Oracle® Essbase

Technical Reference
Release 11.1.2.4
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Oracle Essbase Technical Reference Overview

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About the Oracle Essbase Technical Reference

The Oracle Essbase Technical Reference describes commands, functions, and configuration aspects of Oracle Essbase. This reference is intended for advanced users who need detailed information and examples about Essbase elements.

For other information about Essbase, see the Oracle Essbase Database Administrator’s Guide.

- “What You Should Know Before You Start” on page 19
- “Sample Applications” on page 19
- “Syntax Conventions” on page 20

What You Should Know Before You Start

To use this document, you need the following:

- A working knowledge of the operating system your server uses and the ones your clients use.
- An understanding of Essbase concepts and features.
- An understanding of the typical database administration requirements and tasks, including calculation, reporting, security, and maintenance.

Sample Applications

This document provides examples based on the Sample and Demo applications provided with Essbase. The Sample application contains three databases: Basic, Interntl, and Xchgrate. The Demo application contains one database: Basic. If, when you connect to the Essbase Server, any of the following problems occur, contact your administrator.

- You cannot find the Sample or Demo application
- You don’t have adequate access to the Sample or Demo application
- You don’t see any data in the Sample or Demo databases
## Syntax Conventions

This document uses several formatting styles to indicate actions you should take or types of information you need.

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Purpose</th>
<th>Example</th>
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</thead>
<tbody>
<tr>
<td><strong>UPPERCASE</strong></td>
<td>Command or function names in syntax.</td>
<td>BEGINARCHIVE</td>
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| *italic* | Terms, such as parameters, that you replace with a value | ESSGETSTRING (hCtx, pString); \\
\directorypath\filename \\
The *dimList* argument... |
| " " | Double quotation marks enclose text parameters or single parameters that include a space | "appName" |
| ! | Report Writer: The report output character (bang) signals the start of report processing; this character must be on its own line | ... // commands <DESC MARKET ! |
| ( | Parentheses are used in a couple of ways: |
| | • To enclose function parameters |
| | • To show the order of execution of the enclosed operations | ESSGETSTRING (hCtx, pString); |
| // | Comment markers in report scripts. Double slashes (//) indicate text from // to end of line should be ignored in processing. | // Get results |
| /* ... */ | Comment markers in calculation scripts. The /* ... */ comment markers indicate the enclosed text should be ignored in processing. | /*Get results*/ |
| ; | Statement terminator | EXIT; |
| [] | Brackets enclose optional parameters in syntax. Used with OR symbol | INDENT [ offset ] |
| | if there is more than one optional parameter. Do not type brackets or the OR symbol | |
| [ . numeric ] | Indicates an optional numeric (no quotes) or character (quoted) parameter and the comma which must precede the optional parameter. Do not type the brackets. | [ . year ] |
| [ . "text"] | | [ . "columnName"] |
| () | Braces group statements for processing, enclose alternatives, one of which you must choose |
| | | SET AGGMISSG ON | OFF |
| | Syntax: OR. Separates alternatives from which you choose only one. Do not type the OR symbol. | |
| | Report Writer: Angle bracket precedes layout and member selection commands. | <PAGE |
| @ | Essbase calculation functions: Precedes many function names | @ABS |
### Syntax

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<th>Purpose</th>
<th>Example</th>
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<td>- &gt;</td>
<td>Essbase calculation functions: Cross-dimensional operator (a hyphen followed by a greater-than sign) points to data values of specific member combinations - &gt; (cross-dimensional operator)</td>
<td>Price - &gt; West = AVGRANGE</td>
</tr>
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### About Aggregate Storage Databases

This topic explains how the elements discussed in the *Oracle Essbase Technical Reference* apply to aggregate storage databases.

Consider using the aggregate storage model if the following is true for your database:

- The database is sparse and has many dimensions, and/or the dimensions have many levels of members.
- The database is used primarily for read-only purposes, with few or no data updates.
- The outline contains no formulas except in the dimension tagged as Accounts.
- Calculation of the database is frequent, is based mainly on summation of the data, and does not rely on calculation scripts.

Note the applicability of the following elements for aggregate storage databases:

- **MDX**—Used for querying on block storage and aggregate storage databases. Additionally, MDX numeric-value expressions can be used for developing formulas on aggregate storage outlines. For more information, see "Aggregate Storage and MDX Outline Formulas" on page 1054.

- **Calculation commands**—Not supported in enterprise analytics databases, because calculation scripts are not relevant to aggregate storage storage.

- **Calculation functions**—Not supported in enterprise analytics databases. Instead, MDX formulas can be written using MDX numeric-value expressions. Only the Accounts dimension can have formulas in aggregate storage databases.

- **Report Writer commands**—All Report Writer commands (except <SPARSE) are supported for aggregate storage databases.

- **MaxL statements**—Some MaxL grammar is applicable to aggregate storage mode, and some MaxL grammar is not relevant. To learn which statements are supported in aggregate storage application and database operations, see “MaxL Statements (Aggregate Storage)” on page 950.

- **ESSBASE.CFG configuration settings**—Some ESSBASE.CFG configuration settings are applicable to aggregate storage mode, and some are not. To learn which settings are supported in aggregate storage mode, see “Aggregate Storage and Block Storage Settings Comparison” on page 423.

For more information about aggregate storage, see the *Oracle Essbase Database Administrator’s Guide*. 

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Calculation Functions Overview

Essbase provides a suite of functions and calculation operators to facilitate the definition and application of complex member formulas. Both the Outline Editor and the Calculation Script Editor provide dialog boxes containing functions and operators that you can paste into member formulas and calc scripts. For more information, see the Oracle Essbase Database Administrator’s Guide.

The topics for individual functions in this section provide examples that are based on an application and database provided with the Essbase Server software, called Sample Basic. If you do not have access to Sample Basic, contact your administrator.

Generations and Levels

Many Essbase functions identify a member in the database by its position in the database outline. The outline structure represents a hierarchical tree; every dimension represents a subsection of the database tree. Generations and levels provide position references for all database members within the tree. Position references are required because many applications must be able to determine the location of members within the database structure.

The terms "generation" and "level" denote the distance from either the "root" or the "leaves" of the dimension. Thus, you can determine the location of any member within a database tree. You can also specify relationships between groups of related members.
Generations specify the distance of members from the root of their dimension. All members in a database that are the same number of branches from their root have the same generation number. The dimension is generation 1, its children are generation 2, and so on.

Levels measure the number of branches between a member and the lowest member below it, that is, the number of branches between a member and the "leaf" of its hierarchy within the database structure. Level 0 specifies the bottom-most members of a dimension and thus provides ready access to the raw data stored in a database. Leaf members are level 0, then their parents are level 1, and so on up the hierarchy.

You might note that when all sibling members have the same generation number but not necessarily the same level number.

For example, the members in this hierarchy:

- Dim1
  - m11
  - m111
  - m112
  - m12
  - m121
  - m122
  - m13

have the following generation and level numbers:

- Dim1    Gen 1, Level 2
- m11     Gen 2, Level 1
- m111    Gen 3, Level 0
- m112    Gen 3, Level 0
- m12     Gen 2, Level 1
- m121    Gen 3, Level 0
- m122    Gen 3, Level 0
- m13     Gen 2, Level 0

**Abbreviations**

Function abbreviations are not supported. Use the full function name to obtain expected behavior.

**Function Syntax**

The individual topics for each function include the required syntax for that function. Function names appear in **bold**; required parameters appear in *italics*; and optional parameters appear in brackets [*] and *italics*. Individual topics also discuss the defaults that are used when optional parameters are not specified. For detailed descriptions of each function, along with examples of usage, please refer to the individual topic.

For information about how Essbase checks for and responds to syntax errors in formulas and calculation scripts, or for information on how to use semicolons in formulas and calculation scripts, see the *Oracle Essbase Database Administrator's Guide*. 
Function Parameters

The following table provides a brief description of some of the common parameters used in various functions.

**Note:** Member names that are also keywords, such as IF, THEN, ELSE, and RETURN, must be enclosed in quotation marks. Best practice is to always enclose member names in quotation marks.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>attDimName</td>
<td>A single attribute dimension name specification.</td>
</tr>
<tr>
<td></td>
<td><code>@WITHATTR(Ounces,&quot;&lt;&quot;,16)</code></td>
</tr>
<tr>
<td>attMbrName</td>
<td>A single attribute member name specification.</td>
</tr>
<tr>
<td></td>
<td><code>@ATTRIBUTE(Can)</code></td>
</tr>
<tr>
<td></td>
<td><code>@ATTRIBUTEVAL(Ounces)</code></td>
</tr>
<tr>
<td></td>
<td><code>@WITHATTR(&quot;Pkg Type&quot;,&quot;=&quot;,Can)</code></td>
</tr>
<tr>
<td>dimName</td>
<td>A single dimension name specification.</td>
</tr>
<tr>
<td></td>
<td><code>@CURLEV(Accounts)</code></td>
</tr>
<tr>
<td></td>
<td><code>@CURGEN(Year)</code></td>
</tr>
<tr>
<td></td>
<td><code>@PARENT(Measures,Sales)</code></td>
</tr>
<tr>
<td>expList</td>
<td>A comma-delimited list of member names, variable names, functions, and numeric expressions, all of which return numeric values.</td>
</tr>
<tr>
<td></td>
<td><code>@MAX(Jan,Feb,100,Apr-May)</code></td>
</tr>
<tr>
<td></td>
<td><code>@MIN(Oct:Dec)</code></td>
</tr>
<tr>
<td></td>
<td><code>@COUNT(SKIPNONE,@RANGE(Sales,@CHILDREN(Product)))</code></td>
</tr>
<tr>
<td>expression</td>
<td>Any mathematical or numeric expression that is valid within Essbase and that, when calculated, returns a numeric value. This definition of <code>expression</code> also includes parameters such as <code>numDigits</code>, <code>generation</code>, and <code>level</code>, and other similar parameters for the financial group of functions, such as <code>rateMbrConst</code> and <code>lifeMbrConst</code>.</td>
</tr>
<tr>
<td></td>
<td><code>@ABS(Actual-Budget)</code></td>
</tr>
<tr>
<td></td>
<td><code>@ROUND(Sales / 10.0 + 100)</code></td>
</tr>
<tr>
<td>genLevName</td>
<td>Generation or level name specification.</td>
</tr>
<tr>
<td></td>
<td><code>@DESCENDANTS(Market,Regions)</code></td>
</tr>
<tr>
<td></td>
<td><code>@RELATIVE(Qtr1,Month)</code></td>
</tr>
<tr>
<td>genLevNum</td>
<td>An integer value that defines the number of a generation or level. A positive integer defines a generation number. A value of 0 or a negative integer defines a level number.</td>
</tr>
<tr>
<td></td>
<td><code>@ANCESTORS(Sales,-2)</code></td>
</tr>
<tr>
<td></td>
<td><code>@SANCESTVAL(Product,2,Sales)</code></td>
</tr>
<tr>
<td>mbrList</td>
<td>A comma-delimited list of members.</td>
</tr>
<tr>
<td></td>
<td><code>@ISMBR(New_York,Boston,Chicago)</code></td>
</tr>
</tbody>
</table>
### Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| `mbrName` | Any valid single member name or member combination, or a function that returns a single member or member combination. This definition also includes similar parameters, such as `balanceMbrName`, `costMbr`, and `cashflowMbr`, for the financial group of functions.  
  @GEN(Actual)  
  @CHILDREN(Product)  
  @MAXRANGE(@ANCESTORS(Qtr4),Jan:Dec)  
  For functions that expect a single member name (for example, @DESCENDANTS and @CHILDREN), if a member combination is provided, Essbase uses the first member in the combination. For example, if `mbrName` is Utah->Sales, Essbase uses Utah. |
| `n` | A positive or negative integer value.  
  @NEXT(2,Jan:Dec)  
  @SHIFT(3) |
| `rangeList` | A valid member name, a comma-delimited list of member names, member set functions, and range functions from the same dimension. If `rangeList` is optional and is not specified, Essbase uses the level 0 members from the dimension tagged as Time. If no dimension is tagged as Time and this parameter is omitted, Essbase reports a syntax error. This definition of `rangeList` also includes `mbrList`.  
  @ACCUM(Q189:Q491)  
  @MAXRANGE(Sales,@CHILDREN(Qtr1)) |
| `tag` | Any valid account tag defined in the current database including First, Last, Average, Expense, and Two-Pass.  
  @ISACCTYPE("Expense")  
  To ensure that the tag is resolved as a string rather than a member name, enclose the tag in quotation marks. |
| `XrangeList` | Similar to `rangeList`, but supports cross dimensional members.  
  A valid member name, a comma-delimited list of member names, cross dimension members, or a member set function or range function (including @XRANGE) that returns a list of members from the same dimension. If `XrangeList` is not specified, Essbase uses the level 0 members from the dimension tagged as Time.  
  See also Range List Parameters. |

---

### Calculation Operators

Calculation operators (mathematical, conditional and logical, and cross-dimensional) define equations for member formulas and calc scripts.

### Mathematical Operators

Mathematical operators perform common arithmetic operations.

<table>
<thead>
<tr>
<th>Operator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>Adds.</td>
</tr>
<tr>
<td>-</td>
<td>Subtracts.</td>
</tr>
</tbody>
</table>
### Operator Description

<table>
<thead>
<tr>
<th>Operator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>*</td>
<td>Multiplies.</td>
</tr>
<tr>
<td>/</td>
<td>Divides.</td>
</tr>
<tr>
<td>%</td>
<td>Evaluates percentage. For example, \textit{Member1}%\textit{Member2} evaluates \textit{Member1} as a percentage of \textit{Member2}.</td>
</tr>
<tr>
<td>()</td>
<td>Controls the order of calculations and nests equations and formulas.</td>
</tr>
</tbody>
</table>

### Conditional and Logical Operators

Conditional operators build logical condition into calculations.

<table>
<thead>
<tr>
<th>Operator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IF</td>
<td>ELSE</td>
</tr>
<tr>
<td>&gt;</td>
<td>Data value is greater than.</td>
</tr>
<tr>
<td>&gt;=</td>
<td>Data value is greater than or equal to.</td>
</tr>
<tr>
<td>&lt;</td>
<td>Data value is less than.</td>
</tr>
<tr>
<td>&lt;=</td>
<td>Data value is less than or equal to.</td>
</tr>
<tr>
<td>= =</td>
<td>Data value is equal to.</td>
</tr>
<tr>
<td>&lt; &gt; or !=</td>
<td>Data value is not equal to.</td>
</tr>
<tr>
<td>AND</td>
<td>Logical AND linking operator for multiple value tests. Result is TRUE if both conditions are TRUE. Otherwise the result is FALSE.*</td>
</tr>
<tr>
<td>OR</td>
<td>Logical OR linking operator for multiple value tests. Result is TRUE if either condition is TRUE. Otherwise the result is FALSE.*</td>
</tr>
<tr>
<td>NOT</td>
<td>Logical NOT operator. Result is TRUE if condition is FALSE. Result is FALSE if condition is TRUE.*</td>
</tr>
</tbody>
</table>

* The logical constants TRUE and FALSE are interpreted as 1 (TRUE) and 0 (FALSE) where appropriate.

### Cross-Dimensional Operators

The cross-dimensional operator ( - > ) points to data values of specific member combinations.

The cross-dimensional operator is created with a hyphen ( - ) and a right angle bracket ( > ), with no space between them.
Operation Results on #MISSING Values and Zero (0) Values

If a data value does not exist for a unique combination of members, Essbase gives the combination a value of #MISSING. A #MISSING value is different from a zero (0) value. Therefore, Essbase treats #MISSING values differently from 0 values.

The following tables shows how Essbase calculates #MISSING values. In this table, X represents any number.

<table>
<thead>
<tr>
<th>Calculation/Operation</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>X + #MISSING</td>
<td>X</td>
</tr>
<tr>
<td>X - #MISSING</td>
<td>X, -X</td>
</tr>
<tr>
<td>#MISSING - X</td>
<td>#MISSING</td>
</tr>
<tr>
<td>X * #MISSING</td>
<td>#MISSING</td>
</tr>
<tr>
<td>X / #MISSING</td>
<td>#MISSING</td>
</tr>
<tr>
<td>#MISSING / X</td>
<td>#MISSING</td>
</tr>
<tr>
<td>X / 0</td>
<td>#MISSING</td>
</tr>
<tr>
<td>X % #MISSING</td>
<td>#MISSING</td>
</tr>
<tr>
<td>#MISSING % X</td>
<td>#MISSING</td>
</tr>
<tr>
<td>X % 0</td>
<td>#MISSING</td>
</tr>
<tr>
<td>X == #MISSING</td>
<td>False, unless X is #MISSING</td>
</tr>
<tr>
<td>X != #MISSING</td>
<td>True, unless X is #MISSING</td>
</tr>
<tr>
<td>X &lt;&gt; #MISSING</td>
<td>True, unless X is #MISSING</td>
</tr>
<tr>
<td>(X &lt;= #MISSING)</td>
<td>(X &lt;=0)</td>
</tr>
<tr>
<td>(X &gt;= #MISSING)</td>
<td>(X &gt;=0) or (X == #MISSING)</td>
</tr>
<tr>
<td>(X &gt; #MISSING)</td>
<td>(X &gt; 0)</td>
</tr>
<tr>
<td>(X &lt; #MISSING)</td>
<td>(X &lt; 0)</td>
</tr>
<tr>
<td>X AND #MISSING</td>
<td>#MISSING</td>
</tr>
<tr>
<td>1 AND #MISSING (1 represents any nonzero value)</td>
<td>0</td>
</tr>
<tr>
<td>0 AND #MISSING</td>
<td>#MISSING</td>
</tr>
<tr>
<td>#MISSING AND #MISSING</td>
<td>#MISSING</td>
</tr>
<tr>
<td>X OR #MISSING</td>
<td>1</td>
</tr>
<tr>
<td>1 OR #MISSING (1 represents any nonzero value)</td>
<td>#MISSING</td>
</tr>
<tr>
<td>0 OR #MISSING</td>
<td>#MISSING</td>
</tr>
<tr>
<td>#MISSING OR #MISSING</td>
<td>#MISSING</td>
</tr>
<tr>
<td>Calculation/Operation</td>
<td>Result</td>
</tr>
<tr>
<td>------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>IF (#MISSING)</td>
<td>IF (0)</td>
</tr>
<tr>
<td>f (#MISSING)</td>
<td>#MISSING for any Essbase function of one variable</td>
</tr>
<tr>
<td>f (X)</td>
<td>#MISSING for any X not in the domain of f, and any Essbase function of more than one variable (except where specifically noted)</td>
</tr>
</tbody>
</table>

For information on how Essbase aggregates #MISSING values, see the Oracle Essbase Database Administrator’s Guide.

## Calculation Function Categories

This section lists all of the Essbase calculation functions, grouped by function type.

- “Conditional and Logical Operators” on page 27
- “Boolean Functions” on page 29
- “Relationship Functions” on page 30
- “Calculation Operators” on page 26
- “Mathematical Functions” on page 31
- “Member Set Functions” on page 32
- “Range and Financial Functions” on page 35
- “Allocation Functions” on page 39
- “Forecasting Functions” on page 39
- “Statistical Functions” on page 40
- “Date & Time Function” on page 40
- “Miscellaneous Functions” on page 41
- “Custom-defined Functions” on page 46

## Boolean Functions

A Boolean function returns TRUE or FALSE (1 or 0, respectively). Boolean functions are generally used in conjunction with the IF command to provide a conditional test. Because they generate a numeric value, however, Boolean functions can also be used as part of a member formula.

Boolean functions are useful because they can determine which formula to apply based on characteristics of the current member combination. For example, you may want to restrict a calculation to those members in a dimension that contain input data. In this case, you preface the calculation with an IF test that is based on @ISLEV (dimName, 0).
If one of the function parameters is a cross-dimensional member; for example, @@ISMBR (Sales-Budget), all parts of the cross-dimensional member must match all parts of the current cell to return a value of TRUE.

In the following quick-reference table, "the current member" means the member that is currently being calculated by the function. Words in italics, such as *member*, loosely indicate information you supply to the function. For details, see the individual function topics.

<table>
<thead>
<tr>
<th>Function</th>
<th>Condition Tested</th>
</tr>
</thead>
<tbody>
<tr>
<td>@ISACCTYPE</td>
<td>Whether the current member has a particular accounts tag.</td>
</tr>
<tr>
<td>@ISANCEST</td>
<td>Whether the current member is an ancestor of <em>member</em>.</td>
</tr>
<tr>
<td>@ISCHILD</td>
<td>Whether the current member is a child of <em>member</em>.</td>
</tr>
<tr>
<td>@ISDESC</td>
<td>Whether the current member is a descendant of <em>member</em>.</td>
</tr>
<tr>
<td>@ISGEN</td>
<td>Whether the current member of <em>dimension</em> is in <em>generation</em>.</td>
</tr>
<tr>
<td>@ISIANCEST</td>
<td>Whether the current member is the same member or an ancestor of <em>member</em>.</td>
</tr>
<tr>
<td>@ISICHLDS</td>
<td>Whether the current member is the same member or a child of <em>member</em>.</td>
</tr>
<tr>
<td>@ISDESC</td>
<td>Whether the current member is the same member or a descendant of <em>member</em>.</td>
</tr>
<tr>
<td>@ISIPARENT</td>
<td>Whether the current member is the same member or the parent of <em>member</em>.</td>
</tr>
<tr>
<td>@ISISIBLING</td>
<td>Whether the current member is the same member or a sibling of <em>member</em>.</td>
</tr>
<tr>
<td>@ISLEV</td>
<td>Whether the current member of <em>dimension</em> is in <em>level</em>.</td>
</tr>
<tr>
<td>@ISMBR</td>
<td>Whether the current member is <em>member</em>, or is found in <em>member list</em>, or is found in a range returned by another function.</td>
</tr>
<tr>
<td>@ISMBRUDA</td>
<td>Whether the specified user-defined attribute string exists for the specified <em>member</em>.</td>
</tr>
<tr>
<td>@ISPARENT</td>
<td>Whether the current member is the parent of <em>member</em>.</td>
</tr>
<tr>
<td>@ISRANGENONEMPTY</td>
<td>Whether data values exist for a specified range.</td>
</tr>
<tr>
<td>@ISSAMEGEN</td>
<td>Whether the current member is in the same generation as <em>member</em>.</td>
</tr>
<tr>
<td>@ISSAMELEV</td>
<td>Whether the current member is in the same level as <em>member</em>.</td>
</tr>
<tr>
<td>@ISSIBLING</td>
<td>Whether the current member is a sibling of <em>member</em>.</td>
</tr>
<tr>
<td>@ISUDA</td>
<td>Whether the current member of <em>dimension</em> has a particular user-defined attribute string.</td>
</tr>
</tbody>
</table>

**Relationship Functions**

Relationship functions look up specific values within the database based on current cell location and a series of parameters. You can use these functions to refer to another value in a data series. Relationship functions have an implicit current member argument; that is, these functions are dependent on the current member’s position.
In the following quick-reference table, words in italics loosely represent information you supply to the function. For details, see the individual function topics.

<table>
<thead>
<tr>
<th>Function</th>
<th>Return Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>@ANCESTVAL</td>
<td>Ancestor values of a specified one-dimensional member combination.</td>
</tr>
<tr>
<td>@ATTRIBUTEVAL</td>
<td>Associated attribute value from a Boolean attribute dimension.</td>
</tr>
<tr>
<td>@ATTRIBUTESVAL</td>
<td>Associated attribute value from a text attribute dimension.</td>
</tr>
<tr>
<td>@ATTRIBUTEVAL</td>
<td>Associated attribute value from a numeric or date attribute dimension.</td>
</tr>
<tr>
<td>@CURGEN</td>
<td>Generation number of the current member in dimension.</td>
</tr>
<tr>
<td>@CURLEV</td>
<td>Level number of the current member in dimension.</td>
</tr>
<tr>
<td>@GEN</td>
<td>Generation number of member.</td>
</tr>
<tr>
<td>@LEV</td>
<td>Level number of member.</td>
</tr>
<tr>
<td>@MDANCESTVAL</td>
<td>Ancestor values for any number of multidimensional member combinations.</td>
</tr>
<tr>
<td>@MDPARENTVAL</td>
<td>Parent values for any number of multidimensional member combinations.</td>
</tr>
<tr>
<td>@PARENTVAL</td>
<td>Parent values for member in dimension.</td>
</tr>
<tr>
<td>@SANCESTVAL</td>
<td>Ancestor values for shared members at a certain depth under a root member.</td>
</tr>
<tr>
<td>@S PARENTVAL</td>
<td>Parent values for shared members under a root member.</td>
</tr>
<tr>
<td>@XREF</td>
<td>Values from a different database than the one being calculated.</td>
</tr>
<tr>
<td>@XWRITE</td>
<td>Writes values to a different database than the one being calculated.</td>
</tr>
</tbody>
</table>

**Mathematical Functions**

These functions perform specific mathematical calculations. Mathematical functions define and return values that are based on selected member expressions. These functions cover many basic statistical functions and return numeric results that are based on supplied member values. Advanced statistical functions are included in the statistical functions category.

In the following quick-reference table, words in italics loosely represent information you supply to the function. For details, see the individual function topics.

<table>
<thead>
<tr>
<th>Function</th>
<th>Return Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>@ABS</td>
<td>Absolute value of expression.</td>
</tr>
<tr>
<td>@AVG</td>
<td>Average of all values in expList.</td>
</tr>
<tr>
<td>@EXP</td>
<td>$e$ (base of natural logarithms) raised to the power of expression.</td>
</tr>
<tr>
<td>@FACTORIAL</td>
<td>Factorial of expression.</td>
</tr>
<tr>
<td>Function</td>
<td>Return Value</td>
</tr>
<tr>
<td>----------</td>
<td>--------------</td>
</tr>
<tr>
<td>@INT</td>
<td>Next lowest integer value of expression.</td>
</tr>
<tr>
<td>@LN</td>
<td>e (base of natural logarithms) of expression.</td>
</tr>
<tr>
<td>@LOG</td>
<td>Any base logarithm of expression.</td>
</tr>
<tr>
<td>@LOG10</td>
<td>Base-10 logarithm of expression.</td>
</tr>
<tr>
<td>@MAX</td>
<td>Maximum value found in cells of an expression list.</td>
</tr>
<tr>
<td>@MAXS</td>
<td>Maximum value found in cells of an expression list, optionally skipping empty values.</td>
</tr>
<tr>
<td>@MIN</td>
<td>Minimum value found in cells of expression list.</td>
</tr>
<tr>
<td>@MINS</td>
<td>Minimum value found in cells of an expression list, optionally skipping empty values.</td>
</tr>
<tr>
<td>@MOD</td>
<td>Modulus of a division operation between two members.</td>
</tr>
<tr>
<td>@POWER</td>
<td>Expression raised to power.</td>
</tr>
<tr>
<td>@REMAINDER</td>
<td>Remainder value of expression.</td>
</tr>
<tr>
<td>@ROUND</td>
<td>Expression rounded to numDigits.</td>
</tr>
<tr>
<td>@SUM</td>
<td>Sum of values found in cells of an expression list.</td>
</tr>
<tr>
<td>@TRUNCATE</td>
<td>Expression with fractional part removed, returning an integer.</td>
</tr>
<tr>
<td>@VAR</td>
<td>Variance between two members.</td>
</tr>
<tr>
<td>@VARPER</td>
<td>Percent variance between two members.</td>
</tr>
</tbody>
</table>

**Member Set Functions**

Member set functions return a list of members. This list is based on the member specified and the function used. You can use operators to specify Generation and Level Range Operators for Member Set Functions with member set functions.

When a member set function is called as part of a formula, the list of members is generated before the calculation begins. The list never varies because it is based on the specified member and is independent of the current member.

If a member set function (for example, @CHILDREN or @SIBLINGS) is used to specify the list of members to calculate in a calculation script, Essbase bypasses the calculation of any Dynamic Calc or Dynamic Calc and Store members in the resulting list.

Only the @ATTRIBUTE and @WITHATTR functions can use attribute members or members of the Attribute Calculations dimension as parameters in member set functions.

You can use cross-dimension expressions such as ("1998";"2001" -> @Levmbrs (Year, 0)). The cross-dimensional operator is associative (x -> y) -> z=x -> (y -> z), but not commutative because x -> y = y -> x is a set, but the order of elements is different.
<table>
<thead>
<tr>
<th>Function</th>
<th>Return Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>@ALLANCESTORS</td>
<td>All ancestors of member, including ancestors of shared member.</td>
</tr>
<tr>
<td>@ANCEST</td>
<td>Ancestor at distance from the current member or an explicitly specified member.</td>
</tr>
<tr>
<td>@ANCESTORS</td>
<td>All ancestors of member, or those ancestors up to a specified distance.</td>
</tr>
<tr>
<td>@ATTRIBUTE</td>
<td>All base members associated with attribute member name.</td>
</tr>
<tr>
<td>@BETWEEN</td>
<td>All members whose name string value fall between, and are inclusive of, two specified string tokens.</td>
</tr>
<tr>
<td>@CHILDREN</td>
<td>Children of member.</td>
</tr>
<tr>
<td>@CURRMBR</td>
<td>Member currently being calculated in the specified dimension.</td>
</tr>
<tr>
<td>@DESCENDANTS</td>
<td>All descendants of member, or those descendants down to a specified distance.</td>
</tr>
<tr>
<td>@EQUAL</td>
<td>Member names that match the specified token name.</td>
</tr>
<tr>
<td>@EXPAND</td>
<td>Expands a member search by calling a member set function for each member in a member list.</td>
</tr>
<tr>
<td>@GENMBRS</td>
<td>Members of dimension that are at generation.</td>
</tr>
<tr>
<td>@IALLANCESTORS</td>
<td>Member and ancestors of member, including ancestors of shared member.</td>
</tr>
<tr>
<td>@IANCESTORS</td>
<td>Member, and either all member ancestors or those ancestors up to a specified distance.</td>
</tr>
<tr>
<td>@ICHILDREN</td>
<td>Member and its children.</td>
</tr>
<tr>
<td>@IDESCENDANTS</td>
<td>Member, and either all member descendants or those descendants down to a specified distance.</td>
</tr>
<tr>
<td>@ILANCESTORS</td>
<td>Members of the specified list of members, and either all ancestors of the specified list of members or those ancestors up to a specified distance.</td>
</tr>
<tr>
<td>@ILDESCENDANTS</td>
<td>Members of the specified list of members, and either all descendants of the specified list of members or those descendants down to a specified distance.</td>
</tr>
<tr>
<td>@ILSIBLINGS</td>
<td>Member and its left siblings.</td>
</tr>
<tr>
<td>@INTERSECT</td>
<td>Members that are at the intersection of two specified lists of members.</td>
</tr>
<tr>
<td>@IRSIBLINGS</td>
<td>Member and its right siblings.</td>
</tr>
<tr>
<td>@IRDESCENDANTS</td>
<td>Member and all its descendants, or those descendants down to a specified distance, including descendants of shared member.</td>
</tr>
<tr>
<td>@ISIBLINGS</td>
<td>Member and its siblings.</td>
</tr>
<tr>
<td>@LANCESTORS</td>
<td>All ancestors of the specified list of members, or those ancestors up to a specified distance.</td>
</tr>
<tr>
<td>@LDESCENDANTS</td>
<td>All descendants of the specified list of members, or those descendants down to a specified distance.</td>
</tr>
<tr>
<td>@LEVMBRS</td>
<td>Members of dimension that are at level.</td>
</tr>
<tr>
<td>@LIST</td>
<td>A single list compiled from arguments, and can be used for functions requiring an expression list, a member list, or a range list.</td>
</tr>
<tr>
<td>Function</td>
<td>Return Value</td>
</tr>
<tr>
<td>----------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>@LSIBLINGS</td>
<td>Left siblings of member.</td>
</tr>
<tr>
<td>@MATCH</td>
<td>Members that match a pattern search performed over a generation, a level, or a member and its descendants.</td>
</tr>
<tr>
<td>@MBRCOMPARE</td>
<td>Member names that match the comparison criteria.</td>
</tr>
<tr>
<td>@MBRPARENT</td>
<td>Parent of the specified member.</td>
</tr>
<tr>
<td>@MEMBER</td>
<td>Member with name string.</td>
</tr>
<tr>
<td>@MEMBERAT</td>
<td>Member at the specified location in a list.</td>
</tr>
<tr>
<td>@MERGE</td>
<td>Merged list from two lists.</td>
</tr>
<tr>
<td>@NEXTSIBLING</td>
<td>Next, or right-most, sibling of member.</td>
</tr>
<tr>
<td>@NOTEQUAL</td>
<td>Member names that do not match the specified token name.</td>
</tr>
<tr>
<td>@PARENT</td>
<td>Parent of the current member being calculated in dimension, optionally crossed with another member.</td>
</tr>
<tr>
<td>@PREVSIBLING</td>
<td>Previous, or left-most, sibling of member.</td>
</tr>
<tr>
<td>@RANGE</td>
<td>Member list that crosses a member from one dimension with a range from another dimension.</td>
</tr>
<tr>
<td>@RDESCENDANTS</td>
<td>All descendants of member, or those down to a specified distance, including descendants of shared member.</td>
</tr>
<tr>
<td>@RELATIVE</td>
<td>All members that are at distance from member.</td>
</tr>
<tr>
<td>@REMOVE</td>
<td>List1, with anything that is also in list2 removed.</td>
</tr>
<tr>
<td>@RSIBLINGS</td>
<td>Right siblings of member.</td>
</tr>
<tr>
<td>@SHIFTSIBLING</td>
<td>Sibling at specified distance from member.</td>
</tr>
<tr>
<td>@SIBLINGS</td>
<td>Siblings of member.</td>
</tr>
<tr>
<td>@UDA</td>
<td>Members of dimension that have UDA.</td>
</tr>
<tr>
<td>@WITHATTR</td>
<td>Base members from dimension that are associated with an attribute meeting a condition.</td>
</tr>
<tr>
<td>@XRANGE</td>
<td>Range of members between (and inclusive of) two members at the same level.</td>
</tr>
</tbody>
</table>

**Generation and Level Range Operators for Member Set Functions**

The operators : and :: can be used with member set functions, which return a list of members. The : operator returns level-based ranges and the :: operator returns generation-based ranges. For example, Jan:Dec and Jan::Dec both return all members between and inclusive of Jan and Dec.

The difference is that Jan:Dec returns all members at the same level and Jan::Dec returns all members at the same generation.

For example, if we have the outline:

```
Q1 - Jan
    Feb
```
The function @MOVAVG(Sales, 3, Jan:Dec) computes @MOVAVG(Sales, 3, Jan, Feb, Mar, Apr, May, Jun, Q3, Oct, Nov, Dec).

The function @MOVAVG(Sales, 3, Jan::Dec) computes @MOVAVG(Sales, 3, Jan, Feb, Mar, Apr, May, Jun, Oct, Nov, Dec).

**Range and Financial Functions**

Range functions take a range of members as an argument. Rather than return a single value, these functions calculate a series of values internally based on the range specified.

Financial functions execute specialized financial calculations.

<table>
<thead>
<tr>
<th>Function</th>
<th>Return Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>@ACCUM</td>
<td>The sum of values of a specified member across a range</td>
</tr>
<tr>
<td>@AVGRANGE</td>
<td>The average of values of a specified member across a range</td>
</tr>
<tr>
<td>@COMPOUND</td>
<td>The compound interest of values of a specified member across a range, calculated at a specified rate</td>
</tr>
<tr>
<td>@COMPOUNDGROWTH</td>
<td>A series of values that represent the compound growth of the specified member across a range of members, calculated at a specified rate</td>
</tr>
<tr>
<td>@CURRMBRANGE</td>
<td>A range of members that is based on the relative position of the member combination Essbase is currently calculating</td>
</tr>
<tr>
<td>@DECLINE</td>
<td>Depreciation of a member over a specified period, calculated using the declining balance method</td>
</tr>
<tr>
<td>@DISCOUNT</td>
<td>Discounted values of a specified member, calculated at a specified rate, across a range of values from the time dimension</td>
</tr>
<tr>
<td>@GROWTH</td>
<td>A series of values that represents the linear growth of the specified value</td>
</tr>
<tr>
<td>@INTEREST</td>
<td>A series of values that represent the linear growth of a specified member, calculated at a specified rate, across a range of members from the time dimension</td>
</tr>
<tr>
<td>@IRR</td>
<td>The Internal Rate of Return on a cash flow that is calculated across the time dimension or a specified range of members and must contain at least one investment (negative) and one income (positive). Includes an initial guess of 0.07 (the initial guess cannot be configured).</td>
</tr>
<tr>
<td>@IRREX</td>
<td>The Internal Rate of Return on a cash flow that is calculated across the time dimension or a specified range of members and must contain at least one investment (negative) and one income (positive). Includes functionality to configure the initial guess and the number of iterations the algorithm can make.</td>
</tr>
<tr>
<td>@MAXRANGE</td>
<td>The maximum value of a member across a range of members</td>
</tr>
<tr>
<td>Function</td>
<td>Return Value</td>
</tr>
<tr>
<td>--------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>@MAXSRANGE</td>
<td>The maximum value of a member across a range of members, with the ability to skip zero and #MISSING values</td>
</tr>
<tr>
<td>@MDSHIFT</td>
<td>The next or nth member in a range of members, retaining all other members identical to the current member across multiple dimensions</td>
</tr>
<tr>
<td>@MINRANGE</td>
<td>The minimum value of a member across a range of members</td>
</tr>
<tr>
<td>@MINSRANGE</td>
<td>The minimum value of a member across a range of members, with the ability to skip zero and #MISSING values</td>
</tr>
<tr>
<td>@NEXT</td>
<td>The next or nth member in a range of members</td>
</tr>
<tr>
<td>@NEXTS</td>
<td>The next or nth member in a range of members, with the option to skip #MISSING, zero, or both values</td>
</tr>
<tr>
<td>@NPV</td>
<td>The Net Present Value of an investment based on a series of payments and income values</td>
</tr>
<tr>
<td>@PTD</td>
<td>The period-to-date values of members in the time dimension</td>
</tr>
<tr>
<td>@PRIOR</td>
<td>A list of the previous or nth previous members in a range of members</td>
</tr>
<tr>
<td>@PRIORS</td>
<td>A list of the previous or nth previous members in a range of members, with the option to skip #MISSING, zero, or both values</td>
</tr>
<tr>
<td>@RANGE</td>
<td>A member list that crosses the specified member from one dimension with the specified member range from another dimension</td>
</tr>
<tr>
<td>@RANGEFIRSTVAL</td>
<td>The first value in a range (with options for how to handle zero and #MISSING).</td>
</tr>
<tr>
<td>@RANGELASTVAL</td>
<td>The last value in a range (with options for how to handle zero and #MISSING).</td>
</tr>
<tr>
<td>@SHIFT</td>
<td>A list of the next or nth members in a range of members, retaining all other members identical to the current member and in the specified dimension</td>
</tr>
<tr>
<td>@SHIFTPLUS</td>
<td></td>
</tr>
<tr>
<td>@SHIFTMINUS</td>
<td></td>
</tr>
<tr>
<td>@SLN</td>
<td>Depreciation amounts, across a range period, that an asset in the current period may be depreciated, calculated using the straight-line depreciation method</td>
</tr>
<tr>
<td>@SUMRANGE</td>
<td>A list of summarized values of all specified members across a range of members</td>
</tr>
<tr>
<td>@SYD</td>
<td>Depreciation amounts, across a range of periods, of an asset in the current period, calculated using the sum of the year's digits depreciation method</td>
</tr>
<tr>
<td>@XRANGE</td>
<td>A list of a range of members between specified members at the same level</td>
</tr>
</tbody>
</table>

**Range List Parameters**

Some range and forecasting functions recognize the optional parameter `rangeList` or `XrangeList` as the last parameter. `rangeList` is a range of members restricted to one dimension; `XrangeList` is a range of members that can be from one or multiple dimensions. `XrangeList` helps you incorporate time continuum navigation for the calculation functions you use.
If rangeList or XrangeList are not given, the level 0 (leaf) members from the dimension tagged as Time become the default range. If no dimension is tagged as Time and the last parameter is not given, Essbase reports a syntax error.

Examples of rangeList

The following examples are based on Sample Basic.

@CHILDREN(West) is a rangeList that returns the following list:

California
Oregon
Washington
Utah
Nevada

@CHILDREN(Product) is a rangeList that returns the following list:

Colas
Root Beer
Cream Soda
Fruit Soda
Diet Drinks

As you can see from the above examples, rangeList is a list of members from a single dimension only.

Examples of XrangeList

The following examples are based on Sample Basic.

The following example uses simple members to return the range between Jan and Mar:

@XRANGE(Jan:Mar)

and returns the following members:

Jan
Feb
Mar

The following example uses cross dimensional members to return the range between Actual, Jan and Budget, Mar:

@XRANGE (Actual->Jan, Budget->Mar)

and returns the following members:

Actual, Jan
Actual, Feb
Actual, Mar
Actual, Apr
Actual, May
Actual, Jun
Actual, Jul
Actual, Aug
Actual, Sep
Actual, Oct
Actual, Nov
Actual, Dec
Budget, Jan
Budget, Feb
Budget, Mar

The following example is not based on the Sample Basic database. It is based on database that contains a dimension called Year that contains members for each year, from 2001 to 2003. The following formula computes the average sales for all months between Mar of 2000 and Jan of 2001:

\[
\text{SalesAvg} = \text{MOVAVG}(\text{Sales}, 3, \text{XRANGE("2001"->Mar, "2003"->Jan}}); 
\]

and returns the following members:

<table>
<thead>
<tr>
<th>Colas</th>
<th>New York</th>
<th>Actual</th>
<th>SalesAvg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>======</td>
<td>========</td>
</tr>
<tr>
<td>2000</td>
<td></td>
<td>======</td>
<td>========</td>
</tr>
<tr>
<td>Mar</td>
<td>678</td>
<td>678</td>
<td></td>
</tr>
<tr>
<td>Apr</td>
<td>645</td>
<td>645</td>
<td></td>
</tr>
<tr>
<td>May</td>
<td>675</td>
<td>666</td>
<td></td>
</tr>
<tr>
<td>Jun</td>
<td>712</td>
<td>677.3</td>
<td></td>
</tr>
<tr>
<td>Jul</td>
<td>756</td>
<td>714.3</td>
<td></td>
</tr>
<tr>
<td>Aug</td>
<td>890</td>
<td>786</td>
<td></td>
</tr>
<tr>
<td>Sep</td>
<td>924</td>
<td>856.7</td>
<td></td>
</tr>
<tr>
<td>Oct</td>
<td>914</td>
<td>909.3</td>
<td></td>
</tr>
<tr>
<td>Nov</td>
<td>912</td>
<td>916.7</td>
<td></td>
</tr>
<tr>
<td>Dec</td>
<td>723</td>
<td>849.7</td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td></td>
<td>======</td>
<td>========</td>
</tr>
<tr>
<td>Jan</td>
<td>647</td>
<td>760.7</td>
<td></td>
</tr>
</tbody>
</table>

As you can see from the above examples, `XRangelist` is a range of members from one or more dimensions, and can help you incorporate time continuum navigation.

**More Examples of rangeList and XRangelist**

The following table provides more examples of valid values for `rangeList` or `XRangelist`.

<table>
<thead>
<tr>
<th>Example</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mar99</td>
<td>A single member</td>
</tr>
<tr>
<td>Mar99, Apr99, May99</td>
<td>A comma-delimited list of members.</td>
</tr>
<tr>
<td>Jan99:Dec99</td>
<td>A level range. A level range includes all members on the same level between and including the members defining the range.</td>
</tr>
<tr>
<td>Q1_99::Q4_2000</td>
<td>A generation range. A generation range includes the members defining the range and all members that are within the range and of the same generation.</td>
</tr>
<tr>
<td>Q1_99::Q4_2000, FY98, FY99, FY2000</td>
<td>A generation range and a comma-delimited list.</td>
</tr>
</tbody>
</table>
The following table provides examples of valid values for `XrangeList`.

<table>
<thead>
<tr>
<th>Example</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan-&gt;Actual-&gt;Sales, Dec-&gt;Actual-&gt;Sales</td>
<td>A comma-delimited list of members from one or more dimensions.</td>
</tr>
<tr>
<td>Actual-&gt;Jan, @XRANGE(Actual-&gt;December, Budget-&gt;Mar);</td>
<td>A comma-delimited list and a range.</td>
</tr>
<tr>
<td>@XRANGE(Jan-&gt;Actual,Dec-&gt;Budget);</td>
<td>A <code>@XRANGE</code> function.</td>
</tr>
<tr>
<td>@CHILDREN(&quot;Colas&quot;),@CHILDREN(&quot;West&quot;)</td>
<td>A member set function as part of a range list.</td>
</tr>
</tbody>
</table>

Financial functions never return a value; rather, they internally calculate a series of values based on the range specified and write the results to a range of cells. Thus, you cannot apply any operator directly to the function.

**Allocation Functions**

These functions allocate values that are input at the parent level. The values are allocated across child members in one or more dimensions, based on specified criteria. These functions consolidate the common tasks that are required to perform allocations in Essbase.

<table>
<thead>
<tr>
<th>Function</th>
<th>Allocation Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>@ALLOCATE</td>
<td>Allocates values to lower-level members in one level.</td>
</tr>
<tr>
<td>@MDALLOCATE</td>
<td>Allocates values to lower-level members in multiple dimensions.</td>
</tr>
</tbody>
</table>

**Forecasting Functions**

Forecasting functions manipulate data for the purpose of smoothing, interpolating, or calculating future values. Forecasting functions are often used in planning, analysis, and modeling applications. Some forecasting functions recognize the optional `Range List Parameters rangeList or XrangeList`).

<table>
<thead>
<tr>
<th>Function</th>
<th>Data Manipulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>@MOVAVG</td>
<td>Applies a moving average to a data set, replacing each term in the list with a trailing average. This function modifies the data set for smoothing purposes.</td>
</tr>
<tr>
<td>@MOVMAX</td>
<td>Applies a moving maximum to a data set, replacing each term in the list with a trailing maximum. This function modifies the data set for smoothing purposes.</td>
</tr>
</tbody>
</table>
### Function

<table>
<thead>
<tr>
<th>Function</th>
<th>Data Manipulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>@MOVMED</td>
<td>Applies a moving median to a data set, replacing each term in the list with a trailing median. This function modifies the data set for smoothing purposes.</td>
</tr>
<tr>
<td>@MOVMIN</td>
<td>Applies a moving minimum to a data set, replacing each term in the list with a trailing minimum. This function modifies the data set for smoothing purposes.</td>
</tr>
<tr>
<td>@MOVSUM</td>
<td>Applies a moving sum to a data set. This function modifies the data set for smoothing purposes.</td>
</tr>
<tr>
<td>@MOVSUMX</td>
<td>Applies a moving sum to a data set, enabling specification of values for trailing members. This function modifies the data set for smoothing purposes.</td>
</tr>
<tr>
<td>@SPLINE</td>
<td>Applies a smoothing spline to a set of data points. A spline is a mathematical curve that is used to smooth or interpolate data.</td>
</tr>
<tr>
<td>@TREND</td>
<td>Calculates future values, basing the calculation on curve-fitting to historical values</td>
</tr>
</tbody>
</table>

### Statistical Functions

Statistical functions calculate advanced statistical values, such as correlation or variance. These functions are often used in sales and marketing applications.

<table>
<thead>
<tr>
<th>Function</th>
<th>Return Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>@CORRELATION</td>
<td>The correlation coefficient between two parallel data sets</td>
</tr>
<tr>
<td>@COUNT</td>
<td>The number of data values in the specified data set</td>
</tr>
<tr>
<td>@MEDIAN</td>
<td>The median (middle value) of the specified data set</td>
</tr>
<tr>
<td>@MODE</td>
<td>The mode (the most frequently occurring value) in the specified data set</td>
</tr>
<tr>
<td>@RANK</td>
<td>The rank (position in the sorted data set) of the specified members or the specified value among the values in the specified data set.</td>
</tr>
<tr>
<td>@STDEV</td>
<td>The standard deviation of the specified data set</td>
</tr>
<tr>
<td>@STDEVP</td>
<td>The standard deviation of the specified data set, calculated over the entire population</td>
</tr>
<tr>
<td>@STDEVANGE</td>
<td>The standard deviation of all values of the specified member across the specified data set. The specified mbName is crossed with a range list to obtain the sample across which the standard deviation is calculated.</td>
</tr>
<tr>
<td>@VARIANCE</td>
<td>The statistical variance of the specified data set (expList), based upon a sample of a population</td>
</tr>
<tr>
<td>@VARIANCEP</td>
<td>The statistical variance of the specified data set (expList), based upon the entire population</td>
</tr>
</tbody>
</table>

### Date & Time Function

The date function, @TODATE, converts date strings to numbers that can be used in calculation formulas.
Miscellaneous Functions

- **@CALCMODE**—This function enables you to specify whether a formula is calculated in cell mode or block mode and whether a formula is calculated bottom-up or top-down.
- **@CONCATENATE, @SUBSTRING, and @NAME**—These functions enable manipulation of character strings.
- **@RETURN**—This function enables termination of a calculation, with a custom error message.
- **@ALLOCATE** and **@CREATEBLOCK**—These functions populate cells with values or #MISSING.

Functions Supported in Hybrid Aggregation Mode

The Essbase configuration setting `ASODYNAMICAGGINBSO` controls whether block storage databases use hybrid aggregation mode. Hybrid aggregation for block storage databases means that wherever possible, block storage data calculation executes with efficiency similar to that of aggregate storage databases. If enabled, hybrid aggregation is supported for member formulas using any of functions in this group.

- **@ABS**
- **@ALLANCESTORS**
- **@ALIAS**
- **@ANCESTORS**
- **@ATTRIBUTE**
- **@ATTRIBUTEBVAL**
- **@ATTRIBUTESVAL**
- **@ATTRIBUTEVAL**
- **@AVG**
- **@BETWEEN**
- **@CALCMODE**
- **@CHILDREN**
- **@CONCATENATE**
- **@COUNT**
- **@CURGEN**
- **@CURLEV**
- **@DATEDIFF**
- **@DATEPART**
- **@DATEROLL**
- **@DESCENDANTS**
- **@ENUMVALUE**
- **@EQUAL**
● @ISSAMEGEN
● @ISSAMELEV
● @ISSIBLING
● @ISUDA
● @LANCESTORS
● @LDESCENDANTS
● @LEV
● @LEVMBRS
● @LIKE
● @LIST
● @LN
● @LOG
● @LOG10
● @LSIBLINGS
● @MATCH
● @MAX
● @MAXRANGE
● @MAXS
● @MAXSRANGE
● @MBRCOMPARE
● @MBRPARENT
● @MEDIAN
● @MEMBERAT
● @MERGE
● @MIN
● @MINRANGE
● @MINS
● @MINSRANGE
● @MOD
● @MODE
● @NAME
● @NEXT
● @NEXTS
● @NEXTSIBLING
● @NOTEQUAL
● @POWER
● @PREVSIBLING
● @PRIOR
● @PRIORS
● @RANGE
● @RANGEFIRSTVAL
● @RANGELASTVAL
● @RANK
● @RDESCENDANTS
● @RELATIVE
● @RELXRANGE
● @REMAINDER
● @REMOVE
● @RETURN
● @ROUND
● @RSIBLINGS
● @SHARE
● @SHIFTMINUS
● @SHIFTPLUS
● @SHIFTSIBLING
● @SIBLINGS
● @SPARENTVAL
● @SUBSTRING
● @SUM
● @SUMRANGE
● @TODATE
● @TODATEEX
● @TODAY
● @TRUNCATE
● @UDA
● @VAR
● @VARPER
● @VARIANCE
● @VARIANCEP
● @WITHATTR
The following functions are not supported for hybrid aggregation mode. If encountered, Essbase defaults to block storage execution for these functions.

- @ACCUM
- @ALLOCATE
- @ANCEST
- @ANCESTVAL
- @AVGRANGE
- @COMPOUND
- @COMPOUNDGROWTH
- @CORRELATION
- @CREATEBLOCK
- @CURRMBR
- @CURRMBRRANGE
- @DECLINE
- @DISCOUNT
- @GROWTH
- @INTEREST
- @IRR
- @IRREX
- @MDALLOCATE
- @MDANCESTVAL
- @MDPARENTVAL
- @MDSHIFT
- @MEMBER
- @MOVAVG
- @MOVMAX
- @MOVMED
- @MOVMIN
- @MOVSUM
- @MOVSUMX
- @NPV
- @PARENT
- @PARENTVAL
- @PTD
- @SANCESTVAL
- @SHIFT
- @SLN
- @SPLINE
- @STDEV
- @STDEVP
- @STDEVRANGE
- @SYD
- @TREND
- @XRANGE
- @XREF
- @XWRITE

**Custom-defined Functions**

This custom-defined group is a category of functions that you develop for calculation operations that are not enabled by the built-in Essbase functions. Custom-defined functions are written in Java and registered on the server. The Essbase calculator framework calls custom-defined functions as external functions. For more details, see Create Macro and Create Function in MaxL.

**Calculation Function List**

Consult the Contents pane for a categorical list of calculation functions.

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<th>Function</th>
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<td>@ISATTRIBUTE</td>
<td>@NAME</td>
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<td>@ANCESTVAL</td>
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<td>@PARENT</td>
</tr>
<tr>
<td>@ATTRIBUTE</td>
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</tr>
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<td>@ATTRIBUTESVAL</td>
<td>@ISISIBLING</td>
<td>@PREVSIBLING</td>
</tr>
</tbody>
</table>
@ABS

Returns the absolute value of *expression*. The absolute value of a number is that number less its sign. A negative number becomes positive, while a positive number remains positive.

**Syntax**

@ABS (expression)

**Parameter Description**

expression  Member name or mathematical expression that generates a numeric value.

**Example**

The following example is based on the Demo Basic database. In this example, Variance needs to be presented as a positive number. The @ABS function is used because otherwise some combinations of Actual - Budget would return negative values.

Variance=@ABS(Actual-Budget);

This example produces the following report:
Sales VCR San_Francisco
Jan Feb Mar
=== === ===
Actual 1,323 1,290 1,234
Budget 1,200 1,100 1,100
Variance 123 190 134

See Also
- @INT
- @REMAINDER
- @ROUND
- @TRUNCATE

@ACCUM

Accumulates the values of mbrName within rangeList, up to the current member in the dimension of which rangeList is a part.

Syntax
@ACCUM (mbrName [, rangeList])

Parameter Description
mbrName Any valid single member name or member combination (or a function that returns a single member or member combination) whose value is to be accumulated.
rangeList Optional comma-delimited list of members, member set functions, or range functions, across which the accumulation occurs. If rangeList is not specified, Essbase uses the level 0 members from the dimension tagged as Time.

Notes
- Financial functions never return a value; rather, they calculate a series of values internally based on the range specified.
- @ACCUM accepts the @ATTRIBUTE member set function as a member range.
- If you use an Essbase member set function to generate a member list for the rangeList parameter (for example, @SIBLINGS), to ensure correct results, consider the order in which Essbase sorts the generated member list. For more information, see the Oracle Essbase Technical Reference topic for the member set function you are using.
- You cannot apply an operator (for example divide or multiply) to @Accum. For example, the formula Budget=@ACCUM(Actual, Jan:Feb)/2 is not valid.

Example
In this example, Accum Asset is calculated using the following formula:
"Accum Asset" = @ACCUM(Asset, FY1997:FY2002);

This example produces the following report. This report shows that the values for Asset are accumulated starting with FY1997 and the yearly accumulation value is placed in Accum Asset for FY1997 through FY2002:
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset</td>
<td>9,000</td>
<td>0</td>
<td>1,000</td>
<td>0</td>
<td>2,500</td>
<td>1,500</td>
</tr>
<tr>
<td>Residual</td>
<td>750</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>#MISSING</td>
<td>#MISSING</td>
</tr>
<tr>
<td>Life</td>
<td>5</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>#MISSING</td>
<td>#MISSING</td>
</tr>
<tr>
<td>Accum Asset</td>
<td>#MISSING</td>
<td>#MISSING</td>
<td>1,000</td>
<td>1,000</td>
<td>3,500</td>
<td>5,000</td>
</tr>
</tbody>
</table>

The value of Accum Asset is #MISSING for FY1997 because that is the starting year. The value of Accum Asset is #MISSING for FY1998 because there was no accumulation that year. For FY1999, the value of the asset grew by 1,000, so Accum Asset has a value of 1000.

@ALLANCESTORS

Returns all ancestors of the specified member, including ancestors of any occurrences of the specified member as a shared member. This function excludes the specified member.

Syntax

@ALLANCESTORS (mbrName)

Parameter Description

mbrName  Any valid single member name or member combination, or a function that returns a single member or member combination.

Notes

- Essbase sorts the generated list of members in ascending order of the member number in the outline. Using Sample Basic as an example, if you specify 100-20 for mbrName, 100, Diet, and Product are returned (in that order). However, the order in which shared ancestors are returned is not guaranteed. This order is important to consider when you use the @ALLANCESTORS member set function with certain forecasting and statistical functions.
- You can use @ALLANCESTORS as a parameter of another function, where that parameter is a list of members.

Example

The following example is based on the Sample Basic database. Sample Basic has a shared level of diet drinks, which includes 100-20 (Diet Cola). So 100-20 (Diet Cola) is a descendant of 100 (Colas) and is a shared member descendant of Diet:

```
100
  100-10
  100-20
  ...
Diet
  100-20 (Shared Member)
  ...
```

The following calculation script increases by 5% the Budget->Sales values of all ancestors of 100-20, including Diet.
This example produces the following report. This report shows that the Budget->Sales values for 100, Diet, and Product (the ancestors of 100-20) have been increased by 5%. The original values were 8980, 8260, and 28480, respectively.

<table>
<thead>
<tr>
<th>Jan</th>
<th>Actual</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sales</td>
<td>Sales</td>
</tr>
<tr>
<td>==========</td>
<td>======</td>
<td>======</td>
</tr>
<tr>
<td>Market</td>
<td>100-10</td>
<td>4860</td>
</tr>
<tr>
<td></td>
<td>100-20</td>
<td>2372</td>
</tr>
<tr>
<td></td>
<td>100-30</td>
<td>1082</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>8314</td>
</tr>
<tr>
<td></td>
<td>100-20</td>
<td>2372</td>
</tr>
<tr>
<td></td>
<td>200-20</td>
<td>3122</td>
</tr>
<tr>
<td></td>
<td>300-30</td>
<td>2960</td>
</tr>
<tr>
<td>Diet</td>
<td>8454</td>
<td>8673 *</td>
</tr>
<tr>
<td>Product</td>
<td>31538</td>
<td>30954 *</td>
</tr>
</tbody>
</table>

See Also
- @IALLANCESTORS
- @LANCESTORS
- @ILANCESTORS

@ALIAS

Takes a string as an argument and returns an alias name to the function that calls @ALIAS.

Syntax
@ALIAS (function_name)

Notes
Because functions that take strings as arguments may not function correctly if the string matches a member alias, use the function @ALIAS to pass member alias names as strings, for example when passing alias names as strings to functions such as @ISUDA, @UDA, @CONCATENATE, @SUBSTRING, @MATCH, or @NAME.

Example
For example, if the value "US$" is both an alias and a user-defined attribute, pass the string using @ALIAS:

IF (@ISUDA (@ALIAS("US$")))

...  
ENDIF
@ALLOCATE

Allocates values from a member, from a cross-dimensional member, or from a value across a member list. The allocation is based on a variety of criteria.

This function allocates values that are input at an upper level to lower-level members. The allocation is based upon a specified share or spread of another variable. For example, you can allocate values loaded to a parent member to all of that member’s children. You can specify a rounding parameter for allocated values and account for rounding errors.

Syntax

@ALLOCATE (amount, allocationRange, basisMbr, [roundMbr], method [, methodParams] [, round [, numDigits] [, roundErr]])

Parameter | Description
--- | ---
amount | A value, member, or cross-dimensional member that contains the value to be allocated into allocationRange. The value may also be a constant.
- If amount is a member, the member must be from the dimension to which allocationRange belongs.
- If amount is a cross-dimensional member, at least one of its members must be from the dimension to which allocationRange belongs.
- If no member or cross-dimensional member is from the dimension to which allocationRange belongs, a warning message is displayed.

If the amount parameter is a loaded value, it cannot be a Dynamic Calc member.

allocationRange | A comma-delimited list of members, member set functions, or range functions, into which value(s) from amount are allocated. allocationRange should be from only one level (for example, @CHILDREN(Total Expenses) rather than from multiple levels (for example, @DESCENDANTS(Product)).

basisMbr | A value, member, or cross-dimensional member that contains the values that provide the basis for the allocation. The method you specify determines how the basis data is used.

roundMbr | Optional. The member or cross-dimensional member to which rounding errors are added. The member (or at least one member of a cross-dimensional member) must be included in allocationRange.
Parameter | Description
--- | ---
method | The expression that determines how values are allocated. One of the following:
  - **share:**
    - Uses \( \text{basisMbr} \) to calculate a percentage share. The percentage share is calculated by dividing the value in \( \text{basisMbr} \) for the current member in \( \text{allocationRange} \) by the sum across the \( \text{allocationRange} \) for that basis member:
      \[
      \text{amount} \times \left( \frac{\text{CURRMBR}() \rightarrow \text{basisMbr}}{\text{SUM} \left( \text{allocationRange} \rightarrow \text{basisMbr} \right)} \right)
      \]
  - **spread:**
    - Spreads \( \text{amount} \) across \( \text{allocationRange} \):
      \[
      \text{amount} \times \left( \frac{1}{\text{COUNT} \left( \text{SKIP}, \text{allocationRange} \right)} \right)
      \]
    - **SKIPNONE** | **SKIPMISSING** | **SKIPZERO** | **SKIPBOTH**: Values to be ignored during calculation of the spread. You must specify a SKIP parameter only for spread.
      - **SKIPNONE**: Includes all cells.
      - **SKIPMISSING**: Excludes all \#MISSING values in \( \text{basisMbr} \), and stores \#MISSING for values in \( \text{allocationRange} \) for which the \( \text{basisMbr} \) is missing.
      - **SKIPZERO**: Excludes all zero (0) values in \( \text{basisMbr} \), and stores \#MISSING for values in \( \text{allocationRange} \) for which the \( \text{basisMbr} \) is zero.
      - **SKIPBOTH**: Excludes all zero (0) values and all \#MISSING values, and stores \#MISSING for values in \( \text{allocationRange} \) for which the \( \text{basisMbr} \) is zero (0) or \#MISSING.
  - **percent**: Takes a percentage value from \( \text{basisMbr} \) for each member in \( \text{allocationRange} \) and applies the percentage value to \( \text{amount} \):
    \[
    \text{amount} \times \left( \frac{\text{CURRMBR}() \rightarrow \text{basisMbr}}{100} \right)
    \]
  - **add**: Takes the value from \( \text{basisMbr} \) for each member of \( \text{allocationRange} \) and adds the value to \( \text{amount} \):
    \[
    \text{amount} + \text{CURRMBR}() \rightarrow \text{basisMbr}
    \]
  - **subtract**: Takes the value from \( \text{basisMbr} \) for each member of \( \text{allocationRange} \) and subtracts the value from \( \text{amount} \):
    \[
    \text{amount} - \text{CURRMBR}() \rightarrow \text{basisMbr}
    \]
  - **multiply**: Takes the value from \( \text{basisMbr} \) for each member of \( \text{allocationRange} \) and multiplies the value by \( \text{amount} \):
    \[
    \text{amount} \times \text{CURRMBR}() \rightarrow \text{basisMbr}
    \]
  - **divide**: Takes the value from \( \text{basisMbr} \) for each member of \( \text{allocationRange} \) and divides the value by \( \text{amount} \):
    \[
    \frac{\text{amount}}{\text{CURRMBR}() \rightarrow \text{basisMbr}}
    \]
round | Optional. One of the following:
  - **noRound**: No rounding. **noRound** is the default.
  - **roundAmt**: Indicates that you want to round the allocated values. If you specify **roundAmt**, you also must specify **numDigits** to indicate the number of decimal places to round to.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| numDigits | An integer that represents the number of decimal places to round to. You must specify `numDigits` if you specify `roundAmt`.  
  - If `numDigits` is 0, the allocated values are rounded to the nearest integer. The default value for `numDigits` is 0.  
  - If `numDigits` is greater than 0, the allocated values are rounded to the specified number of decimal places.  
  - If `numDigits` is a negative value, the allocated values are rounded to a power of 10. |
| roundErr | Optional. An expression that specifies where rounding errors should be placed. You must specify `roundAmt` in order to specify `roundErr`. If you do not specify `roundErr`, rounding errors are discarded.  
  To specify `roundErr`, choose from one of the following:  
  - `errorsToHigh`: Adds rounding errors to the member with the highest allocated value. If allocated values are identical, adds rounding errors to the first value in `allocationRange`. (For this option, Essbase does not distinguish between #MI and zero values.)  
  - `errorsToLow`: Adds rounding errors to the member with the lowest allocated value. If allocated values are identical, adds rounding errors to the first value in `allocationRange`. #MISSING is treated as the lowest value in a list; if multiple values are #MISSING, rounding errors are added to the first #MISSING value in the list.  
  - `errorsToMbr`: Adds rounding errors to the specified `roundMbr`, which must be included in `allocationRange`. |

**Notes**

- When you use `@ALLOCATE` in a calculation script, use it within a FIX statement; for example, FIX on the member to which the allocation amount is loaded. Although FIX is not required, using it may improve calculation performance.
- If you use `@ALLOCATE` in a member formula, your formula should look like this:

  ```plaintext
  Member Name = @ALLOCATE (...) 
  ```

  This is because allocation functions never return a value; rather, they calculate a series of values internally based on the range specified.
- For an example that explains the use of rounding error processing with the `@ALLOCATE` function, see the *Oracle Essbase Database Administrator's Guide*.

**Example**

Consider the following example from the Sample Basic database. The example assumes that the Scenario dimension contains an additional member, PY Actual, for the prior year’s actual expenses. Data values of 7000 and 8000 are loaded into Budget->Total Expenses for Jan and Feb, respectively. (For this example, assume that Total Expenses is not a Dynamic Calc member.)

You need to allocate values to each expense category (to each child of Total Expenses). The allocation for each of child of Total Expenses is based on the child’s share of actual expenses for the prior year (PY Actual):

```plaintext
FIX("Total Expenses")
Budget = @ALLOCATE(Budget->"Total Expenses",@CHILDREN("Total Expenses"),
```
This example produces the following report:

<table>
<thead>
<tr>
<th>Product</th>
<th>Market</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PY Actual</td>
</tr>
<tr>
<td></td>
<td>Jan</td>
</tr>
<tr>
<td></td>
<td>===</td>
</tr>
<tr>
<td>Marketing</td>
<td>5223</td>
</tr>
<tr>
<td>Payroll</td>
<td>4056</td>
</tr>
<tr>
<td>Misc</td>
<td>75</td>
</tr>
<tr>
<td>Total Expenses</td>
<td>9354</td>
</tr>
</tbody>
</table>

See Also

- @CREATEBLOCK
- @MDALLOCATE

@ANCEST

Returns the ancestor at the specified generation or level of the current member being calculated in the specified dimension. If you specify the optional mbrName, that ancestor is combined with the specified member.

This member set function can be used as a parameter of another function, where that parameter is a member or list of members.

Syntax

@ANCEST (dimName, genLevNum [, mbrName])

Parameter Description

dimName Single dimension name specification.

genLevNum An integer value that defines the generation or level number from which the ancestor value is returned. A positive integer defines a generation number. A value of 0 or a negative integer defines a level number.

mbrName Optional. Any valid single member name or member combination, or a function that returns a single member or member combination, that is crossed with the ancestor returned.

Notes

- You cannot use the @ANCEST function in a FIX statement.
- You can use the @ANCEST function on both the left-hand and right-hand sides of a formula. If you use this function on the left-hand side of a formula in a calculation script, associate it with a member. For example:

```
Sales(@ANCEST(Product) = 5);  
```

- In some cases, the @ANCEST function is equivalent to the @ANCESTVAL function, except in terms of calculation performance. For example, the following two formulas are equivalent:

```
Sales = @ANCEST(Product, 2);  
Sales = @ANCESTVAL(Product, 2);  
```
In this case, using the latter formula results in better calculation performance. In general, use `@ANCEST` as a member rather than as an implied value of a cell. For example:

\[
\text{Sales} = @\text{AVG}(\text{SKIPMISSING}, \text{ISIBLINGS}(\text{ANCEST}(\text{Product, 2})))
\]

- The time required for retrieval and calculation may be significantly longer if this function is in a formula attached to a member tagged as Dynamic Calc or Dynamic Calc and Store.

**Example**

In the Sample Basic database:

<table>
<thead>
<tr>
<th>Function</th>
<th>Generated List</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>@ANCEST(Product, 2, Sales)</code></td>
<td>Colas-&gt;Sales, if the current member of Product being calculated is Diet Cola.</td>
</tr>
<tr>
<td><code>@ANCEST(Measures, 3, East)</code></td>
<td>Total Expenses-&gt;East, if the current member of Measures being calculated is Payroll.</td>
</tr>
</tbody>
</table>

**See Also**

- `@PARENT`
- `@CHILDREN`
- `@ANCESTORS`
- `@DESCENDANTS`
- `@SIBLINGS`

### @ANCESTORS

Returns all ancestors of the specified member (`mbrName`) or those up to a specified generation or level. You can use this member set function as a parameter of another function, where that parameter is a list of members.

**Syntax**

\[
@\text{ANCESTORS} \left( \text{mbrName} \ [, \ \text{genLevNum} \ | \ \text{genLevName}] \right)
\]

**Parameter** | **Description**
--- | ---
`mbrName` | Any valid single member name or member combination (or a function that returns a single member or member combination).
`genLevNum` | Optional. An integer value that defines the absolute generation or level number up to which to select the members. A positive integer defines a generation number. A value of 0 or a negative integer defines a level number.
`genLevName` | Optional. Level name or generation name up to which to select the members.

**Notes**

The generated list of members is sorted starting with the nearest ancestor of the member, followed by the next nearest ancestor of the member, and so on. Using Sample Basic as an example, if you specify `@ANCESTORS(200-30)`, Essbase returns 200, Product (in that order).
This order is important to consider when you use the @ANCESTORS member set function with certain forecasting and statistical functions.

**Example**

In the Sample Basic database:

@ANCESTORS("New York")

returns East, Market (in that order).

@ANCESTORS(Qtr4)

returns Year.

@ANCESTORS("100-10",1)

returns 100, Product (in that order).

@ANCESTORS(Sales,-2)

returns Margin, Profit (in that order).

**See Also**

- @ANCESTORS
- @ANCESTORS
- @ANCESTORS
- @ANCESTORS
- @ANCESTORS
- @ANCESTORS
- @ANCESTORS
- @ANCESTORS
- @ANCESTORS
- @ANCESTORS

**@ANCESTVAL**

Returns the ancestor values of a specified member combination.

**Syntax**

@ANCESTVAL (dimName, genLevNum [, mbrName])

**Parameter**  
**Description**

dimName  
A single dimension name that defines the focus dimension of ancestor values.

genLevNum  
Integer value that defines the generation or level number from which the ancestor values are to be returned. A positive integer defines a generation reference. A negative number or value of 0 defines a level reference.

mbrName  
Optional. Any valid single member name or member combination (or a function that returns a single member or member combination).

**Example**

In this example, SKU Share is derived by taking Sales in each SKU as a percentage of its product family. Families are at generation 2; therefore, each descendant of family is calculated as a
percentage its respective ancestor. Consolidated results must be calculated for Sales by Product
before the SKU Share calculation occurs.

"SKU Share" = Sales % @ANCESTVAL(Product,2,Sales);

This example produces the following report:

<table>
<thead>
<tr>
<th>Sales</th>
<th>SKU Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>SKU101</td>
<td>510</td>
</tr>
<tr>
<td>SKU102</td>
<td>520</td>
</tr>
<tr>
<td>Group01</td>
<td>1030</td>
</tr>
<tr>
<td>SKU120</td>
<td>430</td>
</tr>
<tr>
<td>SKU123</td>
<td>500</td>
</tr>
<tr>
<td>Group02</td>
<td>930</td>
</tr>
<tr>
<td>Family1</td>
<td>1960</td>
</tr>
</tbody>
</table>

See Also

- @MDANCESTVAL
- @SANCESTVAL
- @PARENTVAL

@ATTRIBUTE

Lists all base members that are associated with the specified attribute member (attrName).
This member set function can be used as a parameter of another function, where that parameter
is a member or list of members.

Syntax

@ATTRIBUTE (attrName)

Parameter Description

attrName Single attribute member name.

Notes

When @ATTRIBUTE is used with a non-level 0 member of an attribute dimension, Essbase
returns all base members that are associated with the children of the attribute member. For
example, in the Sample Basic database, @ATTRIBUTE(Large) returns all base members that fall
into one of the population ranges for the attribute parent Large.

If you specify the name of a Boolean attribute dimension (for example, Caffeinated), Essbase
returns all base members that are associated with either Caffeinated member (for example, True
or False). To return only one, specify the member name (for example,
@ATTRIBUTE(Caffeinated_True)).

You may have duplicate Boolean, date, and numeric attribute member names in your outline.
For example, 12 can be the attribute value for the size (in ounces) of a product as well as the
value for the number of packing units for a product. To distinguish duplicate member names,
specify the full attribute member name (for example, @ATTRIBUTE(Ounces_12)).
The generated list of members is sorted in ascending order from the database outline. This order is important to consider when you use the @ATTRIBUTE member set function with certain forecasting and statistical functions.

**Example**

In the Sample Basic database,

```plaintext
@ATTRIBUTE(Can);
```

returns all base members with the Can attribute: Cola, Diet Cola, and Diet Cream.

Consider the following two calculation scripts, which are based on the Sample Basic database:

```plaintext
/* To increase the marketing budget for markets with large populations */
FIX (@ATTRIBUTE(Large))
Marketing = Marketing * 1.1;
ENDFIX

/* To calculate the average sales of bottled products */
"Bottle Sales" = @AVG(SKIPBOTH,@ATTRIBUTE(Bottle));
```

**See Also**

- @WITHATTR
- @ATTRIBUTEVAL

### @ATTRIBUTEBVAL

Returns, for the current member being calculated, the associated attribute value from the specified Boolean attribute dimension.

**Syntax**

```plaintext
@ATTRIBUTEBVAL (attDimName)
```

**Parameter**

- **attDimName**: The name of a Boolean attribute dimension.

**Notes**

- The @ATTRIBUTEBVAL function works only with Boolean attribute dimensions. To return values from numeric or date attribute dimensions, use this @ATTRIBUTEVAL function. To return values from text attribute dimensions, use the @ATTRIBUTESVAL function. For more information on types of attributes, see the Oracle Essbase Database Administrator’s Guide.

- If no attribute is associated with the member being calculated or if the attribute associated with the member is a text, numeric, or date attribute, @ATTRIBUTEBVAL returns #MISSING.

- Only level 0 members of attribute dimensions can be associated as attributes of members of a base dimension.

**Example**

This example is based on the Sample Basic database.
The Product dimension is associated with the Caffeinated Boolean attribute dimension, as shown in the following example:

Product  {Caffeinated}
  100
    100-10  {Caffeinated:True}
    100-20  {Caffeinated:True}
    100-30  {Caffeinated:False}
  200
    200-10  {Caffeinated:True}
    200-20  {Caffeinated:True}
    200-30  {Caffeinated:False}
    200-40  {Caffeinated:False}
Caffeinated Attribute  {Type: Boolean}
  True
  False

For the current member of the base dimension Product, the function @ATTRIBUTEBVAL(Caffeinated) returns the associated attribute value from the Boolean attribute dimension, Caffeinated. The following table shows the value that would be returned.

<table>
<thead>
<tr>
<th>Current Member</th>
<th>Return Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-10</td>
<td>True</td>
</tr>
<tr>
<td>100-20</td>
<td>True</td>
</tr>
<tr>
<td>100-30</td>
<td>False</td>
</tr>
<tr>
<td>100</td>
<td>#MISSING</td>
</tr>
<tr>
<td>200-10</td>
<td>True</td>
</tr>
<tr>
<td>200-20</td>
<td>True</td>
</tr>
<tr>
<td>200-30</td>
<td>False</td>
</tr>
<tr>
<td>200-40</td>
<td>False</td>
</tr>
<tr>
<td>200</td>
<td>#MISSING</td>
</tr>
<tr>
<td>Product</td>
<td>#MISSING</td>
</tr>
</tbody>
</table>

For any any member that does not have an associated attribute, #MISSING is returned. Only one value is returned at a time.

See Also

- @ATTRIBUTEVAL
- @ATTRIBUTESVAL

@ATTRIBUTESVAL

Returns, for the current member being calculated, the associated attribute value from the specified text attribute dimension.
Syntax

@ATTRIBUTESVAL (attDimName)

Parameter Description

attDimName  The name of a text attribute dimension.

Notes

● The @ATTRIBUTESVAL function works only with text attribute dimensions. To return values from numeric or date attribute dimensions, use the @ATTRIBUTEVAL function. To return values from Boolean attribute dimensions, use the @ATTRIBUTESBVAL function. For more information on types of attributes, see the Oracle Essbase Database Administrator’s Guide.

● If no attribute is associated with the member being calculated or if the attribute associated with the member is a numeric, Boolean, or date attribute, @ATTRIBUTESVAL returns an empty string.

● Only level 0 members of attribute dimensions can be associated as attributes of members of a base dimension.

Example

This example is based on the Sample Basic database.

The Product dimension is associated with the Pkg Type text attribute dimension, as shown in the following example:

```
Product {Pkg Type}
  100
    100-10 {Pkg Type:Can}
    100-20 {Pkg Type:Can}
    100-30 {Pkg Type:Bottle}
  200
    200-10 {Pkg Type:Bottle}
    200-20 {Pkg Type:Bottle}
    200-30 {Pkg Type:Bottle}
    200-40 {Pkg Type:Bottle}
Pkg Type Attribute (Type: Text)
  Bottle
  Can
```

For the current member of the base dimension, Product, the function

@ATTRIBUTESVAL("Pkg Type")

returns the associated attribute value from the text attribute dimension, Pkg Type. The following table shows the value that would be returned:

<table>
<thead>
<tr>
<th>Current Member</th>
<th>Return Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-10</td>
<td>Can</td>
</tr>
<tr>
<td>100-20</td>
<td>Can</td>
</tr>
</tbody>
</table>
For any member that does not have an associated attribute, an empty string is returned.

**See Also**

- [@ATTRIBUTEVAL](#)
- [@ATTRIBUTEBVAL](#)

## @ATTRIBUTEVAL

Returns, for the current member being calculated, the associated attribute value from the specified numeric or date attribute dimension.

**Syntax**

```plaintext
@ATTRIBUTEVAL (attDimName)
```

**Parameter | Description**

| attDimName | Single dimension specification for a numeric or date attribute dimension. |

**Notes**

- The @ATTRIBUTEVAL function works only with numeric and date attribute dimensions. To return values from text attribute dimensions, use the @ATTRIBUTESVAL function. To return values from Boolean attribute dimensions, use the @ATTRIBUTEBVAL function. For more information on types of attributes, see the Oracle Essbase Database Administrator’s Guide.
- Only level 0 members of attribute dimensions can be associated as attributes of members of a base dimension.
- If there is no attribute associated with the member being calculated, or if the attribute associated with the member is a text attribute, @ATTRIBUTEVAL returns #MISSING.
- When the @ATTRIBUTEVAL function is used with a date attribute dimension, Essbase converts the date string to the number of seconds elapsed since midnight, January 1, 1970.

<table>
<thead>
<tr>
<th>Current Member</th>
<th>Return Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-30</td>
<td>Bottle</td>
</tr>
<tr>
<td>100</td>
<td>(empty string)</td>
</tr>
<tr>
<td>200-10</td>
<td>Bottle</td>
</tr>
<tr>
<td>200-20</td>
<td>Bottle</td>
</tr>
<tr>
<td>200-30</td>
<td>Bottle</td>
</tr>
<tr>
<td>200-40</td>
<td>Bottle</td>
</tr>
<tr>
<td>200</td>
<td>(empty string)</td>
</tr>
<tr>
<td>Product</td>
<td>(empty string)</td>
</tr>
</tbody>
</table>
Example

Example 1

The following example is based on the Sample Basic database:

"Profit Per Ounce" = Profit/@ATTRIBUTEVAL(@NAME(Ounces));

In this formula, for the current member being calculated, @ATTRIBUTEVAL returns the associated attribute from the Ounces numeric attribute dimension. For example, if the member being calculated is Cola and if the Ounces attribute value associated with Cola is 12, @ATTRIBUTEVAL returns 12. The value returned is then divided into Profit to yield Profit Per Ounce.

Note: The @NAME function is required to process the string “Ounces” before passing it to the @ATTRIBUTEVAL function.

This example produces the following report:

<table>
<thead>
<tr>
<th>Actual Profit</th>
<th>Year Profit Per Ounce</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cola</td>
<td>4593</td>
</tr>
</tbody>
</table>

Example 2

The following MaxL execute calculation statement applies a formula to members that are 16 Oz products:

execute calculation 'Misc
  ( IF (@ATTRIBUTEVAL(Ounces) == 16)
    Misc = .5;
  ENDIF;
  );'
on sample.basic;

See Also
- @ATTRIBUTEBVAL
- @ATTRIBUTESVAL
- @NAME
- @TODATE

@AVG

Returns the average of all values in expList.

Syntax

@AVG (SKIPNONE | SKIPMISSING | SKIPZERO | SKIPBOTH, expList)
Parameter      Description

SKIPNONE      Includes all cells specified in the average operation regardless of their content.

SKIPMISSING   Excludes all values that are #MISSING in the average operation.

SKIPZERO      Excludes values of zero from the average calculation.

SKIPBOTH      Excludes all values of zero or #MISSING from the average calculation.

expList        Comma-delimited list of member names, variable names, functions, or numeric expressions. expList provides a list of numeric values across which the average is calculated.

Example

The following example is based on the Sample Basic database. The calculation averages the values for the individual states making up the western region and places the results in West:

```plaintext
FIX(Sales)
West=@AVG(SKIPNONE,California:Nevada);
ENDFIX
```

This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>Sales</th>
<th>Jan</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cola</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diet Cola</td>
<td>678</td>
<td>118</td>
<td>145</td>
</tr>
<tr>
<td>Caffeine Free Cola</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>California</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oregon</td>
<td>160</td>
<td>140</td>
<td>150</td>
</tr>
<tr>
<td>Washington</td>
<td>130</td>
<td>190</td>
<td>#MI</td>
</tr>
<tr>
<td>Utah</td>
<td>130</td>
<td>190</td>
<td>170</td>
</tr>
<tr>
<td>Nevada</td>
<td>76</td>
<td>62</td>
<td>#MI</td>
</tr>
<tr>
<td>West</td>
<td>234.8</td>
<td>140</td>
<td>155</td>
</tr>
</tbody>
</table>

See Also

- `@AVGRANGE`

@AVGRANGE

Returns the average value of the specified member (mbrName) across the specified range (XrangeList).

Syntax

```
@AVGRANGE ( SKIPNONE | SKIPMISSING | SKIPZERO | SKIPBOTH, mbrName [, XrangeList])
```

Parameter      Description

SKIPNONE      Includes all cells specified in the average operation regardless of their content.

SKIPMISSING   Excludes all values that are #MISSING in the average operation.

SKIPZERO      Excludes values of zero from the average calculation.

SKIPBOTH      Excludes all values of zero or #MISSING from the average calculation.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>mbrName</td>
<td>Any valid single member or member combination.</td>
</tr>
<tr>
<td>XrangeList</td>
<td>Optional. A valid member name, a comma-delimited list of member names, cross dimension members, or a member set function or range function (including <code>@XRANGE</code>) that returns a list of members from the same dimension. If <code>XrangeList</code> is not specified, Essbase uses the level 0 members from the dimension tagged as Time.</td>
</tr>
</tbody>
</table>

**Notes**

The `@AVGRANGE` function accepts the `@ATTRIBUTE` member set function as a member range.

**Example**

The following example is based on the Sample Basic database. The calculation script determines the average sales of Colas in the West.

```plaintext
FIX(Sales)
West=@AVGRANGE(SKIPNONE,Sales,@CHILDREN(West));
ENDFIX
```

This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>Colas</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jan</td>
<td>Feb</td>
</tr>
<tr>
<td>California</td>
<td>941</td>
<td>899</td>
</tr>
<tr>
<td>Oregon</td>
<td>450</td>
<td>412</td>
</tr>
<tr>
<td>Washington</td>
<td>320</td>
<td>362</td>
</tr>
<tr>
<td>Utah</td>
<td>490</td>
<td>488</td>
</tr>
<tr>
<td>Nevada</td>
<td>138</td>
<td>137</td>
</tr>
<tr>
<td>West</td>
<td>467.8</td>
<td>459.6</td>
</tr>
</tbody>
</table>

**See Also**

- `@AVG`

**@BETWEEN**

Returns a member set of all members whose name string value fall between, and are inclusive of, the two specified string tokens. Member names are evaluated alphanumerically.

This function can be used on unique and duplicate-name outlines.

**Syntax**

```
@BETWEEN (firstToken , secondToken, topMbrInHierarchy)
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>firstToken</td>
<td>First token string value with which to compare to members in the outline, starting with the member specified in <code>topMbr</code>.</td>
</tr>
<tr>
<td>secondToken</td>
<td>Second token string value with which to compare to members in the outline, starting with the member specified in <code>topMbr</code>.</td>
</tr>
</tbody>
</table>
### Parameter Description

**topMbrInHierarchy**  A fully qualified name of a member in the outline on which to base the member search. The specified member and its aliases, and all of its descendants, are included in the search.

To search the entire outline, provide an empty string ("") for this parameter. For example, `@BETWEEN("200-10", "200-20", ")`.

**Example**

The following example is based on the following duplicate-name outline:

```
Product
  100
    100-10
      100-10-10
    100-20
    100-30
  200
    200-10
    200-20
    200-30
  300
    300-10
    300-20
Diet
  100-10
    100-10-11
  200-10
  300-10
Bottle
  200-10
  300-20
```

`@BETWEEN("200-10", "200-20", "Product")`


**See Also**

- `@EQUAL`
- `@EXPAND`
- `@LIKE`
- `@MBRCOMPARE`
- `@MBRPARENT`
- `@NOTEQUAL`

### @CALCMODE

Enables the choice of an execution mode of a formula. @CALCMODE can control two types of modes:

- Whether a formula is calculated in block calculation or cell calculation mode when calculating formulas that contain certain functions (in particular the @ISMBR function)
Whether a formula assigned to a sparse member is calculated in bottom-up or top-down mode

Understanding Block Calculation and Cell Calculation Modes

Using block calculation mode, Essbase groups the cells within a block and simultaneously calculates the cells in each group. Block calculation mode is fast, but you must carefully consider data dependencies within the block to ensure that the resulting data is accurate.

Using cell calculation mode, Essbase calculates each cell sequentially, following the calculation order, which is based on the order of the dense dimensions in the outline. For more information on calculation order, see the Oracle Essbase Database Administrator's Guide.

Understanding Bottom-Up and Top-Down Calculation Modes

Essbase uses one of two methods to do a full calculation of an outline: bottom-up calculation (the default) or top-down calculation. If the outline contains a complex member formula, Essbase performs a top-down calculation for that member. When a formula is compiled, if the formula is to be calculated top-down, Essbase logs a message in the application log file.

For a bottom-up calculation, Essbase determines which existing data blocks need to be calculated before it calculates the database. Essbase then calculates only the blocks that need to be calculated during the full database calculation. The calculation begins with the lowest existing block number and works up through each subsequent block until the last existing block is reached.

In contrast, a top-down calculation calculates the formula on all potential datablocks with the member. A top-down calculation may be less efficient than a bottom-up calculation because more blocks may be calculated than is necessary. Although a top-down calculation is less efficient than a bottom-up calculation, in some cases top-down calculations are necessary to ensure that calculation results are correct. See Example 4.

For more information about bottom-up and top-down calculation modes, see the Oracle Essbase Database Administrator’s Guide.

Syntax

@CALCMODE (CELL|BLOCK|TOPDOWN|BOTTOMUP)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CELL</td>
<td>Turns on the cell calculation mode</td>
</tr>
<tr>
<td>BLOCK</td>
<td>Turns on the block calculation mode</td>
</tr>
<tr>
<td>TOPDOWN</td>
<td>Turns on the top-down calculation mode</td>
</tr>
<tr>
<td>BOTTOMUP</td>
<td>Turns on the bottom-up calculation mode</td>
</tr>
</tbody>
</table>

Notes

Cell and block modes are mutually exclusive. Top-down and bottom-up modes are mutually exclusive. Within one @CALCMODE specification, you can specify only one option. To specify both types of modes, perform the instruction twice; for example:
Knowing When Essbase uses Cell or Block Mode and Top-down or Bottom-up Mode

- When Essbase compiles a formula, it prints a message in the application log file explaining the mode of execution for the formula similar to the following message:
  
  Formula on member Profit % will be executed in CELL and TOPDOWN mode.

  When Essbase determines that the formula will be executed in block and bottom-up mode, no message is written in the application log file.

- In calculation scripts, @CALCMODE statements must be placed within parentheses and associated with a specific database member.

- By default, for a simple formula such as \( A = B + C \), Essbase does a bottom-up calculation. \( A \) is calculated only if \( B \) or \( C \) exists in the database. The dependency of the formula on \( B \) and \( C \) is known before the calculation is started.

  For a complex formula such as \( A = B->D + C->D \), Essbase performs a top-down calculation because every possible combination of \( A \) must be examined to see whether \( B->D \) or \( C->D \) exists.

- By default, Essbase uses cell calculation mode for formulas containing:
  
  - @ANCEST
  - @CURRMBR
  - @ISMBR on a dense member
  - @MDANCESTVAL
  - @MDPARENTVAL
  - @MDSHIFT
  - @NEXT
  - @PARENT
  - @PARENTVAL
  - @PRIOR
  - @SANCESTVAL
  - @SPARENTVAL
  - @SHIFT

  For all other formulas, Essbase uses block calculation mode by default.

  You can also set CALCMODE BLOCK or CALCMODE BOTTOMUP at the Essbase server, application, or database level using the configuration setting CALCMODE.

Understanding Data Dependency Issues With Block Calculation Mode

Data dependency occurs if the accurate calculation of one or more members depends on another member or other on members being calculated previously. Most data dependency issues with block calculation mode occur when a formula contains IF ELSE or IF ELSEIF conditions.
However, data dependencies can occur in other formulas; for example, when using the @PRIOR function.

Data Dependency Issues With IF ELSE and IF ELSEIF

When Essbase uses block calculation mode to calculate a formula that contains IF ELSE or IF ELSEIF conditions, it separates the members being calculated into two groups. The first group contains the members that satisfy the IF condition. The second group contains the members that satisfy the ELSE or ELSEIF conditions.

Essbase simultaneously calculates the members in the first group before simultaneously calculating the members in the second group. See Example 1.

If a formula contains data dependencies, ensure that the following conditions are met:
- Members on which the accurate calculation of other members depends are in the first group.
- Dependent members are in the second group.

If an IF condition has multiple ELSEIF conditions, Essbase evaluates each ELSEIF condition, placing the members that satisfy the ELSEIF condition in the first group and the members that satisfy subsequent ELSEIF or ELSE conditions in the second group. See Example 2.

Understanding Other Data Dependency Issues

Data dependencies can occur in formulas that do not contain IF ELSE conditions. See Example 3 for an example of data dependency in a formula containing the @PRIOR function.

You can also set CALCMODE BLOCK or CALCMODE BOTTOMUP at the Essbase server, application, or database level using the configuration setting CALCMODE.

Example

Example 1, Example 2, and Example 3 illustrate use of the BLOCK and CELL options of the @CALCMODE function. Example 4 illustrates use of the BOTTOMUP and TOPDOWN options.

Example 1

Consider a database with two dense dimensions, Time and Accounts. The following formula is placed on the Budget Sales member of the Accounts dimension. Because this is a formula containing @ISMBR applied to a dense member (Budget Sales), by default Essbase uses cell calculation mode. Use the @CALCMODE(BLOCK) function to specify block calculation mode for this formula.

```plaintext
@CALCMODE(BLOCK);
IF(@ISMBR(Feb))
   "Budget Sales"=100;
ELSE
   "Budget Sales"=Feb+10;
```

According to the above formula, we expect that if the member being calculated is Feb, the Budget Sales value is 100. If the member being calculated is not Feb, the Budget Sales value is 100+10 (the value for Feb + 10).
Assume that we load the values 10, 20, and 30 into the Budget Sales data block for Jan, Feb and Mar, as follows:

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget Sales</td>
<td>10</td>
<td>20</td>
<td>30</td>
</tr>
</tbody>
</table>

Using block calculation mode, Essbase calculates the members satisfying the IF condition first. In this example, Feb is the only member that satisfies the IF condition. After calculating Feb, Essbase calculates the members Jan and Mar. In this example, the results are as expected:

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget Sales</td>
<td>110</td>
<td>100</td>
<td>110</td>
</tr>
</tbody>
</table>

Example 2

Now consider the same database as in Example 1, but we place the following formula on the Budget Sales member of the Accounts dimension. As in Example 1, because this is a formula containing @ISMBR applied to a dense dimension member (Budget Sales), by default Essbase uses cell calculation mode. However, we use the @CALCMODE(BLOCK) function to specify the block calculation mode for this formula.

```plaintext
@CALCMODE(BLOCK);
IF(@ISMBR(Mar))
    "Budget"->"Sales"=Feb+20;
ELSEIF(@ISMBR(Jan))
    "Budget"->"Sales"=Feb+10;
ELSE
    "Budget"->"Sales"=100;
ENDIF
```

According to this formula, we want the Jan and Mar Budget Sales values to be calculated based on the Feb Budget Sales value, which is 100. We want to see the following results:

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget Sales</td>
<td>110</td>
<td>100</td>
<td>120</td>
</tr>
</tbody>
</table>

Assume that we load the values 10, 20, and 30 into the Budget Sales data block for Jan, Feb, and Mar, as follows:

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget Sales</td>
<td>10</td>
<td>20</td>
<td>30</td>
</tr>
</tbody>
</table>

Using block calculation mode, Essbase calculates the members satisfying the IF condition first, followed by the members satisfying the ELSEIF condition, followed by the members satisfying the ELSE condition. In this example, Essbase calculates the members in the following order: Mar, Jan, Feb. The results are not what we want, because the calculation of Jan and Mar is
dependent on the calculation of Feb and Feb is calculated after Jan and Mar. The inaccurate results are as follows:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget Sales</td>
<td>30</td>
<td>100</td>
<td>40</td>
</tr>
</tbody>
</table>

To achieve the desired results, use the `@CALCMODE(CELL)` function.

**Example 3**

The following formula calculates the members Opening Inventory and Ending Inventory using the `@PRIOR` function. There is a data dependency between Opening Inventory and Ending Inventory. The formula is placed on the Opening Inventory member. The example shows the results for January, February, and March.

```
@CALCMODE(BLOCK)
"Opening Inventory"=@PRIOR("Ending Inventory")+10;
"Ending Inventory"="Opening Inventory";
```

Before the calculation, there is no data for these members (the data is #MISSING or #MI):

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opening Inventory</td>
<td>#MI</td>
<td>#MI</td>
<td>#MI</td>
</tr>
<tr>
<td>Ending Inventory</td>
<td>#MI</td>
<td>#MI</td>
<td>#MI</td>
</tr>
</tbody>
</table>

Using block calculation mode, Essbase calculates the members simultaneously, taking the previous month's Ending Inventory #MISSING value as 0 for all member combinations and adding 10. This is not the desired result.

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opening Inventory</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Ending Inventory</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

The following formula on the Opening Inventory member causes Essbase to use cell calculation mode (the default for formulas containing the `@PRIOR` function):

```
"Opening Inventory"=@PRIOR("Ending Inventory")+10;
"Ending Inventory"="Opening Inventory";
```

The results are as follows:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opening Inventory</td>
<td>10</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>Ending Inventory</td>
<td>10</td>
<td>20</td>
<td>30</td>
</tr>
</tbody>
</table>
Example 4

Depending on the formula and the structure of the data, calculating a formula top-down versus bottom-up may involve two issues: performance (reflecting the number of calculations that must be made) and accuracy. This example compares calculation results to illustrate both of these issues.

Before the calculation, assume that Actual and Budget are members of a sparse dimension and they contain the following data:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Cola</th>
<th>New York Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(axis)</td>
<td>Actual</td>
<td>Budget</td>
</tr>
<tr>
<td>Jan</td>
<td>#MISSING</td>
<td>50</td>
</tr>
<tr>
<td>Feb</td>
<td>200</td>
<td>#MISSING</td>
</tr>
<tr>
<td>Mar</td>
<td>400</td>
<td>450</td>
</tr>
</tbody>
</table>

The following formula is calculated bottom-up.

```
Budget(
    @CALCMODE(BOTTOMUP);
    Budget=Actual*1.10;
)
```

In a bottom-up calculation, Essbase executes formulas only from existing data blocks. Therefore, only two values—Jan and Mar—are calculated, based on existing combinations of Budget.

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Cola</th>
<th>New York Sales</th>
<th>(Comment)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(axis)</td>
<td>Actual</td>
<td>Budget</td>
<td></td>
</tr>
<tr>
<td>Jan</td>
<td>#MISSING</td>
<td>#MISSING</td>
<td>(#MISSING*1.10)</td>
</tr>
<tr>
<td>Feb</td>
<td>200</td>
<td>#MISSING</td>
<td>(No calculation is performed)</td>
</tr>
<tr>
<td>Mar</td>
<td>400</td>
<td>440</td>
<td>(400*1.10)</td>
</tr>
</tbody>
</table>

The following formula is calculated top-down.

```
Budget(
    @CALCMODE(TOPDOWN);
    Budget=Actual*1.10;
)
```

In a top-down calculation, Essbase materializes every potential data block that is relevant to the calculation, and executes formulas in those blocks. Therefore, all three values—Jan, Feb, and Mar—are calculated, based on all potential combinations of Budget. The results are:
See Also

- @WITHATTR
- “CALCMODE” on page 454

@CHILDREN

Returns all children of the specified member, excluding the specified member. This member set function can be used as a parameter of another function, where that parameter is a list of members.

Syntax

@CHILDREN (mbrName)

Parameter Description

mbrName  Any valid single member name or member combination, or a function that returns a single member or member combination.

Notes

Essbase sorts the child members in ascending order. Using Sample Basic as an example, if you specify 100 for mbrName, Essbase returns 100-10, 100-20, 100-30 (in that order). This order is important to consider when you use the @CHILDREN member set function with certain forecasting and statistical functions.

Example

In the Sample Basic database:

@CHILDREN(Market)

returns East, West, South, and Central (in that order).

@CHILDREN(Margin)

returns Sales and COGS (in that order).

See Also

- @ICHILDREN
- @ISCHILD
- @ANCESTORS
- @DESCENDANTS
@SIBLINGS

@COMPOUND

Compiles the proceeds of a compound interest calculation. The calculation is based on the balances of the specified member at the specified rate across the specified range.

Syntax

@COMPOUND (balanceMbr, rateMbrConst [, XrangeList])

Parameter Description

balanceMbr Single member specification representing the beginning balance across a range of periods. The input can be either one deposit or a series of deposits. If balanceMbr is a constant, then Essbase assumes balanceMbr to be a single deposit in the first member of rangeList or XrangeList. This is equivalent to entering the constant value in the first member in the range followed by zeros. The function keeps track of each deposit separately, but returns a composite value. If balanceMbr is a member, or a range, then it is assumed to be a series of deposits.

rateMbrConst Single member specification, variable name, or numeric expression in decimal form. This represents the interest rate per time period specified in the rangeList or XrangeList. If your interest is compounded monthly, this value would be the annual interest rate divided by 12.

XrangeList Optional parameter specifying the range over which the interest is compounded. The last value in the range is the total compounded interest for that range. If a range is not specified, Essbase uses the level 0 members from the dimension tagged as Time.

Can be a valid member name, a comma-delimited list of member names, cross dimensional members, or a return value from a member set function or range function (including @XRANGE).

For more information about rangeList and XrangeList, see Range List Parameters in the topic "Range and Financial Functions" on page 35.

Notes

Financial functions never return a value; rather, they calculate a series of values internally based on the range specified.

Example

The following example determines the compound interest of a series of deposits, based on a credit rate of 0.0525, across a series of fiscal years:

"Compound Interest"=@COMPOUND(Deposit,"Credit Rate",FY1998:FY2001,FY2002);

This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit Rate</td>
<td>0.0525</td>
<td>0.0525</td>
<td>0.0525</td>
<td>0.0525</td>
<td>0.0525</td>
</tr>
<tr>
<td>Compound Interest</td>
<td>0</td>
<td>105</td>
<td>110.5125</td>
<td>273.8144</td>
<td>288.1897</td>
</tr>
<tr>
<td>Deposit</td>
<td>0</td>
<td>2,000</td>
<td>0</td>
<td>3,000</td>
<td>0</td>
</tr>
</tbody>
</table>

The following example assumes a Year dimension is added to Sample Basic. It calculates compound interest using a multidimensional range.
The above calculation is performed across the following multidimensional range specified by
XrangeList:

2011->Sep
2011->Oct
2011->Nov
2011->Dec
2012->Jan
2012->Feb
2012->Mar

See Also

● @INTEREST

@COMPOUNDGROWTH

Calculates a series of values that represents a compound growth of values (the first nonzero value
in the specified member across the specified range of members) across time.

The growth factor is calculated by multiplying the growth rate in the current time period by the
previous period's result, yielding a compounded value. You can change the growth rate from
period to period by placing a nonzero value in the current period's rateMbrConst cell.

Syntax

@COMPOUNDGROWTH (principalMbr, rateMbrConst [, XrangeList])

Parameter	Description

principalMbr	Member specification representing the initial value to be compounded. The input line must be a single
deposit.

rateMbrConst	Single member specification, variable name, or expression which provides a constant value. This value
can change across rangeList, making the new value be the new compound rate. If the value in the
current period is zero, the compound rate is equal to zero, and the principal does not change.

XrangeList	Optional parameter specifying the time period over which the interest is calculated. If a range is not
specified, Essbase uses the level 0 members from the dimension tagged as Time.

Can be a valid member name, a comma-delimited list of member names, cross dimensional members,
or a return value from a member set function or range function (including @XRANGE).

For more information about rangeList and XrangeList, see Range List Parameters in the topic
"Range and Financial Functions" on page 35.

Notes

Financial functions never return a value; rather, they calculate a series of values internally based
on the range specified.
Example

The following example determines the compound growth of Principal Amount based on Growth Rate across a series of fiscal years.

"Compound Growth"=@COMPOUNDGROWTH("Principal Amount", "Growth Rate",FY1998:FY2003);

This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth Rate</td>
<td>0.0525</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Compound Growth</td>
<td>2,105</td>
<td>2,105</td>
<td>2,105</td>
<td>2,105</td>
<td>2,105</td>
<td>2,105</td>
</tr>
</tbody>
</table>

The following example assumes a Year dimension is added to Sample Basic. It calculates compound growth using a multidimensional range.

FIX ("100-10", "New York")
"Compound Growth" = @COMPOUNDGROWTH("Principal Amount","Growth Rate",@XRANGE("2011->"Sep", "2012->"Mar");
ENDFIX

The above calculation is performed across the following multidimensional range specified by XrangeList:

2011->Sep
2011->Oct
2011->Nov
2011->Dec
2012->Jan
2012->Feb
2012->Mar

See Also

- @GROWTH

@CONCATENATE

Returns one character string that is the result of appending one character string (String2) to the end of another character string (String1).

The @CONCATENATE function can be nested to concatenate more than two strings (See Example 2 (@CONCATENATE)).

Syntax

@CONCATENATE (String1, String2)

Parameter Description

String1 A string or a function that returns a string
String2 A string or a function that returns a string
Notes

- To use a member name as a character string, use @NAME with the member name.
- To use the resulting character string as a member name, use @MEMBER with the @CONCATENATE statement; for example,
  @MEMBER(@CONCATENATE("2000_", QTR1));

Example

The following examples are based on the Sample Basic database:

Example 1 (@CONCATENATE)

The following function statement puts the string Item in front of the name of the member currently being processed in the Product dimension; for example, if the current member being calculated is 100-10, the result is Item100-10:

@CONCATENATE("Item", @NAME(@CURRMBR(Product)))

Example 2 (@CONCATENATE)

To concatenate more than two strings, you can nest multiple instances of the @CONCATENATE function. The following function statement returns string values starting with the current member of the Year dimension, followed by an underscore, followed by the current member of the Measures dimension; for example, if the current members being calculated are Qtr1 and Sales, the result is Qtr1_Sales:

@CONCATENATE(@NAME(@CURRMBR(Year)), @CONCATENATE("_", @NAME(@CURRMBR(Measures))));

See Also

- @SUBSTRING
- @MEMBER
- @NAME

@CORRELATION

Returns the correlation coefficient between two parallel data sets (XrangeList1 and XrangeList2). The correlation coefficient determines the relationship between two data sets.

Syntax

@CORRELATION (SKIPNONE | SKIPMISSING | SKIPZERO | SKIPBOTH, XrangeList1, XrangeList2)

Parameter  Description

SKIPNONE  Includes all cells specified in the two data sets, regardless of their content, during calculation of the correlation coefficient.

SKIPMISSING  Excludes all #MISSING values from the two data sets during calculation of the correlation coefficient.

SKIPZERO  Excludes all zero (0) values from the two data sets during calculation of the correlation coefficient.
### Parameter | Description
---|---
**SKIPBOTH** | Excludes all zero (0) values and #MISSING values from the two data sets during calculation of the correlation coefficient.
**XrangeList1** | The first of two parallel data sets.
  Can be a valid member name, a comma-delimited list of member names, cross dimensional members, or a return value from a member set function or range function (including @XRANGE).
  For more information about XrangeList, see Range List Parameters in the topic “Range and Financial Functions” on page 35.
**XrangeList2** | The second of two parallel data sets.
  Can be a valid member name, a comma-delimited list of member names, cross dimensional members, or a return value from a member set function or range function (including @XRANGE).

### Notes
- For complete information about using the @RANGE function, see @RANGE. For more information about XrangeList, see Range List Parameters in the topic “Range and Financial Functions” on page 35.
- The XrangeList1 and XrangeList2 parameters must have the same number of data points. If the two data sets have different numbers of data points, @CORRELATION returns #MISSING.
- The @CORRELATION function returns #MISSING if XrangeList1 and XrangeList2 (1) are empty, (2) contain only #MISSING values, or (3) have a standard deviation of 0 (all values are constant).
- The @CORRELATION function treats #MISSING values as zero (0) values, unless SKIPMISSING or SKIPBOTH is specified. If a value in XrangeList1 is #MISSING, and SKIPMISSING is specified, the value's corresponding value in XrangeList1 is treated as #MISSING. (That is, both values are deleted before calculation.) SKIPZERO and SKIPBOTH work similarly.
- The @CORRELATION function returns values from -1 to 1.
- If you use a member set function to generate a member list for this function (for example, @SIBLINGS), to ensure correct results, consider the order in which Essbase sorts the generated member list. For more information, see the topic for the member set function you are using.
- The equation for the correlation coefficient is:
\[ \rho_{X,Y} = \frac{\text{Cov}(X,Y)}{\sigma_X \cdot \sigma_Y} \]

so that

\[-1 \leq \rho_{X,Y} \leq 1\]

and

\[ \text{Cov}(X,Y) = \frac{1}{n} \sum_{i=1}^{n} (x_i - \mu_X)(y_i - \mu_Y) \]

\(\sigma_X\) stands for the standard deviation of \(X = \{x_i\}_{i=1}^{n}\)

\(\sigma_Y\) stands for the standard deviation of \(Y = \{y_i\}_{i=1}^{n}\)

**Example**

The following example is based on the Sample Basic database. Assume that the Measures dimension contains an additional member, Sales Correl. The calculation script calculates the correlation coefficient for a set of members (Sales for the children of Qtr1 and Qtr2). Because the calculation script fixes on Jun, the results are placed in Sales Correl->Jun.

This example uses the @RANGE function to generate \(XrangeList1\) and \(XrangeList2\):

FIX(June)
"Sales Correl"=@CORRELATION(SKIPNONE, @RANGE(Sales,@CHILDREN(Qtr1)),@RANGE(Sales,@CHILDREN(Qtr2)));
ENDFIX

This example produces the following report:

<table>
<thead>
<tr>
<th>Colas</th>
<th>Actual</th>
<th>New York</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sales</td>
<td>Sales Correl</td>
</tr>
<tr>
<td>======</td>
<td>=======</td>
<td>===========</td>
</tr>
<tr>
<td>Jan</td>
<td>678</td>
<td>#MI</td>
</tr>
<tr>
<td>Feb</td>
<td>645</td>
<td>#MI</td>
</tr>
<tr>
<td>Mar</td>
<td>675</td>
<td>#MI</td>
</tr>
<tr>
<td>Apr</td>
<td>712</td>
<td>#MI</td>
</tr>
<tr>
<td>May</td>
<td>756</td>
<td>#MI</td>
</tr>
<tr>
<td>Jun</td>
<td>890</td>
<td>0.200368468</td>
</tr>
</tbody>
</table>

The following example assumes a Year dimension is added to Sample Basic. It calculates a correlation coefficient using cross-dimensional members in the data sets.

FIX(Product)
"Sales Correl" = @CORRELATION(SKIPNONE, @XRANGE("2011"->"Sep", "2012"->"Mar"),@XRANGE("2012"->"Sep", "2013"->"Mar"));
ENDFIX
The correlation above is calculated across the following two multidimensional ranges specified by XrangeList1 and XrangeList2:

2011->Sep
2011->Oct
2011->Nov
2011->Dec
2012->Jan
2012->Feb
2012->Mar

2012->Sep
2012->Oct
2012->Nov
2012->Dec
2013->Jan
2013->Feb
2013->Mar

See Also

● @RANGE

@COUNT

Returns the number of data values in the specified data set (XrangeList).

Syntax

@COUNT (SKIPNONE | SKIPMISSING | SKIPZERO | SKIPBOTH, XrangeList)

Parameter Description

SKIPNONE Includes all cells specified in the data set, regardless of their content, during calculation of the count.

SKIPMISSING Excludes all #MISSING values from the data set during calculation of the count.

SKIPZERO Excludes all zero (0) values from the data set during calculation of the count.

SKIPBOTH Excludes all zero (0) values and #MISSING values from the data set during calculation of the count.

XrangeList A list of numeric values. Referred to generically throughout this topic as “the data set.”

Can be a valid member name, a comma-delimited list of member names, cross dimensional members, or a return value from a member set function or range function (including @XRANGE).

For more information about XrangeList, see Range List Parameters in the topic “Range and Financial Functions” on page 35.

Notes

The @COUNT function always returns an integer greater than or equal to 0.
Example

The following example is based on the Sample Basic database. Assume that the Measures dimension contains an additional member, Prod Count. This example calculates the count of all products for which a data value exists and uses the @RANGE function to generate expList:

```
FIX(Product)
"Prod Count" = @COUNT(SKIPMISSING,@RANGE(Sales,@CHILDREN(Product)));
ENDFIX
```

This example produces the following report. Since SKIPMISSING is specified in the calculation script, the #MI values for Diet Drinks are skipped during the product count.

```
<table>
<thead>
<tr>
<th>Jan</th>
<th>New York</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>Colas 678</td>
</tr>
<tr>
<td></td>
<td>Root Beer 551</td>
</tr>
<tr>
<td></td>
<td>Cream Soda 663</td>
</tr>
<tr>
<td></td>
<td>Fruit Soda 587</td>
</tr>
<tr>
<td></td>
<td>Diet Drinks #MI</td>
</tr>
<tr>
<td>Product</td>
<td>2479</td>
</tr>
</tbody>
</table>
```

The following example assumes a Year dimension is added to Sample Basic. It counts data values using cross-dimensional members in the data set.

```
FIX(Product)
"Count" = @COUNT(SKIPMISSING,@XRANGE("2011"->"Sep", "2012"->"Mar");
ENDFIX
```

The above calculation is performed across the following multidimensional range specified by XrangeList:

```
2011->Sep
2011->Oct
2011->Nov
2011->Dec
2012->Jan
2012->Feb
2012->Mar
```

See Also

- @RANGE
- @ISRANGENONEMPTY

@CREATEBLOCK

Creates a block or blocks for a sparse member name or a sparse member combination, and sets dense values in the newly created block to #MISSING.
Sometimes, new blocks are not desired; for example, when they contain no other values. In large databases, creation and processing of unneeded blocks can increase processing time and storage requirements.

This advanced-level function can help you use bottom-up calculation to achieve faster performance. It is useful for generating empty target blocks that can then be traversed during bottom-up processing, and populated with data at that time. It is most useful in those situations where blocks are not automatically created by the calculator; for example, during processing of a dense formula where the target blocks are from a different, sparse dimension.

Whereas the allocation functions (@ALLOCATE and @MDALLOCATE) also create the necessary target blocks, those functions are intended specifically for allocating values. The purpose of @CREATEBLOCK is only to enable rapid block creation, without reading or writing data.

**Note:** The DATACOPY calculation command also creates blocks on demand.

**Syntax**

@CREATEBLOCK(mbrName|mbrList)

**Parameter Description**

- **mbrName** Any single, sparse member name or a sparse member combination or a function that returns a single member, member list or member combination. For example:
  - Single member name: ["200-20"]
  - Combination of sparse members: ["100-10"->"New York"]
  - Member function returning `mbrName` or `mbrList`: @ANCESTORS("New York")

**Notes**

- @CREATEBLOCK does nothing if the block for the specified member combination already exists.
- `mbrName|mbrList` can be explicitly stated or can be returned by a function.
- If `mbrName` is a cross-dimensional member (such as "100-10"->"New York"), this function creates a block for the combination specified.
- When you use @CREATEBLOCK in a calculation script, use it within a FIX statement; for example, FIX on the member for which blocks should be created. Although FIX is not required, using it may improve calculation performance.
- If you use @CREATEBLOCK in a member formula, your formula should look like this:
  @CREATEBLOCK (...).
- @CREATEBLOCK does not return a value; rather, it creates the required blocks in the database with a #MISSING value.
- On sparse dimension members, a formula is executed in top-down mode, creating all possible blocks. However, if the dimension member is dense, it is executed as bottom-up, creating new blocks only based on the existing ones. Therefore, @CREATEBLOCK will not create dense blocks on an empty database.
For more discussion of top-down and bottom-up processing, see `@CALCMODE`.

Example

The following calculation script example uses the Sample.Basic database, but assumes that only the 100-10 and New York block is loaded. The member formula for Sales is `@CREATEBLOCK("100")`.

```plaintext
/* Calling @CREATEBLOCK inside member formula (Sales) */
FIX("100-10", "New York")

"Sales" (  
    @CREATEBLOCK ("100");
)
ENDFIX
```

The script creates all possible sparse blocks matching the FIX...ENDFIX statement. In this case, only the block "100"->"New York" is created.

In the following calculation script example, `@CREATEBLOCK` is not used in any member formula, so it must be assigned in the script using `mbrName =`.

```plaintext
/* Calling @CREATEBLOCK outside member formula */
Budget = @CREATEBLOCK ("100");
```

The existing value for Budget member in the current processing block is unchanged, because `@CREATEBLOCK` does not return a value (see first Note).

See Also

- `@ALLOCATE`
- `@CALCMODE`
- `DATACOPY`
- `@CURGEN`

@CURGEN

Returns the generation number of the current member combination for the specified dimension. This number represents the number of members separating the current member from the top-most member of the dimension.

Syntax

```plaintext
@CURGEN (dimName)
```

Parameter Description

dimName  Single dimension name specification. `dimName` must be the name of the top-most member of the dimension. It cannot be another member name from within the dimension.

Notes

- If the current member of the specified dimension is an implied share member, the member generation returned is the same generation as the stored member. For example, in Sample Basic, Inventory, a member of the Measures dimension, is an implied share member:
Inventory

    Opening Inventory (+)
    Additions (~)
    Ending Inventory (~)

The generation value of Inventory is the same as the stored member under it, Opening Inventory. For this example, Opening Inventory is at generation 3. When Inventory is the current member, @CURGEN(Measures) returns generation 3.

- For further discussion on levels, please refer to the Oracle Essbase Database Administrator's Guide.

Example

Given the following database structure:

Year
    Qtr1
        Jan, Feb, Mar
    Qtr2
        Apr, May, Jun
    Qtr3
        Jul, Aug, Sep
    Qtr4
        Oct, Nov, Dec

@CURGEN provides the following results for the members shown:

<table>
<thead>
<tr>
<th>Formula</th>
<th>Current Member</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position = @CURGEN(Year);</td>
<td>Year</td>
<td>1</td>
</tr>
<tr>
<td>Position = @CURGEN(Year);</td>
<td>Qtr2</td>
<td>2</td>
</tr>
<tr>
<td>Position = @CURGEN(Year);</td>
<td>Oct</td>
<td>3</td>
</tr>
</tbody>
</table>

See Also

- @CURLEV
- @GEN

@CURLEV

Returns the level number of the current member combination for the specified dimension. This number represents the number of members that separates the current member from its bottom-most descendant.

Syntax

@CURLEV (dimName)

Parameter Description

dimName  Single dimension name specification. dimName must be the name of the top-most member of the dimension. It cannot be another member name from within the dimension.
Notes

- If the current member of the specified dimension is an implied share member, the member level returned is the same level as the stored member. For example, in Sample Basic, Inventory, a member of the Measures dimension, is an implied share member:

  Inventory
    Opening Inventory (+)
    Additions (~)
    Ending Inventory (~)

  The value of Inventory results only from the value of Opening Inventory.

  When Inventory is the current member @CURLEV (Measures) returns level 0.

- For further discussion on levels, please refer to the Oracle Essbase Database Administrator’s Guide.

Example

Given the following database structure:

Year
  Qtr1
    Jan, Feb, Mar
  Qtr2
    Apr, May, Jun
  Qtr3
    Jul, Aug, Sep
  Qtr4
    Oct, Nov, Dec

@CURLEV provides the following results for the members shown:

<table>
<thead>
<tr>
<th>Formula</th>
<th>Current Member</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position = @CURLEV(Year);</td>
<td>Year</td>
<td>2</td>
</tr>
<tr>
<td>Position = @CURLEV(Year);</td>
<td>Qtr3</td>
<td>1</td>
</tr>
<tr>
<td>Position = @CURLEV(Year);</td>
<td>Aug</td>
<td>0</td>
</tr>
</tbody>
</table>

See Also

- @CURGEN
- @LEV

@CURRMBR

Returns the member that is currently being calculated in the specified dimension (dimName). This function can be used as a parameter of another function, where that parameter is a single member or a list of members.

Syntax

@CURRMBR (dimName)

Parameter Description

dimName  A single dimension name.
Notes

- You cannot use the @CURRMBR function in a FIX statement.
- You cannot use the @CURRMBR function on the left-hand side of a formula.
- The time required for retrieval and calculation may be significantly longer if this function is in a formula attached to a member tagged as Dynamic Calc or Dynamic Calc and Store.

Caution! If you use @CURRMBR to return a member name which is then concatenated with other names to get a final member name, it may result in an invalid member name, depending on the current intersection being calculated. For example:

```
@MEMBER(@CONCATENATE(@NAME (@CURRMBR("Account")),"_Total"))
```

Example

In the Sample Basic database,

```
@CURRMBR(Year);
```

returns Jan if the current member of Year being calculated is Jan.

As a more complex example, consider the following formula in the context of the Sample Basic database. Assume that the Measures dimension contains an additional member, Average Sales.

```
"Average Sales"
(IF(@ISLEV(Product,0))
Sales;
ELSE
@AVGRANGE(SKIPNONE,Sales,@CHILDREN(@CURRMBR(Product)));
ENDIF;);
```

This formula populates each upper-level member of the Product dimension (100, 200) at Average Sales. To calculate Average Sales, the Sales values for the level 0 members of Product are averaged and placed in their respective parent members. The Average Sales values for the level 0 Product members are the same as the Sales values, as specified by the IF statement in the calculation script.

This example produces the following report:

<table>
<thead>
<tr>
<th>Jan</th>
<th>New York</th>
<th>Actual Average Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-10</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>100-20</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>100-30</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>100</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>200-10</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>200-20</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>200-30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>200-40</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>200</td>
<td>110</td>
<td>27.5</td>
</tr>
<tr>
<td>300</td>
<td>#MI</td>
<td>#MI</td>
</tr>
<tr>
<td>400</td>
<td>#MI</td>
<td>#MI</td>
</tr>
</tbody>
</table>
Generates a member list that is based on the relative position of the current member being calculated.

**Syntax**

@CURRMBRANGE (dimName, {GEN|LEV}, genLevNum, [startOffset], [endOffset])

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>dimName</td>
<td>Name of the dimension for which you want to return the range list.</td>
</tr>
<tr>
<td>GEN</td>
<td>LEV</td>
</tr>
<tr>
<td>genLevNum</td>
<td>Integer value that defines the absolute generation or level number of the range list to be returned.</td>
</tr>
<tr>
<td>startOffset</td>
<td>Defines the first member in the range to be returned.</td>
</tr>
<tr>
<td>endOffset</td>
<td>Defines the last member in the range to be returned.</td>
</tr>
</tbody>
</table>

**Notes**

- You cannot use the @CURRMBRANGE function in a FIX statement.
- The first three parameters of this function (dimName,[GEN|LEV],genLevNum) provide a member range list. The startOffset and endOffset parameters create a subset of this list. For example, consider the following syntax in the context of the Sample Basic database:

  @CURRMBRANGE (Year, LEV, 0, -1, 1)

  In this example, the full range list contains the level 0 members of the Year dimension (Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec). If the current member being calculated in the Year dimension is Jan, the startOffset and endOffset parameters reduce this list to (Jan, Feb). Since there is no member prior to Jan in the full range list, only
two members are returned: Jan itself and the member after it, Feb. If the current member being calculated is Feb, the subset list would include three members: Jan, Feb, Mar.

- Currently, this function can be used only within range and financial functions, such as @AVGRANGE, @MAXRANGE, @COMPOUND, and @SHIFT.

**Example**

**Example 1**

Average Inventory is calculated by summing opening inventories from the first month of the year to the current period plus one period, and dividing the result by the number of periods to date plus one period. This calculation is accomplished by defining the @CURRMBRRANGE function within the rangeList parameter of the @AVGRANGE function.

"Average Inventory" = @AVGRANGE(SKIPNONE,"Opening Inventory", @CURRMBRRANGE(Year, LEV, 0, , 1))

This example produces the following result:

<table>
<thead>
<tr>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opening Inventory</td>
<td>100</td>
<td>110</td>
<td>120</td>
<td>130</td>
<td>. . . 200</td>
</tr>
<tr>
<td>Average Inventory</td>
<td>105</td>
<td>110</td>
<td>115</td>
<td>120</td>
<td>. . . 155</td>
</tr>
</tbody>
</table>

Since a null value is specified for startOffset, the average operations always begin at the first member of the range list, Jan. The endOffset parameter, 1, specifies that the member after the current member being calculated is included in each average operation. So, for Average Inventory->Jan, the values for Jan and Feb are averaged; for <Average Inventory->Feb, the values for Jan, Feb, and Mar are averaged; and so on. The values for Nov and Dec are the same since there is no member after Dec in the range list.

**Example 2**

Inventory Turnover is calculated by summing period-to-date Sales and dividing the result by the Average Inventory.

Turnover = @SUMRANGE(Sales, @CURRMBRRANGE(Year, LEV, 0, , 0)) / "Average Inventory"

which produces the following result:

<table>
<thead>
<tr>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Inventory</td>
<td>110</td>
<td>116.7</td>
<td>122.5</td>
</tr>
<tr>
<td>Sales</td>
<td>40</td>
<td>44</td>
<td>48</td>
</tr>
<tr>
<td>Turnover</td>
<td>0.36</td>
<td>0.72</td>
<td>1.08</td>
</tr>
</tbody>
</table>

**Example 3**

Consider the following formula:

@CURRMBRRANGE(Year, LEV, @CURLEV("Year"), -1, 1)

The full range list contains the members of the Year dimension at a particular level. The level is determined by taking the level of the current member being calculated. For example, if the current member being calculated is Jan, the full range list contains all level 0 members of Year dimension (Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec). The startOffset and endOffset parameters reduce this list to (Jan, Feb). As there is no member prior to Jan in the full range list, only two members are returned: Jan and Feb. If the current member being calculated is Feb, the subset list includes three members: Jan, Feb, Mar.
Note: The usage demonstrated by this example would require RTDEPCALCOPTIMIZE to be set to FALSE.

See Also
- RTDEPCALCOPTIMIZE
- @CURGEN
- @CURLEV
- @MEMBERAT

@DATEDIFF

Returns the difference (number) between two input dates in terms of the specified date-parts, following a standard Gregorian calendar.

Syntax
@DATEDIFF (date1, date2, date_part)

Parameter Description

date1 A number representing the input date between January 1, 1970 and Dec 31, 2037. The number is the number of seconds elapsed since midnight, January 1, 1970. To retrieve this number, use any of the following functions: @TODAY, @TODATEEX, @DATEROLL.

Date-time attribute properties of a member can also be used to retrieve this number. For example, @AttributeVal("Intro Date"); returns the product introduction date for the current product in context.

date2 A second input date. See date1.

date_part Defined using the following rule:

date_part_ex ::= DP_YEAR | DP_QUARTER | DP_MONTH | DP_WEEK | DP_DAY |
| DP_DAYOFYEAR | DP_WEEKDAY

Defined time components as per the standard calendar:
- DP_YEAR - Year of the input date.
- DP_QUARTER - Quarter of the input date.
- DP_MONTH - Month of the input date.
- DP_WEEK - Week of the input date.
- DP_DAY - Day of the input date.

Notes

Based on the input date_part, the difference between the two input dates is counted in terms of time component specified.

Example: For input dates June 14, 2005 and Oct 10, 2006,
- DP_YEAR returns the difference in the year component. (2006 - 2005 = 1)
- DP_QUARTER returns the distance between the quarters capturing the input dates. (Quarter 4, 2006 - Quarter 2, 2005 = 6)
DP_MONTH returns the distance between the months capturing the input dates. (Oct 2006 - June 2005 = 16)

DP_WEEK returns the distance between the weeks capturing the input dates. Each Standard calendar week is defined to start on Sunday and it spans 7 days. (Oct 10, 2006 - June 14, 2005 = 69)

DP_DAY returns the difference between the input dates in terms of days. (483 days)

Example

Assume the outline has two date type members, MyDate1 and MyDate2.

Profit=@DateDiff(MyDate1, MyDate2, DP_WEEK);
Profit=@DatePart(MyDate1, DP_YEAR);
MyDate2=@DateRoll(MyDate1, DP_MONTH), 10);

See Also

@DATEPART
@DATEROLL
@FORMATDATE
@TODATEEX
@TODAY

@DATEPART

This function returns the Year/Quarter/Month/Week/Day/DayOfYear/Weekday as a number, given the input date and a date part, following the standard Gregorian calendar.

Syntax

@DATEPART ( date, date_part_ex )

Parameter Description

date A number representing the input date between January 1, 1970 and Dec 31, 2037. The number is the number of seconds elapsed since midnight, January 1, 1970. To retrieve this number, use any of the following functions: @TODAY, @TODATEEX, @DATEROLL.

Date-time attribute properties of a member can also be used to retrieve this number. For example, @AttributeVal("Intro Date"); returns the product introduction date for the current product in context.
### Parameter Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>date_part_ex</td>
<td>Defined using the following rule:</td>
</tr>
</tbody>
</table>

```
date_part_ex ::= DP_YEAR | DP_QUARTER | DP_MONTH | DP_WEEK | DP_DAY | DP_DAYOFYEAR | DP_WEEKDAY
```

Defined time components as per the standard calendar:

- **DP_YEAR** - Year of the input date.
- **DP_QUARTER** - Quarter of the input date.
- **DP_MONTH** - Month of the input date.
- **DP_WEEK** - Week of the input date.
- **DP_DAY** - Day of the input date.
- **DP_DAYOFYEAR** - Day of the year numbering (1 to 366).
- **DP_WEEKDAY** - Week day of the input date. (1 - Sunday, 2 - Monday, ..., 6 - Saturday).

### Notes

Based on the requested time component, the output is as follows:

- **DP_YEAR** returns the year of the input date in `yyyy` format.
- **DP_QUARTER** returns the quarter of the year (1 to 4) for the input date.
- **DP_MONTH** returns the month of the year (1 to 12) for the input date.
- **DP_WEEK** returns the week of the year for the input date (1 to 54).
- **DP_WEEKDAY** returns the week day of the input date. (1 - Sunday, 2 - Monday, ..., 6 - Saturday).
- **DP_DAYOFYEAR** returns the day of the year numbering (1 to 366).
- **DP_DAY** returns the day of the month (1 to 31).

**Example**: For June 14, 2005,

- **DP_YEAR** returns 2005 (the year member, in `yyyy` format).
- **DP_QUARTER** returns 2 (Second quarter of the year)
- **DP_MONTH** returns 6 (Sixth month of the year)
- **DP_WEEK** returns 24 (24th week of the year)
- **DP_WEEKDAY** returns 4 (for Wednesday. Sunday = 1)
- **DP_DAYOFYEAR** returns 165 (165th day of the year)
- **DP_DAY** returns 14 (14th day of the month)

**Example**

Assume the outline has two date type members, MyDate1 and MyDate2.

```plaintext
Profit=@DateDiff(MyDate1, MyDate2, DP_WEEK);
Profit=@DatePart(MyDate1, DP_YEAR);
MyDate2=@DateRoll(MyDate1, DP_MONTH), 10);
```
See Also

- @DATEDIFF
- @DATEROLL
- @FORMATDATE
- @TODATEEX
- @TODAY

**@DATEROLL**

To the given date, rolls (adds or subtracts) a number of specific time intervals, returning another date. This function assumes a standard Gregorian calendar.

**Syntax**

```
@DATEROLL ( date, date_part, number )
```

**Parameter Description**

- **date**: A number representing the date between January 1, 1970 and Dec 31, 2037. The number is the number of seconds elapsed since midnight, January 1, 1970. To retrieve this number, use either of the following functions: @TODAY, @TODATEEX.
  
  Date-time attribute properties of a member can also be used to retrieve this number. For example, @AttributeVal("Intro Date"); returns the product introduction date for the current product in context.

- **date_part**: Defined using the following rule:
  ```
  date_part_ex ::= DP_YEAR | DP_QUARTER | DP_MONTH | DP_WEEK | DP_DAY |
  DP_DAYOFYEAR | DP_WEEKDAY
  ```
  Defined time components as per the standard calendar:
  
  - **DP_YEAR** - Year of the input date.
  - **DP_QUARTER** - Quarter of the input date.
  - **DP_MONTH** - Month of the input date.
  - **DP_WEEK** - Week of the input date.
  - **DP_DAY** - Day of the input date.

- **number**: Number of time intervals to add or subtract.

**Notes**

Based on input `date_part` and dateroll `number`, the date is moved forward or backward in time.

Example: For input date June 14, 2005 and input dateroll number 5,

- **DP_YEAR** adds 5 years to the input date. (June 14, 2010)
- **DP_QUARTER** adds 5 quarters to the input date. (June 14, 2005 + 5 quarters = June 14, 2005 + 15 months = Sept 14, 2006)
- **DP_MONTH** adds 5 months to the input date (June 14, 2005 + 5 months = Nov 14, 2005)
- DP_WEEK adds 5 weeks to the input date (June 14, 2005 + 5 weeks = June 14, 2005 + 35 days = July 19, 2005)
- DP_DAY adds 5 days to the input date. (June 14, 2005 + 5 days = June 19, 2005)

**Example**

Assume the outline has two date type members, MyDate1 and MyDate2.

```plaintext
Profit=@DateDiff(MyDate1, MyDate2, DP_WEEK);
Profit=@DatePart(MyDate1, DP_YEAR);
MyDate2=@DateRoll(MyDate1, DP_MONTH, 10);
```

**See Also**
- @DATEDIFF
- @DATEPART
- @FORMATDATE
- @TODATEEX
- @TODAY

---

**@DECLINE**

Calculates the depreciation of an asset for the specified period using the declining balance method. The factor by which the declining balance depreciates the assets is specified using `factorMbrConst`. For example, to calculate a double declining balance, set `factorMbrConst` to 2.

**Syntax**

```plaintext
@DECLINE (costMbr, salvageMbrConst, lifeMbrConst, factorMbrConst [, XrangeList])
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>costMbr</td>
<td>Single member specification representing the starting values of the assets. More than one asset can be input and depreciated across the specified range. The function calculates each asset separately.</td>
</tr>
<tr>
<td>salvageMbrConst</td>
<td>Single member specification, variable name, or numeric expression that provides a constant value. This value represents the value of the asset at the end of the depreciation.</td>
</tr>
<tr>
<td>lifeMbrConst</td>
<td>Single member specification, variable name, or numeric expression that provides a constant value. The value represents the number of periods over which the asset is depreciated.</td>
</tr>
<tr>
<td>factorMbrConst</td>
<td>Single member specification, variable name, or numeric expression that provides a constant value. The value represents the factor by which the asset is depreciated.</td>
</tr>
<tr>
<td>XrangeList</td>
<td>Optional parameter specifying the periods over which the function is calculated. More than one asset can be depreciated. If a range is not specified, Essbase uses the level 0 members from the dimension tagged as Time. Can be a valid member name, a comma-delimited list of member names, cross dimensional members, or a return value from a member set function or range function (including @XRANGE). For more information about <code>rangeList</code> and <code>XrangeList</code>, see Range List Parameters in the topic &quot;Range and Financial Functions&quot; on page 35.</td>
</tr>
</tbody>
</table>
Notes

Financial functions never return a value; rather, they calculate a series of values internally based on the range specified.

Example

The following example calculates the depreciation of Asset for the specified series of fiscal years.

"Decline Dep" = @DECLINE(Asset, Residual, Life, 2, FY2000:FY2001, FY2002, FY2003);

This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset</td>
<td>9,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Residual</td>
<td>750</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Life</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Decline Dep</td>
<td>3,600</td>
<td>2,160</td>
<td>1,296</td>
<td>778</td>
</tr>
</tbody>
</table>

The following example assumes a Year dimension is added to Sample Basic. It calculates depreciation using a multidimensional range.

FIX ("100-10", "New York")
"Decline Dep" = @DECLINE(Asset, Residual, Life, 2, @XRANGE("2011"->"Sep", "2012"->"Mar"));
ENDFIX

The above calculation is performed across the following multidimensional range specified by XrangeList:

2011->Sep
2011->Oct
2011->Nov
2011->Dec
2012->Jan
2012->Feb
2012->Mar

See Also

- @SLN
- @GROWTH

@DESCENDANTS

Returns all descendants of the specified member, or those down to the specified generation or level. This function excludes the specified member.

Syntax

@DESCENDANTS (mbrName [, genLevNum| genLevName])

Parameter Description

mbrName Any valid single member name or member combination, or a function that returns a single member or member combination.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>genLevNum</td>
<td>Optional. An integer value that defines the absolute generation or level number down to which to select the members. A positive integer defines a generation number. A value of 0 or a negative integer defines a level number.</td>
</tr>
<tr>
<td>genLevName</td>
<td>Optional. Level name or generation name down to which to select the members.</td>
</tr>
</tbody>
</table>

**Notes**

- You can use this member set function as a parameter of another function, where that parameter is a list of members.
- Essbase sorts the generated list of members starting with the nearest descendant of the member, followed by the next nearest descendant of the member, and so on. In the Sample.Basic database, if you specify `@DESCENDANTS(100)`, Essbase returns 100-10, 100-20, 100-30 (in that order). This order is important to consider when you use the @DESCENDANTS member set function with certain forecasting and statistical functions.
- You can use `@IDESCENDANTS`, to include the specified member.
- You can use `@RDESCENDANTS` and `@RDESCENDANTS` to include descendants of shared members.

**Example**

In the Sample Basic database:

- `@DESCENDANTS(East)` returns New York, Massachusetts, Florida, Connecticut, and New Hampshire (in that order).
- `@DESCENDANTS(Profit)` returns Margin, Sales, COGS, Total Expenses, Marketing, Payroll, and Misc (in that order).
- `@DESCENDANTS(Market,2)` returns East, West, South, and Central (in that order).
- `@DESCENDANTS(Diet,0)` returns 100-20, 200-20, and 300-30 (in that order).

**See Also**

- `@IDESCENDANTS`
- `@LDESCENDANTS`
- `@ILDESCENDANTS`
- `@RDESCENDANTS`
- `@IRDESCENDANTS`
- `@ISDESC`
@DISCOUNT

Calculates a value discounted by the specified rate, from the first period of the range to the period in which the amount to discount is found. The answer is returned in the same period. More than one value can be discounted simultaneously in this manner.

**Syntax**

@DISCOUNT (cashMbr, rateMbrConst [, XrangeList])

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cashMbr</td>
<td>Member specification representing the value you want to discount from the last period in XrangeList to the current period.</td>
</tr>
<tr>
<td>rateMbrConst</td>
<td>Member specification, variable name, or numeric expression which provides a constant value. The value represents the rate per period which cashMbr is discounted. It is a decimal value, not a percent.</td>
</tr>
<tr>
<td>XrangeList</td>
<td>Optional parameter specifying the period over which the discount is calculated. If a range is not specified, Essbase uses the level 0 members from the dimension tagged as Time. Can be a valid member name, a comma-delimited list of member names, cross dimensional members, or a return value from a member set function or range function (including @XRANGE). For more information about rangeList and XrangeList, see Range List Parameters in the topic “Range and Financial Functions” on page 35.</td>
</tr>
</tbody>
</table>

**Notes**

Financial functions never return a value; rather, they calculate a series of values internally based on the range specified.

**Example**

The following example discounts the values in Cash by the rates in Credit Rate and places the results in Discount Amount for each fiscal year.

"Discount Amount" = @DISCOUNT(Cash,"Credit Rate",FY1999:FY2002,FY2003);

This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>0.00</td>
<td>0.00</td>
<td>1000.00</td>
<td>1000.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Credit Rate</td>
<td>0.00</td>
<td>0.00</td>
<td>0.05</td>
<td>0.05</td>
<td>0.00</td>
</tr>
<tr>
<td>Discount Amount</td>
<td>#MI</td>
<td>#MI</td>
<td>863.84</td>
<td>822.70</td>
<td>#MI</td>
</tr>
</tbody>
</table>

The following example assumes a Year dimension is added to Sample Basic. It calculates discount using a multidimensional range.

FIX ("100-10", "New York")

"Discount Amount" = @DISCOUNT(Cash,"Credit Rate",@XRANGE("2011"->"Sep", "2012"->"Mar"));

ENDFIX

The above calculation is performed across the following multidimensional range specified by XrangeList:

2011->Sep
@ENUMVALUE

Returns the internal numeric value for a text value in a text list.

Syntax

@ENUMVALUE (enum_string)

Parameter Description

enum_string String of the format text_list_name.char_string_literal, where:
- text_list_name is the name of a text list, or of a member that is associated with a text list.
- char_string_literal is one of the text values represented in the text list.

Example

The following example is based on a variation of ASOSamp.Sample. Assume there is a text list named CustSatRatings, in which text values are mapped to numeric IDs as follows: Good=1, Average=2, Poor=3.

@ENUMVALUE(CustSatRatings, "Good");

returns 1.

@EQUAL

Returns a member set of member names that match the specified token name.

This function can be used on unique and duplicate-name outlines.

Syntax

@EQUAL (tokenName, topMbrinHierarchy)

Parameter Description

tokenName Token string value, representing the name of a member, with which to compare to members in the outline, starting with member specified in topMbrinHierarchy. The specified token name must not be qualified for duplicate members.

topMbrinHierarchy A fully qualified name of a member in the outline on which to base the member search. The specified member and its aliases, and all of its descendants, are included in the search.

To search the entire outline, provide an empty string ("") for this parameter. For example, @EQUAL("100-10", "").
Example

The following examples are based on the following duplicate-name outline:

```
Product
  100
    100-10
    100-10-10
    100-20
    100-30
  200
    200-10
    200-20
    200-30
  300
    300-10
    300-20

Diet
  100-10
    100-10-11
    200-10
    300-10

Bottle
  200-10
  300-20
```

@EQUAL("100-10", "Product")

Returns the members [Diet].[100-10] and [100].[100-10].

@EQUAL("100-10", "Diet")

Returns the member [Diet].[100-10].

See Also

- @BETWEEN
- @EXPAND
- @LIKE
- @MBRCOMPARE
- @MBRPARENT
- @NOTEQUAL

@EXP

Returns the exponent of a specified expression; that is, the value of \( e \) (the base of natural logarithms) raised to the power of the specified expression.

Syntax

@EXP (expression)

Parameter Description

expression Single member specification, variable name, function, or other numeric expression. If less than -700 or greater than 700, Essbase returns #MISSING.
Example

The following example is based on a variation of Sample Basic:

Index = @EXP("Variance %"/100);

This example produces the following result:

<table>
<thead>
<tr>
<th></th>
<th>East</th>
<th>West</th>
<th>South</th>
<th>Central</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variance %</td>
<td>10.7</td>
<td>10.9</td>
<td>3.6</td>
<td>3.6</td>
</tr>
<tr>
<td>Index</td>
<td>1.11293</td>
<td>1.11516</td>
<td>1.03666</td>
<td>1.03666</td>
</tr>
</tbody>
</table>

See Also

- @LN

@EXPAND

Expands a member search by calling a member set function for each member in a member list. The members returned by the @EXPAND function are added to the existing member set. Duplicate members are not removed from the member set.

This function can be used on unique and duplicate-name outlines.

Syntax

@EXPAND (mbrSetFunction, mbrList, [, genLevNum], [LAYERONLY | ALL], [, topMbrinHierarchy])

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>mbrSetFunction</td>
<td>One of the following member set functions, which return a list of members:</td>
</tr>
<tr>
<td>mbrList</td>
<td>A comma-delimited list of members grouped together using @LIST or a member set function (such as @DESCENDANTS) that returns a list of members.</td>
</tr>
<tr>
<td>genLevNum</td>
<td>Optional: This argument applies only if you specify @ANCESTORS, @IANCESTORS, @DESCENDANTS, or @DESCENDANTS for mbrSetFunction. The integer value that defines the absolute generation or level number up to which to select members. A positive integer defines a generation number. A value of 0 or a negative integer defines a level number.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>LAYERONLY</td>
<td><strong>Optional:</strong> This argument applies only if you specify @ANCESTORS, @IANCESTORS, @DESCENDANTS, or @IDESCENDANTS for mbrSetFunction. Returns only those members at the specified generation or level (genLevNum) that match the selection criteria. If you specify this argument, you must specify genLevNum.</td>
</tr>
<tr>
<td>ALL</td>
<td><strong>Optional:</strong> This argument applies only if you specify @ANCESTORS, @IANCESTORS, @DESCENDANTS, or @IDESCENDANTS for mbrSetFunction. Returns all of the members that match the member selection criteria, starting with the specified top member (topMbrinHierarchy). If you specify this argument, you must specify topMbrinHierarchy.</td>
</tr>
<tr>
<td>topMbrinHierarchy</td>
<td><strong>Optional:</strong> This argument applies only if you specify @EQUAL for mbrSetFunction. A fully qualified member name on which to base the member search. The specified member and its aliases, and all of its descendants, are included in the search. If you specify @EQUAL for mbrSetFunction, and you do not specify topMbrinHierarchy, Essbase searches the entire outline.</td>
</tr>
</tbody>
</table>

**Example**

The following examples are based on the following duplicate-name outline:

```
Product
  100
    100-10
      100-10-10
    100-20
    100-30
  200
    200-10
    200-20
    200-30
  300
    300-10
    300-20
Diet
  100-10
    100-10-11
  200-10
  300-10
Bottle
  200-10
  300-20
```

```
@EXPAND("@DESC", @LIST("Product"), -1, LAYERONLY)

Returns all of the members under the Product dimension that are at level 1, which are [100]. [100-10], [Product].[200], [Product].[300], [Diet].[100-10], and [Product].[Bottle].

@EXPAND("@EQUAL", @EXPAND("@CHILDREN", @LIST("[product].[100]", "[product].[200]")), , , "Product")
```
Essbase first executes the inner @EXPAND function—@EXPAND("@CHILDREN", @LIST("[product].[100]", "[product].[200]"))—which expands the member list to include all of the children of members 100 and 200 (a total of six members). Then Essbase executes the outer @EXPAND function, which searches the Product hierarchy for a match with any of the six members.

See Also

- @BETWEEN
- @EQUAL
- @NOTEQUAL
- @LIKE
- @MBRCOMPARE
- @MBRPARENT

@FACTORIAL

Returns the factorial of expression. The factorial of a number is equal to $1 \times 2 \times 3 \times ... \times \text{number}$.

Syntax

@FACTORIAL(expression)

Parameter Description

- **expression**: Single member specification or numeric expression.

Notes

- *expression* can be no larger than 189. If *expression* is larger than 189, Essbase returns #MISSING.
- If *expression* is negative, Essbase returns #MISSING.

Example

- @FACTORIAL(1) 1
- @FACTORIAL(5) 120

See Also

- @POWER

@FORMATDATE

Returns a formatted date-string.

Syntax

@FormatDate(date, date_format_string)
Parameter | Description
---|---
<date> | A number representing the input date between January 1, 1970 and Dec 31, 2037. The number is the number of seconds elapsed since midnight, January 1, 1970. To retrieve this number, use any of the following functions: @TODAY, @TODATEEX, @DATEROLL.

Date-time attribute properties of a member can also be used to retrieve this number. For example, @AttributeVal("Intro Date"); returns the product introduction date for the current product in context.

date_format_string | One of the following literal strings (excluding ordered-list numbers and parenthetical examples) indicating a supported date format.

1. "mon dd yyyy" (Example: mon = Aug)
2. "Month dd yyyy" (Example: Month = August)
3. "mm/dd/yy"
4. "mm/dd/yyyy"
5. "yy.mm.dd"
6. "dd/mm/yy"
7. "dd.mm.yy"
8. "dd-mm-yy"
9. "dd Month yy"
10. "dd mon yy"
11. "Month dd, yy"
12. "mon dd, yy"
13. "mm-dd-yy"
14. "yy/mm/dd"
15. "yyymmdd"
16. "dd Month yyyy"
17. "dd mon yyyy"
18. "yyyy-mm-dd"
19. "yyyy/mm/dd"
20. Long format (Example: WeekDay, Mon dd, yyyy)
21. Short format (Example: m/d/yy)

Notes
- Using an invalid input date returns an error.
- Using extra whitespace not included in the internal format strings returns an error.
- This function interprets years in the range 1970 to 2029 for yy format. Therefore, if the function is invoked using a date format mm/dd/yy for June 20, 2006, the returned date string is "06/20/06".

Example

Assume the outline has a date type member MyDate1.

```
Profit (If(@ToDateEx("yyyy-mm-dd", @FormatDate(@Today(), "yyyy-mm-dd")) == MyDate1 )
```
Profit=99;
Endif;)

See Also

- @DATEDIFF
- @DATEPART
- @DATEROLL
- @TODATEEX
- @TODAY

@GEN

Returns the generation number of the specified member.

Syntax

@GEN (mbrName)

Parameter Description

mbrName Any valid single member name or member combination, or a function that returns a single member or member combination.

Example

In the Sample Basic database:

@GEN(Year)

Returns 1.

@GEN(Qtr3)

Returns 2.

See Also

- @CURGEN
- @LEV

@GENMBRS

Returns all members with the specified generation number or generation name in the specified dimension.

Syntax

@GENMBRS (dimName, genName|genNum)

Parameter Description

dimName A single dimension name specification.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>genName</td>
<td>Generation name or generation number from dimName. A positive integer defines a generation number.</td>
</tr>
</tbody>
</table>

**Notes**

- If you specify a name for the `genName` parameter, Essbase looks for a generation with that name in the specified dimension.
- If you specify a number for the `genName` parameter (for example, 2), Essbase first looks for a generation with a number string name. If no generation name exists with that numeric name, Essbase checks to see if the parameter is a valid generation number. Check the application event log after running the calculation to make sure that the correct members were calculated.
- Generation 0 is not a valid generation number. In Essbase, generations begin numbering at 1.
- If you specify a temporary variable for the `genName` parameter, Essbase does not recognize the value of the variable. It looks in the outline for a generation name with the same name as the temporary variable.
- For more information about generations and defining generation names, see the *Oracle Essbase Database Administrator’s Guide*.
- Essbase sorts the generated list of members in ascending order. Using Sample Basic as an example, if you specify `@GENMBRS(Product,2)`, Essbase returns 100, 200, 300, 400, Diet (in that order). This order is important to consider when you use the `@GENMBRS` member set function with certain forecasting and statistical functions.

**Example**

In the Sample Basic database:

@GENMBRS(Year,Month)
@GENMBRS(Year,3)

both return the following members since generation 3 of the Year dimension is named Month: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, and Dec (in that order).

The following example restricts the calculation to members with the combination Budget and one of the members of the Market dimension with a generation name of State.

```
FIX(Budget,@GENMBRS(Market,State))
CALC DIM (Year,Measures);
ENDFIX
```

**See Also**

- `@LEVMBRS`
@GROWTH

Calculates a series of values that represent a linear growth of the first nonzero value encountered in principalMbr across the specified XrangeList. Growth is calculated by multiplying the growth rate in rateMbrConst by the original principalMbr. This value is then added to the previous time period's result, yielding the new value.

Syntax

@GROWTH (principalMbr, rateMbrConst [, XrangeList])

Parameter Description

principalMbr Single member specification that represents the initial value of the value to grow. The first nonzero value encountered is the initial value. Other principalMbr values after the first are ignored.

rateMbrConst Single member specification, variable name, or numeric expression providing a constant value that represents the decimal growth rate to be applied (for example, 10% = .1).

XrangeList Optional parameter specifying the range over which the function is calculated. If a range is not specified, Essbase uses the level 0 members from the dimension tagged as Time. Can be a valid member name, a comma-delimited list of member names, cross dimensional members, or a return value from a member set function or range function (including @XRANGE).

For more information about rangeList and XrangeList, see Range List Parameters in the topic “Range and Financial Functions” on page 35.

Notes

Financial functions never return a value; rather, they calculate a series of values internally based on the range specified.

Example

The following example calculates the growth of Principal Amount, using the rate found in Growth Rate for each fiscal year. The results are placed in Growth Amount.

"Growth Amount"=@GROWTH("Principal Amount","Growth Rate",FY1998:FY2003);

This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal Amount</td>
<td>1,000</td>
<td>0</td>
<td>2,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Growth Amount</td>
<td>1,050</td>
<td>1,120</td>
<td>1,200</td>
<td>1,280</td>
<td>1,380</td>
<td>1,480</td>
</tr>
<tr>
<td>Growth Rate</td>
<td>0.05</td>
<td>0.07</td>
<td>0.08</td>
<td>0.08</td>
<td>0.1</td>
<td>0.1</td>
</tr>
</tbody>
</table>

The following example assumes a Year dimension is added to Sample Basic. It calculates growth using a multidimensional range.

FIX ("100-10", "New York")
"Growth Amount" = @GROWTH("Principal Amount","Growth Rate",@XRANGE("2011"->"Sep", "2012"->"Mar"));
ENDFIX

The above calculation is performed across the following multidimensional range specified by XrangeList:
Returns the specified member and all the ancestors of that member, including ancestors of any occurrences of the specified member as a shared member. You can use this member set function as a parameter of another function, where that parameter is a list of members.

Syntax

@IALLANCESTORS (mbrName)

Parameter Description

mbrName  A valid single member name or member combination, or a function that returns a single member or member combination.

Notes

Essbase sorts the generated list of members in ascending order of the member number in the outline. Using Sample Basic as an example, if you specify 100-20 for mbrName, Essbase returns 100-20, 100, Diet, Product (in that order). However, the order in which shared ancestors are returned is not guaranteed. This order is important to consider when you use the @IALLANCESTORS member set function with certain forecasting and statistical functions.

Example

The following example is based on the Sample Basic database. Sample Basic has a shared level of diet drinks, which includes 100-20 (Diet Cola). So 100-20 (Diet Cola) is a descendant of 100 (Colas) and is a shared member descendant of Diet:

```
100
   100-10
   100-20
   ...
Diet
   100-20 (Shared Member)
   ...
```

The following calculation script increases by 5% the Budget Sales values of 100-20 and all its ancestors, including Diet:
This example produces the following report. This report shows that the Budget-Sales values for 100-20, 100, Diet, and Product (100-20 and its ancestors) have been increased by 5%. The original values were 2610, 8980, 8260, and 28480, respectively.

<table>
<thead>
<tr>
<th>Jan</th>
<th>Actual</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>======</td>
<td>======</td>
</tr>
<tr>
<td>Market</td>
<td>100-10</td>
<td>4860</td>
</tr>
<tr>
<td></td>
<td>100-20</td>
<td>2372</td>
</tr>
<tr>
<td></td>
<td>100-30</td>
<td>1082</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>8314</td>
</tr>
<tr>
<td></td>
<td>200-20</td>
<td>3122</td>
</tr>
<tr>
<td></td>
<td>300-30</td>
<td>2960</td>
</tr>
<tr>
<td>Diet</td>
<td>8454</td>
<td></td>
</tr>
<tr>
<td>Product</td>
<td>31538</td>
<td></td>
</tr>
</tbody>
</table>

See Also

- @ALLANCESTORS
- @ANCESTORS
- @ANCESTORS
- @ILANCESTORS

@ANCESTORS

Returns the specified member and either all ancestors of the member or all ancestors up to the specified generation or level.

Essbase sorts the generated list of members—starting with the specified member, followed by the nearest ancestor of the member, followed by the next nearest ancestor of the member, and so on. In the Sample.Basic database, if you specify @ANCESTORS(200-30), Essbase returns 200-30, 200, Product (in that order). When using the @ANCESTORS function with certain forecasting and statistical functions, you must consider order.

You can use the @ANCESTORS function as a parameter of another function, where the function requires a list of members.

Syntax

@ANCESTORS (mbrName [, genLevNum | genLevName])

Parameter Description

mbrName Valid member name or member-name combination or a function that returns one member or member combination.
Parameter | Description
--- | ---
genLevNum | Optional. The integer value that defines the absolute generation or level number up to which to select members. A positive integer defines a generation number. A value of 0 or a negative integer defines a level number.
genLevName | Optional. The level or generation name up to which to select members.

**Example**

All examples are from the Sample.Basic database.

@ANCESTORS("New York")

Returns New York, East, Market (in that order).

@ANCESTORS(Qtr4)

Returns Qtr4, Year (in that order).

@ANCESTORS(Sales,-2)

Returns Sales, Margin, Profit (in that order). Members higher than level 2 are not returned.

@ANCESTORS("100-10",1)

Returns 100-10, 100, Product (in that order). All ancestors are returned up to generation 1.

**See Also**

- @ANCESTORS
- @ALLANCESTORS
- @ANCESTORS
- @ILANCESTORS

**@ICHILDREN**

Returns the specified member and all of its children. This member set function can be used as a parameter of another function, where that parameter is a list of members.

**Syntax**

@ICHILDREN (mbrName)

**Parameter | Description**
--- | ---
mbrName | Any valid single member name or member combination, or a function that returns a single member or member combination.

**Notes**

Essbase sorts the generated list of members starting with the specified member, followed by its children in ascending order. Using Sample Basic as an example, if you specify 100 for \textit{mbrName}, Essbase returns 100, 100-10, 100-20, 100-30 (in that order). This order is important to consider when you use the @ICHILDREN member set function with certain forecasting and statistical functions.
Example
In the Sample Basic database:
@ICHILDREN(Market)
Returns Market, East, West, South, and Central (in that order).
@ICHILDREN(Margin)
Returns Margin, Sales, and COGS (in that order).

See Also
- @CHILDREN

@IDESCENDANTS
Returns the specified member and either all descendants of the member or all descendants down to the specified generation or level.

Essbase sorts the generated list of members—starting with the specified member, followed by the nearest descendant of the member, followed by the next nearest descendant of the member, and so on. In the Sample.Basic database, if you specify @IDESCENDANTS(100), Essbase returns 100, 100-10, 100-20, 100-30 (in that order). When using the @IDESCENDANTS function with certain forecasting and statistical functions, you must consider order.

You can use the @IDESCENDANTS function as a parameter of another function, where the function requires a list of members.

Syntax
@IDESCENDANTS (mbrName[, genLevNum | genLevName])

Parameter | Description
--- | ---
 mbrName  | Valid member name or member-name combination or a function that returns one member or member combination.
 genLevNum  | Optional. The integer value that defines the absolute generation or level number up to which to select members. A positive integer defines a generation number. A value of 0 or a negative integer defines a level number.
 genLevName | Optional. The level or generation name up to which to select members.

Example
All examples are from the Sample.Basic database.
@IDESCENDANTS(East)
@IDESCENDANTS(Profit)
Returns Profit, Margin, Sales, COGS, Total Expenses, Marketing, Payroll, and Misc (in that order).

@IDESCENDANTS(Market,2)

Returns Market, East, West, South, and Central (in that order).

@IDESCENDANTS(South,-1)

Returns South.

See Also

- @DESCENDANTS
- @IRDESCENDANTS
- @RDESCENDANTS
- @LDESCENDANTS
- @ILDESCENDANTS
- @ISDESC
- @ANCESTORS
- @CHILDREN
- @SIBLINGS

@ILANCESTORS

Returns the members of the specified member list and either all ancestors of the members or all ancestors up to the specified generation or level.

You can use the @ILANCESTORS function as a parameter of another function, where the function requires a list of members.

Syntax

@ILANCESTORS ((memberSetFunction) [, genLevNum])
Parameter | Description
---|---
memberSetFunction | A member set function that returns a list of members.

How the `@ILANCESTORS` function is used determines which member set functions are allowed. Follow these guidelines:

- If the `@ILANCESTORS` function is used alone (not within a FIX statement), you must use the `@LIST` function and specify member names. For example:

  `@LIST(mbr1, mbr2, ...)`

- If the `@ILANCESTORS` function is used within a FIX statement, you can use member set functions such as `@UDA` and `@ATTRIBUTE`. For example:

  `@UDA(dimName, uda)`

  `@ATTRIBUTE(attMbrName)`

  In this case, you can choose whether to use the `@LIST` function. For example, both of the following statements are valid, and the statements return the same results.

Example using only `@ATTRIBUTE`:

```plaintext
FIX(@ILANCESTORS(@ATTRIBUTE(Caffeinated_True), @ATTRIBUTE(Ounces_12), "200-40"))
... ENDFIX;
```

Example using `@LIST` and `@ATTRIBUTE`:

```plaintext
FIX(@ILANCESTORS(@LIST(@ATTRIBUTE(Caffeinated_True), @ATTRIBUTE(Ounces_12), "200-40")))
... ENDFIX;
```

**Caution!** All members of the specified member list must be from the same dimension.

`genLevNum` | Optional. The integer value that defines the absolute generation or level number up to which to select members. A positive integer defines a generation number. A value of 0 or a negative integer defines a level number.

### Example

All examples are from the Sample.Basic database.

`@ILANCESTORS(@LIST("100-10", "200-20"))`

Returns 100-10 (a specified member); 100 and Product (the ancestors of 100-10); 200-20 (a specified member); and 200 (the ancestor of 200–20). The result does not contain duplicate members.

`@ILANCESTORS(@LIST("100", "100-10"))`

Returns 100 and 100-10 (the specified members); and Product (the ancestor of 100 and 100-10). The result does not contain duplicate members.

`@ILANCESTORS(@LIST("100", "Product", "200"))`

Returns 100, Product, and 200 (the specified members). The result does not contain duplicate members.
FIX(@ILANCESTORS(@UDA(Market,"New Market")),2)
...
ENDFIX;

Returns Nevada (a member that is assigned the New Market UDA) and West (the ancestor to
generation 2 for Nevada); Louisiana (a member that is assigned the New Market UDA) and South (the ancestor to generation 2 for Louisiana); and Colorado (a member that is assigned the New Market UDA) and Central (the ancestor to generation 2 for Colorado).

FIX(@ILANCESTORS(@ATTRIBUTE(Caffeinated_True),@ATTRIBUTE(Ounces_12),"200-40"))
...
ENDFIX;

Returns 100-10, 100-20, 200-10, and 300-30 (caffeinated, 12-ounce drinks); and 200-40 (the specified member), and 100, 200, 300, and Product (the ancestors of the members).

See Also

- @LANCESTORS
- @ANCESTORS
- @IANCESTORS

@ILDESCENDANTS

Returns the members of the specified member list and either all descendants of the members or all descendents down to the specified generation or level.

You can use the @ILDESCENDANTS function as a parameter of another function, where the function requires a list of members.

Syntax

@ILDESCENDANTS ((memberSetFunction) [, genLevNum])
**Parameter** | **Description**
---|---
memberSetFunction | A member set function that returns a list of members.

How the `@ILDESCENDANTS` function is used determines which member set functions are allowed. Follow these guidelines:

- If the `@ILDESCENDANTS` function is used alone (not within a FIX statement), you must use the `@LIST` function and specify member names. For example:
  ```
@LIST(mbr1, mbr2, ...)
  ```
- If the `@ILDESCENDANTS` function is used within a FIX statement, you can use member set functions such as `@UDA` and `@ATTRIBUTE`. For example:
  ```
@UDA(dimName, uda)
@ATTRIBUTE (attMbrName)
  ```

In this case, you can choose whether to use the `@LIST` function. For example, both of the following statements are valid, and the statements return the same results.

Example using only `@ATTRIBUTE`:
```
FIX
  (@ILDESCENDANTS(@ATTRIBUTE(Caffeinated_True), @ATTRIBUTE(Ounces_12), "200-40"))
  ...
ENDFIX;
```

Example using `@LIST` and `@ATTRIBUTE`:
```
FIX
  (@ILDESCENDANTS(@LIST(@ATTRIBUTE(Caffeinated_True), @ATTRIBUTE(Ounces_12), "200-40")))
  ...
ENDFIX;
```

**Caution!** All members of the specified member list must be from the same dimension.

genLevNum | Optional. The integer value that defines the absolute generation or level number up to which to select members. A positive integer defines a generation number. A value of 0 or a negative integer defines a level number.

**Example**

All examples are from the Sample.Basic database.

`@ILDESCENDANTS(@LIST("100","200","300"))`

Returns 100 (a specified member); 100-10, 100-20, 100-30 (the descendants of 100); 200 (a specified member); and 200-10, 200-20, 200-30, and 200-40 (the descendants of 200); 300 (a specified member); and 300-10, 300-20, 300-30 (the descendants of 300).

`@ILDESCENDANTS(@LIST("Market"),-1)`

Returns Market (the specified member); and East, West, South, and Central (the descendants of Market to level 1).

```
FIX
  (@ILDESCENDANTS(@UDA(Market,"Major Market")))
```
Returns East (a specified member); New York, Massachusetts, Florida, Connecticut, and New Hampshire (the descendants of East); Central (a specified member); Illinois, Ohio, Wisconsin, Missouri, Iowa, and Colorado (the descendants of Central); California and Texas (specified members, which do not have descendants).

```
FIX (@ILDESCENDANTS(@ATTRIBUTE(Caffeinated_True)@ATTRIBUTE(Ounces_12),"200–40"))
```

Returns 100-10, 100-20, 200-10, 300-30 (caffeinated, 12-ounce drinks); and 200-40 (a specified member). None of these members have descendants.

**See Also**
- @LDESCENDANTS
- @DESCENDANTS
- @RDESCENDANTS
- @IRDESCENDANTS
- @IDESCENDANTS
- @ANCESTORS
- @LANCESTORS
- @ILANCESTORS
- @CHILDREN
- @SIBLINGS
- @SHIFTSIBLING

**@ILSIBLINGS**

Returns the specified member and its left siblings.

**Syntax**

```
@ILSIBLINGS (mbrName)
```

**Parameter Description**

- mbrName: Any valid single member name or member combination, or a function that returns a single member or member combination.

**Notes**

This function returns the specified member and all of the left siblings of the member. Left siblings are children that share the same parent as the member and that precede the member in the database outline.

This member set function can be used as a parameter of another function, where that parameter is a list of members.
Essbase sorts the generated list of members starting with the left siblings of the member (that is, siblings appearing above the member in the database outline) in ascending order. Using Sample Basic as an example, if you specify 200-30 for mbrName, Essbase returns 200-10, 200-20, 200-30 (in that order). This order is important to consider when you use the @ILSIBLINGS member set function with certain forecasting and statistical functions.

**Example**

In the Sample Basic database:

@ILSIBLINGS(Florida)

Returns New York, Massachusetts, and Florida (in that order). New York and Massachusetts appear above Florida in the Sample Basic outline.

@ILSIBLINGS(Qtr3)

Returns Qtr1, Qtr2, and Qtr3 (in that order). Qtr1 and Qtr2 appear above Qtr3 in the Sample Basic outline.

**See Also**

- @LSIBLINGS

---

**@INT**

Returns the next lowest integer value of expression.

**Syntax**

@INT (expression)

**Parameter Description**

| expression | Member specification or mathematical expression that generates a numeric value. |

**Example**

The following example is based on the Sample Basic database. Assume that the Profit % member is not tagged as Dynamic Calc.

The following formula rounds the values for West down to the nearest integer.

West=@INT(@SUM(@CHILDREN(West)));

This example produces the following report:

<table>
<thead>
<tr>
<th>Profit %</th>
<th>cola</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jan</td>
<td>Feb</td>
</tr>
<tr>
<td>Cola</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>California</td>
<td>38.64</td>
<td>37.98</td>
</tr>
<tr>
<td>Oregon</td>
<td>17.50</td>
<td>16.13</td>
</tr>
<tr>
<td>Washington</td>
<td>29.23</td>
<td>30.90</td>
</tr>
<tr>
<td>Utah</td>
<td>23.08</td>
<td>23.08</td>
</tr>
<tr>
<td>Nevada</td>
<td>-3.95</td>
<td>-6.76</td>
</tr>
<tr>
<td>West</td>
<td>104</td>
<td>101</td>
</tr>
</tbody>
</table>
See Also

- @ABS
- @REMAINDER
- @ROUND
- @TRUNCATE

**@INTEREST**

Calculates the simple interest in `balanceMbr` at the rate specified by `creditrateMbrConst` if the value specified by `balanceMbr` is positive, or at the rate specified by `borrowrateMbrConst` if `balanceMbr` is negative. The interest is calculated for each time period specified by `XrangeList`.

**Syntax**

```
@INTEREST (balanceMbr, creditrateMbrConst, borrowrateMbrConst [, XrangeList])
```

**Parameter**

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>balanceMbr</strong> Single member specification representing the balance at the time the interest is calculated.</td>
</tr>
<tr>
<td><strong>creditrateMbrConst</strong> Single member specification, variable name, or numeric expression providing a constant value. The value must be a decimal number that corresponds to a percentage. The value represents the per-period interest rate.</td>
</tr>
<tr>
<td><strong>borrowrateMbrConst</strong> Single member specification, variable name, or numeric expression providing a constant value. The value must be a decimal number corresponding to a percentage value. The value represents the per-period interest rate.</td>
</tr>
<tr>
<td><strong>XrangeList</strong> Optional parameter specifying the time period over which the interest is calculated. If a range is not specified, Essbase uses the level 0 members from the dimension tagged as Time. Can be a valid member name, a comma-delimited list of member names, cross dimensional members, or a return value from a member set function or range function (including <code>@XRANGE</code>). For more information about rangeList and XrangeList, see Range List Parameters in the topic &quot;Range and Financial Functions&quot; on page 35.</td>
</tr>
</tbody>
</table>

**Notes**

Financial functions never return a value; rather, they calculate a series of values internally based on the range specified.

**Example**

The following example calculates the interest for Balance, using Credit Rate for positive balances and using Borrow Rate for negative balances. The results are placed in Interest Amount for each fiscal year.

```
"Interest Amount" = @INTEREST(Balance,"Credit Rate","Borrow Rate", FY1998:FY2001,FY2002,FY2003);
```

This example produces the following report:
====== ====== ====== ====== ====== ======
Balance 2000.00 3000.00 -1000.00 3000.00 9000.00 -6000.00
Credit Rate 0.065 0.065 0.065 0.065 0.065 0.065
Borrow Rate 0.1125 0.1125 0.1125 0.1125 0.1125 0.1125
Interest Amount 130.00 195.00 -112.50 195.00 585.00 -675.00

The following example assumes a Year dimension is added to Sample Basic. It calculates interest using a multidimensional range.

FIX ("100-10", "New York")
"Interest Amount" = @INTEREST (Balance, "Credit Rate", "Borrow Rate", @XRANGE("2011-"->"Sep", "2012"->"Mar"));
ENDFIX

The above calculation is performed across the following multidimensional range specified by XrangeList:

2011->Sep
2011->Oct
2011->Nov
2011->Dec
2012->Jan
2012->Feb
2012->Mar

See Also
● @COMPOUND

@INTERSECT

Returns the intersection of members that appear in two specified lists of members.

Syntax
@INTERSECT(list1, list2)

Parameter Description

list1 The first list of members.
list2 The second list of members.

Notes
This function treats shared members as distinct from their base members; therefore, they do not intersect.

Example
The following examples use the Sample.Basic database.

@INTERSECT(@CHILDREN("100"), @ATTRIBUTE(Can)) returns 100-10 and 100-20.
@INTERSECT(@CHILDREN("Colas"), @CHILDREN("Diet Drinks")); returns an empty set, because shared members are considered distinct from their base members.

FIX (@INTERSECT(@CHILDREN("100-10"), @CHILDREN("Diet Drinks")))

    Sales = 500;

ENDFIX;

@INTERSECT expression evaluates to an empty set; therefore, the FIX statement sets all the values of Sales to 500.

See Also

- @MERGE
- @REMOVE

@IRDESCENDANTS

Returns the specified member and all its descendants, or all descendants down to a specified generation or level, including descendants of any occurrences of the specified member as a shared member.

You can use this member set function as a parameter of another function, where that parameter is a list of members. In the absence of shared members, @IRDESCENDANTS and @IDESCENDANTS have identical behavior.

Syntax

@IRDESCENDANTS (mbrName[, genLevNum | genLevName])

Parameter Description

mbrName Any valid single member name or member combination, or a function that returns a single member or member combination

genLevNum Optional. An integer value that defines the absolute generation or level number down to which to select the members. A positive integer defines a generation number. A value of 0 or a negative integer defines a level number.

genLevName Optional. Level name or generation name down to which to select the members.

Notes

- The order of members in the result list is important to consider when you use the @IRDESCENDANTS member set function with certain forecasting and statistical functions. Essbase generates the list of members in the following sequence: If a shared member is encountered, the above steps are repeated on the member being shared.
  1. The specified member
  2. The nearest descendant of the member
  3. The next nearest descendant of the member, and so on
• You can use **@RDESCENDANTS** to exclude the specified member and include descendants of shared members.

• You can use **@IDESCENDANTS** to include the specified member and exclude descendants of shared members.

• You can use **@DESCENDANTS** to exclude the specified member and descendants of shared members.

**Example**

**Example 1**

Assume a variation of the Sample Basic database such that the Product dimension includes the following members:

<table>
<thead>
<tr>
<th>Product</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100-10</td>
</tr>
<tr>
<td></td>
<td>100-20</td>
</tr>
<tr>
<td></td>
<td>100-30</td>
</tr>
<tr>
<td></td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>200-10</td>
</tr>
<tr>
<td></td>
<td>200-20</td>
</tr>
<tr>
<td></td>
<td>200-30</td>
</tr>
<tr>
<td></td>
<td>200-40</td>
</tr>
<tr>
<td>Diet</td>
<td>100 (Shared Member)</td>
</tr>
<tr>
<td></td>
<td>200 (Shared Member)</td>
</tr>
</tbody>
</table>

Diet has two children "100" and "200" instead of "100-10", "200-20" and "300-30". The members "100" and "200" are shared members.

@IRDESCENDANTS(Diet)

Returns the members: Diet, 100, 100-10, 100-20, 100-30, 200, 200-10, 200-20, 200-30, 200-40 (in that order).

**Example 2**

@IRDESCENDANTS(East)

Returns East, New York, Massachusetts, Florida, Connecticut, and New Hampshire (in that order) and is exactly the same as @IDESCENDANTS(East).

**See Also**

- **@RDESCENDANTS**
- **@IDESCENDANTS**
- **@DESCENDANTS**
- **@ISDESC**
- **@ICHILDREN**
- **@ISIBLINGS**
- **@IANCESTORS**
@IRR

Calculates the Internal Rate of Return on a cash flow that must contain at least one investment (negative) and one income (positive) value.

Also see @IRREX.

Syntax

@IRR (cashflowMbr, discountFlag[, XrangeList])

Parameter    Description

cashflowMbr  Single member specification.

discountFlag Member specification, variable name, or numeric expression providing a constant value of either 1 or 0. 

discountFlag indicates whether the function should discount from the first period. 1 means do not discount from the first period.

XrangeList   Optional parameter specifying the range over which the rate is calculated. If a range is not specified, 

Essbase uses the level 0 members from the dimension tagged as Time. 

Can be a valid member name, a comma-delimited list of member names, cross dimensional members, or a return value from a member set function or range function (including @XRANGE). 

For more information about rangeList and XrangeList, see Range List Parameters in the topic “Range and Financial Functions” on page 35.

Notes

- Financial functions never return a value; rather, they calculate a series of values internally based on the range specified.
- Essbase returns #MISSING from calculator function @IRR if all cash flows are zero.
- @IRR provides an initial guess of 0.07. This value cannot be changed, in contrast to similar functions in Excel. Because results depend in part on the initial guess, any difference in the initial guess may result in a different result. Even if both Excel and Essbase start with the same initial guess, results may differ. This is because there may be more than one solution to an equation, and the algorithm stops looking when it finds a valid solution. Which solution is found first may differ based on the algorithm. Although leading or trailing zeros do not matter in a mathematical context, the algorithm may behave differently and find a different root because of the presence of leading or trailing zeros. If you need identical solutions regardless of the presence of leading or trailing zeros, you may wish to create a custom-defined function to handle these issues.

Example

This example calculates the Internal Rate of Return (Return) on a cash flow (Cash).

Return = @IRR(Cash,0,FY1998:FY2000,FY2001:FY2003);

This example produces the following report:

<table>
<thead>
<tr>
<th>Cash</th>
<th>1,000</th>
<th>500</th>
<th>600</th>
<th>500</th>
<th>#MISSING</th>
<th>#MISSING</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The following example assumes a Year dimension is added to Sample Basic. It calculates the return using a multidimensional range.

```plaintext
FIX ("100-10", "New York")
"Return" = @IRR(Cash, 0, @XRANGE("2011"->"Sep", "2012"->"Mar"));
ENDFIX
```

The above calculation is performed across the following multidimensional range specified by XrangeList:

- 2011->Sep
- 2011->Oct
- 2011->Nov
- 2011->Dec
- 2012->Jan
- 2012->Feb
- 2012->Mar

---

@IRREX

Calculates the Internal Rate of Return on a cash flow that must contain at least one investment (negative) and one income (positive) value. Includes functionality to configure the initial guess and the number of iterations the algorithm can make.

@IRREX is an extension of @IRR, in which the initial guess of 0.07 cannot be changed.

**Syntax**

```plaintext
@IRREX (cashflowMbr, discountFlag[, [guess], [number_of_iteration], [STORECALCVALUE | STOREMISSING], [XrangeList])
```

**Parameter** | **Description**
--- | ---
`cashflowMbr` | Single member specification.
`discountFlag` | Member specification, variable name, or numeric expression providing a constant value of either 1 or 0. Indicates whether the function should discount from the first period. 0 means discount from the first period, and 1 means do not discount from the first period.
`guess` | Optional. The starting guess for estimated IRR. If not specified, the default guess of 0.07 is used.
`number_of_iteration` | Optional. The number of iterations the Newton Raphson algorithm will loop through. (Newton Raphson is the mathematical method used for finding the IRR using the IRREX function.) The default value is 300.
`STORECALCVALUE | STOREMISSING` | Optional. STORECALCVALUE tells Essbase to always store the calculated value even when the IRR calculation returns ‘false’ results. This is the default.
`[XrangeList]` | Optional. STOREMISSING tells Essbase to store #MISSING value when the IRR calculation returns false results after the specified number of iterations.
Parameter | Description
--- | ---
XrangeList | Optional parameter specifying the range over which the rate is calculated. If a range is not specified, Essbase uses the level 0 members from the dimension tagged as Time.

Can be a valid member name, a comma-delimited list of member names, cross dimensional members, or a return value from a member set function or range function (including `@XRANGE`).

For more information about `rangeList` and `XrangeList`, see Range List Parameters in the topic “Range and Financial Functions” on page 35.

Notes

- Financial functions never return a value; rather, they calculate a series of values internally based on the range specified.
- Essbase returns #MISSING from calculator function @IRREX if all cash flows are zero.
- @IRREX provides functionality to configure the initial guess and the number of iterations the algorithm can make. Even if both Essbase and similar functions in Excel start with the same initial guess, results may differ. This is because there may be more than one solution to an equation, and the algorithm stops looking when it finds a valid solution. Which solution is found first may differ based on the algorithm. Although leading or trailing zeros do not matter in a mathematical context, the algorithm may behave differently and find a different root because of the presence of leading or trailing zeros. If you need identical solutions regardless of the presence of leading or trailing zeros, you may wish to create a custom-defined function to handle these issues.

Example

```
@IRREX(IRROut1,0,0.02, 500,STOREMISSING,"2006":"2009");
```

The starting guess is 0.02 (2%). @IRREX iterates 500 times, and stores #MISSING if the solution does not converge.

```
@IRREX(IRROut1,0, , ,STOREMISSING,"2006":"2009");
```

The starting guess and iteration values are omitted (NULL). Note: The commas (_) are required even when passing null arguments.

The following example assumes a Year dimension is added to Sample Basic. The rate is calculated using a multidimensional range.

```
FIX (*100-10", "New York")
Return = @IRREX(IRROut1,0, , ,STOREMISSING, @XRANGE("2011->"Sep","2012->"Mar");
ENDFIX
```

The above calculation is performed across the following multidimensional range specified by `XrangeList`:

- 2011->Sep
- 2011->Oct
- 2011->Nov
- 2011->Dec
- 2012->Jan

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@IRSIBLINGS

Returns the specified member and its right siblings.

Syntax

@IRSIBLINGS (mbrName)

Parameter Description

mbrName Any valid single member name or member combination, or a function that returns a single member or member combination.

Notes

This function returns the specified member and all of the right siblings of the specified member. Right siblings are children that share the same parent as the member and that follow the member in the database outline.

This member set function can be used as a parameter of another function, where that parameter is a list of members.

Essbase sorts the generated list of members starting with the specified member, followed by the right siblings of the member (that is, siblings appearing below the member in the database outline) in ascending order. Using Sample Basic as an example, if you specify 200-20 for mbrName, Essbase returns 200-20, 200-30, 200-40 (in that order). This order is important to consider when you use the @IRSIBLINGS member set function with certain forecasting and statistical functions.

Example

In the Sample Basic database:

@IRSIBLINGS(Florida)


@IRSIBLINGS(Qtr3)

Returns Qtr3 and Qtr4 (in that order). Qtr4 appears below Qtr3 in the Sample Basic outline.

See Also

- @IRSIBLINGS

@ISACCTYPE

Returns TRUE if the current member has the associated accounts tag.
Syntax

@ISACCTYPE (tag)

Parameter  Description

tag  Valid account tag defined in the current database. Any of these values may be used: First, Last, Average, Expense, and Twopass. To ensure that the tag is resolved as a string rather than a member name, enclose the tag in quotation marks.

Example

The following example is based on the Sample Basic database. For members with the Expense accounts tag, the formula uses the @ABS function to calculate Budget as the absolute value of Budget.

IF (@ISACCTYPE("Expense"))
    Budget = @ABS(Budget);
ENDIF;

@ISANCEST

Returns TRUE if the current member is an ancestor of the specified member. This function excludes the specified member.

Syntax

@ISANCEST (mbrName)

Parameter  Description

mbrName  Any valid single member name or member combination, or a function that returns a single member or member combination.

Example

In the Sample Basic database:

@ISANCEST(California)

Returns TRUE for Market, West

@ISANCEST(West)

Returns FALSE for California, West, East

See Also

- @ISANCEST

@ISATTRIBUTE

Returns TRUE if the current member under calculation matches the attribute or varying attribute name specified in attMbrName.
Syntax
@ISATTRIBUTE (attMbrName)

Parameter Description
attMbrName  Single attribute member name or member combination.

Notes
- This function provides the same functionality as @IsMbr (@Attribute(attMbrName)), but is faster.
- You may have duplicate Boolean, date, and numeric attribute member names in your outline. For example, 12 can be the attribute value for the size (in ounces) of a product as well as the value for the number of packing units for a product. To distinguish duplicate member names, specify the full attribute member name (for example, @ISATTRIBUTE(Ounces_12)).

Example
Consider the following calculation script, based on the Sample Basic database:

```plaintext
/* To increase the marketing budget for markets with large populations */
Marketing (IF (@ISATTRIBUTE(Large))
   Marketing = Marketing * 1.1;
ENDIF);
```

See Also
- @ISMBRWITHATTR
- SET SCAPERSPECTIVE

@ISCHILD
Returns TRUE if the current member is a child of the specified member. This function excludes the specified member.

Syntax
@ISCHILD (mbrName)

Parameter Description
mbrName  Any valid single member name or member combination, or a function that returns a single member or member combination.

Example
In the Sample Basic database:

```plaintext
@ISCHILD(East)
```

Returns TRUE for New York, Florida, Connecticut
@ISCHILD(Margin)
Returns FALSE for Measures, Profit, Margin

See Also
• @ISICHILD

@ISDESC

Returns TRUE if the current member is a descendant of the specified member. This function excludes the specified member.

Syntax
@ISDESC (mbrName)

Parameter Description
mbrName Any valid single member name or member combination, or a function that returns a single member or member combination.

Example
In the Sample Basic database:
@ISDESC(Market)
Returns TRUE for West, California, Oregon, Washington, Utah, Nevada
@ISDESC(Profit)
Returns FALSE for Measures, Profit, Profit %

@ISGEN

Returns TRUE if the current member of the specified dimension is in the specified generation.

Syntax
@ISGEN (dimName, genName | genNum)

Parameter Description
dimName The name of a dimension.
genName or genNum Generation name specification, or a non-negative number that defines the number of a generation.

Example
In the Sample Basic database:
@ISGEN(Measures, 3)
Returns TRUE if the current member is Margin, Total Inventory, or Margin %, because these members are all in generation 3 of the Measures dimension.

@ISGEN(Market,2)

Returns FALSE if the current member is New York or Market, because these members are not in generation 2 of the Market dimension.

See Also

- @ISSAMEGEN
- @ISLEV

@ISIANCEST

Returns TRUE if the current member is the specified member or an ancestor of the specified member. This function includes the specified member.

Syntax

@ISIANCEST (mbrName)

Parameter Description

mbrName  Any valid single member name or member combination, or a function that returns a single member or member combination.

Example

In the Sample Basic database:

@ISIANCEST(California)

Returns TRUE for Market, West, and California. California is the specified member, and West and Market are ancestors of California.

@ISIANCEST(Qtr1)

Returns FALSE for Jan, Feb, Mar, Qtr2. None of these members is the specified member (Qtr1) or an ancestor of Qtr1.

See Also

- @ISIANCEST

@ISIBLINGS

Returns the specified member and all siblings of that member. This member set function can be used as a parameter of another function, where that parameter is a list of members.

Syntax

@ISIBLINGS (mbrName)
Parameter Description

mbrName Any valid single member name or member combination, or a function that returns a single member or member combination.

Notes
Essbase sorts the generated list of members in ascending order. Using Sample Basic as an example, if you specify 200-30 for mbrName, Essbase returns 200-10, 200-20, 200-30, 200-40 (in that order). This order is important to consider when you use the @ISIBLINGS member set function with certain forecasting and statistical functions.

Example
In the Sample Basic database:
@ISIBLINGS(California)
returns California, Oregon, Washington, Utah, and Nevada (in that order), because these members are siblings of California.
@ISIBLINGS(Qtr2)
returns Qtr1, Qtr2, Qtr3, and Qtr4 (in that order), because these members are siblings of Qtr2.

See Also
- @SIBLINGS
- @SHIFTSIBLING
- @NEXTSIBLING
- @PREVSIBLING

@ISICHILD
Returns TRUE if the current member is the specified member or a child of the specified member.

Syntax
@ISICHILD (mbrName)

Parameter Description

mbrName Any valid single member name or member combination, or a function that returns a single member or member combination.

Example
In the Sample Basic database:
@ISICHILD(South)
Returns TRUE for Texas, Oklahoma, Louisiana, New Mexico, South
@ISICHILD(Profit)
Returns FALSE for Measures, Sales
See Also
● @ISCHILD

@ISIDESC
Returns TRUE if the current member is the specified member or a descendant of the specified member.

Syntax
@ISIDESC (mbrName)

Parameter Description
mbrName Any valid single member name or member combination, or a function that returns a single member or member combination.

Example
In the Sample Basic database:
@ISIDESC(South)
Returns TRUE for Texas, Oklahoma, Louisiana, New Mexico, South
@ISIDESC(West)
Returns FALSE for Market, East, South, and Central

See Also
● @ISDESC

@ISIPARENT
Returns TRUE if the current member is the specified member or the parent of the specified member.

Syntax
@ISIPARENT (mbrName)

Parameter Description
mbrName Any valid single member name or member combination, or a function that returns a single member or member combination.

Example
In the Sample Basic database:
@ISIPARENT(Qtr1)
Returns TRUE for Year, Qtr1.
@ISIPARENT(Margin)
@ISISIBLING

Returns TRUE if the current member is the specified member or a sibling of the specified member.

**Syntax**

@ISISIBLING (mbrName)

**Parameter Description**

- **mbrName**: Any valid single member name or member combination, or a function that returns a single member or member combination.

**Example**

In the Sample Basic database:

@ISISIBLING(Qtr2)

Returns TRUE for Qtr1, Qtr2, Qtr3, and Qtr4.

@ISISIBLING(Actual)

Returns FALSE for Scenario.

**See Also**

- @ISSIBLING

@ISLEV

Returns TRUE if the current member of the specified dimension is in the specified level.

**Syntax**

@ISLEV (dimName, levName | levNum)

**Parameter Description**

- **dimName**: Name of a dimension.
- **levName | levNum**: A level name or an integer value that defines the number of a level. A value of 0 or a negative integer defines a level number.

**Example**

In the Sample Basic database:

@ISLEV(Market, 0)
Returns TRUE if the current member of Market is New York, California, Texas, or Illinois.

@ISLEV(Year,1)

Returns FALSE if the current member of Year is Jan, Feb, or Mar.

See Also
- @ISSAMELEV
- @ISGEN

@ISMBR

Retuns TRUE if the current member matches any one of the specified members.

Syntax

@ISMBR (mbrName | rangeList | mbrList)

Parameter Description

mbrName  Any valid single member name or member combination, or a function that returns a single member or member combination.

rangeList  A valid member name, a comma-delimited list of member names, member set functions, and range functions.

mbrList  A comma-delimited list of members.

Notes

If a cross-dimensional (->) member is included, that term evaluates as TRUE only if all the components of the cross-dimensional member match the current member list.

If any term returns TRUE, the @ISMBR function returns TRUE.

Example

In the Sample Basic database:

@ISMBR("New York"; "New Hampshire")

Returns TRUE for Florida.

@ISMBR(@CHILDREN(Qtr1))

Returns FALSE for Qtr2, Year.

@ISMBRUDA

Returns TRUE if the specified user-defined attribute (UDA) exists for the specified member at calculation time.

Syntax

@ISMBRUDA(mbrName, UDAStr)
Parameter Description

mbrName Valid member name or member combination, or a function that returns a member or member combination.

UDAStr User-defined attribute (UDA) name string.

Notes
If a nonexistent member name is specified, calculation script verification fails with an error code.

Example
The following examples use the Sample.Basic database.

@ISMBRUDA ("New York", "Major Market") and @ISMBRUDA([Market].[New York], "Major Market") both return true.

@ISMBRUDA("New York", "Small Market") AND @ISCHILD("Market")

Because “New York” is not a small market, the first condition returns false.

IF(@ISMBRUDA("New York")

Because UDAstr is omitted, the verification fails.

@ISMBRWITHATTR

Returns TRUE if the current member belongs to the list of base members that are associated with an attribute that satisfies the conditions you specify.

Syntax
@ISMBRWITHATTR (dimName, "operator", value)

Parameter Description

dimName Single varying attribute dimension name.

operator Operator specification, which must be enclosed in quotation marks ("").

value A value that, in combination with the operator, defines the condition that must be met. The value can be a varying attribute member specification, a constant, or a date-format function (that is, @TODATE).

Notes
- This function provides the same functionality as @IsMbr(@WithAttr()), but is faster.
- This function is a superset of the @ISATTRIBUTE function. The following two formulas return the same member set:

  @ISATTRIBUTE(Bottle)
  @ISMBRWITHATTR("Pkg Type","="",Bottle)

However, the following formula can be performed only with @ISMBRWITHATTR (not with @ISATTRIBUTE) because you specify a condition:

@ISMBRWITHATTR(Ounces,">","16")
If you specify a date attribute with the @ISMBRWITHATTR function, you must use the @TODATE function in the string parameter to convert the date string to a number. For more information, see the topic for the @TODATE function.

The following operators are supported:

<table>
<thead>
<tr>
<th>Operator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;</td>
<td>Greater than</td>
</tr>
<tr>
<td>&gt;=</td>
<td>Greater than or equal to</td>
</tr>
<tr>
<td>&lt;</td>
<td>Less than</td>
</tr>
<tr>
<td>&lt;=</td>
<td>Less than or equal to</td>
</tr>
<tr>
<td>= =</td>
<td>Equal to</td>
</tr>
<tr>
<td>&lt;&gt; or !=</td>
<td>Not equal to</td>
</tr>
<tr>
<td>IN</td>
<td>In</td>
</tr>
</tbody>
</table>

When using Boolean attributes with @ISMBRWITHATTR, use only the actual Boolean attribute member name, or use 1 (for True or Yes) or 0 (for False or No). You cannot use True/Yes and False/No interchangeably.

See Also
- @WITHATTR
- @ISATTRIBUTE
- SET SCAPERSPECTIVE
- @ATTRIBUTE
- @ATTRIBUTEVAL
- @TODATE

@ISPARENT

Returns TRUE if the current member is the parent of the specified member. This function excludes the specified member.

Syntax

@ISPARENT (mbrName)

Parameter Description

mbrName  Any valid single member name or member combination, or a function that returns a single member or member combination.

Example

In the Sample Basic database:

@ISPARENT("New York")
Returns TRUE for East.
@ISPARENT(Profit)

Returns FALSE for Margin.

**See Also**
- @ISIPARENT

---

**@ISRANGENONEMPTY**

Tests for the existence of data values to improve performance of complex dense processing. If this function returns true, values exist for the specified range. If it returns false, the range is empty.

**Syntax**

@ISRANGENONEMPTY(ZEROASDATA|ZEROASMISSG, mbrList)

**Parameter**

**ZEROASDATA**
Zero (0) values are treated as data.

**ZEROASMISSG**
Zero (0) values are treated as #MISSING.

**mbrList**
A valid member name, a comma-delimited list of member names, or a member set function that returns a list of members from the same dimension. If you use the range operator or a function, the order of mbrList is dictated by the database outline order.

**Notes**

The definition of “emptiness” depends on your use of the first parameter, which describes how zero (0) values are treated.

**Example**

The following examples use the Sample.Basic database.

**Example 1**

@ISRANGENONEMPTY(ZEROASDATA, Sales->Cola)

Because the intersection of Cola and Sales contains non-#MISSING values, the condition returns TRUE.

**Example 2**

//ESS_LOCALE English_UnitedStates.Latin1@Binary
FIX (Budget)
  Sales (IF(@ISRANGENONEMPTY(ZEROASMISSG, Jan:Mar))
    Sales = 500;
  ENDFIX;)
ENDFIX

134
If there is any value except #MISSING in the range Jan:Mar in the database, the script returns TRUE, and all the Sales->Budget values in the database are changed to 500.

@ISSAMEGEN

Returns TRUE if the current member is the same generation as the specified member.

Syntax

@ISSAMEGEN (mbrName)

Parameter Description

mbrName Any valid single member name or member combination, or a function that returns a single member or member combination.

Example

In the Sample Basic database:

@ISSAMEGEN(West)

Returns TRUE for East.

@ISSAMEGEN(West)

Returns FALSE for California.

See Also

- @ISGEN
- @GEN
- @ISSAMELEV

@ISSAMELEV

Returns TRUE if the current member is the same level as the specified member.

Syntax

@ISSAMELEV (mbrName)

Parameter Description

mbrName Any valid single member name or member combination, or a function that returns a single member or member combination.

Example

In the Sample Basic database:

@ISSAMELEV(Sales)

Returns FALSE for Total Expenses.

@ISSAMELEV(Jan)
Returns TRUE for Apr, Jul, Oct.

See Also
- @ISLEV
- @LEV
- @ISSAMEGEN

@ISSIBLING

Returns TRUE if the current member is a sibling of the specified member. This function excludes the specified member.

Syntax
@ISSIBLING (mbrName)

Parameter Description
mbrName Any valid single member name or member combination, or a function that returns a single member or member combination.

Example
In the Sample Basic database:
@ISSIBLING("New York")

Returns TRUE for Florida, New Hampshire.
@ISSIBLING(Sales)

Returns FALSE for Margin.

See Also
- @ISISIBLING

@ISUDA

Returns TRUE if the specified user-defined attribute (UDA) exists for the current member of the specified dimension at the time of the calculation.

Syntax
@ISUDA (dimName, UDAStr)

Parameter Description
dimName Dimension name specification that contains the member you are checking.
UDAStr User-defined attribute (UDA) name string.
Notes

- Essbase checks to see if the UDA is defined for the current member of the specified dimension at calculation time. It returns TRUE if the UDA is defined, FALSE if not.
- For more information about UDAs, see the *Oracle Essbase Database Administrator’s Guide*.

Example

The following example is based on the Sample Basic database. The Market dimension has members that indicate a geographic location. Some members represent major markets. The example below calculates the database and stores a budget amount for the upcoming year based on the actual amount from this year. A different sales growth rate is applied to major markets than to small markets.

```plaintext
FIX (Budget)
  Sales (IF(@ISUDA(Market,"Major Market"))
    Sales = Sales->Actual * 1.2;
  ELSE
    Sales = Sales->Actual * 1.1;
  ENDIF;)
ENDFIX
```

The preceding example tests to see if the current member of Market has a UDA called "Major Market". If it does, the Budget -> Sales value is set to 120% of Actual -> Sales. If it does not, the Budget -> Sales value is set to 110% of Actual -> Sales.

See Also

- @ISMBRUDA
- @UDA

@LANCESTORS

Returns all ancestors of the members in the specified member list or all ancestors up to a specified generation or level. This function excludes the specified members.

You can use the @LANCESTORS function as a parameter of another function, where the function requires a list of members.

Syntax

```plaintext
@LANCESTORS ((memberSetFunction) [,genLevNum])
```
### Parameter Description

**memberSetFunction**  A member set function that returns a list of members.

How the @LANCESTORS function is used determines which member set functions are allowed. Follow these guidelines:

- If the @LANCESTORS function is used alone (not within a FIX statement), you must use the @LIST function and specify member names. For example:
  
  ```
  @LIST (mbr1, mbr2, 
  ...
  )
  ```

- If the @LANCESTORS function is used within a FIX statement, you can use member set functions such as @UDA and @ATTRIBUTE. For example:
  
  ```
  @UDA (dimName, uda) 
  @ATTRIBUTE (attMbrName)
  ```

In this case, you can choose whether to use the @LIST function. For example, both of the following statements are valid, and the statements return the same results.

Example using only @ATTRIBUTE:

```
FIX (@LANCESTORS (@ATTRIBUTE (Caffeinated_True), @ATTRIBUTE (Ounces_12), "200-40"))
...
ENDFIX;
```

Example using @LIST and @ATTRIBUTE:

```
FIX (@LANCESTORS (@LIST (@ATTRIBUTE (Caffeinated_True), @ATTRIBUTE (Ounces_12), "200-40")))
...
ENDFIX;
```

---

**genLevNum**  Optional. The integer value that defines the absolute generation or level number up to which to select members. A positive integer defines a generation number. A value of 0 or a negative integer defines a level number.

---

### Example

All examples are from the Sample.Basic database.

```
@LANCESTORS (@LIST ("100-10", "200-20"), 2)
```

Returns 100 (the ancestor of 100-10); and 200 (the ancestor of 200-20). Excludes Product because it is at generation 1.

```
@LANCESTORS (@LIST ("100", "100-10") )
```

Returns Product (the ancestor of 100); and 100 (the ancestor of 100-10). The result does not contain duplicate members.

```
@LANCESTORS (@LIST ("100", "Product", "200") )
```

Returns Product (the ancestor of 100 and 200). The result does not contain duplicate members.

```
FIX (@LANCESTORS (@UDA (Market, "New Market"), 2)
...
ENDFIX;
```
Returns West, South, and Central (the ancestors, to generation 2, for the members in the Market dimension that are associated with the New Market attribute).

```plaintext
FIX(@ANCESTORS(@ATTRIBUTE(Caffeinated_True),@ATTRIBUTE(Ounces_12),"200-40"))
... ENDFIX;
```

Returns 100, 200, 300, and Product (the ancestors of 100-10, 100-20, 200-10, 300-30—caffeinated, 12-ounce drinks, and 200-40).

**See Also**

- `@ILANCESTORS`
- `@ANCESTORS`
- `@IANCESTORS`

**@LDESCENDANTS**

Returns all descendants of the members in the specified member list or all descendents down to the specified generation or level. This function excludes the specified members.

You can use the `@LDESCENDANTS` function as a parameter of another function, where the function requires a list of members.

**Syntax**

```plaintext
@LDESCENDANTS ((memberSetFunction) [, genLevNum])
```
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>memberSetFunction</td>
<td>A member set function that returns a list of members. How the @LDESCENDANTS function is used determines which member set functions are allowed. Follow these guidelines:</td>
</tr>
<tr>
<td></td>
<td>● If the @LDESCENDANTS function is used alone (not within a FIX statement), you must use the @LIST function and specify member names. For example:</td>
</tr>
<tr>
<td></td>
<td>@LIST (mbr1, mbr2, ...)</td>
</tr>
<tr>
<td></td>
<td>● If the @LDESCENDANTS function is used within a FIX statement, you can use member set functions such as @UDA and @ATTRIBUTE. For example:</td>
</tr>
<tr>
<td></td>
<td>@UDA (dimName, uda) @ATTRIBUTE (attMbrName)</td>
</tr>
<tr>
<td></td>
<td>In this case, you can choose whether to use the @LIST function. For example, both of the following statements are valid, and the statements return the same results.</td>
</tr>
<tr>
<td></td>
<td>Example using only @ATTRIBUTE:</td>
</tr>
<tr>
<td></td>
<td>FIX ( @LDESCENDANTS (@ATTRIBUTE (Caffeinated_True), @ATTRIBUTE (Ounces_12), &quot;200-40&quot;) )</td>
</tr>
<tr>
<td></td>
<td>...</td>
</tr>
<tr>
<td></td>
<td>ENDFIX;</td>
</tr>
<tr>
<td></td>
<td>Example using @LIST and @ATTRIBUTE:</td>
</tr>
<tr>
<td></td>
<td>FIX ( @LDESCENDANTS (@LIST (@ATTRIBUTE (Caffeinated_True), @ATTRIBUTE (Ounces_12), &quot;200-40&quot;) ) )</td>
</tr>
<tr>
<td></td>
<td>...</td>
</tr>
<tr>
<td></td>
<td>ENDFIX;</td>
</tr>
<tr>
<td></td>
<td><strong>Caution!</strong> All members of the specified member list must be from the same dimension.</td>
</tr>
<tr>
<td>genLevNum</td>
<td>Optional. The integer value that defines the absolute generation or level number up to which to select members. A positive integer defines a generation number. A value of 0 or a negative integer defines a level number.</td>
</tr>
</tbody>
</table>

**Example**

All examples are from the Sample.Basic database.

@LDESCENDANTS (@LIST ("100", "200", "300"))

Returns 100-10, 100-20, 100-30 (the descendants of 100); 200-10, 200-20, 200-30, 200-40 (the descendants of 200); and 300-10, 300-20, 300-30 (the descendants of 300).

@LDESCENDANTS (@LIST ("Market"), -1)

Returns East, West, South, and Central (the descendants of the specified member Market to level 1).

FIX (@LDESCENDANTS (@UDA (Market, "Major Market")))

... ENDFIX;
Returns New York, Massachusetts, Florida, Connecticut, and New Hampshire (the descendants of the specified member East); and Illinois, Ohio, Wisconsin, Missouri, Iowa, and Colorado (the descendants of the specified member Central). California and Texas (specified members) are excluded because they do not have descendants.

```FIX
(@LDESCENDANTS(@ATTRIBUTE(Caffeinated_True),@ATTRIBUTE(Ounces_12),"200–40")... ENDFIX;
```

Returns an empty list as none of the specified members (100-10, 100-20, 200-10, 300-30, which are caffeinated, 12-ounce drinks, and 200-40) have descendants.

**See Also**
- `@LDESCENDANTS`
- `@DESCENDANTS`

### @LEV

Returns the level number of the specified member.

**Syntax**

`@LEV(mbrName)`

**Parameter Description**

- **mbrName**: Any valid single member name or member combination, or a function that returns a single member or member combination.

**Example**

In the Sample Basic database:

<table>
<thead>
<tr>
<th>Function</th>
<th>Level Returned</th>
</tr>
</thead>
<tbody>
<tr>
<td>@LEV(Margin)</td>
<td>1</td>
</tr>
<tr>
<td>@LEV(&quot;New York&quot;)</td>
<td>0</td>
</tr>
</tbody>
</table>

**See Also**
- `@CURLEV`
- `@GEN`

### @LEVMBRS

Returns all members with the specified level number or level name in the specified dimension.

**Syntax**

`@LEVMBRS(dimName, levName|levNum)`
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>dimName</td>
<td>Dimension name specification.</td>
</tr>
<tr>
<td>levName</td>
<td>levNum</td>
</tr>
</tbody>
</table>

**Notes**

- If you specify a name for the `levName` parameter, Essbase looks for a level with that name in the specified dimension.
- If you specify a number for the `levName` parameter (for example, 2), Essbase first looks for a level with a number string name. If no level name exists with that name, Essbase checks to see if the parameter is a valid level number.
- If you specify a temporary variable for the `levName` parameter, Essbase does not recognize the value of the variable. It looks in the outline for a level name with the same name as the temporary variable.
- For more information about levels and defining level names, see the Oracle Essbase Database Administrator’s Guide.
- Essbase sorts the generated list of members in ascending order. Using Sample Basic as an example, if you specify `@LEVMBRS(Product,1)`, Essbase returns 100, 200, 300, 400, Diet (in that order). This order is important to consider when you use the `@LEVMBRS` member set function with certain forecasting and statistical functions.
- If you use a negative number for the level number, no syntax error is noted, but the calculation will fail with an error message.

**Example**

In the Sample Basic database:

```plaintext
@LEVMBRS(Measures,"Profit and Loss")
@LEVMBRS(Measures,0)
```

both return the following members if level 0 of the Measures dimension is named Profit and Loss:

Sales, COGS, Marketing, Payroll, Misc, Opening Inventory, Additions, Ending Inventory, Margin %, Profit %, and Profit per Ounce (in that order).

```plaintext
@LEVMBRS(Scenario,0)
```

Returns Actual, Budget, Variance, and Variance %.

The following example restricts the calculation to members with the combination Budget and one of the members of the Market dimension with a level name of "State".

```plaintext
FIX (Budget,@LEVMBRS(Market,State))
   CALC DIM (Year,Measures);
ENDFIX
```

**See Also**

- `@GENMBRS`
@LIKE

Returns a member set of member names that match the specified pattern.

This function can be used on unique and duplicate-name outlines.

Syntax

@LIKE(pattern, topMbrinHierarchy, [escChar])

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| pattern         | The character pattern with which to compare to members in the outline, including a single wildcard character:  
|                 |   - %: The percentage sign allows matching to a string of any length (including zero length).  
|                 |   - _: The underscore allows matching on a single character in a member name.  
| topMbrinHierarchy | A fully qualified member name on which to base the member search. The specified member and its aliases, and all of its descendants, are included in the search.  
|                 | To search the entire outline, provide an empty string (""") for this parameter. For example,  
|                 | @LIKE("100\%", "").  
| escChar         | Optional: A one-byte-length escape character to use if the wildcard character exists in member names.  
|                 | If you do not specify an escape character, a backslash (\) is assumed.  

Example

The following examples are based on the following duplicate-name outline:

```
Product
  100
    100-10
    100-10-10
    100-20
    100-30
  200
    200-10
    200-20
    200-30
  300
    300-10
    300-20
Diet
  100-10
    100-10-11
    200-10
    300-10
Bottle
  200-10
  300-20
```

@LIKE("100\%", "Product")

Returns members 100, 100-10, 100-20, and 100-30.

@LIKE("30\_", "Product")
Returns member 300.

@LIKE("200\_", "Product", "\")

If member 200 has children named 200_10 (note the underscore, _), 200-20 (note the dash, -), 200_30 and 200-40, returns those members whose name contains an underscore: 200_10 and 200_30.

See Also
- @BETWEEN
- @EQUAL
- @EXPAND
- @MBRCOMPARE
- @MBRPARENT
- @NOTEQUAL

@LIST

Creates and distinguishes lists that are processed by functions that require list arguments. @LIST can be used to create explists, member lists, or rangelists. @LIST treats a collection of parameters as one entity.

Syntax

@LIST (argument1, argument2, ..., argumentN)

Parameter | Description
---|---
argument1, argument2, ... | The list of arguments that are collected and treated as one argument so they can be processed by the parent function. Arguments can be member names, member combinations, member set functions, range functions, and numeric expressions.

Notes

@LIST does not check for or eliminate duplicates.

Example

The following example is based on the Sample Basic database. Assume that the Year dimension contains an additional member, Sales Correl. @LIST is used with the @CORRELATION function to determine the sales relationship between a product’s two peak periods (Jan through Mar and Apr through May):

```plaintext
FIX(Sales)
"Sales Correl" = @CORRELATION(SKIPNONE,
   @LIST(Jan,Feb,Mar),@LIST(Apr,May,Jun));
ENDFIX
```

This example produces the following report:

<table>
<thead>
<tr>
<th>Colas</th>
<th>Actual</th>
<th>New York</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jan</td>
<td>678</td>
<td></td>
</tr>
</tbody>
</table>
Feb  645
Mar  675
Apr  712
May  756
Jun  890

Sales Correl  0.200368468

@LN

Returns the natural logarithm (base $e$) of the specified expression.

**Syntax**

@LN (expression)

**Parameter Description**

expression  Single member specification, member combination, or other numeric expression. If less than or equal to 0, Essbase returns #MISSING.

**Example**

The following example is based on a variation of Sample Basic:

```
LN_Sales = @LN(Sales);
```

This example produces the following result:

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>100</td>
<td>110</td>
<td>120</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>LN_Sales</td>
<td>4.65052</td>
<td>4.70048</td>
<td>4.78749</td>
<td></td>
<td>5.34710</td>
</tr>
</tbody>
</table>

See Also

- @LOG10
- @LOG
- @EXP

@LOG

Returns the result of a logarithm calculation where you can specify both the base to use and the expression to calculate.

**Syntax**

@LOG (expression [, base])

**Parameter Description**

expression  Single member specification, variable name, function, or other numeric expression. If less than or equal to 0, Essbase returns #MISSING.
Parameter Description

base  Optional. Single member specification, member combination, or numeric expression.
  - If the base value is #MISSING, less than or equal to 0, or close to 1, Essbase returns #MISSING.
  - If the base is omitted, Essbase calculates the base-10 logarithm of the specified expression. @LOG(Sales) is equivalent to @LOG10(Sales).

Notes

The @LOG function returns the logarithm of expression calculated using the specified base. @LOG (x,b) is equivalent to log_b(x).

Example

The following example is based on a variation of Sample Basic:

LOG2_Sales = @LOG(Sales, 2);

This example produces the following result:

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>100</td>
<td>#MISSING</td>
<td>120</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>LOG2_Sales</td>
<td>6.64386</td>
<td>#MISSING</td>
<td>6.90689</td>
<td>.</td>
<td>.</td>
</tr>
</tbody>
</table>

See Also

- @LN
- @LOG10

@LOG10

Returns the base-10 logarithm of the specified expression.

Syntax

@LOG10 (expression)

Parameter Description

expression  Single member specification, variable name, function, or other numeric expression. If less than or equal to 0, Essbase returns #MISSING.

Example

The following example is based on a variation of Sample Basic:

LOG10_Sales = @LOG10(Sales);

This example produces the following result:

<table>
<thead>
<tr>
<th>Product</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>East</td>
<td>West</td>
</tr>
<tr>
<td>Sales</td>
<td>87398</td>
</tr>
<tr>
<td>LOG10_Sales</td>
<td>4.94150</td>
</tr>
</tbody>
</table>
@LSIBLINGS

Returns the left siblings of the specified member.

Syntax

@LSIBLINGS (mbrName)

Parameter  Description

mbrName  Any valid single member name or member combination, or a function that returns a single member or member combination.

Notes

This function returns the left siblings of the specified member. Left siblings are children that share the same parent as the member and that precede the member in the database outline. This function excludes the specified member.

This member set function can be used as a parameter of another function, where that parameter is a list of members.

Essbase sorts the generated list of left siblings in descending order. Using Sample Basic as an example, if you specify 200-30 for mbrName, Essbase returns 200-20, 200-10 (in that order). This order is important to consider when you use the @LSIBLINGS member set function with certain forecasting and statistical functions.

Example

In the Sample Basic database:

@LSIBLINGS(Qtr4)

Returns Qtr3, Qtr2, and Qtr1 (in that order). These members appear above Qtr4 in the Sample Basic outline.

@LSIBLINGS(Utah)

Returns Washington, Oregon, and California (in that order). These members appear above Utah in the Sample Basic outline.

See Also

- @ILSIBLINGS
- @RSIBLINGS
- @NEXTSIBLING
- @PREVSIBLING
- @SHIFTSIBLING
@MATCH

Performs wildcard member selections.

Syntax

@MATCH (mbrName|genName|levName, "pattern")

Parameter Description

mbrName  The default or user-defined name of the member on which to base the search. Essbase searches the member names and alias names of the specified member and its descendants.

genName  The default or user-defined name of the generation to search. Essbase searches all member names and member alias names in the generation.

levName  The default or user-defined name of the level to search. Essbase searches all member names and member alias names in the level.

“pattern”  The character pattern to search for, including a wildcard character (* or ?).

*  substitutes any number of characters. You can use * only at the end of the pattern.

?  substitutes one occurrence of any character. You can use ? anywhere in the pattern.

To include spaces in the character pattern, enclose the pattern in double quotation marks ("").

Notes

This function performs a trailing-wildcard member selection. Essbase searches for member names and alias names that match the pattern you specify and returns the member and alias names it finds.

If the members names in the database you are searching are case-sensitive, the search is case-sensitive. Otherwise, the search is not case-sensitive. To define database member names as case-sensitive, use Outline Editor in Oracle Essbase Administration Services. See the Oracle Essbase Administration Services Online Help.

You can use more than one @MATCH function in a calculation script.

If Essbase does not find any members that match the chosen character pattern, it returns no member names and continues with the other calculation commands in the calculation script.

Example

In the Sample Basic database:

@MATCH(Product,"???-10")

Returns 100-10, 200-10, 300-10, and 400-10

@MATCH(Year,"J*")

Returns Jan, Jun, Jul

@MATCH(Product,"C*")

Returns 100 (Colas), 100-10 (Cola), 100-30 (Caffeine Free Cola), 300 (Cream Soda)
@MAX

Returns the maximum value among the results of the expressions in the specified member list.

Syntax

@MAX (expList)

Parameter Description

expList Comma-delimited list of members, variable names, functions, and numeric expressions, all of which return numeric values.

Notes

Depending on the values in the list, @MAX may return a zero(0) or #MISSING value. For full control over skipping or inclusion of zero(0) and #MISSING values, Oracle recommends using the @MAXS function instead of the @MAX function.

Example

This example is based on the Sample Basic database:

Qtr1 = @MAX(Jan:Mar);

This example produces the following report:

<table>
<thead>
<tr>
<th>Colas</th>
<th>New York</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>Feb</td>
<td>Mar</td>
</tr>
<tr>
<td>===</td>
<td>===</td>
<td>===</td>
</tr>
<tr>
<td>Sales</td>
<td>678</td>
<td>645</td>
</tr>
</tbody>
</table>

See Also

- @MAXS
- @MAXSRANGE
- @MINS

@MAXRANGE

Returns the maximum value of the specified member across the specified range of members.

Syntax

@MAXRANGE (mbrName [ ,XrangeList])

Parameter Description

mbrName Any valid single member name or member combination, or a function that returns a single member or member combination.

XrangeList Optional. A valid member name, a comma-delimited list of member names, cross dimension members, or a member set function or range function (including @XRANGE) that returns a list of members from the same dimension. If XrangeList is not specified, Essbase uses the level 0 members from the dimension tagged as Time.
Notes

Depending on the values in the list, @MAXRANGE may return a zero(0) or #MISSING value. For full control over skipping or inclusion of zero(0) and #MISSING values, Oracle recommends using @MAXSRANGE instead of @MAXRANGE.

Example

In the Sample Basic database:

\[ Qtr1 = @MAXRANGE(Sales,@CHILDREN(Qtr1)); \]

produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>Colas</th>
<th>New York</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>678</td>
<td>645</td>
<td>675</td>
</tr>
<tr>
<td>Feb</td>
<td>678</td>
<td>645</td>
<td>675</td>
</tr>
<tr>
<td>Mar</td>
<td>678</td>
<td>645</td>
<td>675</td>
</tr>
<tr>
<td>Qtr1</td>
<td>678</td>
<td>645</td>
<td>675</td>
</tr>
<tr>
<td>Sales</td>
<td>678</td>
<td>645</td>
<td>675</td>
</tr>
</tbody>
</table>

See Also

- @MAXSRANGE
- @MAXS
- @MINSRANGE

@MAXS

Returns the maximum value among the results of the expressions in the specified member list, with options to skip missing or zero values (in contrast with the @MAX function, which cannot ignore these values).

Syntax

@MAXS (SKIPNONE | SKIPMISSING | SKIPZERO | SKIPBOTH, expList)

Parameter | Description
----------|------------------
SKIPNONE   | Includes all cells specified in expList in the operation, regardless of their content
SKIPMISSING| Ignores all #MISSING values
SKIPZERO   | Ignores all 0 values
SKIPBOTH   | Ignores all 0 and #MISSING values

Notes

- @MAXS (SKIPMISSING, expList) is equivalent to @MAX (expList).
- Because #MISSING values are greater than negative data values and less than positive data values, if the data being calculated includes only negative and #MISSING values, @MAXS returns #MISSING.
If the data being calculated includes only negative, 0, and #MISSING values, @MAXS may return either #MISSING or 0 values in an unpredictable manner.

**Example**

For both examples, assume a database similar to Sample Basic. The Measures dimension includes two members: COGS (cost of goods sold) and OtherInc_Exp (miscellaneous income and expenses). The data can include 0 and #MISSING values.

**Example 1**

Qtr1_Max = @MAXS(SKIPBOTH, Jan:Mar);

This example ignores #MISSING and 0 values for all members of the Measures dimension. This example produces the following results:

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Qtr1_Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>COGS</td>
<td>#MISSING</td>
<td>1500</td>
<td>2300</td>
<td>2300</td>
</tr>
<tr>
<td>OtherInc_Exp</td>
<td>-500</td>
<td>-350</td>
<td>0</td>
<td>-350</td>
</tr>
</tbody>
</table>

**Example 2**

Qtr1_Max = @MAXS(SKIPNONE, Jan:Mar);

This example includes #MISSING and 0 values in the calculation, for all members of the Measures dimension. This example produces the following results:

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Qtr1_Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>COGS</td>
<td>#MISSING</td>
<td>1500</td>
<td>2300</td>
<td>2300</td>
</tr>
<tr>
<td>OtherInc_Exp</td>
<td>-500</td>
<td>-350</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**See Also**

- @MAXSRANGE
- @MAX
- @MINS

**@MAXSRANGE**

Returns the maximum value of the specified member across the specified range of members, with options to skip missing or zero values (in contrast with the @MAXRANGE function, which cannot ignore these values).

**Syntax**

@MAXSRANGE (SKIPNONE | SKIPMISSING | SKIPZERO | SKIPBOTH, mbrName [ ,XrangeList])

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SKIPNONE</td>
<td>Includes all cells specified in expList in the operation, regardless of their content</td>
</tr>
<tr>
<td>SKIPMISSING</td>
<td>Ignores all #MISSING values</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>SKIPZERO</td>
<td>Ignores all 0 values</td>
</tr>
<tr>
<td>SKIPBOTH</td>
<td>Ignores all 0 and #MISSING values</td>
</tr>
<tr>
<td>mbrName</td>
<td>Any valid single member name or member combination, or a function that returns a single member or member combination</td>
</tr>
<tr>
<td>XrangeList</td>
<td>Optional. A valid member name, a comma-delimited list of member names, cross dimension members, or a member set function or range function (including @XRANGE) that returns a list of members from the same dimension. If XrangeList is not specified, Essbase uses the level 0 members from the dimension tagged as Time.</td>
</tr>
</tbody>
</table>

**Notes**

- @MAXSRANGE(SKIPNONE, mbrName, XrangeList) is equivalent to @MAXRANGE mbrName, (XrangeList).
- #MISSING values are considered to be greater than negative data values and less than positive data values. If the data being calculated includes only negative and #MISSING values, @MAXSRANGE returns #MISSING.
- For all members, @MAXSRANGE returns the value calculated for the specified member and range list.

**Example**

For both examples, assume a database similar to Sample Basic. The Measures dimension includes two members: COGS (cost of goods sold) and OtherInc_Exp (miscellaneous income and expenses). The data can include 0 and #MISSING values. For both members of the Measures dimension, the result is the same—the maximum value for the OtherInc_Exp member across the specified range.

**Example 1**

Qtr1_Max = @MAXSRANGE (SKIPBOTH, OtherInc_Exp, @CHILDREN(Qtr1));

This example ignores #MISSING and 0 values and produces the following results:

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Qtr1_Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>OtherInc_Exp</td>
<td>-500</td>
<td>#MISSING</td>
<td>-250</td>
<td>-250</td>
</tr>
<tr>
<td>COGS</td>
<td>0</td>
<td>1500</td>
<td>2300</td>
<td>-250</td>
</tr>
</tbody>
</table>

**Example 2**

Qtr1_Max = @MAXSRANGE (SKIPNONE, OtherInc_Exp, @CHILDREN(Qtr1));

Using the same data as Example 1, Example 2 demonstrates what happens if you do not skip 0 and #MISSING values in the data. Example 2 produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Qtr1_Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>OtherInc_Exp</td>
<td>-500</td>
<td>#MISSING</td>
<td>-250</td>
<td>#MISSING</td>
</tr>
<tr>
<td>COGS</td>
<td>0</td>
<td>1500</td>
<td>2300</td>
<td>#MISSING</td>
</tr>
</tbody>
</table>
See Also
- @MAXS
- @MINSRANGE
- @MAXRANGE

@MBRCOMPARE

Returns a member set of member names that match the comparison criteria. Member names are evaluated alpha-numerically.

This function can be used on unique and duplicate-name outlines.

Syntax
@MBRCOMPARE (compOperator, tokenString, topMbrinHierarchy, cdfName)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>compOperator</td>
<td>One of the following strings: &lt; (less than), &lt;= (less than or equal to), &gt; (greater than), &gt;= (greater than or equal to), == (equals), != (not equal to), or CDF (for a custom-defined function).</td>
</tr>
</tbody>
</table>

**Note:** Using the == (equal to) comparison operator is the same as using the @EQUAL function. Using the != (not equal to) comparison operator is the same as using the @NOTEQUAL function.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>tokenString</td>
<td>Token string value with which to compare to members in the outline, starting with the member specified in topMbrinHierarchy.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>topMbrinHierarchy</td>
<td>A fully qualified name of a member in the outline on which to base the member search. The specified member and its aliases, and all of its descendants, are included in the search.</td>
</tr>
</tbody>
</table>

**Note:** Although aliases of the specified member are included in the search, only outline member names (not aliases) are used when comparing member names.

To search the entire outline, provide an empty string (""") for this parameter. For example, @MBRCOMPARE("<=" , "100-10", "").

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cdfName</td>
<td>Optional: This argument applies only if CDF is specified for compOperator. Name of a custom-defined function.</td>
</tr>
</tbody>
</table>

The custom-defined function must take the tokenString and topMbrinHierarchy arguments and return a Boolean value. (When compiling @MBRCOMPARE, Essbase rejects custom-defined functions that do not meet these requirements.) If the function returns a value of TRUE, the member is added to the member set returned by @MBRCOMPARE.

Notes

The following example of a custom-defined function returns results similar to using the >= (greater than or equal to) comparison operator:

package com.hyperion.essbase.cdf.comparedcf;

class MyCDF {
public static boolean JavaNameCompare(String baseStr,  
        String newStr)
{
    try {
        System.out.println ("\n COMPARING MEMBER NAMES ..... \n ");  
// Compare the two strings.  
        int result = newStr.compareToIgnoreCase(baseStr);  
        if (result < 0)  
            return false;  
        else if (result == 0)  
            return true;  
        else  
            return true;  
    }  
    catch (Exception e) {  
        System.out.println ("Comparison function failed !!. Exception \n ");  
        return false;  
    }
}

You must register the custom-defined function before you can use it in the @MBRCOMPARE function.

To register the custom-defined function:

1. Compile the custom-defined function into a JAR file. For example:
   CompareCDF.jar

2. Copy the JAR file to the following directory:
   $ARBORPATH/java/udf

3. To grant access to the JAR file, add the following statement to the end of the udf.policy file, which is located in the $ARBORPATH/java directory:
   grant codeBase "file:${essbase.java.home}/../java/udf/CompareCDF.jar" {  
      permission java.security.AllPermission;  
    };

4. To register the custom-defined function, use the following MaxL statement:
   CREATE OR REPLACE FUNCTION '@JAVACOMPARE'  
   AS com.hyperion.essbase.cdf.comparecdf.MyCDF.JavaNameCompare(String,  
   String);  
   SPEC '@ CUSTOMCOMPARE (Str1, Str2)'  
   COMMENT 'Compares Strings returns boolean flag';

Example

The following examples are based on the following duplicate-name outline:

<table>
<thead>
<tr>
<th>Product</th>
<th>100</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100–10</td>
<td>200–10</td>
</tr>
<tr>
<td></td>
<td>100–10–10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>100–20</td>
<td></td>
</tr>
<tr>
<td></td>
<td>100–30</td>
<td></td>
</tr>
<tr>
<td></td>
<td>200</td>
<td></td>
</tr>
<tr>
<td></td>
<td>200–10</td>
<td></td>
</tr>
</tbody>
</table>
@MBRCOMPARE("\geq", "100-10", "Product")

Returns the members 100, [100].[100-10], and [Diet].[100-10].

@MBRCOMPARE("\geq", "100-10", "Product")

Returns the members [Diet].[100-10] and [100].[100-10].

@MBRCOMPARE ("CDF","100-20", "100", @JAVACOMPARE)

Uses the @JAVACOMPARE custom-defined function to return a member set.

See Also

- @BETWEEN
- @EQUAL
- @EXPAND
- @LIKE
- @MBRPARENT
- @NOTEQUAL

@MBRPARENT

Returns the parent of the specified member.

This function can be used on unique and duplicate-name outlines.

Syntax

@MBRPARENT (mbrName)

Parameter Description

mbrName  Name of a member in the outline.

Example

The following examples are based on the following duplicate-name outline:

Product
100
   100-10
      100-10-10
@MBRPARENT ("100-10", "Product")

Returns the member 100.

@MBRPARENT("100-10-11")

Returns the member [Diet].[100-10].

See Also

- @BETWEEN
- @EQUAL
- @EXPAND
- @LIKE
- @MBRCOMPARE
- @NOTEQUAL

@MDALLOCATE

Allocates values from a member, from a cross-dimensional member, or from a value across multiple dimensions. The allocation is based on a variety of criteria.

This function allocates values that are input at an upper level to lower-level members in multiple dimensions. The allocation is based upon a specified share or spread of another variable. You can specify a rounding parameter for allocated values and account for rounding errors.

Syntax

@MDALLOCATE (amount, Ndim, allocationRange1 ... allocationRangeN, basisMbr, [roundMbr], method [, methodParams]

[ , round [, numDigits][, roundErr]])
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>amount</td>
<td>A value, member, or cross-dimensional member that contains the value to be allocated into each <em>allocationRange</em>. The value may also be a constant.</td>
</tr>
<tr>
<td></td>
<td>• If <em>amount</em> is a member, the member must be from a dimension to which an <em>allocationRange</em> belongs.</td>
</tr>
<tr>
<td></td>
<td>• If <em>amount</em> is a cross-dimensional member, the member must include a member from every dimension of every <em>allocationRange</em>.</td>
</tr>
<tr>
<td></td>
<td>• If a member or cross-dimensional member is not from an <em>allocationRange</em> dimension, Essbase displays a warning message.</td>
</tr>
<tr>
<td></td>
<td>If the <em>amount</em> parameter is a loaded value, it cannot be a Dynamic Calc member.</td>
</tr>
<tr>
<td>Ndim</td>
<td>The number of dimensions across which values are allocated.</td>
</tr>
<tr>
<td>allocationRange1 ... allocationRangeN</td>
<td>Comma-delimited lists of members, member set functions, or range functions from the multiple dimensions into which values from <em>amount</em> are allocated.</td>
</tr>
<tr>
<td>basisMbr</td>
<td>A value, member, or cross-dimensional member that contains the values that are used as the basis for the allocation. The <em>method</em> you specify determines how the basis data is used.</td>
</tr>
<tr>
<td>roundMbr</td>
<td>Optional. The member or cross-dimensional member to which rounding errors are added. This member (or at least one member of a cross-dimensional member) must be included in an <em>allocationRange</em>.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td>method</td>
<td>The expression that determines how values are allocated. One of the following:</td>
</tr>
<tr>
<td></td>
<td>- <strong>share</strong>: Uses <code>basisMbr</code> to calculate a percentage share. The percentage share is calculated by dividing the value in <code>basisMbr</code> for the current member in <code>allocationRange</code> by the sum across the <code>allocationRange</code> for that basis member:</td>
</tr>
</tbody>
</table>
|           | \[
|           | \text{amount} \times (@\text{CURRMBR()} \to basisMbr \div \text{SUM}(allocationRange \to basisMbr))
|           | - **spread**: Spreads amount across `allocationRange`: |
|           | \[
|           | \text{amount} \times (1/\text{COUNT}(\text{SKIP}, allocationRange))
|           | - **SKIPNONE | SKIPMISSING | SKIPZERO | SKIPBOTH**: Values to be ignored during calculation of the spread. You must specify a SKIP parameter only for `spread`. |
|           | o **SKIPNONE**: Includes all cells. |
|           | o **SKIPMISSING**: Excludes all `#MISSING` values in `basisMbr`, and stores `#MISSING` for values in `allocationRange` for which the `basisMbr` is missing. |
|           | o **SKIPZERO**: Excludes all zero (0) values in `basisMbr`, and stores `#MISSING` for values in `allocationRange` for which the `basisMbr` is zero. |
|           | o **SKIPBOTH**: Excludes all zero (0) values and all `#MISSING` values, and stores `#MISSING` for values in `allocationRange` for which the `basisMbr` is zero (0) or `#MISSING`. |
|           | - **percent**: Takes a percentage value from `basisMbr` for each member in `allocationRange` and applies the percentage value to `amount`: |
|           | \[
|           | \text{amount} \times (@\text{CURRMBR()} \to basisMbr \times .01)
|           | - **add**: Takes the value from `basisMbr` for each member of `allocationRange` and adds the value to `amount`: |
|           | \[
|           | \text{amount} + @\text{CURRMBR()} \to basisMbr
|           | - **subtract**: Takes the value from `basisMbr` for each member of `allocationRange` and subtracts the value from `amount`: |
|           | \[
|           | \text{amount} - @\text{CURRMBR()} \to basisMbr
|           | - **multiply**: Takes the value from `basisMbr` for each member of `allocationRange` and multiplies the value by `amount`: |
|           | \[
|           | \text{amount} \times @\text{CURRMBR()} \to basisMbr
|           | - **divide**: Takes the value from `basisMbr` for each member of `allocationRange` and divides the value by `amount`: |
|           | \[
|           | \text{amount} \div @\text{CURRMBR()} \to basisMbr
| round     | Optional. One of the following: |
|           | - **noRound**: No rounding. This is the default. |
|           | - **roundAmt**: Indicates that you want to round the allocated values. If you specify `roundAmt`, you also must specify `numDigits` to indicate the number of decimal places to round to. |
Parameter | Description
---|---
numDigits | An integer that represents the number of decimal places to round to. You must specify numDigits if you specify roundAmt.
  - If numDigits is 0, the allocated values are rounded to the nearest integer. The default value for numDigits is 0.
  - If numDigits is greater than 0, the allocated values are rounded to the specified number of decimal places.
  - If numDigits is a negative value, the allocated values are rounded to a power of 10.
roundErr | Optional. An expression that specifies where rounding errors should be placed. You must specify roundAmt in order to specify roundErr. If you do not specify roundErr, Essbase discards rounding errors.
  To specify roundErr, choose from one of the following:
    - errorsToHigh: Adds rounding errors to the member with the highest allocated value. If allocated values are identical, adds rounding errors to the first value in allocationRange.
    - errorsToLow: Adds rounding errors to the member with the lowest allocated value. If allocated values are identical, adds rounding errors to the first value in allocationRange. #MISSING is treated as the lowest value in a list; if multiple values are #MISSING, rounding errors are added to the first #MISSING value in the list.
    - errorsToMbr: Adds rounding errors to the specified roundMbr, which must be included in allocationRange.

Notes
- When you use @MDALLOCATE in a calculation script, use it within a FIX statement; for example, FIX on the member to which the allocation amount is loaded. Although FIX is not required, using it may decrease calculation time.
- For a more complex example using the @MDALLOCATE function, see the Oracle Essbase Database Administrator’s Guide.
- If you have very large allocationRange lists, Essbase may return error messages during the calculation. If you receive error messages, you may need to raise the number for CALCLOCKBLOCK DEFAULT or use CALCLOCKBLOCK HIGH in your calculation script.

Example
Consider the following example from the Sample Basic database. A data value of 500 is loaded to Budget->Total Expenses->East for Jan and Colas. (For this example, assume that Total Expenses is not a Dynamic Calc member.)

You need to allocate the amount across each expense category for each child of East. The allocation for each child of East is based on the child’s share of Total Expenses->Actual:

```plaintext
FIX("Total Expenses")
Budget = @MDALLOCATE(Budget->"Total Expenses"->East,2,
                      @CHILDREN(East),@CHILDREN("Total Expenses"),Actual,,share);
ENDFIX
```
This example produces the following report:

<table>
<thead>
<tr>
<th>Marketing</th>
<th>Jan</th>
<th>Colas</th>
<th>Misc</th>
<th>Total Expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>94</td>
<td>51</td>
<td>0</td>
<td>145</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>23</td>
<td>31</td>
<td>1</td>
<td>55</td>
</tr>
<tr>
<td>Florida</td>
<td>53</td>
<td>54</td>
<td>0</td>
<td>107</td>
</tr>
<tr>
<td>Connecticut</td>
<td>40</td>
<td>31</td>
<td>0</td>
<td>71</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>27</td>
<td>53</td>
<td>2</td>
<td>82</td>
</tr>
<tr>
<td>East</td>
<td>237</td>
<td>220</td>
<td>3</td>
<td>460</td>
</tr>
<tr>
<td>Budget</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>102.174</td>
<td>55.435</td>
<td>0</td>
<td>#MI</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>25</td>
<td>33.696</td>
<td>1.087</td>
<td>#MI</td>
</tr>
<tr>
<td>Florida</td>
<td>57.609</td>
<td>58.696</td>
<td>0</td>
<td>#MI</td>
</tr>
<tr>
<td>Connecticut</td>
<td>43.478</td>
<td>33.696</td>
<td>0</td>
<td>#MI</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>29.348</td>
<td>57.609</td>
<td>2.173</td>
<td>#MI</td>
</tr>
<tr>
<td>East</td>
<td>#MI</td>
<td>#MI</td>
<td>#MI</td>
<td>500</td>
</tr>
</tbody>
</table>

See Also

- @ALLOCATE

@MDANCESTVAL

Returns ancestor-level data from multiple dimensions based on the current member being calculated.

Syntax

@MDANCESTVAL (dimCount, dimName1, genLevNum1 . . . dimNameX, genLevNumX [, mbrName])

Parameter Description

dimCount Integer value that defines the number of dimensions from which ancestor values are being returned.
dimName1, . . . dimNameX Defines the dimension names from which the ancestor values are to be returned. You must specify a genLevNum for every dimName.
genLevNum, . . . genLevNumX Integer value that defines the absolute generation or level number from which the ancestor values are to be returned. A positive integer defines a generation reference. A negative number or value of 0 defines a level reference. You must specify a dimName for every genLevNum.
mbrName Optional. Any valid single member name or member combination, or a function that returns a single member or member combination, from which the ancestor values are to be returned.

Example

Marketing expenses are captured at the Product Family and Region level in a product planning application. The Marketing Expense data must be allocated down to each Product code and State level based on Sales contribution. Data is captured as follows:

<table>
<thead>
<tr>
<th>Sales</th>
<th>Marketing</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>100-10</td>
</tr>
<tr>
<td></td>
<td>100-20</td>
</tr>
<tr>
<td></td>
<td>100</td>
</tr>
<tr>
<td>Boston</td>
<td>100-10</td>
</tr>
</tbody>
</table>
The Marketing Expense value of 200 at East and Product code 100 is allocated down to each Product code and State with the following formula:

Marketing = (Sales / @MDANCESTVAL(2, Market, 2, Product, 2, Sales)) * @MDANCESTVAL(2, Market, 2, Product, 2, Marketing);

which produces the following result:

<table>
<thead>
<tr>
<th>Sales</th>
<th>Marketing</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td></td>
</tr>
<tr>
<td>100-10</td>
<td>300</td>
</tr>
<tr>
<td>100-20</td>
<td>200</td>
</tr>
<tr>
<td>100</td>
<td>500</td>
</tr>
<tr>
<td>Boston</td>
<td></td>
</tr>
<tr>
<td>100-10</td>
<td>100</td>
</tr>
<tr>
<td>100-20</td>
<td>400</td>
</tr>
<tr>
<td>100</td>
<td>500</td>
</tr>
<tr>
<td>East</td>
<td></td>
</tr>
<tr>
<td>100-10</td>
<td>400</td>
</tr>
<tr>
<td>100-20</td>
<td>600</td>
</tr>
<tr>
<td>100</td>
<td>1000</td>
</tr>
</tbody>
</table>

The Marketing expenses can then be reconsolidated across Products and Markets.

See Also
- @ANCESTVAL
- @SANCESTVAL
- @MDPARENTVAL

@MDPARENTVAL

Returns parent-level data from multiple dimensions based on the current member being calculated.

Syntax

@MDPARENTVAL (numDim, dimName1, . . . dimNameX [,mbrName])

Parameter | Description
--- | ---
numDim | Integer value that defines the number of dimensions from which parent values are being returned.
dimName1,...dimNameX | Defines the dimension names from which the parent values are to be returned.
mbrName | Any valid single member name or member combination, or a function that returns a single member or member combination, from which the parent values are to be returned.
Example

Marketing expenses are captured at the Product Family and Region level in a product planning application. The Marketing Expense data must be allocated down to each Product code and State level based on Sales contribution.

Data is captured as follows:

<table>
<thead>
<tr>
<th>Sales</th>
<th>Marketing</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>100-10</td>
</tr>
<tr>
<td></td>
<td>100-20</td>
</tr>
<tr>
<td></td>
<td>100</td>
</tr>
<tr>
<td>Boston</td>
<td>100-10</td>
</tr>
<tr>
<td></td>
<td>100-20</td>
</tr>
<tr>
<td></td>
<td>100</td>
</tr>
<tr>
<td>East</td>
<td>100-10</td>
</tr>
<tr>
<td></td>
<td>100-20</td>
</tr>
<tr>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

The Marketing Expense value of 200 at East and Product code 100 is allocated down to each Product code and State with the following formula:

\[ \text{Marketing} = (\frac{\text{Sales}}{\text{MDPARENTVAL}(2, \text{Market}, \text{Product}, \text{Sales})}) \times \text{MDPARENTVAL}(2, \text{Market}, \text{Product}, \text{Marketing}); \]

which produces the following result:

<table>
<thead>
<tr>
<th>Sales</th>
<th>Marketing</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>100-10</td>
</tr>
<tr>
<td></td>
<td>100-20</td>
</tr>
<tr>
<td></td>
<td>100</td>
</tr>
<tr>
<td>Boston</td>
<td>100-10</td>
</tr>
<tr>
<td></td>
<td>100-20</td>
</tr>
<tr>
<td></td>
<td>100</td>
</tr>
<tr>
<td>East</td>
<td>100-10</td>
</tr>
<tr>
<td></td>
<td>100-20</td>
</tr>
<tr>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

The Marketing expenses can then be reconsolidated across Products and Markets.

See Also

- @PARENTVAL
- @SPARENTVAL
- @MDANCESTVAL

@MDSHIFT

Shifts a series of data values across multiple dimension ranges.

Syntax

\[ \text{@MDSHIFT (mbrName, shiftCnt1, dimName1, [range1](range1)), \ldots shiftCntX, dimNameX, [rangeX](rangeX))} \]
**Parameter** | **Description**
--- | ---
mbrName | Any valid single member name or member combination, or a function that returns a single member or member combination, from which the values are to be shifted.
shiftCnt1...shiftCntX | Integer that defines the number of member positions to shift.
dimName1,...
dimNameX | Defines the dimension names in which the shift is to occur.
rangep1|(range1) ... rangepX|(rangeX) | Optional. A valid member name, a comma-delimited list of member names, member set functions, and range functions. If rangeList is not specified, Essbase uses the level 0 members from the dimension specified with the dimName parameter. If the range list is comma delimited, then the list must be enclosed in parentheses.

**Example**

The Budget figures for Ending Inventory need to be calculated by taking Prior Year->Opening Inventory results as a starting point:

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior Year</td>
<td>***</td>
<td>***</td>
<td>***</td>
</tr>
<tr>
<td>Budget</td>
<td>110</td>
<td>120</td>
<td>130</td>
</tr>
<tr>
<td>Opening Inventory</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

The following calculation script assumes that the Scenario dimension is as follows:

```
Scenario
  Prior Year
  Budget
```

```
FIX (Budget)
"Ending Inventory" = @MDSHIFT("Opening Inventory", 1, Year, , -1, Scenario,);
ENDFIX
```

In this example, range1 is not specified, so Essbase defaults to the level 0 members of the Year dimension, which was specified as the dimName1 parameter. Since range2 is also not specified, Essbase defaults to the level 0 members of the Scenario dimension, which was specified as the dimName2 parameter. This example produces the following result:

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior Year</td>
<td>***</td>
<td>***</td>
<td>***</td>
</tr>
<tr>
<td>Budget</td>
<td>110</td>
<td>120</td>
<td>130</td>
</tr>
<tr>
<td>Ending Inventory</td>
<td>120</td>
<td>130</td>
<td>140</td>
</tr>
</tbody>
</table>

**See Also**

- @SHIFT
- @MEDIAN

**@MEDIAN**

Returns the median (the middle number) of the specified data set. Half the numbers in the data set are larger than the median, and half are smaller.
Syntax

@MEDIAN (SKIPNONE | SKIPMISSING | SKIPZERO | SKIPBOTH, XrangeList)

Parameter  Description

SKIPNONE       Includes all cells specified in the data set, regardless of their content, during calculation of the median.

SKIPMISSING    Excludes all #MISSING values from the data set during calculation of the median.

SKIPZERO        Excludes all zero (0) values from the data set during calculation of the median.

SKIPBOTH        Excludes all zero (0) values and #MISSING values from the data set during calculation of the median.

XrangeList      A list of numeric values across which the median is calculated. Referred to generically throughout this topic as “the data set.”

Can be a valid member name, a comma-delimited list of member names, cross dimensional members, or a return value from a member set function or range function (including @XRANGE).

For more information about XrangeList, see Range List Parameters in the topic “Range and Financial Functions” on page 35.

Notes

- If the member you are calculating and the data set (XrangeList) are not in the same dimension, use the @RANGE or @XRANGE function to cross the member with the list of members (for example, to cross Sales with the children of 100).

- @MEDIAN sorts the data set in ascending order before calculating the median.

- When the data set contains an even number of values, the @MEDIAN function calculates the average of the two middle numbers.

- @MEDIAN treats #MISSING values as 0 unless SKIPMISSING or SKIPBOTH is specified.

- When you use @MEDIAN in a calculation script, use it within a FIX statement. Although FIX is not required, using it may improve calculation performance.

- When you use @MEDIAN across a large range in a sparse dimension, you may need to increase the size of the calculator cache. For more information on the calculator cache, see the Oracle Essbase Database Administrator's Guide.

Example

The following example is based on the Sample Basic database. Assume that the Measures dimension contains an additional member, Median. This example calculates the median sales values for all products and uses the @RANGE function to generate the data set:

```plaintext
FIX (Product)
Median = @MEDIAN(SKIPBOTH, @RANGE(Sales, @CHILDREN(Product)));
ENDFIX
```

This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>New York</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual</td>
<td>Budget</td>
</tr>
<tr>
<td>-------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td>Sales</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colas</td>
<td>678</td>
<td>640</td>
</tr>
<tr>
<td>Root Beer</td>
<td>551</td>
<td>530</td>
</tr>
</tbody>
</table>
Because SKIPBOTH is specified in the calculation script, the #MI values for Diet Drinks are skipped. The remaining four products create an even-numbered data set. So, to calculate Median->Product->Actual, the two middle numbers in the set (587 and 663) are averaged to create the median (625). To calculate Median->Product->Budget, the two middle numbers in the set (530 and 620) are averaged to create the median (575).

The following example assumes a Year dimension is added to Sample Basic. It calculates median using cross-dimensional members in the data set.

```plaintext
FIX(Product)
Median = @MEDIAN(@XRANGE("2011"->"Sep", "2012"->"Mar");
ENDFIX
```

The above calculation is performed across the following multidimensional range specified by XrangeList:

- 2011->Sep
- 2011->Oct
- 2011->Nov
- 2011->Dec
- 2012->Jan
- 2012->Feb
- 2012->Mar

See Also

- @RANGE

@MEMBER

Returns the member with the name that is provided as a character string.

Syntax

@MEMBER (String)

Parameter Description

String A string (enclosed in double quotation marks) or a function that returns a string

Example

Typically, the @MEMBER function is used in combination with string functions that are used to manipulate character strings to form the name of a member. In the following example, the member name QTR1 is appended to the character string 2000_ to form the string 2000_QTR1. The @MEMBER function returns the member 2000_QTR1 and QTD is set to the value of this member.
See Also

- @CONCATENATE
- @SUBSTRING

@MEMBERAT

Returns the specified member in a list of members.

Syntax

@MEMBERAT(mbrList, mbrIndex)

Parameter  Description

mbrList Member list or function that returns a member list.

mbrIndex Nonzero integer. If positive, enumerates from start of the list (for example, 1 returns the first member in the list). If negative, enumerates from the end of the list (for example, -1 returns the last member in the list).

Notes

If mbrIndex is 0 or out of bounds, the script or member formula fails during verification or runtime and returns an error.

Example

The following examples use the Sample.Basic database.

@MEMBERAT(@CHILDREN("Colas"), 1); returns 100-20 (Diet Cola).

Sales = @MEMBERAT(@CHILDREN("Total Expenses"), -1); The value of the member Misc is assigned to Sales, because Misc is the last child of Total Expenses, and the mbrIndex of -1 causes this function to select the last member in the list.

@MEMBERAT(@CHILDREN("100-10"), 1);

Because @CHILDREN("100-10") is an empty list, returns an error.

See Also

- @MEMBER

@MERGE

Merges two member lists that are processed by another function. Duplicates (values found in both lists) are included only once in the merged list.

Syntax

@MERGE (list1, list2)
Parameter Description

list1 The first list of member specifications to be merged.
list2 The second list of member specifications to be merged.

Notes

- Duplicate values are included only once in the merged list.
- @MERGE can merge only two lists at a time. You can nest @MERGE functions to merge more than two lists.

Example

Example 1
In the Sample Basic database,

```
@MERGE(@CHILDREN(Colas),@CHILDREN("Diet Drinks"));
```

returns Cola, Diet Cola, Caffeine Free Cola, Diet Root Beer, and Diet Cream Soda.
Diet Cola appears only once in the merged list, even though it is a child of both Colas and Diet Drinks.

Example 2
In this example, the @MERGE function is used with the @ISMBR function to increase the marketing budget for major markets and for western markets.

```
Budget
( IF ( @ISMBR( @MERGE( @UDA(Market,"Major Market"),
                 @DESCENDANTS(West)) ) )
    Marketing = Marketing * 1.1;
  ENDIF; ) ;
```

This example produces the following report, which shows only the major markets in the East and all western markets:

<table>
<thead>
<tr>
<th>Product</th>
<th>Year</th>
<th>Budget Marketing</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>6039</td>
<td></td>
</tr>
<tr>
<td>Massachusetts</td>
<td>1276</td>
<td></td>
</tr>
<tr>
<td>Florida</td>
<td>2530</td>
<td></td>
</tr>
<tr>
<td>California</td>
<td>7260</td>
<td></td>
</tr>
<tr>
<td>Oregon</td>
<td>2090</td>
<td></td>
</tr>
<tr>
<td>Washington</td>
<td>2772</td>
<td></td>
</tr>
<tr>
<td>Utah</td>
<td>1837</td>
<td></td>
</tr>
<tr>
<td>Nevada</td>
<td>4521</td>
<td></td>
</tr>
</tbody>
</table>

The values prior to running the calculation script were:

<table>
<thead>
<tr>
<th>Product</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>5490</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>1160</td>
</tr>
<tr>
<td>Florida</td>
<td>2300</td>
</tr>
</tbody>
</table>
California      6600
Oregon          1900
Washington      2520
Utah            1670
Nevada          4110

See Also
- @INTERSECT
- @LIST
- @RANGE
- @REMOVE

@MIN

Returns the minimum value among the results of the expressions in expList.

Syntax
@MIN (expList)

Parameter Description
expList      Comma-delimited list of members, variable names, functions, and numeric expressions, all of which return numeric values.

Notes
Depending on the values in the list, @MIN may return a zero(0) or #MISSING value. For full control over skipping or inclusion of zero(0) and #MISSING values, Oracle recommends using the @MINS function instead of the @MIN function.

Example
In the Sample Basic database:
Qtr1 = @MIN(Jan:Mar);

produces the following report:

<table>
<thead>
<tr>
<th>Colas</th>
<th>New York</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jan</td>
<td>Feb</td>
</tr>
<tr>
<td>Sales</td>
<td>678</td>
<td>645</td>
</tr>
</tbody>
</table>

See Also
- @MINS
- @MINRANGE
- @MAX

@MINRANGE

Returns the minimum value of mbrName across XrangeList.
Syntax
@MINRANGE (mbrName [ , XrangeList])

Parameter Description
mbrName Any valid single member name or member combination, or a function that returns a single member or member combination.

XrangeList Optional. A valid member name, a comma-delimited list of member names, cross dimension members, or a member set function or range function (including @XRANGE) that returns a list of members from the same dimension. If XrangeList is not specified, Essbase uses the level 0 members from the dimension tagged as Time.

Notes
Depending on the values in the list, @MINRANGE may return a zero(0) or #MISSING value. For full control over skipping or inclusion of zero(0) and #MISSING values, Oracle recommends using the @MINSRANGE function instead of the @MINRANGE function.

Example
In the Sample Basic database:
Qtr1 = @MINRANGE(Sales,Jan:Mar);

produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>Colas</th>
<th>New York</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>===</td>
<td>===</td>
<td>===</td>
</tr>
<tr>
<td>Feb</td>
<td>678</td>
<td>645</td>
<td>675</td>
</tr>
<tr>
<td>Mar</td>
<td>675</td>
<td>645</td>
<td>645</td>
</tr>
</tbody>
</table>

See Also
- @MINSRANGE
- @MIN
- @MAXSRANGE

@MINS

Returns the minimum value across the results of the expressions in expList, with options to skip missing or zero values.

Syntax
@MINS (SKIPNONE | SKIPMISSING | SKIPZERO | SKIPBOTH, expList)

Parameter Description
SKIPNONE Includes in the operation all cells specified in expList regardless of their content

SKIPMISSING Ignores all #MISSING values

SKIPZERO Ignores all 0 values

SKIPBOTH Ignores all 0 and #MISSING values
### Parameter Description

| expList | Comma-delimited list of member names, variable names, functions, or numeric expressions. expList provides a list of numeric values for which Essbase determines the minimum value. |

### Notes

- @MINS enables skipping of #MISSING and 0 values, in contrast with @MIN, which always includes these values.
- @MINS (SKIPNONE, expList) is equivalent to @MIN (expList).
- Because #MISSING values are less than positive data values and more than negative data values, if the data being calculated includes only positive and #MISSING values, @MINS returns #MISSING.
- If the data being calculated includes only negative, 0, and #MISSING values, @MINS may return either #MISSING or 0 values in an unpredictable manner.

### Example

For both examples, assume a database similar to Sample Basic. The Measures dimension includes two members: COGS (cost of goods sold) and OtherInc_Exp (miscellaneous income and expenses). The data can include 0 and #MISSING values.

#### Example 1

\[ Qtr1\_Min = @MINS(SKIPBOTH, \text{Jan}:\text{Mar}); \]

This example ignores #MISSING and 0 values for all members of the Measures dimension. This example produces the following results:

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Qtr1_Min</th>
</tr>
</thead>
<tbody>
<tr>
<td>COGS</td>
<td>#MISSING</td>
<td>1500</td>
<td>2300</td>
<td>1500</td>
</tr>
<tr>
<td>OtherInc_Exp</td>
<td>-500</td>
<td>-350</td>
<td>0</td>
<td>-500</td>
</tr>
</tbody>
</table>

#### Example 2

\[ Qtr1\_Min = @MINS(SKIPNONE, \text{Jan}:\text{Mar}); \]

For all members of the Measures dimension, this example includes #MISSING and 0 values and produces the following results:

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Qtr1_Min</th>
</tr>
</thead>
<tbody>
<tr>
<td>COGS</td>
<td>#MISSING</td>
<td>1500</td>
<td>2300</td>
<td>#MISSING</td>
</tr>
<tr>
<td>OtherInc_Exp</td>
<td>-500</td>
<td>-350</td>
<td>0</td>
<td>-500</td>
</tr>
</tbody>
</table>

### See Also

- @MINRANGE
- @MAXS
- @MIN
@MINSRANGE

Returns the minimum value of \texttt{mbrName} across \texttt{XrangeList}, with options to skip missing or zero values.

**Syntax**

\[
@\text{MINSRANGE} \left( \text{SKIPNONE} \mid \text{SKIPMISSING} \mid \text{SKIPZERO} \mid \text{SKIPBOTH}, \text{mbrName} \left[ , \text{XrangeList} \right] \right)
\]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SKIPNONE</td>
<td>Includes in the operation all specified cells regardless of their content</td>
</tr>
<tr>
<td>SKIPMISSING</td>
<td>Ignores all #MISSING values</td>
</tr>
<tr>
<td>SKIPZERO</td>
<td>Ignores all 0 values</td>
</tr>
<tr>
<td>SKIPBOTH</td>
<td>Ignores all 0 and #MISSING values</td>
</tr>
<tr>
<td>mbrName</td>
<td>Any valid single member name or member combination, or a function that returns a single member or member combination</td>
</tr>
<tr>
<td>XrangeList</td>
<td>Optional. A valid member name, a comma-delimited list of member names, cross dimension members, or a member set function or range function (including @XRANGE) that returns a list of members from the same dimension. If \texttt{XrangeList} is not specified, Essbase uses the level 0 members from the dimension tagged as Time.</td>
</tr>
</tbody>
</table>

**Notes**

- @MINSRANGE enables skipping of \#MISSING and 0 values, in contrast with the @MINRANGE function, which always includes these values in the calculation.
- @MINSRANGE (SKIPNONE, \texttt{mbrName}, \texttt{rangeList}) is equivalent to @MINRANGE (\texttt{mbrName}, \texttt{rangeList}).
- \#MISSING values are considered to be less than positive data values and more than negative data values. If the data being calculated includes only positive and \#MISSING values, @MINSRANGE returns \#MISSING.
- For all members, @MINSRANGE returns the value calculated for the specified member and range list.

**Example**

For both examples, assume a database similar to Sample Basic. The Measures dimension includes two members: COGS (cost of goods sold) and OtherInc_Exp (miscellaneous income and expenses). The data can include 0 and \#MISSING values. For both members of the Measures dimension, the result is the same--the minimum value for the OtherInc_Exp member across the specified range.

**Example 1**

\[
\text{Qtr1 Min} = @\text{MINSRANGE}(\text{SKIPBOTH}, \text{OtherInc}_\text{Exp}, \text{Jan:Mar});
\]

This example ignores the 0 value for Mar and produces the following results:
Example 2

Qtr1_Min = @MINS(SKIPNONE, OtherInc_Exp, Jan:Mar);

This example does not ignore the 0 value in the calculation. This example produces the following results:

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Qtr1_Min</th>
</tr>
</thead>
<tbody>
<tr>
<td>COGS</td>
<td>#MISSING</td>
<td>1500</td>
<td>2300</td>
<td>0</td>
</tr>
<tr>
<td>OtherInc_Exp</td>
<td>500</td>
<td>350</td>
<td>0</td>
<td>350</td>
</tr>
</tbody>
</table>

See Also

- @MINS
- @MINRANGE
- @MAXSRANGE

@MOD

Calculates the modulus of a division operation.

Syntax

@MOD (mbrName1, mbrName2)

Parameter | Description
-----------|-------------
mbrName1 and mbrName2 | Members from the same dimension whose modulus is to be calculated.

Example

The following example is based on the Sample Basic database. Assume that the Measures dimension contains an additional member, Factor. The modulus between Profit % and Margin % is calculated with the following formula:

Factor = @MOD("Margin %", "Profit %");

This example produces the following report:

<table>
<thead>
<tr>
<th>Market</th>
<th>Product</th>
<th>Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>Margin %</td>
<td>Profit %</td>
<td>Factor</td>
</tr>
<tr>
<td>========</td>
<td>=======</td>
<td>=======</td>
</tr>
<tr>
<td>Jan</td>
<td>55.10</td>
<td>25.44</td>
</tr>
<tr>
<td>Feb</td>
<td>55.39</td>
<td>26.03</td>
</tr>
<tr>
<td>Mar</td>
<td>55.27</td>
<td>25.87</td>
</tr>
</tbody>
</table>

@MODE

Returns the mode (the most frequently occurring value) in the specified data set.
Syntax

@MODE (SKIPNONE | SKIPMISSING | SKIPZERO | SKIPBOTH, XrangeList)

Parameter Description

SKIPNONE Includes all cells specified in the data set, regardless of their content, during calculation of the mode.

SKIPMISSING Excludes all #MISSING values from the data set during calculation of the mode.

SKIPZERO Excludes all zero (0) values from the data set during calculation of the mode.

SKIPBOTH Excludes all zero (0) values and #MISSING values from the data set during calculation of the mode.

XrangeList A list of numeric values across which the mode is calculated. Referred to generically throughout this topic as “the data set.”

Can be a valid member name, a comma-delimited list of member names, cross dimensional members, or a return value from a member set function or range function (including @XRANGE).

For more information about XrangeList, see Range List Parameters in the topic “Range and Financial Functions” on page 35.

Notes

- When two or more values in the data set occur at the same frequency, Essbase sorts the list of values in ascending order and chooses the lowest value that occurs with the most frequency as the mode. For example, if the data set contains [2,1,2,2,2,3,3,3,3], Essbase sorts the list as [1,2,2,2,2,3,3,3,3] and chooses the value [2] as the mode.
- If the data set contains no duplicate values, the @MODE function returns the smallest value in the list as the mode. For example, if the data set contains [2,4,7,10,14], @MODE returns 2 as the mode.
- If #MISSING is the mode of the data set, @MODE returns #MISSING unless SKIPMISSING or SKIPBOTH is specified. If you specify SKIPMISSING or SKIPBOTH and all values in the data set are #MISSING, @MODE returns #MISSING. If you specify SKIPZERO or SKIPBOTH and all values in the data set are 0, @MODE returns #MISSING.
- When you use @MODE in a calculation script, use it within a FIX statement. Although FIX is not required, using it may improve calculation performance.
- When you use @MODE across a large range in a sparse dimension, you may need to increase the size of the calculator cache. For more information on the calculator cache, see the Oracle Essbase Database Administrator’s Guide.

Example

The following example calculates the mode of the units sold for the Central region and uses the @RANGE function to generate the data set:

FIX (Central)
"Mode" = @MODE(SKIPMISSING, @RANGE(Sales,@CHILDREN(Central)));
ENDFIX

This example produces the following report:
<table>
<thead>
<tr>
<th>Units Sold</th>
<th>Illinois</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ohio</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Wisconsin</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Missouri</td>
<td>#MI</td>
<td></td>
</tr>
<tr>
<td>Iowa</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Colorado</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Central</td>
<td>14</td>
<td></td>
</tr>
</tbody>
</table>

Mode Central 3

The following example assumes a Year dimension is added to Sample Basic. It calculates mode using cross-dimensional members in the data set.

```
FIX(Product)
"Mode" = @MODE(SKIPMISSING,@XRANGE("2011"->"Sep", "2012"->"Mar"));
ENDFIX
```

The above calculation is performed across the following multidimensional range specified by XrangeList:

- 2011->Sep
- 2011->Oct
- 2011->Nov
- 2011->Dec
- 2012->Jan
- 2012->Feb
- 2012->Mar

**See Also**
- @RANGE
- @MOVAVG

**@MOVAVG**

Applies a moving $n$-term average (mean) to an input data set. Each term in the set is replaced by a trailing mean of $n$ terms, and the first terms (the $n-1$ terms) are copies of the input data. @MOVAVG modifies a data set for smoothing purposes.

**Syntax**

```
@MOVAVG (mbrName [, n [, XrangeList]])
```

**Parameter Description**

- mbrName: Any valid single member name or member combination, or a function that returns a single member or member combination.
- n: Optional. A positive integer value that represents the number of values to average. The default is 3.
Parameter Description

XrangeList Optional. A valid member name, a comma-delimited list of member names, cross dimension members, or a member set function or range function (including @XRANGE) that returns a list of members from the same dimension. If XrangeList is not specified, Essbase uses the level 0 members from the dimension tagged as Time.

Notes

- The @MOVAVG function calculates a trailing, rather than a centered, average. For example:

<table>
<thead>
<tr>
<th>Trailing Average</th>
<th>Centered Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3</td>
<td>1 2 3</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

- While calculating the moving average, the @MOVAVG function skips #MISSING values and decreases the denominator accordingly. For example, if one value out of three is #MISSING, Essbase adds the remaining two values and divides the sum by two.

- If you use a member set function to generate a member list for the XrangeList parameter (for example, @SIBLINGS), to ensure correct results, consider the order in which Essbase sorts the generated member list. For more information, see the help topic for the member set function you are using.

- When you use @MOVAVG in a calculation script, use it within a FIX statement. Although FIX is not required, using it may improve calculation performance.

- For periods where the width is undefined, the value is the same as for the source member. For example, you can’t compute the moving average over the last three months for Jan and Feb because it doesn’t exist. When this happens, Essbase simply copies the value for Jan and Feb for the moving average.

- When you use @MOVAVG across a large range in a sparse dimension, you may need to increase the size of the calculator cache. For more information on the calculator cache, see the Oracle Essbase Database Administrator’s Guide.

Example

The following example is based on the Sample Basic database. Assume that the Measures dimension contains an additional member, Mov Avg.

"Mov Avg" = @MOVAVG(Sales,3,Jan:Jun);

In this example, the @MOVAVG function smooths sales data for the first six months of the year (Jan through Jun). The results of @MOVAVG can be used with the @TREND function to forecast average sales data for a holiday season (for example, October - December).

This example produces the following report:

<table>
<thead>
<tr>
<th>Colas</th>
<th>New York</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>Mov Avg</td>
<td></td>
</tr>
<tr>
<td>Jan</td>
<td>678</td>
<td>678</td>
</tr>
<tr>
<td>Feb</td>
<td>645</td>
<td>645</td>
</tr>
<tr>
<td>Mar</td>
<td>675</td>
<td>666</td>
</tr>
<tr>
<td>Apr</td>
<td>712</td>
<td>677.3</td>
</tr>
<tr>
<td>May</td>
<td>756</td>
<td>714.3</td>
</tr>
<tr>
<td>Jun</td>
<td>890</td>
<td>786</td>
</tr>
</tbody>
</table>
In this example, Essbase averages three values at a time for the moving average. The first two values (Jan, Feb) for Mov Avg and the first two values for Sales are the same. The value for Mar represents the trailing average of Jan, Feb, and Mar. The value for Apr represents the trailing average of Feb, Mar, and Apr. The remaining values represent the trailing average for each group of three values.

See Also
- @MOVMAX
- @MOVMED
- @MOVMIN
- @MOVSUM
- @MOVSUMX
- @TREND

@MOVMAX

Applies a moving $n$-term maximum (highest number) to an input data set. Each term in the set is replaced by a trailing maximum of $n$ terms, and the first terms (the $n$-1 terms) are copies of the input data. @MOVMAX modifies a data set for smoothing purposes.

Syntax

```
@MOVMAX (mbrName [, , n [, XrangeList]])
```

Parameter Description

- **mbrName**: Any valid single member name or member combination, or a function that returns a single member or member combination.

- **n**: Optional. A positive integer value that represents the number of values that are used to calculate the moving maximum. The default is 3.

- **XrangeList**: Optional. A valid member name, a comma-delimited list of member names, cross dimension members, or a member set function or range function (including @XRANGE) that returns a list of members from the same dimension. If XrangeList is not specified, Essbase uses the level 0 members from the dimension tagged as Time.

Notes

- The @MOVMAX function calculates a trailing, rather than a centered, maximum. For example:

<table>
<thead>
<tr>
<th>Trailing Maximum</th>
<th>Centered Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3</td>
<td>1 2 3</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

- While calculating the moving maximum, @MOVMAX skips #MISSING values. For example, if one value out of four is #MISSING, @MOVMAX calculates the maximum of the remaining three values.

- If you use an Essbase member set function to generate a member list for the XrangeList parameter (for example, @SIBLINGS), to ensure correct results, consider the order in which
Essbase sorts the generated member list. For more information, see the help topic for the member set function you are using.

- When you use @MOVMAX in a calculation script, use it within a FIX statement. Although FIX is not required, using it may improve calculation performance.
- When you use @MOVMAX across a large range in a sparse dimension, you may need to increase the size of the calculator cache. For more information on the calculator cache, see the Oracle Essbase Database Administrator’s Guide.

**Example**

The following example is based on the Sample Basic database. Assume that the Measures dimension contains an additional member, Mov Max.

"Mov Max" = @MOVMAX(Sales,3,Jan:Jun);

In this example, the @MOVMAX function smooths sales data for the first six months of the year (Jan through Jun). The results of @MOVMAX can be used with the @TREND function to forecast maximum sales data for a holiday season (for example, October - December).

This example produces the following report:

<table>
<thead>
<tr>
<th>Root Beer Sales</th>
<th>New York Mov Max</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>551</td>
<td>551</td>
</tr>
<tr>
<td>Feb</td>
<td>641</td>
<td>641</td>
</tr>
<tr>
<td>Mar</td>
<td>586</td>
<td>641</td>
</tr>
<tr>
<td>Apr</td>
<td>630</td>
<td>641</td>
</tr>
<tr>
<td>May</td>
<td>612</td>
<td>630</td>
</tr>
<tr>
<td>Jun</td>
<td>747</td>
<td>747</td>
</tr>
</tbody>
</table>

In this example, Essbase uses three values at a time to calculate the moving maximum. The first two values (Jan,Feb) for Mov Max and the first two values for Sales are the same. The value for Mar represents the trailing maximum of Jan, Feb, and Mar. The value for Apr represents the trailing maximum of Feb, Mar, and Apr. The remaining values represent the trailing maximum for each group of three values.

**See Also**

- @MOVAVG
- @MOVMED
- @MOVMIN
- @MOVSUM
- @MOVSUMX
- @TREND

**@MOVMED**

Applies a moving \( n \)-term median (middle number) to an input data set. Each term in the list is replaced by a trailing median of \( n \) terms, and the first terms (the \( n-1 \) terms) are copies of the input data. @MOVMED modifies a data set for smoothing purposes.
Syntax

@MOVMED (mbrName [, n [, XrangeList]])

Parameter Description

mbrName Any valid single member name or member combination, or a function that returns a single member or member combination.

n Optional. A positive integer value that represents the number of values that are used to calculate the moving median. The default is 3.

XrangeList Optional. A valid member name, a comma-delimited list of member names, cross dimension members, or a member set function or range function (including @XRANGE) that returns a list of members from the same dimension. If XrangeList is not specified, Essbase uses the level 0 members from the dimension tagged as Time.

Notes

- While calculating the moving median, the @MOVMED function skips #MISSING values. For example, if one value out of four is #MISSING, @MOVMED calculates the median of the remaining three values.
- The @MOVMED function calculates a trailing, rather than a centered, median. For example:

  Trailing Median  Centered Median
  1 2 3        1 2 3
  2            2

- If the group of values being used to calculate the median contains an even number of values, the @MOVMED function averages the two numbers in the middle.
- If you use an Essbase member set function to generate a member list for the XrangeList parameter (for example, @SIBLINGS), to ensure correct results, consider the order in which Essbase sorts the generated member list. For more information, see the help topic for the member set function you are using.
- When you use @MOVMED in a calculation script, use it within a FIX statement. Although FIX is not required, using it may improve calculation performance.
- When you use @MOVMED across a large range in a sparse dimension, you may need to increase the size of the calculator cache. For more information on the calculator cache, see the Oracle Essbase Database Administrator's Guide.

Example

The following example is based on the Sample Basic database. Assume that the Measures dimension contains an additional member, Mov Med.

"Mov Med" = @MOVMED(Sales,3,Jan:Jun);

In this example, the @MOVMED function smooths sales data for the first six months of the year (Jan through Jun). The results of @MOVMED could be used with the @TREND function to forecast sales data for a holiday season (for example, October - December).

This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>New York</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>Mov Med</td>
<td></td>
</tr>
<tr>
<td>Colas</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In this example, Essbase uses three values at a time to calculate the moving median. The first two values (Jan, Feb) for Mov Med are the same as the first two values for Sales. The value for Mar represents the trailing median of Jan, Feb, and Mar. The value for Apr represents the trailing median of Feb, Mar, and Apr. The remaining values represent the trailing median of each group of three values.

### See Also
- @MOVAVG
- @MOVMAX
- @MOVMIN
- @MOVSUM
- @MOVSUMX
- @TREND

### @MOVMIN

Applies a moving n-term minimum (lowest number) to an input data set. Each term in the list is replaced by a trailing minimum of n terms, and the first terms (the n-1 terms) are copies of the input data. @MOVMIN modifies a data set for smoothing purposes.

#### Syntax

```plaintext
@MOVMIN (mbrName [, n [, XrangeList]])
```

#### Parameter Description

- **mbrName**: Any valid single member name or member combination, or a function that returns a single member or member combination.
- **n**: Optional. A positive integer value that represents the number of values that are used to calculate the moving minimum. The default is 3.
- **XrangeList**: Optional. A valid member name, a comma-delimited list of member names, cross dimension members, or a member set function or range function (including @XRANGE) that returns a list of members from the same dimension. If `XrangeList` is not specified, Essbase uses the level 0 members from the dimension tagged as Time.

#### Notes

- While calculating the moving minimum, the @MOVMIN function skips #MISSING values. For example, if one value out of four is #MISSING, @MOVMIN calculates the minimum of the remaining three values.
- The @MOVMIN function calculates a trailing, rather than a centered, minimum. For example:
- If you use a member set function to generate a member list for the XrangeList parameter (for example, @SIBLINGS), to ensure correct results, consider the order in which Essbase sorts the generated member list. For more information, see the help topic for the member set function you are using.

- When you use @MOVMIN in a calculation script, use it within a FIX statement. Although FIX is not required, using it may improve calculation performance.

- When you use @MOVMIN across a large range in a sparse dimension, you may need to increase the size of the calculator cache. For more information on the calculator cache, see the Oracle Essbase Database Administrator’s Guide.

Example

The following example is based on the Sample Basic database. Assume that the Measures dimension contains an additional member, Mov Min.

"Mov Min" = @MOVMIN(Sales,3,Jan:Jun);

In this example, the @MOVMIN function smooths sales data for the first six months of the year (Jan through Jun). The results of @MOVMIN can be used with the @TREND function to forecast minimum sales data for the holiday season (for example, October - December).

This example produces the following report:

<table>
<thead>
<tr>
<th>Colas</th>
<th>New York</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>Mov Min</td>
<td></td>
</tr>
<tr>
<td>=====</td>
<td>========</td>
<td></td>
</tr>
<tr>
<td>Jan</td>
<td>678</td>
<td>678</td>
</tr>
<tr>
<td>Feb</td>
<td>645</td>
<td>645</td>
</tr>
<tr>
<td>Mar</td>
<td>765</td>
<td>645</td>
</tr>
<tr>
<td>Apr</td>
<td>712</td>
<td>645</td>
</tr>
<tr>
<td>May</td>
<td>890</td>
<td>712</td>
</tr>
</tbody>
</table>

In this example, Essbase uses three values at a time to calculate the moving minimum. The first two values (Jan,Feb) for Mov Min and the first two values for Sales are the same. The value for Mar represents the trailing minimum of Jan, Feb, and Mar. The value for Apr represents the trailing minimum of Feb, Mar, and Apr. The remaining values represent the trailing minimum for each group of three values.

See Also

- @MOVAVG
- @MOVMAX
- @MOVMED
- @MOVSUM
- @MOVSUMX
- @TREND
@MOVSUM

Applies a moving sum to the specified number of values in an input data set. @MOVSUM modifies a data set for smoothing purposes.

Syntax

```
@MOVSUM (mbrName [, n [, XrangeList]])
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>mbrName</td>
<td>Any valid single member name or member combination, or a function that returns a single member or member combination.</td>
</tr>
<tr>
<td>n</td>
<td>Optional. A positive integer value that represents the number of values to sum. The default is 3.</td>
</tr>
<tr>
<td>XrangeList</td>
<td>Optional. A valid member name, a comma-delimited list of member names, cross dimension members, or a member set function or range function (including @XRANGE) that returns a list of members from the same dimension. If XrangeList is not specified, Essbase uses the level 0 members from the dimension tagged as Time.</td>
</tr>
</tbody>
</table>

Notes

- For example, if you specify 3 members of the Time dimension in the Sample Basic database, @MOVSUM at Mar is the sum of the values for Jan, Feb, and Mar; @MOVSUM at Apr is the sum of the values for Feb, Mar, and Apr. However, Jan and Feb have no @MOVSUM value, and are called trailing members. Trailing members are copies of the input values. If you wish to assign different values to trailing members, use @MOVSUMX instead.
- The @MOVSUM function calculates a trailing, rather than a centered, sum. This example illustrates the difference:

<table>
<thead>
<tr>
<th></th>
<th>Trailing Sum</th>
<th>Centered Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

- While calculating the moving sum, @MOVSUM skips #MISSING values. For example, if one value out of three is #MISSING, Essbase adds the remaining two values.
- If you use an Essbase member set function to generate a member list for the XrangeList parameter (for example, @SIBLINGS), to ensure correct results, consider the order in which Essbase sorts the generated member list. For more information, see the help topic for the member set function that you are using.
- When you use @MOVSUM in a calculation script, use it within a FIX statement. Although FIX is not required, using it may improve calculation performance.
- When you use @MOVSUM across a large range in a sparse dimension, you may need to increase the size of the calculator cache. For more information on the calculator cache, see the Oracle Essbase Database Administrator’s Guide.

Example

The following example is based on the Sample Basic database. Assume that the Measures dimension contains an additional member, Mov Sum.

```
"Mov Sum" = @MOVSUM(Sales,3,Jan:Jun);
```
In this example, @MOVSUM smooths sales data for the first six months of the year (Jan through Jun). The results of @MOVSUM can be used with the @TREND function to forecast average sales data for a holiday season (for example, October through December).

This example produces the following report:

<table>
<thead>
<tr>
<th>Colas</th>
<th>New York</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>Mov Sum</td>
<td>=======</td>
</tr>
<tr>
<td>-------</td>
<td>----------</td>
<td>--------</td>
</tr>
<tr>
<td>Jan</td>
<td>678</td>
<td>678</td>
</tr>
<tr>
<td>Feb</td>
<td>645</td>
<td>645</td>
</tr>
<tr>
<td>Mar</td>
<td>675</td>
<td>1998</td>
</tr>
<tr>
<td>Apr</td>
<td>712</td>
<td>2032</td>
</tr>
<tr>
<td>May</td>
<td>756</td>
<td>2143</td>
</tr>
<tr>
<td>Jun</td>
<td>890</td>
<td>2358</td>
</tr>
</tbody>
</table>

See Also
- @MOVAVG
- @MOVMAX
- @MOVMED
- @MOVMIN
- @MOVSUMX
- @TREND

@MOVSUMX

Applies a moving sum to the specified number of values in an input data set. @MOVSUMX modifies a data set for smoothing purposes.

Unlike @MOVSUM, @MOVSUMX allows you to specify the values assigned to trailing members. For example, if you specify three members of the Time dimension in the Sample Basic database, @MOVSUMX at Mar is the sum of the values for Jan, Feb, and Mar; @MOVSUMX at Apr is the sum of the values for Feb, Mar, and Apr. However, Jan and Feb have no @MOVSUMX value, and are called trailing members.

Syntax
@MOVSUMX (COPYFORWARD | TRAILMISSING | TRAILSUM, mbrName [,n[,Xrangelist]])

Parameter | Description
--- | ---
COPYFORWARD | Copies the input value into the trailing members. This behavior is the same as the @MOVSUM function.
TRAILMISSING | Sets the value of the trailing members to #MISSING.
TRAILSUM | Sums the trailing values.
mbrName | Any valid single member name or member combination, or a function that returns a single member or member combination.
n | Optional. A positive integer value that represents the number of values that are used to calculate the moving maximum. The default is 3.
Parameter | Description
--- | ---
XrangeList | Optional. A valid member name, a comma-delimited list of member names, cross dimension members, or a member set function or range function (including @XRange) that returns a list of members from the same dimension. If XrangeList is not specified, Essbase uses the level 0 members from the dimension tagged as Time.

Notes

- The @MOVSUMX function calculates a trailing, rather than a centered, sum. This example illustrates the difference:

<table>
<thead>
<tr>
<th>Trailing Sum</th>
<th>Centered Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3</td>
<td>1 2 3</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

- While calculating the moving sum, @MOVSUMX skips #MISSING values. For example, if one value out of three is #MISSING, Essbase adds the remaining two values.

- If you use a member set function to generate a member list for the XrangeList parameter (for example, @SIBLINGS), to ensure correct results, consider the order in which Essbase sorts the generated member list. For more information, see the help topic for the member set function that you are using.

- When you use @MOVSUMX in a calculation script, use it within a FIX statement. Although FIX is not required, using it may improve calculation performance.

- When you use @MOVSUMX across a large range in a sparse dimension, you may need to increase the size of the calculator cache. For more information on the calculator cache, see the Oracle Essbase Database Administrator's Guide.

Example

The following examples are based on the Sample Basic database. Assume that the Measures dimension contains an additional member, "Last 3 Months of Sales," and that the original Sales values are as shown.

```
Last 3 Months of Sales = @MOVSUMX (COPYFORWARD,Sales,3,Jan:Aug);
```

or:

```
Last 3 Months of Sales = @MOVSUMX (TRAILMISSING,Sales,3,Jan:Aug);
```

or:

```
Last 3 Months of Sales = @MOVSUMX (TRAILSUM,Sales,3,Jan:Aug);
```

These examples produce the following reports:

Sales

```
Jan   100
Feb   150
Mar   200
Apr   250
May   300
Jun   350
```

Jul  400
Aug  450

**Last 3 Months of Sales**

`COPYFORWARD`

```
100
150
450
600
750
900
1050
1200
```

**Last 3 Months of Sales**

`TRAILMISSING`

```
#MISSING
#MISSING
450
600
750
900
1050
1200
```

**Last 3 Months of Sales**

`TRAILSUM`

```
100
250
450
600
750
900
1050
1200
```

**See Also**

- `@MOVAVG`
- `@MOVMAX`
- `@MOVMED`
- `@MOVMIN`
- `@MOVSUM`
- `@TREND`

---

**@NAME**

Passes the enclosed string, or list of member or dimension names, as a list of strings to another function.

**Syntax**

```
@NAME (mbrName [,UNIQUE])
```
Parameter Description

mbrName A list of member names, dimension names, or strings.

UNIQUE Tells @NAME to return a unique member name (using shortcut qualified name format) for mbrName, if mbrName is a duplicate name. If mbrName is not a duplicate name or if duplicate member names is not enabled, UNIQUE is ignored, and only the member name is returned.

Notes:
- Essbase does not support strings in functions. It treats strings as values or an array of values. The @NAME function processes strings.
- To learn more about the shortcut qualified name format used for unique member names, see "Creating and Working With Duplicate Member Outlines" in the Oracle Essbase Database Administrator’s Guide.

Example

Example 1
The following example is based on the Sample Basic database. A user-defined function is used to retrieve the price from the table below. The user defined function (J_GetPrice) takes two string parameters, time and product name, to return the price for each product.

<table>
<thead>
<tr>
<th>MonthName</th>
<th>ProductId</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>100-10</td>
<td>1.90</td>
</tr>
<tr>
<td>Feb</td>
<td>100-10</td>
<td>1.95</td>
</tr>
<tr>
<td>Mar</td>
<td>100-10</td>
<td>1.98</td>
</tr>
<tr>
<td>Jan</td>
<td>100-20</td>
<td>1.95</td>
</tr>
<tr>
<td>Feb</td>
<td>100-20</td>
<td>2.00</td>
</tr>
<tr>
<td>Mar</td>
<td>100-20</td>
<td>2.05</td>
</tr>
</tbody>
</table>

Price = @J_GetPrice(@NAME(@CURRMBR(Product)),@NAME(@CURRMBR(Year)));

The following report illustrates the above example:

<table>
<thead>
<tr>
<th>Price</th>
<th>Actual</th>
<th>Market</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>Feb</td>
<td>Mar</td>
</tr>
<tr>
<td>100-10</td>
<td>1.90</td>
<td>1.95</td>
</tr>
<tr>
<td>100-20</td>
<td>1.95</td>
<td>2.00</td>
</tr>
</tbody>
</table>

Example 2
The following example is based on the Sample Basic database:

"Profit Per Ounce" = Profit/@ATTRIBUTEVAL(@NAME(Ounces));

The @NAME function processes the string “Ounces” before passing it to the @ATTRIBUTEVAL function. This example produces the following report:
<table>
<thead>
<tr>
<th>Actual Profit</th>
<th>Year</th>
<th>West Profit Per Ounce</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4593</td>
<td>382.75</td>
</tr>
</tbody>
</table>

**Example 3**

For the following example, assume an outline that has duplicate member names enabled, and there are two members named New York in the Market dimension:

```
[State]  [New York]
  [City]  [New York]
```

The qualified member names for the New York members are [State].[New York] and [City].[New York].

The following example captures a qualified member name from the current calculation context:

```
@MEMBER(@NAME(@CURRMBR("Market"), UNIQUE))
```

If the current member of Market being calculated is the New York State member, the qualified member name, [State].[New York], is passed to the @MEMBER function, effectively differentiating it from the New York City member.

**See Also**

- @CURRMBR

---

**@NEXT**

Returns the \( n \)th cell value from \( mbrName \), in the sequence \( XrangeList \), retaining all other members identical to the current member. \@NEXT cannot operate outside the given range.

**Syntax**

```
@NEXT (mbrName [, n, XrangeList])
```

**Parameter**

- \( mbrName \)  
  Any valid single member name or member combination, or a function that returns a single member or member combination.

- \( n \)  
  Optional signed integer. If you do not specify \( n \), then the default is set to 1, which provides the next member in the range. Using a negative value for \( n \) has the same effect as using the matching positive value in the \@PRIOR function.

- \( XrangeList \)  
  Optional parameter specifying a sequential range of members. If a range is not specified, Essbase uses the level 0 members from the dimension tagged as Time.

  Can be a valid member name, a comma-delimited list of member names, cross dimensional members, or a return value from a member set function or range function (including \@XRANGE).

  For more information about \( rangeList \) and \( XrangeList \), see Range List Parameters in the topic "Range and Financial Functions" on page 35.
Example

In this example, Next Cash for each month is derived by taking the Cash value for the following month. Since \( n \) is not specified, the default is 1, which provides the next member in the range. Since \( XrangeList \) is not specified, the level 0 members from the dimension tagged as Time are used (Jan, Feb, Mar, ...).

"Next Cash" = @NEXT(Cash);

This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>100</td>
<td>90</td>
<td>120</td>
<td>110</td>
<td>150</td>
<td>100</td>
</tr>
<tr>
<td>Next Cash</td>
<td>90</td>
<td>120</td>
<td>110</td>
<td>150</td>
<td>100</td>
<td>#MI</td>
</tr>
</tbody>
</table>

The following example assumes a Year dimension is added to Sample Basic.

"Next Sales" = @NEXT(Sales, 1, @XRANGE("2011"->"Sep", "2012"->"Mar");

The above calculation is performed across the following multidimensional range specified by \( XrangeList \):

2011->Sep
2011->Oct
2011->Nov
2011->Dec
2012->Jan
2012->Feb
2012->Mar

See Also

- @PRIOR
- @SHIFT
- @SHIFTMINUS
- @SHIFTPLUS

@NEXTS

Returns the \( n \)th cell value from \( mbrName \), in the sequence \( XrangeList \). Provides the option to skip #MISSING, zero, or both #MISSING and zero values. Works within a designated range, and retains all other members identical to the current member.

Syntax

@NEXTS (SKIPNONE | SKIPMISSING | SKIPZERO | SKIPBOTH \( mbrName[,n,XrangeList] \))

Parameter | Description
--- | ---
SKIPNONE | Includes all cells specified in the sequence, regardless of their content.
SKIPMISSING | Ignores all #MISSING values in the sequence.
SKIPZERO | Ignores all 0 values in the sequence.
### Parameter Description

**SKIPBOTH**
Ignores all `#MISSING` and 0 values in the sequence.

**mbrName**
Any valid single member name or member combination, or a function that returns a single member or member combination.

**n**
Optional signed integer. Using a negative value for `n` has the same effect as using the matching positive value in `@PRIORS`. If you do not specify `n`, then a default value of 1 is assumed, which returns the next prior member from the lowest level of the dimension set as Time in the database outline.

**XrangeList**
Optional parameter specifying a sequential range of members. If a range is not specified, Essbase uses the level 0 members from the dimension tagged as Time.

Can be a valid member name, a comma-delimited list of member names, cross dimensional members, or a return value from a member set function or range function (including `@XRANGE`).

For more information about `rangeList` and `XrangeList`, see Range List Parameters in the topic “Range and Financial Functions” on page 35.

### Example

In this example, Next Cash for each month is derived by taking the Cash value for the following month and ignoring both `#MISSING` and zero values. Because `n` is not specified, the default is 1, which provides the next member in the range. Also, because `XrangeList` is not specified, the level 0 members from the dimension set as Time are used (Jan,Feb,Mar,...).

```
"Next Cash" = @NEXTS(SKIPBOTH, Cash);
```

The following report illustrates the above example:

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>1100</td>
<td>#MI</td>
<td>1000</td>
<td>1300</td>
<td>0</td>
<td>1400</td>
</tr>
<tr>
<td>Next Cash</td>
<td>1000</td>
<td>1000</td>
<td>1300</td>
<td>1400</td>
<td>1400</td>
<td>#MI</td>
</tr>
</tbody>
</table>

The following example assumes a Year dimension is added to Sample Basic.

```
FIX(East)
"Next Cash" = @NEXTS(SKIPNONE, Sales, 1, @XRANGE("2011"->"Sep", "2012"->"Mar"));
ENDFIX;
```

The above calculation is performed across the following multidimensional range specified by `XrangeList`:

```
2011->Sep
2011->Oct
2011->Nov
2011->Dec
2012->Jan
2012->Feb
2012->Mar
```

### See Also

- `@NEXT`
@NEXTSIBLING

Returns the next sibling (the sibling to the immediate right) of the specified member. This function excludes the specified member. If the specified member is the last sibling, Essbase returns an empty string.

This function returns the next sibling as a string. To pass the @NEXTSIBLING function as a parameter of another function, where the function requires a list of members, you must wrap the output of @NEXTSIBLING with the @MEMBER function.

Syntax

@NEXTSIBLING (mbrName)

Parameter Description

mbrName Valid member name or member-name combination or a function that returns one member or member combination.

Example

All examples are from the Sample.Basic database.

@NEXTSIBLING("100-20")

Returns 100-30 (the next sibling of 100-20).

@NEXTSIBLING("200")

Returns 300 (the next sibling of 200). The @NEXTSIBLING and the @SHIFTSIBLING ("200",1) function return the same results.

@MEMBER(@NEXTSIBLING("100-20"))

Returns 100-30 (the next sibling of 100-20).

@CHILDREN(@MEMBER(@NEXTSIBLING("East")))

Returns all children of West.

See Also

- @PREVSIBLING
- @SHIFTSIBLING

@NOTEQUAL

Returns a member set of member names that do not match the specified token name. This function can be used on unique and duplicate-name outlines.

Syntax

@NOTEQUAL (tokenName, topMemberInHierarchy)
Parameter | Description
--- | ---
tokenName | Token string value, representing the name of a member, with which to compare to members in the outline, starting with member specified in `topMbrinHierarchy`. The specified token name must not be qualified for duplicate members.
topMbrinHierarchy | A fully qualified name of a member in the outline on which to base the member search. The specified member and its aliases, and all of its descendants, are included in the search. To search the entire outline, provide an empty string (""") for this parameter. For example, @NOTEQUAL("300-30", ")

Example

The following examples are based on the following duplicate-name outline:

```
Product
  100
    100-10
      100-10-10
    100-20
    100-30
  200
    200-10
    200-20
    200-30
  300
    300-10
    300-20
Diet
  100-10
    100-10-11
  200-10
  300-10
Bottle
  200-10
  300-20
```

@NOTEQUAL("200-10", "Product")

Returns all of the members under the Product dimension, except for the members [Bottle]. [200-10], [Diet].[200-10], and [200].[200-10].

@NOTEQUAL("200-10", "Diet")

Returns the members Diet, [Diet].[100-10], [Diet].[100-10],[100-10-10], and [Diet]. [300-10].

See Also

- @BETWEEN
- @EQUAL
- @EXPAND
- @LIKE
- @MBRCOMPARE
- @MBRPARENT
@NPV

Calculates the Net Present Value of an investment based on the series of payments (negative values) and income (positive values).

Syntax

@NPV (cashflowMbr, rateMbrConst, discountFlag [, XrangeList])

Parameter    Description

cashflowMbr  Member specification providing a series of numeric values.

rateMbrConst  Single member specification, variable name, or numeric expression, providing a constant value.

discountFlag  Single member specification, variable name, or numeric expression set to 0 or 1 to indicate whether the function should discount from the first period. 1 means do not discount from the first period.

XrangeList    Optional parameter specifying the range over which the function is calculated. If a range is not specified, Essbase uses the level 0 members from the dimension tagged as Time.

Can be a valid member name, a comma-delimited list of member names, cross dimensional members, or a return value from a member set function or range function (including @XRANGE).

For more information about rangeList and XrangeList, see Range List Parameters in the topic "Range and Financial Functions" on page 35.

Notes

Financial functions never return a value; rather, they calculate a series of values internally based on the range specified.

Example

In this example, Value is calculated with the following formula:

Value = @NPV(Cash, Rate, 0, FY1990:FY1994, FY1995:FY2000);

This example produces the following report:

<table>
<thead>
<tr>
<th>Year</th>
<th>Value</th>
<th>Rate</th>
<th>Cash</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>296</td>
<td>0</td>
<td>-1000</td>
<td></td>
</tr>
<tr>
<td>1991</td>
<td>296</td>
<td>0</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>1992</td>
<td>296</td>
<td>0</td>
<td>600</td>
<td></td>
</tr>
<tr>
<td>1993</td>
<td>296</td>
<td>0</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>1994</td>
<td>296</td>
<td>0</td>
<td>#MISSING</td>
<td></td>
</tr>
<tr>
<td>1995</td>
<td>296</td>
<td>0</td>
<td>#MISSING</td>
<td></td>
</tr>
</tbody>
</table>

The following example assumes a Year dimension is added to Sample Basic. It calculates NPV using a multidimensional range.

FIX ("100-10", "New York")
"Value" = @NPV(Cash, Rate, 0, @XRANGE("2011"->"Sep", "2012"->"Mar"));
ENDFIX

The above calculation is performed across the following multidimensional range specified by XrangeList:

    2011->Sep
    2011->Oct
    2011->Nov
See Also

- @PTD

@PARENT

Returns the parent of the current member being calculated in the specified dimension. If you specify the optional mbrName, that parent is combined with the specified member.

This member set function can be used as a parameter of another function, where that parameter is a member or list of members.

Syntax

@PARENT (dimName [, mbrName])

Parameter Description

dimName  Single dimension name specification.

mbrName  Optional. Any valid single member name or member combination, or a function that returns a single member or member combination, that is combined with the parent returned.

Notes

- You cannot use the @PARENT function in a FIX statement.
- You can use the @PARENT function on both the left and right sides of a formula. If you use this function on the left side of a formula in a calculation script, associate it with a member. For example:
  Sales(@PARENT(Product) = 5;);
- In some cases, the @PARENT function is equivalent to the @PARENTVAL function, except in terms of calculation performance. For example, the following two formulas are equivalent:
  Sales = @PARENT(Profit);
  Sales = @PARENTVAL(Profit);

  In this case, using the latter formula results in better calculation performance. In general, use @PARENT as a member rather than as an implied value of a cell. For example:
  Sales = @AVG(SKIPMISSING, @ISIBLINGS(@PARENT("100")))
- The time required for retrieval and calculation may be significantly longer if this function is in a formula attached to a member tagged as Dynamic Calc or Dynamic Calc and Store.
- If you are using the @PARENT function within @XREF, the @XREF function requires the @NAME function to be used around @PARENT. For example:
  COGS=@XREF(Sample, @NAME(@PARENT(Product)),Sales);
Example

In the Sample Basic database:

@PARENT(Market, Sales)

returns Central->Sales, if the current member of Market being calculated is Colorado.

@PARENT(Measures)

returns Profit, if the current member of Measures being calculated is Margin.

See Also

- @ANCEST
- @CHILDREN
- @ANCESTORS
- @DESCENDANTS
- @SIBLINGS

@PARENTVAL

Returns the parent values of the member being calculated in the specified dimension.

Syntax

@PARENTVAL (dimName [, mbrName])

Parameter  Description

dimName  Single dimension name specification that defines the focus dimension of parent values.

mbrName  Optional. Any valid single member name or member combination, or a function that returns a single member or member combination.

Example

This example is based on the Sample Basic database. The formula calculates Market Share for each state by taking each state’s Sales value as a percentage of Sales for East (its parent) as a whole. Market Share->East is calculated as East’s percentage of its parent, Market.

"Market Share" = Sales % @PARENTVAL(Market, Sales);

This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>Cola Sales</th>
<th>Actual</th>
<th>Jan Market Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>678</td>
<td>37.42</td>
<td></td>
</tr>
<tr>
<td>Massachusetts</td>
<td>494</td>
<td>27.26</td>
<td></td>
</tr>
<tr>
<td>Florida</td>
<td>210</td>
<td>11.59</td>
<td></td>
</tr>
<tr>
<td>Connecticut</td>
<td>310</td>
<td>17.11</td>
<td></td>
</tr>
<tr>
<td>New Hampshire</td>
<td>120</td>
<td>6.62</td>
<td></td>
</tr>
<tr>
<td>East</td>
<td>1812</td>
<td>37.29</td>
<td></td>
</tr>
<tr>
<td>Market</td>
<td>4860</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>
Adding the "Market Share" member and formula to the outline would produce the same result as above.

- Measures
  - Profit (+)
  - Margin (+)
    - Market Share (+) [Formula: Sales % @PARENTVAL(Market,Sales)]
    - Sales (+)
    - COGS (-)

See Also
- @MDPARENTVAL
- @SPARENTVAL
- @ANCESTVAL

@POWER

Returns the value of the specified member or expression raised to power.

Syntax

@POWER (expression, power)

Parameter Description

- expression: Single member specification, variable name, function, or other numeric expression.
- power: Single member specification, variable name, function, or other numeric expression.

Notes

- If expression is negative, and if power is not an integer, Essbase returns #MISSING.
- If the value calculated by @POWER is an infinite number, Essbase returns #MISSING.

Example

<table>
<thead>
<tr>
<th>Usage</th>
<th>Return Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>@POWER(14,3)</td>
<td>2744</td>
</tr>
<tr>
<td>@POWER(2,8)</td>
<td>256</td>
</tr>
</tbody>
</table>

See Also
- @FACTORIAL

@PREVSIBLING

Returns the previous sibling (the sibling to the immediate left) of the specified member. This function excludes the specified member. If the specified member is the first sibling, Essbase returns an empty string.
This function returns the next sibling as a string. To pass the @PREVSibling function as a parameter of another function, where the function requires a list of members, you must wrap the output of @PREVSibling with the @MEMBER function.

**Syntax**

@PREVSibling(mbrName)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>mbrName</td>
<td>Valid member name or member-name combination or a function that returns one member or member combination.</td>
</tr>
</tbody>
</table>

**Example**

All examples are from the Sample.Basic database.

@PREVSibling("100–20")

Returns 100-10 (the previous sibling of 100-20). The @PREVSibling("100–20") function and the @SHIFTSibling("100-20", -1) function return the same results.

Returns 100 (the previous sibling of 200).

@PREVSibling("100–10")

Returns an empty list as 100-10 does not have a previous sibling.

@CHILDREN(@MEMBER(@PREVSibling("East")))

Returns an empty list as there is no previous sibling of East at the same level.

**See Also**

- @NEXTSibling
- @SHIFTSibling

---

**@PRIOR**

Returns the \( n \)th previous cell member from \( mbrName \), in the sequence \( XrangeList \). All other dimensions assume the same members as the current member. @PRIOR works only within the designated range, and with level 0 members.

**Syntax**

@PRIOR(mbrName [, \( n \), XrangeList])

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>mbrName</td>
<td>Any valid single member name or member combination, or a function that returns a single member or member combination.</td>
</tr>
<tr>
<td>( n )</td>
<td>Optional signed integer. Using a negative value for ( n ) has the same effect as using the matching positive value in the @NEXT function. If you do not specify ( n ), then a default value of 1 is assumed, which returns the next prior member from the lowest level of the dimension tagged as Time in the database outline.</td>
</tr>
</tbody>
</table>
Parameter   Description

XrangeList  Optional parameter specifying a sequential range of members. If a range is not specified, Essbase uses the level 0 members from the dimension tagged as Time.

Can be a valid member name, a comma-delimited list of member names, cross dimensional members, or a return value from a member set function or range function (including @XRANGE).

For more information about rangeList and XrangeList, see Range List Parameters in the topic “Range and Financial Functions” on page 35.

Example

In this example, Prev Inventory for each month is derived by taking the Inventory value from the previous month. Since \( n \) is not specified, the default is 1, which provides the next prior member in the range. Since XrangeList is not specified, the level 0 members from the dimension tagged as Time are used (Jan,Feb,Mar,...).

"Prev Inventory" = @PRIOR(Inventory);

This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventory</td>
<td>1100</td>
<td>1200</td>
<td>1000</td>
<td>1300</td>
<td>1300</td>
<td>1400</td>
</tr>
<tr>
<td>Prev Inventory</td>
<td>#MI</td>
<td>1100</td>
<td>1200</td>
<td>1000</td>
<td>1300</td>
<td>1300</td>
</tr>
</tbody>
</table>

The following example assumes a Year dimension is added to Sample Basic.

"Prev Sales" = @PRIOR(Sales, 2, @XRANGE("2011"->"Sep", "2012"->"Mar"));

The above calculation is performed across the following multidimensional range specified by XrangeList:

2011->Sep
2011->Oct
2011->Nov
2011->Dec
2012->Jan
2012->Feb
2012->Mar

See Also

- @NEXT
- @SHIFT
- @SHIFTMINUS
- @SHIFTPLUS

@PRIORS

Returns the \( n \)th previous cell member from \( mbrName \), in the sequence XrangeList. Provides options to skip #MISSING, zero, or both #MISSING and zero values. All other dimensions assume the same members as the current member. @PRIORS works within the designated range.
Syntax

@PRIORS(SKIPNONE | SKIPMISSING | SKIPZERO | SKIPBOTH mbrName[,n, rangeList])

Parameter Description

SKIPNONE  Includes all cells specified in the sequence, regardless of their content.

SKIPMISSING  Ignores all #MISSING values in the sequence.

SKIPZERO  Ignores all zero values in the sequence.

SKIPBOTH  Ignores all #MISSING and zero values in the sequence.

mbrName  Any valid single member name or member combination, or a function that returns a single member or member combination.

n  Optional signed integer. Using a negative value for n has the same effect as using the matching positive value in the @NEXTS function. If you do not specify n, then a default value of 1 is assumed, which returns the next prior member from the lowest level of the dimension set as Time in the database outline.

XrangeList  Optional parameter specifying a sequential range of members. If a range is not specified, Essbase uses the level 0 members from the dimension tagged as Time.

Can be a valid member name, a comma-delimited list of member names, cross dimensional members, or a return value from a member set function or range function (including @XRANGE).

For more information about rangeList and XrangeList, see Range List Parameters in the topic "Range and Financial Functions" on page 35.

Example

In this example, Prev Inventory for each month is derived by taking the Inventory value from the previous month and ignoring #MISSING and zero values. Because n is not specified, the default is 1, which provides the next prior member in the range. Also, because XrangeList is not specified, the level 0 members from the dimension are set as Time used as (Jan,Feb,Mar,...).

"Prev Inventory" = @PRIORS(SKIPBOTH,Inventory);

The following report illustrates this example:

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventory</td>
<td>1100</td>
<td>#MI</td>
<td>1000</td>
<td>1300</td>
<td>0</td>
<td>1400</td>
</tr>
<tr>
<td>Prev Inventory</td>
<td>#MI</td>
<td>1100</td>
<td>1100</td>
<td>1000</td>
<td>1300</td>
<td>1300</td>
</tr>
</tbody>
</table>

The following example assumes a Year dimension is added to Sample Basic.

FIX(East)
"Prev Sales" = @PRIORS(SKIPBOTH,Sales, 1, @XRANGE("2011"->"Sep", "2012"->"Mar"));
ENDFIX;

The above calculation is performed across the following multidimensional range specified by XrangeList:

2011->Sep
2011->Oct
2011->Nov
See Also

- @PRIOR

@PTD

Calculates the period-to-date values of members in the dimension tagged as Time. By default, data is summed unless Accounts are tagged as "First" or "Last".

Syntax

@PTD (XrangeList)

Parameter Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>XrangeList</td>
<td>Range of members from the dimension tagged as Time. Can be a valid member name, a comma-delimited list of member names, cross dimensional members, or a return value from a member set function or range function (including @XRANGE). For more information about XrangeList, see Range List Parameters in the topic &quot;Range and Financial Functions&quot; on page 35.</td>
</tr>
</tbody>
</table>

Notes

- Financial functions never return a value; rather, they calculate a series of values internally based on the range specified.
- You can use the @PTD function only if the outline contains a dimension tagged as Accounts.

Example

In this example, assume that the Year dimension in the Sample Basic database outline contains two additional members, YTD and QTD. Using a calculation script, the YTD and QTD members are calculated as follows:

YTD = @PTD(Jan:May);
QTD = @PTD(Apr:May);

In this example Opening Inventory is tagged with a time balance of First, and Ending Inventory is tagged with a time balance of Last.

This example produces the following report:

<table>
<thead>
<tr>
<th>Product</th>
<th>Market</th>
<th>Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sales</td>
<td>Opening Inventory</td>
</tr>
<tr>
<td>Jan</td>
<td>31538</td>
<td>117405</td>
</tr>
<tr>
<td>Feb</td>
<td>32069</td>
<td>116434</td>
</tr>
<tr>
<td>Mar</td>
<td>32213</td>
<td>115558</td>
</tr>
<tr>
<td>Qtr1</td>
<td>95820</td>
<td>117405</td>
</tr>
<tr>
<td>Apr</td>
<td>32917</td>
<td>119143</td>
</tr>
</tbody>
</table>
The following example assumes a Year dimension is added to Sample Basic. It calculates YTD using a multidimensional range.

```plaintext
FIX("100-10", "New York")
YTD = @PTD(@XRANGE("2011"->"Sep", "2012"->"Mar"));
ENDFIX
```

The above calculation is performed across the following multidimensional range specified by `XrangeList`:

- 2011->Sep
- 2011->Oct
- 2011->Nov
- 2011->Dec
- 2012->Jan
- 2012->Feb
- 2012->Mar

See Also

- @NPV

@RANGE

Returns a member list that crosses the specified member from one dimension (`mbrName`) with the specified member range from another dimension (`rangeList`). `@RANGE` can be combined with non-range functions, such as `@AVG`, which replaces an existing range function, such as `@AVGRANGE`.

Syntax

```plaintext
@RANGE (mbrName [, rangeList])
```

Parameter Description

- `mbrName`: Any valid single member name or member combination, or a function that returns a single member or member combination.
- `rangeList`: Optional. A valid member name, a comma-delimited list of member names, member set functions, and range functions. If `rangeList` is not specified, Essbase uses the level 0 members from the dimension tagged as Time.

Notes

Calculator function `@RANGE` and the cross-dimensional operator (`->`) cannot be used inside a FIX/ENDFIX statement.
**Example**

**Example 1**

The following example is based on the Sample Basic database. The @RANGE function is used with the @AVG function to determine the average sales for Colas in the West.

```
FIX(Sales)
West=@AVG(SKIPBOTH,@RANGE(Sales,@CHILDREN(West)));
ENDFIX
```

Since the calculation script fixes on Sales, only the Sales value for West are the average of the values for western states; COGS values for West are the sum of the western states. This example produces the following report:

<table>
<thead>
<tr>
<th>Colas</th>
<th>Sales</th>
<th>COGS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual</td>
<td>Actual</td>
</tr>
<tr>
<td></td>
<td>Qtr3  Qtr4</td>
<td>Qtr3  Qtr4</td>
</tr>
<tr>
<td>-------</td>
<td>-------------</td>
<td>------------</td>
</tr>
<tr>
<td>California</td>
<td>3401   2767</td>
<td>2070  1701</td>
</tr>
<tr>
<td>Oregon</td>
<td>932   1051</td>
<td>382    434</td>
</tr>
<tr>
<td>Washington</td>
<td>1426  1203</td>
<td>590    498</td>
</tr>
<tr>
<td>Utah</td>
<td>1168  1294</td>
<td>520    575</td>
</tr>
<tr>
<td>Nevada</td>
<td>496   440</td>
<td>222    197</td>
</tr>
<tr>
<td>West</td>
<td>1484.6 1351</td>
<td>3784  3405</td>
</tr>
</tbody>
</table>

**Example 2**

The following example is based on the Sample Basic database. Assume that the Measures dimension contains an additional member, Prod Count. The @RANGE function is used with the @COUNT function to calculate the count of all products for which a data value exists:

```
"Prod Count" = @COUNT(SKIPMISSING,@RANGE(Sales,@CHILDREN(Product)));
```

This example produces the following report. Since SKIPMISSING is specified in the formula, the #MI value for Sales->Diet Drinks is not counted as a data value:

<table>
<thead>
<tr>
<th>Jan</th>
<th>New York</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>Prod Count</td>
<td></td>
</tr>
<tr>
<td>======</td>
<td>==========</td>
<td></td>
</tr>
<tr>
<td>Colas</td>
<td>678</td>
<td>#MI</td>
</tr>
<tr>
<td>Root Beer</td>
<td>551</td>
<td>#MI</td>
</tr>
<tr>
<td>Cream Soda</td>
<td>663</td>
<td>#MI</td>
</tr>
<tr>
<td>Fruit Soda</td>
<td>587</td>
<td>#MI</td>
</tr>
<tr>
<td>Diet Drinks</td>
<td>#MI</td>
<td>#MI</td>
</tr>
<tr>
<td>Product</td>
<td>2479</td>
<td>4</td>
</tr>
</tbody>
</table>

**See Also**

- @LIST
- @MERGE
- @REMOVE
@RANGEFIRSTVAL

Returns the first value, in a range of the specified `mbrList`, that satisfies the criterion specified in the first function parameter.

**Syntax**

```
@RANGEFIRSTVAL(SKIPNONE | SKIPMISSING | SKIPZERO | SKIPBOTH, mbrList)
```

**Parameter**

<table>
<thead>
<tr>
<th>Description</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every cell value is considered as data.</td>
<td>SKIPNONE</td>
</tr>
<tr>
<td>#MISSING values are not considered as data.</td>
<td>SKIPMISSING</td>
</tr>
<tr>
<td>Zero (0) values are not considered as data.</td>
<td>SKIPZERO</td>
</tr>
<tr>
<td>Zero (0) and #MISSING values are not considered as data.</td>
<td>SKIPBOTH</td>
</tr>
</tbody>
</table>

**mbrList**

A valid member name, a comma-delimited list of member names, cross dimension members, or a member set function that returns a list of members from the same dimension. If you use the range operator or a function, the order of `mbrList` is dictated by the database outline order.

**Notes**

The function returns #MISSING when `mbrList` does not contain any value matching the criterion specified in the first argument.

**Example**

**Example 1**

The following examples use the Sample.Basic database.

```
@RANGEFIRSTVAL(SKIPMISSING, @CHILDREN("Qtr1"));
```

or

```
@RANGEFIRSTVAL(SKIPMISSING, "Jan":"Mar");
```

or

```
@RANGEFIRSTVAL(SKIPMISSING, ("Jan","Feb","Mar"))
```

The previous statements return the first non-#MISSING value found when sequentially looking up the values of members Jan, Feb, and Mar.

**Example 2**

```
@RANGEFIRSTVAL(SKIPZERO, @CHILDREN("Jan"));
```

Because member Jan does not have children, returns #MISSING.

**Example 3**

```
@RANGEFIRSTVAL(SKIPBOTH, @CHILDREN("Qtr1"));
```
Returns the first non-#MISSING and nonzero Actual value from Qtr1, using the outline order. All months have data, so the value for Jan is returned.

Example 4
@RANGEFIRSTVAL(SKIPBOTH, (Actual->Feb, Actual->Mar, Actual->Jan ))

Returns the first non-#MISSING and nonzero Actual value from the given list of months, using the order given in mbrList. All months have data, so the value for Feb is returned.

See Also
- @RANGELASTVAL

@RANGELASTVAL

Returns the last value, in a range of the specified mbrList, that satisfies the criterion specified in the first function parameter.

Syntax
@RANGELASTVAL(SKIPNONE | SKIPMISSING | SKIPZERO | SKIPBOTH, mbrList)

Parameter | Description
--- | ---
SKIPNONE | Every cell value is considered as data.
SKIPMISSING | #MISSING values are not considered as data.
SKIPZERO | Zero (0) values are not considered as data.
SKIPBOTH | Zero (0) and #MISSING values are not considered as data.
mbrList | A valid member name, a comma-delimited list of member names, cross dimension members, or a member set function that returns a list of members from the same dimension. If you use the range operator or a function, the order of mbrList is dictated by the database outline order.

Notes
The function returns #MISSING when mbrList does not contain any value matching the criterion specified in the first argument.

Example
Example 1
In the following example, @RANGELASTVAL sets Jan's budget sales of Diet Cola to the last actual sales of Qtr1.

FIX("100-10", "New York", "Sales", "Jan")
"Budget" = @RANGELASTVAL(SKIPBOTH, @CHILDREN(Qtr1)->"Actual");
ENDFIX

As indicated by the SKIPBOTH parameter, @RANGELASTVAL skips zero and #MISSING. The mbrList parameter is provided by the @CHILDREN expression.
The following examples use the Sample.Basic database.

**Example 2**

```
@RANGELASTVAL(SKIPMISSING, @CHILDREN("Qtr1"));
```

or

```
@RANGELASTVAL(SKIPMISSING, "Jan";"Mar");
```

or

```
@RANGELASTVAL(SKIPMISSING, ("Jan","Feb","Mar"))
```

The previous statements return the last non-#MISSING value found when sequentially looking up the values of members Jan, Feb, and Mar.

**Example 3**

```
@RANGELASTVAL(SKIPZERO, @CHILDREN("Jan"));
```

Because member Jan does not have any children, it returns #MISSING.

**See Also**

- @RANGEFIRSTVAL

---

**@RANK**

Returns the rank of the specified members or the specified value among the values in the specified data set. The rank of a value is equivalent to its position (its rank) in the sorted data set.

**Syntax**

```
@RANK (SKIPNONE | SKIPMISSING | SKIPZERO | SKIPBOTH, value, XrangeList)
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SKIPNONE</td>
<td>Includes all cells specified in the data set, regardless of their content, during calculation of the rank.</td>
</tr>
<tr>
<td>SKIPMISSING</td>
<td>Excludes all #MISSING values from the data set during calculation of the rank.</td>
</tr>
<tr>
<td>SKIPZERO</td>
<td>Excludes all zero (0) values from the data set during calculation of the rank.</td>
</tr>
<tr>
<td>SKIPBOTH</td>
<td>Excludes all zero (0) values and #MISSING values from the data set during calculation of the rank.</td>
</tr>
<tr>
<td>value</td>
<td>(1) The member or member combination for which the rank is calculated, or (2) a constant value for which the rank is calculated.</td>
</tr>
<tr>
<td>XrangeList</td>
<td>A list of numeric values across which the rank is calculated. Referred to generically throughout this topic as “the data set.”</td>
</tr>
</tbody>
</table>

Can be a valid member name, a comma-delimited list of member names, cross dimensional members, or a return value from a member set function or range function (including @XRANGE).

For more information about XrangeList, see Range List Parameters in the topic “Range and Financial Functions” on page 35.
Notes

- After SKIP processing, the @RANK function sorts the data set in descending order (for example, 15341, 9650, 6556, 4255, 1989). The rank of a value identifies its position in the sorted data set (for example, 15341 is ranked 1; 1989 is ranked 5).

- An input value of #MISSING returns #MISSING. #MISSING is also returned if, after SKIP processing, there are no values to compare.

- The @RANK function assigns the same rank to duplicate values; however, the presence of duplicate values affects the rank numbers. For example, if a list of values contains [2, 2, 4, 5], Essbase first sorts the list [5, 4, 2, 2] and then ranks: [5] has a rank of 1, [4] has a rank of 2, and [2] has a rank of 3. In this case, no value has a rank of 4.

- If value is a constant value and that value is not included in the data set (XrangeList), Essbase inserts the constant value in the list and then ranks it accordingly. For example, if a list of values contains [2, 4, 6, 13], and you want to rank a value of [3] in this list, Essbase:
  1. Sorts the list in descending order [13, 6, 4, 2]
  2. Inserts [3] in the list [13, 6, 4, 3, 2]

- When you use @RANK in a calculation script, use it within a FIX statement. Although using FIX is not required, it may improve calculation performance.

- When you use @RANK across a large range in a sparse dimension, you may need to increase the size of the calculator cache. For more information on the calculator cache, see the Oracle Essbase Database Administrator’s Guide.

Example

The following example is based on the Sample Basic database. Assume that the Measures dimension contains an additional member, Sales Rank. Essbase ranks the sales values for a set of products:

"Sales Rank" = @RANK(SKIPBOTH, Sales, @RANGE(Sales, @LEVMBRS(Product, 1)));

This example produces the following report. Since SKIPBOTH is specified in the formula, the #MI value for Sales->Diet Drinks is not included in the ranked list:

<table>
<thead>
<tr>
<th>New York</th>
<th>Actual</th>
<th>Jan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>Sales Rank</td>
<td></td>
</tr>
<tr>
<td>Colas</td>
<td>678</td>
<td>1</td>
</tr>
<tr>
<td>Root Beer</td>
<td>551</td>
<td>4</td>
</tr>
<tr>
<td>Cream Soda</td>
<td>663</td>
<td>2</td>
</tr>
<tr>
<td>Fruit Soda</td>
<td>587</td>
<td>3</td>
</tr>
<tr>
<td>Diet Drinks</td>
<td>#MI</td>
<td>#MI</td>
</tr>
</tbody>
</table>

The following example assumes a Year dimension is added to Sample Basic. It ranks values using cross-dimensional members in the data set.

FIX(Product)
"Sales Rank" = @RANK(SKIPBOTH, Sales, @XRANGE("2011"->"Sep", "2012"->"Mar"));
ENDFIX
The above calculation is performed across the following multidimensional range specified by 
XrangeList:

2011->Sep
2011->Oct
2011->Nov
2011->Dec
2012->Jan
2012->Feb
2012->Mar

@RDESCENDANTS

Returns all descendants of the specified member, or those down to the specified generation or 
level, including shared members. This function excludes the specified member.

You can use this member set function as a parameter of another function, where that parameter 
is a list of members.

In the absence of shared members, @RDESCENDANTS and @DESCENDANTS return the same 
result.

Syntax

@RDESCENDANTS (mbrName [, genLevNum| genLevName])

Parameter     Description

mbrName       Any valid single member name or member combination, or a function that returns a single member or 
               member combination

genLevNum     Optional. An integer value that defines the absolute generation or level number down to which to select 
               the members. A positive integer defines a generation number. A value of 0 or a negative integer defines 
               a level number.

genLevName    Optional. Level name or generation name down to which to select the members.

Notes

● The order of members in the result list is important to consider when you use the 
  @RDESCENDANTS member set function with certain forecasting and statistical functions. 
  Essbase generates the list of members in the following sequence: If a shared member is 
  encountered, the above steps are repeated on the member being shared.

  1. The specified member
  2. The nearest descendant of the member
  3. The next nearest descendant of the member, and so on.

● You can use @IRDESCENDANTS to include the specified member in the member list.
Example

Example 1
Assume a variation of the Sample Basic database such that the Product dimension includes the following members:

Product
  100
    100-10
    100-20
    100-30
  200
    200-10
    200-20
    200-30
    200-40
Diet
  100 (Shared Member)
  200 (Shared Member)

Diet has two children "100" and "200". The members "100" and "200" are shared members.

@RDESCENDANTS(Diet)

returns the members: 100, 100-10, 100-20, 100-30, 200, 200-10, 200-20, 200-30, 200-40 (in that order).

Example 2

@RDESCENDANTS(Profit)

returns Margin, Sales, COGS, Total Expenses, Marketing, Payroll, and Misc (in that order) and is identical to @DESCENDANTS(Profit).

See Also
- @DESCENDANTS
- @IRDESCENDANTS
- @IDESCENDANTS
- @ISDESC
- @ANCESTORS
- @CHILDREN
- @SIBLINGS

@RELATIVE

Returns all members at the specified generation or level that are above or below the specified member in the database outline.

Syntax

@RELATIVE (mbrName, genLevNum | genLevName)
### Parameter Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>mbrName</td>
<td>Any valid single member name or member combination, or a function that returns a single member or member combination.</td>
</tr>
<tr>
<td>genLevNum</td>
<td>An integer value that defines the number of a generation or level. A positive integer defines a generation number. A value of 0 or a negative integer defines a level number.</td>
</tr>
<tr>
<td>genLevName</td>
<td>Generation or level name specification.</td>
</tr>
</tbody>
</table>

**Notes**

This function returns all members at the specified generation or level that are above or below the specified member in the database outline.

Essbase sorts the generated list of members in ascending order. Using Sample Basic as an example, @RELATIVE(200,0), returns 200-10, 200-20, 200-30, 200-40 (in that order). This order is important to consider when you use the @RELATIVE member set function with certain forecasting and statistical functions.

**Example**

In the Sample Basic database:

@RELATIVE(Qtr1,3)

@RELATIVE(Qtr1,0)

both return the three members that are at generation 3 (or level 0) and that are below Qtr1 in the Sample Basic outline: Jan, Feb, and Mar (in that order).

@RELATIVE(Profit,-1)

returns the two members that are at level 1 and that are below Profit: Margin and Total Expenses (in that order).

---

**@RELXRANGE**

Generates a cross-dimensional list for each cell in the predefined cross-dimensional list (XrangeList), based on the relative position of the cell that is currently being calculated and the offsets, using the predefined cross-dimensional list (XrangeList) as the limit.

**Syntax**

@RELXRANGE (startOffset, endOffset, XrangeList)
Parameter  Description

startOffset  Defines the first tuple in the cross dimensional list to be returned.
  - An integer value returns a cross-dimensional member relative to the current cell being calculated, in
    the predefined cross-dimensional list (XrangeList).
  - A negative value specifies a prior cross-dimensional member to the current cell being calculated, in
    XrangeList.
  - A value of 0 returns the cross-dimensional member or cell currently being calculated.
  - A positive value specifies a subsequent cross-dimensional member to the current cell being calculated,
    in XrangeList.

endOffset  Defines the last tuple in the cross-dimensional list to be returned. The value types are the same as for
  startOffset

XrangeList  A cross-dimensional list to be used as the limit.
  Can be a valid member name, a comma-delimited list of member names, cross-dimensional members, or
  a return value from a member set function or range function (including @XRANGE).
  For more information about rangeList and XrangeList, see Range List Parameters in the topic
  “Range and Financial Functions” on page 35.

Notes

- startOffset must be equal to or lesser than endOffset.
- The order of dimensions in XrangeList drives the sequence of the tuples in the resulting
tuples list. The right-most dimension in an XrangeList is the most frequently incremented
dimension. The increment of members in a dimension goes in outline order, or in the order
of the XrangeList used as an argument.
- If the cell that is currently being calculated is out of the bounds of XrangeList, this function
  returns an empty cross-dimensional list.
- If startOffset is out of the bounds of XrangeList, this function returns a cross-
dimensional list starting from the first member of XrangeList.
- If endOffset is out of the bounds of XrangeList, this function returns a cross-
dimensional list ending on the last member of XrangeList.
- Within XrangeList, in the parameter list for @XRANGE, you cannot pass members from
  the anchor dimension, meaning the dimension of the member on which the formula is set.
  See the Example for a correct way to use members from the anchor dimension.

Example

In the parameter list for @XRANGE, you cannot pass members from the anchor dimension.
This example demonstrates a correct and an incorrect usage of @XRANGE.

Correct

mbrCount=@COUNT(SKIPNONE,@RELXRANGE(-1,3,@XRANGE(Jan->Actual,May->Actual))->Sales); Where mbrCount and Sales are both in the Measures dimension. Measures is the anchor
dimension, meaning the dimension of the member on which the formula is set.
The **XrangeList** is represented by `@XRANGE(Jan->Actual, May->Actual)`, and returns the following:

- Jan->Actual
- Jan->Budget
- Feb->Actual
- Feb->Budget
- Mar->Actual
- Mar->Budget
- Apr->Actual
- Apr->Budget
- May->Actual

`@RELXRANGE` operates on the **XrangeList**, returning lists of cross dimensional members within the defined offsets of -1 and 3.

If the current member being calculated is Jan->Actual, the count returned is 4 (offset of -1 is empty):

- Jan->Actual (offset 0)
- Jan->Budget (offset 1)
- Feb->Actual (offset 2)
- Feb->Budget (offset 3)

If the current member being calculated is Jan->Budget, the count returned is 5:

- Jan->Actual (offset -1)
- Jan->Budget (offset 0)
- Feb->Actual (offset 1)
- Feb->Budget (offset 2)
- Mar->Actual (offset 3)

If the current member being calculated is Apr->Budget, the count returned is 3 (offsets of 2 and 3 are empty):

- Apr->Actual (offset -1)
- Apr->Budget (offset 0)
- May->Actual (offset 1)

Incorrect

```
mbrCount=@COUNT(SKIPNONE, @RELXRANGE(0, 0, @XRANGE(Sales->Jan->Actual, Sales->May->Actual)));  
```

You cannot use Sales in the arguments for `@XRANGE`, because it is from the anchor dimension for mbrCount. Instead, reference a cross dimensional member with Sales and the `@XRANGE` function call, as shown in the correct example.

**@REMAINDER**

Returns the remainder value of `expression`.  

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Syntax

@REMAINDER (expression)

Parameter Description

expression Single member specification, variable name, or other numeric expression.

Example

Margin = @REMAINDER("Margin %");

This example produces the following report:

<table>
<thead>
<tr>
<th>Product</th>
<th>Market</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Jan</td>
<td>Feb</td>
</tr>
<tr>
<td>===</td>
<td>===</td>
</tr>
<tr>
<td>Scenario</td>
<td>55.10</td>
</tr>
</tbody>
</table>

See Also

- @TRUNCATE
- @REMOVE

@REMOVE

Removes values or members in one list from another list.

Syntax

@REMOVE (list1, list2)

Parameter Description

list1 A list of member specifications, from which the members specified in list2 are removed.
list2 A list of member specifications to be removed from list1.

Example

Example 1

In the Sample Basic database,

@REMOVE(@CHILDREN(East),@LIST("New York",Connecticut))

returns Massachusetts, Florida, New Hampshire.

Example 2

The following example is based on the Sample Basic database. Assume that the Market dimension contains an additional member, Non-West.

A special analysis requires a sum of the actual sales values of a particular product family for non-western states. In this example, the @REMOVE function is used with the @SUMRANGE function to perform this analysis. The @LIST function is used to group the last two arguments
of the @REMOVE function (the children of West plus two additional members, Texas and New Mexico).

```plaintext
FIX(Sales)
"Non-West"=@SUMRANGE(Sales,@REMOVE(@LEVMBRS(Market,0),
    @LIST(@CHILDREN(West),Texas,"New Mexico")));
ENDFIX
```

This example produces the following report:

<table>
<thead>
<tr>
<th>Jan</th>
<th>Colas</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sales</td>
<td>======</td>
</tr>
<tr>
<td>Non-West</td>
<td>5114</td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>678</td>
<td></td>
</tr>
<tr>
<td>Massachusetts</td>
<td>494</td>
<td></td>
</tr>
<tr>
<td>Florida</td>
<td>410</td>
<td></td>
</tr>
<tr>
<td>Connecticut</td>
<td>310</td>
<td></td>
</tr>
<tr>
<td>New Hampshire</td>
<td>213</td>
<td></td>
</tr>
<tr>
<td>East</td>
<td>2105</td>
<td></td>
</tr>
<tr>
<td>California</td>
<td>941</td>
<td></td>
</tr>
<tr>
<td>Oregon</td>
<td>450</td>
<td></td>
</tr>
<tr>
<td>Washington</td>
<td>320</td>
<td></td>
</tr>
<tr>
<td>Utah</td>
<td>490</td>
<td></td>
</tr>
<tr>
<td>Nevada</td>
<td>138</td>
<td></td>
</tr>
<tr>
<td>West</td>
<td>2339</td>
<td></td>
</tr>
<tr>
<td>Texas</td>
<td>642</td>
<td></td>
</tr>
<tr>
<td>Oklahoma</td>
<td>180</td>
<td></td>
</tr>
<tr>
<td>Louisiana</td>
<td>166</td>
<td></td>
</tr>
<tr>
<td>New Mexico</td>
<td>219</td>
<td></td>
</tr>
<tr>
<td>South</td>
<td>1207</td>
<td></td>
</tr>
<tr>
<td>Illinois</td>
<td>579</td>
<td></td>
</tr>
<tr>
<td>Ohio</td>
<td>430</td>
<td></td>
</tr>
<tr>
<td>Wisconsin</td>
<td>490</td>
<td></td>
</tr>
<tr>
<td>Missouri</td>
<td>360</td>
<td></td>
</tr>
<tr>
<td>Iowa</td>
<td>161</td>
<td></td>
</tr>
<tr>
<td>Colorado</td>
<td>643</td>
<td></td>
</tr>
<tr>
<td>Central</td>
<td>2663</td>
<td></td>
</tr>
</tbody>
</table>

**See Also**
- @INTERSECT
- @LIST
- @MERGE
- @RANGE

**@RETURN**

Exits the calculation immediately under specified logical conditions. You can use the IF... ELSEIF calculation command block to specify the logical error conditions, and use the @RETURN function to exit the calculation with customized error messages and levels.
Syntax

```
@RETURN ("ErrorMessage", [INFO | ERROR | WARNING])
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ErrorMessage</td>
<td>An error message string, or any expression that returns a string.</td>
</tr>
<tr>
<td>INFO</td>
<td>ERROR</td>
</tr>
<tr>
<td>- INFO—The message indicated in the ErrorMessage string is sent back to the client and the application log as an informational type message. This is the default.</td>
<td></td>
</tr>
<tr>
<td>- ERROR—The message indicated in the ErrorMessage string is sent back to the client and the application log as an error type message.</td>
<td></td>
</tr>
<tr>
<td>- WARNING—The message indicated in the ErrorMessage string is sent back to the client and the application log as a warning type message.</td>
<td></td>
</tr>
</tbody>
</table>

Notes

- The calculation script will stop executing when this function is called.
- This function can only be used in calculation scripts; it cannot be used in member formulas.

Example

The following example stops the calculation and returns a custom warning message if maximum values specified in the IF statement are empty:

```
FIX("Actual")
  "Profit"(
    IF( ("Marketing" < 0) OR ("Payroll" < 0) OR ("Misc" < 0) )
      @RETURN( @CONCATENATE(
        @CONCATENATE("The violation of data integrity : Market [",
        @NAME(@CURRMBR("Market")),
        "] has a negative expenses. Calculations are interrupted")
        , WARNING);
      ELSE
    "Profit" = ("Margin" - "Total Expenses")*0.9;
      ENDIF
  )
ENDFIX
```

@ROUND

Rounds expression to numDigits.

Syntax

```
@ROUND (expression, numDigits [, compatibility])
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>expression</td>
<td>Single member specification, variable name, or other numeric expression.</td>
</tr>
</tbody>
</table>
Parameter | Description
--- | ---
numDigits | Single member specification, variable name, or other numeric expression that provides an integer value. If numDigits is 0 or a positive number, expression is rounded to the number of decimal places specified by numDigits. If numDigits is a negative value, expression is rounded to the nearest 10 to the power of the absolute value of numDigits. For example:
@ROUND(1234, -2) = 1200
The default value for numDigits is 0.

compatibility | Optional backward-compatibility setting to select which algorithm you want to use for rounding margin of error.
Possible keyword values:

- COMPATPREV11121—Original rounding algorithm, in use up until Release 11.1.2.1. The integer part of the number is used to generate the rounding margin of error. Limitation: aggregate values are only accurate up to the 15th decimal place.
  Only some decimal numbers can be represented perfectly in binary. For example, if the value 1234.725 is loaded, it may be represented in binary as 1234.72499999999991. Using the COMPATPREV11121 algorithm to round this number to two decimal places returns 1234.72, though you may prefer 1234.73.
- COMPATPREV11123—Alternate rounding algorithm, in use between Release 11.1.2.1 and 11.1.2.3, to negate the representational error discussed above. The rounding margin of error was changed for better precision, which in some cases returned different results than the original algorithm.

If unspecified, the default rounding algorithm now matches the standard used by the C-language Round function. The C Round function is a common rounding algorithm, used widely across platforms. It uses a built-in construct of floor and ceiling functions to map a real number to the largest previous or the smallest subsequent integer, respectively, depending on numDigits.

Example

The following example is based on the Sample Basic database:

```
SET UPDATECALC OFF;
Profit = @ROUND("Profit_%", 1);
```

This example produces the following report:

<table>
<thead>
<tr>
<th>Market</th>
<th>Product</th>
<th>Profit_%</th>
<th>Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>Feb</td>
<td>Mar</td>
<td>Jan</td>
</tr>
<tr>
<td>===</td>
<td>===</td>
<td>===</td>
<td>===</td>
</tr>
<tr>
<td>Scenario</td>
<td>21.37</td>
<td>19.09</td>
<td>18.46</td>
</tr>
</tbody>
</table>

See Also

- @ABS
- @INT
- @TRUNCATE
- @REMAINDER
@RSIBLINGS

Returns the right siblings of the specified member.

Syntax

@RSIBLINGS (mbrName)

Parameter Description

mbrName  Any valid single member name or member combination, or a function that returns a single member or member combination.

Notes

This function returns all of the right siblings of the specified member. Right siblings are children that share the same parent as the member and that follow the member in the database outline. This function excludes the specified member.

This member set function can be used as a parameter of another function, where that parameter is a list of members.

Essbase sorts the right siblings in ascending order. Using Sample Basic as an example, if you specify 200-10 for mbrName, Essbase returns 200-20, 200-30, 200-40 (in that order). This order is important to consider when you use the @RSIBLINGS member set function with certain forecasting and statistical functions.

Example

In the Sample Basic database:

@RSIBLINGS(Florida)

returns Connecticut and New Hampshire (in that order). These members appear below Florida in the Sample Basic outline.

@RSIBLINGS(Sales)

returns COGS because this member appears below Sales in the Sample Basic outline.

See Also

- @IRSIBLINGS
- @LSIBLINGS
- @NEXTSIBLING
- @PREVSIBLING
- @SHIFTSIBLING

@SANCESTVAL

Returns ancestor-level data based on the shared ancestor value of the current member being calculated.

Syntax

@SANCESTVAL (rootMbr, genLevNum [, mbrName])
Parameter | Description
--- | ---
rootMbr | Defines a member that is used to search for the nearest occurrence of an ancestor of a shared member.
genLevNum | Integer value that defines the absolute generation or level number from which the ancestor values are to be returned. A positive integer defines a generation reference. A negative number or value of 0 defines a level reference.
mbrName | Optional. Any valid single member name or member combination, or a function that returns a single member or member combination, for which the ancestor values are to be returned.

Notes
- You cannot use the @SANCESTVAL function in a FIX statement.
- The time required for retrieval and calculation may be significantly longer if this function is in a formula attached to a member tagged as Dynamic Calc or Dynamic Calc and Store.

Example
Marketing expenses are captured at the Product Category levels in a product planning application. The Product categories are defined as ancestors that contain shared members as children. The Marketing Expense data must be allocated down to each Product code based on Sales contribution.

The following Product hierarchy is defined:
```
Product    Sales   Marketing
        =====   =========
          100-10            300       0
          100-20            200       0
          100              500       0
          200-10            100       0
          200-30            400       0
          200              900       0
          100-10            300       0
          200-10            100       0
          200-20            400      50
          200              600      40
```
The Marketing Expense value is allocated down to each Product code with the following formula:
Marketing = (Sales / @SANCESTVAL(Product, 2, Sales)) * @SANCESTVAL(Product, 2, Marketing);

which produces the following result:

<table>
<thead>
<tr>
<th></th>
<th>Sales</th>
<th>Marketing</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-10</td>
<td>300</td>
<td>37.5</td>
</tr>
<tr>
<td>100-20</td>
<td>200</td>
<td>13.3</td>
</tr>
<tr>
<td>100</td>
<td>500</td>
<td>#MI</td>
</tr>
<tr>
<td>200-10</td>
<td>100</td>
<td>12.5</td>
</tr>
<tr>
<td>200-30</td>
<td>400</td>
<td>26.7</td>
</tr>
<tr>
<td>200</td>
<td>900</td>
<td>#MI</td>
</tr>
<tr>
<td>100-10</td>
<td>300</td>
<td>37.5</td>
</tr>
<tr>
<td>200-10</td>
<td>100</td>
<td>12.5</td>
</tr>
<tr>
<td>Diet</td>
<td>400</td>
<td>50</td>
</tr>
<tr>
<td>100-20</td>
<td>200</td>
<td>13.3</td>
</tr>
<tr>
<td>200-30</td>
<td>400</td>
<td>26.7</td>
</tr>
<tr>
<td>Caffeine Free</td>
<td>600</td>
<td>40</td>
</tr>
</tbody>
</table>

The Marketing expenses can then be reconsolidated across Products and Markets.

See Also

- @ANCESTVAL
- @MDANCESTVAL
- @SPARENTVAL

@SHARE

Checks each member from `rangeList` to see if it has a shared member and returns a list of the shared members it has found.

Syntax

@SHARE (rangeList)

Parameter Description

rangeList A comma-delimited list of members, functions that return members, and ranges of members. All the members in `rangeList` must be from the same dimension.

Notes

Other member-set functions return actual members, not the shared members. You can use @SHARE within the `memberList`, `rangeliSt`, `expList` or `list` parameters of other functions to provide shared members instead.

Example

The following examples are based on Sample Basic.

To remove all shared members from the Product dimension:

```
@REMOVE(@DESCENDANT(Product), @SHARE(@DESCENDANT(Product)))
```
To remove a specific member from the Product dimension, you can use @SHARE specifying the shared member to be removed:

@REMOVE(@DESCENDANT(Product),@SHARE("100-20"))

See Also

- @REMOVE

@SHIFT

Returns either the prior or next \( n \)th cell value from \( mbrName \), in the sequence \( XrangeList \), retaining all other members identical to the current member.

The direction of @SHIFT is wholly based on \( n \), with positive \( n \) values producing an effect equivalent to @NEXT and negative values of \( n \) producing an equivalent effect to @PRIOR.

Syntax

@SHIFT (mbrName [,n, XrangeList])

Parameter Description

- \( mbrName \): Any valid single member name or member combination, or a function that returns a single member or member combination.
- \( n \): Optional signed integer. Using a negative value for \( n \) has the same effect as using a positive value in the @PRIOR function. \( n \) must be a numeric value, not a reference, such as a member name.
- \( XrangeList \): Optional parameter specifying a sequential range of members. If a range is not specified, Essbase uses the level 0 members from the dimension tagged as Time.

Can be a valid member name, a comma-delimited list of member names, cross dimensional members, or a return value from a member set function or range function (including @XRANGE).

For more information about rangeList and XrangeList, see Range List Parameters in the topic “Range and Financial Functions” on page 35.

Notes

@SHIFT is provided as a more appropriate, self-documenting name than @NEXT or @PRIOR when the value for \( n \) is a variable and may change from positive to negative, depending on the database state when the call occurs (that is, when the usage is likely to be NEXT and/or PRIOR).

Example

In this example, Prev Asset for each month is derived by taking the Asset value from the previous month because -1 is specified as the \( n \) parameter. Next Avl Asset for each month is derived by taking the Asset value from two months following the current month because 2 is specified as the \( n \) parameter. Since the range sequence is not specified for either formula, the level 0 members from the dimension tagged as Time are used.

"Prev Asset" = @SHIFT(Asset,-1);
"Next Avl Asset" = @SHIFT(Asset,2);

This example produces the following report:
Jan    Feb    Mar    Apr    May    Jun
===    ===    ===    ===    ===    ===
Asset            100    110    105    120    115    125
Prev Asset       #MI    100    110    105    120    115
Next Avl Asset   105    120    115    125    #MI    #MI

The following example assumes a Year dimension is added to Sample Basic.

FIX("West")
"Prev Sales" = @SHIFT(Sales, -1, @XRANGE("2011"->"Sep", "2012"->"Mar"));
ENDFIX;

The above calculation is performed across the following multidimensional range specified by XrangeList:

2011->Sep
2011->Oct
2011->Nov
2011->Dec
2012->Jan
2012->Feb
2012->Mar

See Also

- @MDSHIFT
- @NEXT
- @PRIOR
- @SHIFTPLUS
- @SHIFTMINUS

**@SHIFTMINUS**

Can be used in place of @SHIFT, @PRIOR, or @NEXT to improve performance if the formula meets the following criteria:

- The formula is being executed in CELL mode.
- The formula has one of the following patterns:
  
  \[ X = Y - \@SHIFT(mbrName [\, n, XrangeList]) \]

  or:

  \[ X = Y - \@PRIOR(mbrName [\, n, XrangeList]) \]

  or:

  \[ X = Y - \@NEXT(mbrName [\, n, XrangeList]) \]

If these criteria are met, consider rewriting your formula using @SHIFTMINUS, which runs the formula in block mode to improve performance.

**Syntax**

@SHIFTMINUS \( mbrName1, mbrName2 [\, n, XrangeList] \)
**Parameter**  **Description**

mbrName1  Any valid single member name or member combination, or a function that returns a single member or member combination.

mbrName2  Any valid single member name or member combination, or a function that returns a single member or member combination.

n  Optional signed integer. $n$ must be a numeric value, not a reference, such as a member name. If you are using @SHIFTPLUS to replace the @NEXT function, use 1 as the value for $n$. If you are using @SHIFTPLUS to replace the @PRIOR function, use -1 as the value for $n$. Default value is +1.

XrangeList  Optional parameter specifying a sequential range of members. If a range is not specified, Essbase uses the level 0 members from the dimension tagged as Time.

  Can be a valid member name, a comma-delimited list of member names, cross dimensional members, or a return value from a member set function or range function (including @XRANGE).

  For more information about rangeList and XrangeList, see Range List Parameters in the topic “Range and Financial Functions” on page 35.

**Example**

The following example shows a formula using @SHIFT().

Sales = Loss - @SHIFT(Sales, 1);

Here is the formula using @SHIFTMINUS() to improve performance:

@SHIFTMINUS (Loss, Sales, 1)

The following example assumes a Year dimension is added to Sample Basic.

FIX("South", "East")
Sales = @SHIFTMINUS (COGS, Sales, 1, @XRANGE("2011"->"Sep", "2012"->"Mar"));
ENDFIX;

The above calculation is performed across the following multidimensional range specified by XrangeList:

2011->Sep
2011->Oct
2011->Nov
2011->Dec
2012->Jan
2012->Feb
2012->Mar

**See Also**

- @SHIFT
- @SHIFTPLUS
- @PRIOR
- @NEXT
@SHIFTPLUS

Can be used in place of @SHIFT, @PRIOR, or @NEXT to improve performance if the formula meets the following criteria:

- The formula is being executed in CELL mode.
- The formula has one of the following patterns:

  \[ X = Y + \text{@SHIFT}(mbrName [,n, XrangeList]) \]

  or:

  \[ X = Y + \text{@PRIOR}(mbrName [,n, XrangeList]) \]

  or:

  \[ X = Y + \text{@NEXT}(mbrName [,n, XrangeList]) \]

If these criteria are met, consider rewriting your formula using @SHIFTPLUS, which runs the formula in block mode to improve performance.

Syntax

@SHIFTPLUS (mbrName1, mbrName2 [,n, XrangeList])

Parameter Description

mbrName1  Any valid single member name or member combination, or a function that returns a single member or member combination.

mbrName2  Any valid single member name or member combination, or a function that returns a single member or member combination.

n  Optional signed integer. n must be a numeric value, not a reference, such as a member name. If you are using @SHIFTPLUS to replace the @NEXT function, use 1 as the value for n. If you are using @SHIFTPLUS to replace the @PRIOR function, use -1 as the value for n. Default value is +1.

XrangeList  Optional parameter specifying a sequential range of members. If a range is not specified, Essbase uses the level 0 members from the dimension tagged as Time.

Can be a valid member name, a comma-delimited list of member names, cross dimensional members, or a return value from a member set function or range function (including @XRANGE).

For more information about rangeList and XrangeList, see Range List Parameters in the topic "Range and Financial Functions" on page 35.

Example

The following example shows a formula using @SHIFT().

Sales = Loss + @SHIFT(Sales, 1);

Here is the formula using @SHIFTPLUS() to improve performance:

@SHIFTPLUS (Loss, Sales, 1);

The following example assumes a Year dimension is added to Sample Basic.
Sales = @SHIFTPLUS (COGS, Sales, 1, @XRANGE("2011"->"Sep", "2012"->"Mar"));

The above calculation is performed across the following multidimensional range specified by XrangeList:

2011->Sep
2011->Oct
2011->Nov
2011->Dec
2012->Jan
2012->Feb
2012->Mar

See Also
● @SHIFT
● @SHIFTMINUS
● @PRIOR
● @NEXT

@SHIFTSIBLING

Returns the specified member or the $n^{th}$ sibling of the member. @SHIFTSIBLING traverses members that are at the same level and of the same parent. If the specified relative position moves beyond the first or last sibling, Essbase returns an empty string.

This function returns the next sibling as a string. To pass the @SHIFTSIBLING function as a parameter of another function, where the function requires a list of members, you must wrap the output of @SHIFTSIBLING with the @MEMBER function.

Syntax
@SHIFTSIBLING (mbrName [,relativePosition])

Parameter Description
mbrName Valid member name or member-name combination or a function that returns one member or member combination.
relativePosition Optional. The integer that defines the position relative to the specified member. Valid values:
  ● 0 (Default) Returns the specified member.
  ● < 0 (negative integer): Returns the previous sibling.
  ● > 0 (positive integer): Returns the next sibling.

Example
All examples are from the Sample.Basic database.

@SHIFTSIBLING("100-20",0)

Returns 100-20 (the specified member).
@SHIFTSIBLING("200", 1)

Returns 300 (the next sibling of 200). The @SHIFTSIBLING("200", 1) function and the
@NEXTSIBLING("200") function return the same results.

Returns 400 (the second-next sibling of 200).

@SHIFTSIBLING("100–20", -1)

Returns 100–10 (the previous sibling of 100-20). The @SHIFTSIBLING("100–20", -1)
function and the @PREVSIBLING("100–20") function return the same results.

@SHIFTSIBLING("100–10", 9)

Returns an empty string, as 100-10 does not have a ninth sibling.

@CHILDREN(@MEMBER(@SHIFTSIBLING("East")))

Returns all children of East. Because no shift position is specified, the default shift position is 0,
which means the current member.

See Also

- @PREVSIBLING
- @NEXTSIBLING

@SIBLINGS

Returns all siblings of the specified member.

Syntax

@SIBLINGS (mbrName)

Parameter Description

mbrName  Any valid single member name or member combination, or a function that returns a single member or
member combination.

Notes

This function returns all siblings of the specified member. This function excludes the specified
member.

This function can be used as a parameter of another function, where that parameter is a list of
members.

Essbase sorts the generated list of members as follows:

1. Left siblings of the member (siblings appearing above the member in the database outline)
in descending order
2. Right siblings of the member (siblings appearing below the member in the database outline)
in ascending order
Using Sample Basic as an example, if you specify 200-30 for \textit{mbrName}, Essbase returns 200-20, 200-10, 200-40 (in that order). This order is important to consider when you use the \texttt{@SIBLINGS} member set function with certain forecasting and statistical functions.

\textbf{Example}

In the Sample Basic database:

\begin{verbatim}
@SIBLINGS (Washington)
\end{verbatim}

Returns Oregon, California, Utah, and Nevada (in that order).

\begin{verbatim}
@SIBLINGS(East)
\end{verbatim}

Returns West, South, and Central (in that order).

\textbf{See Also}

- \texttt{@ISIBLINGS}
- \texttt{@ISISIBLING}
- \texttt{@ISSIBLING}
- \texttt{@LSIBLINGS}
- \texttt{@RSIBLINGS}
- \texttt{@SHIFTSIBLING}
- \texttt{@NEXTSIBLING}
- \texttt{@PREVSIBLING}

\textbf{@SLN}

Calculates the periodic amount that an asset in the current period may be depreciated, calculated across a range of periods. The depreciation method used is straight-line depreciation:

$\text{cost} - \frac{\text{salvage value}}{\text{life}}$

The SLN method assumes that the asset depreciates by the same amount each period.

More than one asset may be depreciated over the range. The value is depreciated from its entry period to the last period in the range. The resulting value represents the sum of all the per-period depreciation values of each asset being depreciated.

\textbf{Syntax}

\begin{verbatim}
@SLN (costMbr, salvageMbrConst, lifeMbrConst [, XrangeList])
\end{verbatim}

\begin{tabular}{|l|l|}
\hline
\textbf{Parameter} & \textbf{Description} \\
\hline
costMbr & Single member specification representing an input asset for the current period. \\
\hline
salvageMbrConst & Single member specification, variable name, or numeric expression, providing a constant numeric value. This value represents the value of the asset in the current period at the end of the useful life of the asset. \\
\hline
lifeMbrConst & Single member specification, variable name, or numeric expression representing the useful life of the asset. \\
\hline
\end{tabular}
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>XrangeList</td>
<td>Optional parameter specifying the range over which the function accepts input and returns depreciation values. If a range is not specified, Essbase uses the level 0 members from the dimension tagged as Time. Can be a valid member name, a comma-delimited list of member names, cross dimensional members, or a return value from a member set function or range function (including <code>@XRANGE</code>). For more information about <code>rangeList</code> and <code>XrangeList</code>, see Range List Parameters in the topic &quot;Range and Financial Functions&quot; on page 35.</td>
</tr>
</tbody>
</table>

**Notes**

Financial functions never return a value; rather, they calculate a series of values internally based on the range specified.

**Example**

In this example, the depreciation for each year is calculated by taking into account the initial asset (Asset), the salvage value of the asset (Residual), and the life of the asset (Life).

```plaintext
"SLN Dep" = @SLN(Asset,Residual,Life,FY1991:FY1995);
```

This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset</td>
<td>9,000</td>
<td>1,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Residual</td>
<td>750.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Life</td>
<td>5.00</td>
<td>#MI</td>
<td>5.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>SLN Dep</td>
<td>1650</td>
<td>1650</td>
<td>1850</td>
<td>1850</td>
<td>1850</td>
<td>0</td>
</tr>
</tbody>
</table>

The following example assumes a Year dimension is added to Sample Basic. It calculates depreciation using a multidimensional range.

```plaintext
FIX ("100-10", "New York")
"SLN Dep" = @SLN(Asset,Residual,Life,@XRANGE("2011"->"Sep", "2012"->"Mar"));
ENDFIX
```

The above calculation is performed across the following multidimensional range specified by XrangeList:

```
2011->Sep
2011->Oct
2011->Nov
2011->Dec
2012->Jan
2012->Feb
2012->Mar
```

**See Also**

- `@DECLINE`
- `@SYD`
@SPARENTVAL

Returns parent-level data based on the shared parent value of the current member being calculated.

Syntax

@SPARENTVAL (RootMbr [, mbrName])

Parameter Description

RootMbr Defines a member that is used to search for the nearest occurrence of a parent of a shared member.

mbrName Optional. Any valid single member name or member combination, or a function that returns a single member or member combination, from which the parent values are returned.

Notes

- You cannot use the @SPARENTVAL function in a FIX statement.
- The time required for retrieval and calculation may be significantly longer if this function is in a formula attached to a member tagged as Dynamic Calc or Dynamic Calc and Store.

Example

Marketing expenses are captured at the Product Category levels in a product planning application. The Product categories are defined as parents that contain shared members as children. The Marketing Expense data must be allocated down to each Product code based on Sales contribution.

The following Product hierarchy is defined:

Product
100
  100-10
  100-20
200
  200-10
  200-20
Diet ~
  100-10 @SHARED
  200-10 @SHARED@Caffeine Free ~
  100-20 @SHARED
  200-20 @SHARED

<table>
<thead>
<tr>
<th>Sales</th>
<th>Marketing</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-10</td>
<td>300</td>
</tr>
<tr>
<td>100-20</td>
<td>200</td>
</tr>
<tr>
<td>100</td>
<td>500</td>
</tr>
<tr>
<td>200-10</td>
<td>100</td>
</tr>
<tr>
<td>200-30</td>
<td>400</td>
</tr>
<tr>
<td>200</td>
<td>900</td>
</tr>
<tr>
<td>100-10</td>
<td>300</td>
</tr>
<tr>
<td>200-10</td>
<td>100</td>
</tr>
<tr>
<td>Diet</td>
<td>400</td>
</tr>
<tr>
<td>100-20</td>
<td>200</td>
</tr>
</tbody>
</table>
The Marketing Expense value is allocated down to each Product code with the following formula:

\[
\text{Marketing} = \frac{\text{Sales}}{\text{@SPARENTVAL(Product, Sales)}} \times \text{@SPARENTVAL(Product, Marketing)};
\]

which produces the following result:

<table>
<thead>
<tr>
<th>Sales</th>
<th>Marketing</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-10</td>
<td>300</td>
</tr>
<tr>
<td>100-20</td>
<td>200</td>
</tr>
<tr>
<td>100</td>
<td>500</td>
</tr>
<tr>
<td>200-10</td>
<td>100</td>
</tr>
<tr>
<td>200-30</td>
<td>400</td>
</tr>
<tr>
<td>200</td>
<td>900</td>
</tr>
<tr>
<td>100-10</td>
<td>300</td>
</tr>
<tr>
<td>200-10</td>
<td>100</td>
</tr>
<tr>
<td>Diet</td>
<td>400</td>
</tr>
<tr>
<td>100-20</td>
<td>200</td>
</tr>
<tr>
<td>200-30</td>
<td>400</td>
</tr>
<tr>
<td>Caffeine Free</td>
<td>600</td>
</tr>
</tbody>
</table>

The Marketing expenses can then be reconsolidated across Products and Markets.

See Also

- @PARENTVAL
- @MDPARENTVAL
- @SANCESTVAL

@SPLINE

Applies a smoothing spline to a set of data points. A spline is a mathematical curve that smoothes or interpolates data.

Syntax

@SPLINE (YmbrName [, s [, XmbrName [, XrangeList]]])

Parameter Description

YmbrName  A valid single member name that contains the dependent variable values used (when crossed with rangeList) to construct the spline.

s Optional. A zero (0) or positive value that determines the smoothness parameter. The default value is 1.0.

XmbrName  Optional. A valid single member name that contains the independent variable values used (when crossed with rangeList) to construct the spline. The default independent variable values are 0,1,2,3, and so on.

XrangeList Optional. A valid member name, a comma-delimited list of member names, cross dimension members, or a member set function or range function (including @XRANGE) that returns a list of members from the same dimension. If XrangeList is not specified, Essbase uses the level 0 members from the dimension tagged as Time.
Notes

- XrangeList must contain at least two values.
- If XrangeList contains gaps in the data (for example: Jan, Feb, Mar, Jun, Jul), be sure to specify XmbrName (for example: 0,1,2,5,6) so that correct results are returned.
- The @SPLINE function skips #MISSING values in YmbrName and XmbrName; in the result, Essbase replaces the #MISSING values of YmbrName with the spline values.
- The @SPLINE function calculates a smoothing cubic spline for \( n > 0 \).
- Setting the smoothness parameter (s) to 0 produces an interpolating spline, that is, a spline that fits the initial data exactly. Increasing s results in a smoother spline but a less exact approximation of the initial data.
- The @SPLINE function can be used with the @TREND function to forecast future values that are based on the values smoothed with @SPLINE.
- If you use an Essbase member set function to generate a member list for the XrangeList parameter (for example, @SIBLINGS), to ensure correct results, consider the order in which Essbase sorts the generated member list. For more information, see the help topic for the member set function you are using.
- When you use @SPLINE in a calculation script, use it within a FIX statement. Although using FIX is not required, it may improve calculation performance.
- When you use @SPLINE across a large range in a sparse dimension, you may need to increase the size of the calculator cache. For more information on the calculator cache, see the Oracle Essbase Database Administrator’s Guide.
- View the Algorithm for the smoothing spline.
Algorithm

\[(x_i, y_i), \quad i = 0, 1, \ldots, N\]

A function \(S(x)\) defined on grid \(X = \{x_i\}\) is called a smoothing cubic spline function if the function

1) is a cubic polynomial

\[S(x) = S_i(x) = a_0^{(i)} + a_1^{(i)}(x - x_i) + a_2^{(i)}(x - x_i)^2 + a_3^{(i)}(x - x_i)^3\]

on each partial segment \([x_i, x_i + 1], i = 0, 1, \ldots, N - 1\),

2) has the continuous second derivatives on segment \(\lbrack x_0, x_N \rbrack\), that is, the function is of class \(C^2\lbrack x_0, x_N \rbrack\).

3) minimizes the functional

\[J(f) = \varepsilon \int_{x_0}^{x_N} (f''(x))^2 \, dx + \sum_{i=0}^{N} (f(x_i) - y_i)^2,\]

where \(y_i\) are given numbers and \(\varepsilon \geq 0\), where \(\varepsilon\) is the smoothness parameter, and

4) satisfies the boundary condition:

\[S''(x_0) = 0, \quad S''(x_N) = 0\]

In each segment \([x_i, x_{i+1}], \quad i = 0, 1, \ldots, N - 1\), the smoothing spline function is sought in the following modified form:

\[S(x) = S_i(x) = z_i (1 - t) + z_{i+1} t - \frac{h_i^2}{6} \cdot t(1 - t)[(2 - t)z_i + (1 + t)z_{i+1}] \quad (\ast)\]

where

\[h_i = x_{i+1} - x_i \quad \text{and} \quad t = \frac{x - x_i}{h_i}, \quad (\ast\ast)\]

and numbers \(z_i\) and \(n_i\), \(i = 0, 1, \ldots, N\) are a solution of a linear algebraic system.
The numbers \( n_i \) are solutions to the system:

\[
\begin{align*}
    a_0 n_0 + b_0 n_1 + c_0 n_2 &= g_0, \\
    b_0 n_0 + a_1 n_1 + b_1 n_2 + c_1 n_3 &= g_1, \\
    c_{i-2} n_{i-2} + b_{i-1} n_{i-1} + a_i n_i + b_i n_{i+1} + c_i n_{i+2} &= g_i, \quad i = 2, 3, \ldots, N-2, \\
    c_{N-3} n_{N-3} + b_{N-2} n_{N-2} + a_{N-1} n_{N-1} + b_{N-1} n_N &= g_{N-1}, \\
    c_{N-2} n_{N-2} + b_{N-1} n_{N-1} + a_N n_N &= g_N,
\end{align*}
\]

where

\[
\begin{align*}
    a_i &= \frac{1}{3} (h_{i+1} + h_i) + \frac{1}{h_{i+1}^2} s + \left( \frac{1}{h_{i+1}} + \frac{1}{h_i} \right)^2 s + \frac{1}{h_i^2} s, \\
    b_i &= \frac{1}{6} h_i - \frac{s}{h_i} \left( \left( \frac{1}{h_{i+1}} + \frac{1}{h_i} \right) + \left( \frac{1}{h_{i+1}} + \frac{1}{h_{i+1}} \right) \right), \\
        &= \frac{s}{h_i h_{i+1}}, \quad i = 1, 2, \ldots, N-2, \\
    c_i &= \frac{s}{h_i h_{i+1}}, \quad i = 1, 2, \ldots, N-3 \\
    g_i &= \frac{y_{i+1} - y_i}{h_i} - \frac{y_i - y_{i-1}}{h_{i-1}}, \quad i = 1, 2, \ldots, N-1
\end{align*}
\]

The end conditions are:

\[
\begin{align*}
    a_0 &= 1, \quad b_0 = 0, \quad c_0 = 0, \quad g_0 = 0, \\
    a_N &= 1, \quad b_{N-1} = 0, \quad c_{N-2} = 0, \quad g_N = 0.
\end{align*}
\]

When numbers \( n_i \) are found, the magnitudes \( z_i \) are easily determined by formulas

\[
    z_i = y_i - s D_i, \quad i = 0, 1, 2, \ldots, N,
\]
The following example is based on the Sample Basic database. Assume that the Measures dimension contains an additional member, Sales Spline. The formula calculates the spline of Sales values for Jan through Jun, based on a smoothness parameter of 2.

"Sales Spline" = @SPLINE(Sales, 2, , Jan:Jun);

This example produces the following report:

<table>
<thead>
<tr>
<th>Colas</th>
<th>Actual</th>
<th>New York</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>Sales Spline</td>
<td></td>
</tr>
<tr>
<td>======</td>
<td>===========</td>
<td></td>
</tr>
<tr>
<td>Jan</td>
<td>645</td>
<td>632.8941564</td>
</tr>
<tr>
<td>Feb</td>
<td>675</td>
<td>675.8247101</td>
</tr>
<tr>
<td>Mar</td>
<td>712</td>
<td>724.7394598</td>
</tr>
<tr>
<td>Apr</td>
<td>756</td>
<td>784.2860765</td>
</tr>
<tr>
<td>May</td>
<td>890</td>
<td>852.4398456</td>
</tr>
<tr>
<td>Jun</td>
<td>912</td>
<td>919.8157517</td>
</tr>
</tbody>
</table>

And now given any x, use (*) and (**) from above to calculate S(x).

**Example**

The following example is based on the Sample Basic database. Assume that the Measures dimension contains an additional member, Sales Spline. The formula calculates the spline of Sales values for Jan through Jun, based on a smoothness parameter of 2.

"Sales Spline" = @SPLINE(Sales, 2, , Jan:Jun);

This example produces the following report:

<table>
<thead>
<tr>
<th>Colas</th>
<th>Actual</th>
<th>New York</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>Sales Spline</td>
<td></td>
</tr>
<tr>
<td>======</td>
<td>===========</td>
<td></td>
</tr>
<tr>
<td>Jan</td>
<td>645</td>
<td>632.8941564</td>
</tr>
<tr>
<td>Feb</td>
<td>675</td>
<td>675.8247101</td>
</tr>
<tr>
<td>Mar</td>
<td>712</td>
<td>724.7394598</td>
</tr>
<tr>
<td>Apr</td>
<td>756</td>
<td>784.2860765</td>
</tr>
<tr>
<td>May</td>
<td>890</td>
<td>852.4398456</td>
</tr>
<tr>
<td>Jun</td>
<td>912</td>
<td>919.8157517</td>
</tr>
</tbody>
</table>

**See Also**

- @TREND

**@STDEV**

Calculates the standard deviation of the specified data set (expList). The calculation is based upon a sample of a population. Standard deviation is a measure of how widely values are dispersed from their mean (average).

This function assumes that expList represents a sample of a population. If you want expList to represent the entire population, use @STDEVP. For large samples, the functions return similar values.

@STDEV is calculated using the "nonbiased" or "n-1" method.

@STDEV uses the following formula:

\[
\sqrt{\frac{n \sum x^2 - (\sum x)^2}{n(n-1)}}
\]

where

\[
D_0 = \frac{1}{h_0}(n_1 - n_0), \quad D_N = -\frac{1}{h_{N-1}}(n_N - n_{N-1}),
\]

\[
D_i = \frac{1}{h_i}(n_{i+1} - n_i) - \frac{1}{h_{i-1}}(n_i - n_{i-1}), \quad i = 1, 2, \ldots, N - 1.
\]
Syntax

@STDEV (SKIPNONE | SKIPMISSING | SKIPZERO | SKIPBOTH, expList)

Parameter | Description
--- | ---
SKIPNONE | Includes all cells specified in expList, regardless of their content, during calculation of the standard deviation.
SKIPMISSING | Excludes all #MISSING values from expList during calculation of the standard deviation.
SKIPZERO | Excludes all zero (0) values from expList during calculation of the standard deviation.
SKIPBOTH | Excludes all zero (0) values and #MISSING values from expList during calculation of the standard deviation.
expList | Comma-delimited list of member specifications, variable names, functions, or numeric expressions. expList provides a list of numeric values across which the standard deviation is calculated.

Notes

The @STDEV function replaces the @STDDEV function. The only difference between the functions is the SKIP parameter in the @STDEV function. Although the old @STDDEV function is supported for migration purposes, you can no longer select it in the Calculation Script Editor or Formula Editor.

Example

The following example is based on the Sample Basic database. Assume that the Measures dimension contains an additional member, Std Deviation. This example calculates the standard deviation (based on a sample of a population) of the sales values for all products and uses the @RANGE function to generate expList.

FIX (Product)
"Std Deviation" = @STDEV(SKIPBOTH,@RANGE(Sales,@CHILDREN(Product)));
ENDFIX

This example produces the following report:

```
Jan  New York
Actual  Budget
======  ======
Sales
Colas   678  640
Root Beer  551  530
Cream Soda  663  510
Fruit Soda  587  620
Diet Drinks  #MI  #MI
Product   2479  2300

Std Deviation  Product  60.73  64.55
```

See Also

- @RANGE
- @STDEVP
- @STDEVRENGA
@STDEVP

Calculates the standard deviation of the specified data set (expList).

Syntax

@STDEVP (SKIPNONE | SKIPMISSING | SKIPZERO | SKIPBOTH, expList)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SKIPNONE</td>
<td>Includes all cells specified in expList, regardless of their content, during calculation of the standard deviation.</td>
</tr>
<tr>
<td>SKIPMISSING</td>
<td>Excludes all #MISSING values from expList during calculation of the standard deviation.</td>
</tr>
<tr>
<td>SKIPZERO</td>
<td>Excludes all zero (0) values from expList during calculation of the standard deviation.</td>
</tr>
<tr>
<td>SKIPBOTH</td>
<td>Excludes all zero (0) values and #MISSING values from expList during calculation of the standard deviation.</td>
</tr>
</tbody>
</table>

expList : Comma-delimited list of member specifications, variable names, functions, or numeric expressions. expList provides a list of numeric values across which the standard deviation is calculated.

Notes

@STDEVP calculates the standard deviation of the specified data set (expList). The calculation is based upon the entire population. Standard deviation is a measure of how widely values are dispersed from their mean (average).

This function assumes that expList represents the entire population. If you want expList to represent a sample of a population, use @STDEV. For large samples, the functions return similar values.

@STDEVP is calculated using the "biased" or "n" method.

@STDEVP uses the following formula:

\[
\sqrt{\frac{n \sum x^2 - (\sum x)^2}{n^2}}
\]

Example

The following example is based on the Sample Basic database. Assume that the Measures dimension contains an additional member, Std Deviation. This example calculates the standard deviation (based on the entire population) of the sales values for all products and uses the @RANGE function to generate expList.

FIX (Product)
"Std Deviation" = @STDEVP(SKIPBOTH, @RANGE(Sales, @CHILDREN(Product)));
ENDFIX

This example produces the following report:

<table>
<thead>
<tr>
<th>Jan</th>
<th>New York</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual</td>
<td>Budget</td>
</tr>
<tr>
<td>======</td>
<td>========</td>
</tr>
<tr>
<td>Sales</td>
<td>Colas</td>
</tr>
<tr>
<td>----------------</td>
<td>-------</td>
</tr>
<tr>
<td>Root Beer</td>
<td>551</td>
</tr>
<tr>
<td>Cream Soda</td>
<td>663</td>
</tr>
<tr>
<td>Fruit Soda</td>
<td>587</td>
</tr>
<tr>
<td>Diet Drinks</td>
<td>#MI</td>
</tr>
<tr>
<td>Product</td>
<td>2479</td>
</tr>
</tbody>
</table>

Std Deviation  | Product | 52.59 | 55.90 |

See Also
- @RANGE
- @STDEV
- @STDEVRANGE

@STDEVRANGE

Calculates the standard deviation of all values of the specified member (mbrName) across the specified data set (XrangeList). The calculation is based upon a sample of a population. Standard deviation is a measure of how widely values are dispersed from their mean (average). This function is calculated using the "unbiased" or "n-1" method. See @STDEV for the formula used.

Syntax

@STDEVRANGE (SKIPNONE | SKIPMISSING | SKIPZERO | SKIPBOTH, mbrName [, XrangeList])

Parameter       | Description
----------------|---------------------------------------------------
SKIPNONE        | Includes all cells specified in expList, regardless of their content, during calculation of the standard deviation.
SKIPMISSING     | Excludes all #MISSING values from expList during calculation of the standard deviation.
SKIPZERO         | Excludes all zero (0) values from expList during calculation of the standard deviation.
SKIPBOTH         | Excludes all zero (0) values and #MISSING values from expList during calculation of the standard deviation.
mbrName          | Any valid single member name or member combination, or a function that returns a single member or member combination.
XrangeList       | Optional. A valid member name, a comma-delimited list of member names, cross dimension members, or a member set function or range function (including @XRANGE) that returns a list of members from the same dimension. If XrangeList is not specified, Essbase uses the level 0 members from the dimension tagged as Time.

Notes

The @STDEVRANGE function replaces the @STDDEVRANGE function. The only difference between the functions is the SKIP parameter in the @STDEVRANGE function. Although the old @STDDEVRANGE function is supported for migration purposes, you can no longer select it in the Calculation Script Editor or Formula Editor.
Example

The following example is based on the Sample Basic database. Assume that the Measures dimension contains an additional member, Std Deviation. This example calculates the standard deviation (based on a sample of a population) of the sales values for all products.

```
FIX (Product)
"Std Deviation" = @STDEVRANGE(SKIPBOTH,Sales,@CHILDREN(Product));
ENDFIX
```

This example produces the following report:

<table>
<thead>
<tr>
<th>Jan Actual</th>
<th>New York Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>Colas 678</td>
</tr>
<tr>
<td></td>
<td>Root Beer 551</td>
</tr>
<tr>
<td></td>
<td>Cream Soda 663</td>
</tr>
<tr>
<td></td>
<td>Fruit Soda 587</td>
</tr>
<tr>
<td></td>
<td>Diet Drinks #MI</td>
</tr>
<tr>
<td>Product</td>
<td>2479</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Std Deviation</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>60.73</td>
<td>64.55</td>
</tr>
</tbody>
</table>

See Also

- @STDEV
- @STDEVP

@SUBSTRING

Returns the requested string of characters from an existing source string. The source string can be a text string or a member name, or it can result from a specified function that returns a text string or a single member name.

Syntax

```
@SUBSTRING (String, StartPosition [, EndPosition])
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>String</td>
<td>A string or a function that returns a string or a single member name (For example, @ATTRIBUTESVAL, @CONCATENATE, and @NAME return strings.)</td>
</tr>
<tr>
<td>StartPosition</td>
<td>Beginning character position within String to include in the substring. An integer greater than or equal to 0, where 0 corresponds to the first character in String, 1 corresponds to the second character, and so on.</td>
</tr>
<tr>
<td>EndPosition</td>
<td>Optional. An integer greater than or equal to 1, where 1 corresponds to the first character in String, 2 corresponds to the second character, and so on. If EndPosition is not specified or is less than StartPosition, Essbase returns all remaining characters from the source string. Note that this is a different numbering scheme that the start position uses.</td>
</tr>
</tbody>
</table>

Example

The following examples are based on the Sample Basic database:
<table>
<thead>
<tr>
<th>Function Statement</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>@SUBSTRING (&quot;100-10&quot;,1)</td>
<td>&quot;00-10&quot;</td>
</tr>
<tr>
<td>@SUBSTRING (&quot;200-21&quot;,0,2)</td>
<td>&quot;20&quot;</td>
</tr>
<tr>
<td>@SUBSTRING (@Name(@Parent(Jan)),3)</td>
<td>&quot;1&quot;</td>
</tr>
<tr>
<td>(The parent of Jan is Qtr1.)</td>
<td></td>
</tr>
</tbody>
</table>

See Also

- @CONCATENATE
- @MEMBER

@SUM

Returns the summation of all the values in `expList`.

Syntax

@SUM (expList)

Parameter Description

expList    Comma-delimited list of member specifications, variable names, or numeric expressions, all of which provide numeric values.

Example

In the Sample Basic database:

```
FIX("Total Expenses")
West=@SUM(West, East);
ENDFIX
```

Since the calculation script fixes on Total Expenses, the value for Total Expenses->West is equal to the sum of the value for East and the values for the states making up the West. For Sales, West and East are simply the sum of the states making up each region (that is, Sales->West is not equal to the sum of East and West). This example produces the following report:

<table>
<thead>
<tr>
<th>Product</th>
<th>Qtr1</th>
<th>Actual Total Expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>7705</td>
<td>2068</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>3660</td>
<td>892</td>
</tr>
<tr>
<td>Florida</td>
<td>4132</td>
<td>1313</td>
</tr>
<tr>
<td>Connecticut</td>
<td>3472</td>
<td>1087</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>1652</td>
<td>801</td>
</tr>
<tr>
<td>East</td>
<td>20621</td>
<td>6161</td>
</tr>
<tr>
<td>California</td>
<td>11056</td>
<td>2742</td>
</tr>
<tr>
<td>Oregon</td>
<td>5058</td>
<td>1587</td>
</tr>
<tr>
<td>Washington</td>
<td>4835</td>
<td>1621</td>
</tr>
<tr>
<td>Utah</td>
<td>4209</td>
<td>1544</td>
</tr>
<tr>
<td>Nevada</td>
<td>6516</td>
<td>2193</td>
</tr>
<tr>
<td>West</td>
<td>31674</td>
<td>15848</td>
</tr>
</tbody>
</table>
@SUMRANGE

Returns the summation of all the values of the specified member (mbrName) across the specified range (XrangeList).

Syntax

@SUMRANGE (mbrName [,XrangeList])

Parameter Description

mbrName Any valid single member name, or a function that returns a single member.

Note: Cross-dimensional member combination is not supported for mbrName for this function.

XrangeList Optional. A valid member name, a comma-delimited list of member names, cross dimension members, or a member set function or range function (including @XRANGE) that returns a list of members from the same dimension. If XrangeList is not specified, Essbase uses the level 0 members from the dimension tagged as Time.

Example

The following example is based on the Sample Basic database. Assume that the Year dimension contains an additional member, Partial Year. The formula for Partial Year sums the values for New York across the range of Jan through Jun. The calculation script fixes on Sales, so this formula is applied only to Sales values.

FIX(Sales)
"Partial Year"=@SUMRANGE("New York",Jan:Jun);
ENDFIX

This example produces the following report:

<table>
<thead>
<tr>
<th>Actual</th>
<th>New York</th>
<th>Colas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jan</td>
<td>678</td>
<td></td>
</tr>
<tr>
<td>Feb</td>
<td>645</td>
<td></td>
</tr>
<tr>
<td>Mar</td>
<td>675</td>
<td></td>
</tr>
<tr>
<td>Apr</td>
<td>712</td>
<td></td>
</tr>
<tr>
<td>May</td>
<td>756</td>
<td></td>
</tr>
<tr>
<td>Jun</td>
<td>890</td>
<td></td>
</tr>
<tr>
<td>Partial Year</td>
<td>4356</td>
<td></td>
</tr>
</tbody>
</table>

See Also

- @SUM
@SYD

Calculates the periodic amount (usually annual) that an asset in the current period may be depreciated, across a range of periods. The depreciation method used is sum of the year's digits. The SYD method assumes that depreciation amounts are higher at the earlier stages of the asset's life. Thus, XrangeList can be used to specify a period to calculate.

More than one asset may be depreciated over the range. The value is depreciated from its entry period to the last period in the range. The resulting value represents the sum of all per-period depreciation values of each asset.

Syntax

@SYD (costMbr, salvageMbrConst, lifeMbrConst [, XrangeList])

Parameter Description

costMbr Single member specification representing an input asset for the current period.

salvageMbrConst Single member specification, variable name, or numeric expression, providing a constant numeric value. This value is the value of the asset in the current period after the useful life of the asset.

lifeMbrConst Single member specification, variable name, or numeric expression representing the useful life of the asset.

XrangeList Optional parameter specifying the range over which the function accepts input and returns depreciation values. If a range is not specified, Essbase uses the level 0 members from the dimension tagged as Time.

Can be a valid member name, a comma-delimited list of member names, cross dimensional members, or a return value from a member set function or range function (including @XRANGE).

For more information about rangeList and XrangeList, see Range List Parameters in the topic "Range and Financial Functions" on page 35.

Notes

Financial functions never return a value; rather, they calculate a series of values internally based on the range specified.

Example

In this example, the depreciation for each year is calculated by taking into account the initial asset (Asset), the salvage value of the asset (Residual), and the life of the asset (Life).

"SYD Dep"=@SYD(Asset, Residual, Life, FY1999:FY2002, FY2003);

This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset</td>
<td>9,000</td>
<td>0</td>
<td>1,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Residual</td>
<td>750.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Life</td>
<td>5.00</td>
<td>#MISSING</td>
<td>3.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>SYD Dep</td>
<td>2750</td>
<td>2200</td>
<td>2150</td>
<td>1433</td>
<td>717</td>
</tr>
</tbody>
</table>

The following example assumes a Year dimension is added to Sample Basic. It calculates depreciation using a multidimensional range.
The above calculation is performed across the following multidimensional range specified by XrangeList:

2011->Sep
2011->Oct
2011->Nov
2011->Dec
2012->Jan
2012->Feb
2012->Mar

See Also

- @DECLINE
- @SLN

@TODATE

Converts date strings to numbers that can be used in calculation formulas. @TODATE converts date strings into the number of seconds elapsed since midnight, January 1, 1970.

Syntax

@TODATE (formatString, dateString)

Parameter Description

formatString The format of the date string, either "mm-dd-yyyy" or "dd-mm-yyyy" (must be in lower case).

dateString The date string.

Notes

- If you specify a date that is earlier than 01-01-1970, this function returns an error.
- The latest date supported by this function is 12-31-2037.

Example

The following example is based on the Sample Basic database.

Marketing
(IF (@ATTRIBUTEVAL("Intro Date") >
    @TODATE("mm-dd-yyyy","06-30-1996")
Marketing - (Marketing * .1);
ENDIF);

This formula searches for members with an Intro Date attribute member that is later than 6-30-96 and decreases Marketing for those members by 10 percent. In order to process the formula, Essbase converts the date strings to numbers before it calculates.

This example produces the following report:
Returns the numeric date value from input date-string according to the date-format specified. The date returned is the number of seconds elapsed since midnight, January 1, 1970.

If the date or the date format strings are invalid, an error is returned.

**Syntax**

@TODATEEX(date_format_string, string)
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>date_format_string</td>
<td>One of the following literal strings (excluding ordered-list numbers and parenthetical examples) indicating a supported date format.</td>
</tr>
<tr>
<td>1.</td>
<td>&quot;mon dd yyyy&quot; (Example: mon = Aug)</td>
</tr>
<tr>
<td>2.</td>
<td>&quot;Month dd yyyyy&quot; (Example: Month = August)</td>
</tr>
<tr>
<td>3.</td>
<td>&quot;mm/dd/yy&quot;</td>
</tr>
<tr>
<td>4.</td>
<td>&quot;mm/dd/yyyy&quot;</td>
</tr>
<tr>
<td>5.</td>
<td>&quot;yy.mm.dd&quot;</td>
</tr>
<tr>
<td>6.</td>
<td>&quot;dd/mm/yy&quot;</td>
</tr>
<tr>
<td>7.</td>
<td>&quot;dd.mm.yy&quot;</td>
</tr>
<tr>
<td>8.</td>
<td>&quot;dd-mm-yy&quot;</td>
</tr>
<tr>
<td>9.</td>
<td>&quot;dd Month yy&quot;</td>
</tr>
<tr>
<td>10.</td>
<td>&quot;dd mon yy&quot;</td>
</tr>
<tr>
<td>11.</td>
<td>&quot;Month dd, yy&quot;</td>
</tr>
<tr>
<td>12.</td>
<td>&quot;mon dd, yy&quot;</td>
</tr>
<tr>
<td>13.</td>
<td>&quot;mm-dd-yy&quot;</td>
</tr>
<tr>
<td>14.</td>
<td>&quot;yy/mm/dd&quot;</td>
</tr>
<tr>
<td>15.</td>
<td>&quot;yymmdd&quot;</td>
</tr>
<tr>
<td>16.</td>
<td>&quot;dd Month yyyyy&quot;</td>
</tr>
<tr>
<td>17.</td>
<td>&quot;dd mon yyyy&quot;</td>
</tr>
<tr>
<td>18.</td>
<td>&quot;yyyy-mm-dd&quot;</td>
</tr>
<tr>
<td>19.</td>
<td>&quot;yyyy/mm/dd&quot;</td>
</tr>
<tr>
<td>20.</td>
<td><strong>Long format</strong> (Example: WeekDay, Mon dd, yyyy)</td>
</tr>
<tr>
<td>21.</td>
<td><strong>Short format</strong> (Example: m/d/yy)</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td>string</td>
<td>A date string following the rules of <code>internal-date-format</code>. The following examples correspond to the above listed internal date formats.</td>
</tr>
</tbody>
</table>

1. Jan 15 2006
2. January 15 2006
3. 01/15/06
4. 01/15/2006
5. 06.01.06
6. 15/01/06
7. 15.01.06
8. 15-01-06
9. 15 January 06
10. 15 Jan 06
11. January 15 06
12. Jan 15 06
13. 01-15-06
14. 06/01/15
15. 060115
16. 15 January 2006
17. 15 Jan 2006
18. 2006-01-15
19. 2006/01/15
21. 1/8/06 (m/d/yy)

**Notes**

- This function is case-sensitive. For example, using `apr` instead of `Apr` returns an error.
- Using extra whitespace not included in the internal format strings returns an error.
- Trailing characters after the date format has been satisfied are ignored. If you erroneously use a date string of `06/20/2006` with date format `mm/dd/yy`, the trailing `06` is ignored and the date is interpreted as June 20, 2020.
- Long Format (Weekday, Mon dd, yyyy) is not verified for a day-of-week match to the given date.

  For example: For date string `Sunday, March 13, 2007` with date format Long Format, the input date string is parsed correctly for March 13, 2007, although March 13, 2007 does not fall on Sunday.
- If you specify a date that is earlier than 01-01-1970, this function returns an error.
- The latest date supported by this function is 12-31-2037.
- When the `yy` format is used, this function interprets years in the range 1970 to 2029.
Returns a number representing the current date on the Essbase computer. The number is the number of seconds elapsed since midnight, January 1, 1970.

Syntax
@TODAY()

Notes
- The date returned can be used as input to other functions listed in the See Also section.
- As this function is a run-time formula, you cannot use it in a FIX statement.

Example
If today’s date is 15-Jul-2014, the following expression returns 15:
@DATEPART(@TODAY(), DP_DAY)

See also the example for @FORMATDATE.

See Also
- @DATEDIFF
- @DATEPART
- @DATEROLL
- @FORMATDATE
- @TODATEEX

Calculates future values based on curve-fitting to historical values. The @TREND procedure considers a number of observations; constructs a mathematical model of the process based on these observations (that is, fits a curve); and predicts values for a future observation. You can use weights to assign credibility coefficients to particular observations, report errors of the curve fitting, choose the forecasting method to be used (for example, linear regression), and specify certain data filters.

Syntax
@TREND (Ylist, [Xlist], [weightList], [errorList], [XforecastList], YforecastList,
method[, method parameters] [, Xfilter1 [, parameters]] [, XfilterN [, parameters]] [, Yfilter1 [, parameters]] [, YfilterN [, parameters]])
Parameter | Description
--- | ---
Ylist | An expression list that contains known observations; for example, sales figures over a period of time.
Xlist | Optional. An expression list that contains underlying variable values. For example, for each sales figure in Ylist, Xlist may contain a value for associated time periods. If you do not specify Xlist, the default variable values are 1, 2, 3, and so on, up to the number of values in Ylist.
weightList | Optional. An expression list that contains weights for the data points in Ylist, for the linear regression method only. If values in weightList are #MISSING, the default is 1. Weights for methods other than linear regression are ignored. Negative weights are replaced with their absolute values.
errorList | Optional. Member list that represents the differences between the data points in Ylist and the data points on the line or curve (as specified for method).
XforecastList | Optional. Expression list that contains the underlying variable values for which the forecasting is sought. If you do not specify XforecastList, the values are assumed to be as follows: {(last value in Xlist + 1), (last value in Xlist + 2), ...} up to (last value in Xlist + the number of values in YforecastList).
  If you forecast consecutively from where Ylist stops, you do not need to specify XforecastList. If you want to move the forecasting period forward, specify the new period with XforecastList.
YforecastList | A member list into which the forecast values are placed.
method | A choice among LR (linear regression), SES (single exponential smoothing), DES (double exponential smoothing), and TES (triple exponential smoothing). Method parameters must be numeric values, not member names. Method parameters may be any of the following:
  - LR[,]t: standard linear regression with possible weights assigned to each data point and an optional seasonal adjustment period [t], where [t] is the length of the period. In general, the weights are equal to 1 by default. You might want to increase the weight if the corresponding observation is important, or decrease the weight if the corresponding observation is an outlier or is unreliable.
  - SES[,]c: single exponential smoothing with parameter c (default c=0.2). This method uses its own weight system, using the single parameter c. Increasing this parameter gives more weight to early observations than to later ones.
  - DES[,]c1,c2: double exponential smoothing (Holt’s method) with optional parameters c1, c2 (default c1=0.2, c2=0.3). This is a two-parameter weight system and a linear subsequent approximation scheme. The first parameter controls weight distribution for the intercept; the second parameter controls weight distribution for the slope of the line fit.
  - TES[,]c1,c2,c3,T: triple exponential smoothing (Holt-Winters method) with optional parameters c1, c2, c3, T (default c1=0.2, c2=0.05, c3=0.1, T=1). This is a three-parameter weight system and a linear model with a multiplicative seasonal component.
Xfilter1 ... XfilterN | Optional. Use one or more of the following filter methods to scale Xlist:
  - XLOG[,]c: logarithmic change with shift c (x' = log(x+c)) (default c=1)
  - XEXP[,]c: exponential change with shift c (x' = exp(x+c)) (default c=0).
  - XPOW[,]c: power change with power c (x' = x^c) (default c=2).
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| Yfilter1 ... YfilterN | Optional. Use one or more of the following filter methods to scale Ylist:
|             | - **YLOG**[c]: logarithmic change with shift c \(y' = \log(y+c)\) (default c=1)
|             | - **YEXP**[c]: exponential change with shift c \(y' = \exp(y+c)\) (default c=0).
|             | - **YPOW**[c]: power change with power c \(y' = y^c\) (default c=2).

**Notes**
- The @TREND function can be used only in calculation scripts, not in outline formulas.
- In a calculation script, you must associate the @TREND formula with a member.
- Ylist, Xlist, weightList, and errorList should contain the same number of values.
- XforecastList and YforecastList should contain the same number of values.
- The method and filter parameters must be numbers only; functions and member names are not allowed.
- @TREND ignores #MISSING values during calculation of the trend.
- When you use the LR method with seasonal adjustments or when you use the TES method, Essbase places strict requirements on the input data. With these methods, input data cannot contain #MISSING values. Also, if you specify Xlist, the data must be equidistant, with the interval (step) being a whole fraction of the period, T (for example, T/5, T/2). The XforecastList parameters should also contain multiples of the interval.
- For another example using the @TREND function with more options used, see the Oracle Essbase Database Administrator’s Guide.
- If you use a member set function to generate a member list for this function, (for example, @SIBLINGS), to ensure correct results, consider the order in which Essbase sorts the generated member list. For more information, see the help topic for the member set function you are using.
- The following algorithms are used to calculate @TREND:
Algorithm for Linear Regression

\( Ylist \quad y_1, y_2, \ldots, y_k \)

\( Xlist \quad x_1, x_2, \ldots, x_k \)

\( weightList \quad w_1, w_2, \ldots, w_k \)

**Linear Regression (LR)**

(if \( w_i \) is #MISSING or the whole \( weightList \) is missing as an argument, \( w_i = 1 \))

\[
S = \sum_{i=1}^{K} (w_i)^2 \\
S_x = \sum_{i=1}^{K} x_i (w_i)^2 \\
S_y = \sum_{i=1}^{K} y_i (w_i)^2 \\
S_{xx} = \sum_{i=1}^{K} (x_i)^2 (w_i)^2 \\
S_{xy} = \sum_{i=1}^{K} (x_i y_i) (w_i)^2 \\
\Delta = SS_{xx} - (S_x)^2 \\
a = \frac{S_{xx} S_y - S_x S_{xy}}{\Delta} \\
b = \frac{SS_{xy} - S_x S_y}{\Delta} \\
the equation of the line is:

\[
line = Y_{LR}(x) = a + bx
\]
Algorithm for Linear Regression with Seasonal Adjustment

\[
\begin{align*}
&\ y_1 \quad y_2 \quad y_3 \quad y_4 \quad y_5 \quad y_6 \\
&\text{In linear regressions, the intervals between } x \text{ values must be the same.} \\
&\text{The value of that interval is } \Delta. \text{ In this case, } \Delta = 1. \\
\end{align*}
\]

Step 1, Centered moving average of \( y \)'s, where \( n = 3 \) (moving centered average with 3 members at a time)

\[
\begin{align*}
&\ \frac{y_1 + y_2 + y_3}{3} = \bar{y}_2 \\
&\ \frac{y_2 + y_3 + y_4}{3} = \bar{y}_3 \\
&\ \frac{y_3 + y_4 + y_5}{3} = \bar{y}_4 \\
&\ \frac{y_4 + y_5 + y_6}{3} = \bar{y}_5 \\
\end{align*}
\]

\[\text{centered moving average}\]

\[Ylist = y_1, y_2, \ldots, y_X\]

\[Xlist = x_1, x_2, \ldots, x_X\]

\[weightList = w_1, w_2, \ldots, w_X\]

@TREND(\(Ylist,\), \(LR, t\))

Linear regression with seasonal adjustment example:

There are 6 data points and a seasonal adjustment parameter, \( t = 3 \)

Input data:

\[x_1 = 1 \quad x_2 = 2 \quad x_3 = 3 \quad x_4 = 4 \quad x_5 = 5 \quad x_6 = 6\]
In linear regressions with seasonal adjustments, the intervals between x values must be the same. Δ is equal to that interval. In this case, Δ = 1.

Step 1, Centered moving average of y’s, where k = 3 (moving centered average with 3 members at a time)

\[ \frac{y_1 + y_2 + y_3}{3} = \bar{y}_2 \]
\[ \frac{y_2 + y_3 + y_4}{3} = \bar{y}_3 \]
\[ \frac{y_3 + y_4 + y_5}{3} = \bar{y}_4 \]
\[ \frac{y_4 + y_5 + y_6}{3} = \bar{y}_5 \]

centered moving average

Step 2, Subtract \( \bar{y} \)'s from y's:

\[ \begin{array}{c|cccc}
\hline
y_2 & y_3 & y_4 & y_5 \\
\hline
\bar{y}_2 & \bar{y}_3 & \bar{y}_4 & \bar{y}_5 \\
\hline
\end{array} \]

\[ \hat{y}_2 \hat{y}_3 \hat{y}_4 \hat{y}_5 \]
difference

Step 3, Arrange \( \hat{y} \)'s into k(\( k = 3 \)) columns to derive \( \overline{P} \)'s and average values along columns:

\[ \begin{array}{c|cccc}
\hline
\hat{y}_2 & \hat{y}_3 \\
\hline
\hat{y}_4 & \hat{y}_5 \\
\hline
\frac{1}{2} & \frac{1}{2} & \frac{1}{2} \\
\hline
\end{array} \]

\[ -P_0 \ -P_1 \ -P_2 \]
adjustment list
Step 4, Subtract $P$'s from original $Y_{list}$:

\[
\begin{array}{cccccccc}
Y_1 & Y_2 & Y_3 & Y_4 & Y_5 & Y_6 \\
P_0 & P_1 & P_2 & P_0 & P_1 & P_2 \\
Y_1' & Y_2' & Y_3' & Y_4' & Y_5' & Y_6'
\end{array}
\]

Step 5, Linear Regression (LR) with

\[
x_1 = 1 \quad x_2 = 2 \quad x_3 = 3 \quad x_4 = 4 \quad x_5 = 5 \quad x_6 = 6
\]

\[
Y_1' \quad Y_2' \quad Y_3' \quad Y_4' \quad Y_5' \quad Y_6'
\]

as shown in **Linear Regression (LR) section**, deriving $a,b$ such that

\[y = bx + a\]

is the trending line.

Step 6, To get future trend value for $x$:

\[
x : \quad Y_{\text{forecast}} = b \cdot x + a + P_i, \quad \text{where} \quad P_i : \quad i = \frac{(x - x_1) \mod t}{\Delta}
\]

\[= \frac{(x - 1) \mod 3}{1}
\]

\[= (x - 1) \mod 3\]

Algorithm for Single Exponential Smoothing (SES)

\[Y_{list} \quad Y_1, Y_2, \ldots, Y_N\]

\[X_{list} \quad x_1, x_2, \ldots, x_N\]
\( c = 0.2 \) default, or else \( c \) is input into the trend

find \( S_1, S_2, \ldots, S_K \):

\[
S_1 = y_1
\]

\[
S_{i+1} = a_i \cdot S_i + (1 - a_i) y_i \quad \text{for } i = 1, \ldots, K - 1
\]

then \( Y_{\text{forecast}}(x) = a \cdot S_K + (1 - a) \cdot y_K \)

where \( a_i = (1 - c)^{x_{i+1} - x_i} \)

\[ a = (1 - c)^{x_K - x_1} \]

Note: When \( Xlist \) is missing, \( x_{i+1} - x_i = 1 \) and the correspondent coefficients

\[ a_i = (1 - c) \quad \text{for } i = 1, \ldots, K - 1 \]

Algorithm for Double Exponential Smoothing (DES)

\( Ylist \quad y_1, y_2, \ldots, y_K \)

\( Xlist \quad x_1, x_2, \ldots, x_K \)
Algorithm for Triple Exponential Smoothing (TES)

\[ c_1 = .2, \quad c_2 = .3 \]
default, or else they are input into the trend

\[
\begin{align*}
\text{find} & \quad S_1, S_2, \ldots, S_K \\
& \quad b_1, b_2, \ldots, b_K \\
S_1 &= y_1 \\
b_1 &= \frac{(y_2 - y_1)}{(x_2 - x_1)} \\
S_{i+1} &= a_i \cdot (S_i + b_i (x_{i+1} - x_i)) + (1 - a_i) \cdot (y_{i+1}) \\
b_{i+1} &= d_i \cdot b_i + (1 - d_i) \cdot \left[ \frac{(S_{i+1} - S_i)}{x_{i+1} - x_i} \right]
\end{align*}
\]

where \[ a_i = (1 - c_1)^{x_{i+1} - x_i} \]
\[ d_i = (1 - c_2)^{x_{i+1} - x_i} \]

then \[ Y_{\text{forecast}}(x) = S_K + (x - x_K) b_K \]

Note: When \( Xlist \) is missing, \( x_{i-1} - x_i = 1 \) and the correspondent coefficients

\[ a_i = (1 - c_1) \quad \text{for } i = 1, \ldots, K - 1 \]
\[ b_i = (1 - c_2) \]

Algorithm for Triple Exponential Smoothing (TES)

\[ Ylist \quad y_1, y_2, \ldots, y_K \]
\[ Xlist \quad x_1, x_2, \ldots, x_K \]
TES with period $T$ (if $T$ is not given, it is assumed to be $T = 1$)

$x_1, x_2, \ldots, x_K, \quad y_1, y_2, \ldots, y_K$ are input to TES, $x$ is forecast value.

$$a_i = (1 - c)x_{i+1} - x_i \quad d_i = (1 - d)x_{i+1} - y_i \quad e_i = (1 - e)x_{i+1} - x_i$$

**Note:** When $Xlist$ is missing, $x_{i-1} - x_i = i$ and the correspondent coefficients

$$a_i = (1 - c) \quad \text{for } i = 1, \ldots, K - 1$$

$$d_i = (1 - d)$$

$$e_i = (1 - e)$$

Default

$c = 0.2$

$d = 0.05$

$e = 0.1$

Step 1,

$$S_1 = y_1$$

$$b_1 = \frac{y_2 - y_1}{x_2 - x_1}$$

$$I_1 = 1$$

Step 2, For $i = 1, \ldots, T - 1$

$$S_{i+1} = a_i \times (S_i + b_i \times (x_{i+1} - x_i)) + (1 - a_i) \times \frac{y_i}{I_i}$$

$$I_{i+1} = \frac{y_i}{S_i}$$

$$b_{i+1} = d_i b_i + (1 - d_i) \times \frac{S_{i+1} - S_i}{x_{i+1} - x_i}$$
Step 3, For \( i = T, \ldots, K \)

\[
S_{i+1} = a_i \cdot (S_i + b_i \cdot (x_{i+1} - x_i)) + (1 - a_i) \frac{Y_{i+1}}{I_{i+1:T}}
\]

\[
I_{i+1} = e_i \cdot I_{i+1:T} + (1 - e_i) \frac{Y_{i+1}}{S_i}
\]

\[
b_{i+1} = d_i \cdot b_i + (1 - d_i) \frac{S_{i+1} - S_i}{x_{i+1} - x_i}
\]

Forecast for \( x \) is \( (S_X + b_X \cdot (x - X_X)) \cdot (I_j)^m \)

where \( j \) is determined by finding the maximum \( j \) such that \( x_j < x \) and then

\[
m = \frac{x - x_j}{T}
\]

Example

The following example is based on the Sample Basic database. It forecasts sales data for May through December, based on the trend of the same sales data from January through April. The method used is linear regression with no seasonal adjustment.

\[\text{Sales}(@\text{TREND(Jan:Apr,,,,,May:Dec,LR));} \]

This example produces the following report:

<table>
<thead>
<tr>
<th>Actual</th>
<th>Sales</th>
<th>West Colas</th>
</tr>
</thead>
<tbody>
<tr>
<td>======</td>
<td>======</td>
<td>=========</td>
</tr>
<tr>
<td>Jan</td>
<td>2339</td>
<td></td>
</tr>
<tr>
<td>Feb</td>
<td>2298</td>
<td></td>
</tr>
<tr>
<td>Mar</td>
<td>2313</td>
<td></td>
</tr>
<tr>
<td>Apr</td>
<td>2332</td>
<td></td>
</tr>
<tr>
<td>May</td>
<td>2319</td>
<td></td>
</tr>
<tr>
<td>Jun</td>
<td>2318.4</td>
<td></td>
</tr>
<tr>
<td>Jul</td>
<td>2317.8</td>
<td></td>
</tr>
<tr>
<td>Aug</td>
<td>2317.2</td>
<td></td>
</tr>
<tr>
<td>Sep</td>
<td>2316.6</td>
<td></td>
</tr>
<tr>
<td>Oct</td>
<td>2316</td>
<td></td>
</tr>
<tr>
<td>Nov</td>
<td>2315.4</td>
<td></td>
</tr>
<tr>
<td>Dec</td>
<td>2314.8</td>
<td></td>
</tr>
<tr>
<td>Year</td>
<td>27817.2</td>
<td></td>
</tr>
</tbody>
</table>

See Also

- @LIST
@TRUNCATE

Removes the fractional part of expression, returning the integer.

Syntax

@TRUNCATE (expression)

Parameter Description

| expression | Single member specification, function, variable name, or other numeric expression, which returns a numeric value. |

Example

In the following example, Total Sales is calculated by (1) taking the sum of the values for Direct Sales and Other Sales and (2) truncating the summed values.

"Total Sales" = @TRUNCATE(@SUM("Direct Sales":"Other Sales");

This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>Colas</th>
<th>New York</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jan</td>
<td>Feb</td>
<td>Mar</td>
</tr>
<tr>
<td>Direct Sales</td>
<td>678.557</td>
<td>645.874</td>
<td>675.299</td>
</tr>
<tr>
<td>Other Sales</td>
<td>411.299</td>
<td>389.554</td>
<td>423.547</td>
</tr>
<tr>
<td>Total Sales</td>
<td>1089</td>
<td>1035</td>
<td>1098</td>
</tr>
</tbody>
</table>

See Also

- @REMAINDER
- @ROUND

@UDA

Returns members based on a common attribute, which you have defined as a user-defined attribute (UDA) on the Essbase Server.

Syntax

@UDA (dimName, uda)

Parameter Description

| dimName   | Name of the dimension with which the uda is associated. |
| uda       | Name of the user-defined attribute as it appears in the database outline. |

Notes

You must type the UDA string exactly as it appears in the database outline.

Example

In the Sample Basic database:
@UDA(Market, "New Mkt")

Returns a list of members with the UDA of New Mkt.

See Also
- @ISUDA
- @ISMBRUDA

@VAR

Calculates the variance (difference) between two members. The variance calculation recognizes the difference between accounts that are tagged in the database outline as "Expense" or "No Expense" and calculates the variance accordingly.

Syntax

@VAR (mbrName1, mbrName2)

Parameter Description

mbrName1 and mbrName2 Members from the same dimension whose variance results are to be calculated. The variance is derived by subtracting mbrName2 values from mbrName1, unless an account is tagged as "Expense", in which case mbrName1 values are subtracted from mbrName2.

Example

The following example is based on the Sample Basic database. The variance between Actual and Budget is calculated as follows:

```
Variance = @VAR(Actual, Budget);
```

Sales is defined as "No Expense", whereas COGS is tagged as "Expense". This example produces the following report:

<table>
<thead>
<tr>
<th>Year</th>
<th>Product</th>
<th>Market</th>
<th>Sales</th>
<th>COGS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>====</td>
<td>====</td>
</tr>
<tr>
<td>Actual</td>
<td></td>
<td></td>
<td>400855</td>
<td>179336</td>
</tr>
<tr>
<td>Budget</td>
<td></td>
<td></td>
<td>373080</td>
<td>158940</td>
</tr>
<tr>
<td>Variance</td>
<td></td>
<td></td>
<td>27775</td>
<td>(20396)</td>
</tr>
</tbody>
</table>

See Also
- @VARPER
- @VARIANCE
- @VARIANCEP

@VARPER

Calculates the percent variance (difference) between two members. The variance calculation recognizes the difference between accounts that are tagged in the database outline as "Expense" or "No Expense" and calculates the variance accordingly.
@VARPER (mbrName1, mbrName2)

Parameter Description

mbrName1 and mbrName2 Members from the same dimension whose variance results are to be calculated. The percent variance is derived by taking the percent variance of mbrName2 values from mbrName1, unless an account is tagged as "Expense", in which case mbrName1 values are taken as a percent variance of mbrName2.

Example

The following example is based on the Sample Basic database. The percent variance between Actual and Budget is calculated as follows:

Variance = @VARPER(Actual, Budget);

In this example Sales is defined as "No Expense", whereas COGS is tagged as "Expense". This example produces the following report:

<table>
<thead>
<tr>
<th>Year</th>
<th>Product</th>
<th>Market</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sales</td>
<td>COGS</td>
</tr>
<tr>
<td>----------</td>
<td>---------</td>
<td>--------</td>
</tr>
<tr>
<td>Actual</td>
<td>400855</td>
<td>179336</td>
</tr>
<tr>
<td>Budget</td>
<td>373080</td>
<td>158940</td>
</tr>
<tr>
<td>Variance %</td>
<td>7.4</td>
<td>(12.8)</td>
</tr>
</tbody>
</table>

See Also

- @VAR
- @VARIANCE
- @VARIANCEP

@VARIANCE

Calculates the statistical variance of the specified data set. The calculation is based upon a sample of a population. Variance is a measure of the dispersion of a set of data points around their mean (average) value.

Syntax

@VARIANCE (SKIPNONE | SKIPMISSING | SKIPZERO | SKIPBOTH, XrangeList)

Parameter Description

SKIPNONE Includes all cells specified in the data set, regardless of their content, during calculation of the variance.

SKIPMISSING Excludes all #MISSING values from the data set during calculation of the variance.

SKIPZERO Excludes all zero (0) values from the data set during calculation of the variance.

SKIPBOTH Excludes all zero (0) values and #MISSING values from the data set during calculation of the variance.
Parameter Description

XrangeList A list of numeric values across which the variance is calculated. Referred to generically throughout this topic as "the data set."

Can be a valid member name, a comma-delimited list of member names, cross dimensional members, or a return value from a member set function or range function (including @XRANGE).

For more information about XrangeList, see Range List Parameters in the topic "Range and Financial Functions" on page 35.

Notes

- @VARIANCE is different from @VAR, which calculates the variance (difference) between two members.
- @VARIANCE assumes that the data set (XrangeList) represents a sample of the population. If you want the data set to represent the entire population, use @VARIANCEP.
- @VARIANCE is calculated with the "unbiased" or "n-1" method.
- @VARIANCE uses the following formula:

\[
\frac{n \sum x^2 - (\sum x)^2}{n(n - 1)}
\]

Example

The following example is based on the Sample Basic database. Assume that the Measures dimension contains an additional member, Sales Var. This example uses the @RANGE function to generate the data set, and calculates the variance of the sales values for a product family.

```plaintext
FIX (Product)
"Sales Var" = @VARIANCE(SKIPBOTH, @RANGE(Sales, @CHILDREN(Product)));
ENDFIX
```

This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>New York</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual</td>
<td>678</td>
<td>640</td>
</tr>
<tr>
<td></td>
<td></td>
<td>551</td>
</tr>
<tr>
<td></td>
<td>663</td>
<td>510</td>
</tr>
<tr>
<td></td>
<td>587</td>
<td>620</td>
</tr>
<tr>
<td></td>
<td>#MI</td>
<td>#MI</td>
</tr>
<tr>
<td></td>
<td>2479</td>
<td>2300</td>
</tr>
</tbody>
</table>

Sales Var Product  3687.58  4166.67

The following example assumes a Year dimension is added to Sample Basic. It calculates variance using cross-dimensional members in the data set.

```plaintext
FIX(Product)
"Sales Var" = @VARIANCE(SKIPBOTH, @XRANGE("2011"->"Sep", "2012"->"Mar"));
ENDFIX
```
The above calculation is performed across the following multidimensional range specified by $XrangeList$:

2011->Sep
2011->Oct
2011->Nov
2011->Dec
2012->Jan
2012->Feb
2012->Mar

See Also

- @VARIANCEP

## @VARIANCEP

Calculates the statistical variance of the specified data set. The calculation is based upon the entire population. Variance is a measure of the dispersion of a set of data points around their mean (average) value.

### Syntax

```
@VARIANCEP (SKIPNONE | SKIPMISSING | SKIPZERO | SKIPBOTH, XrangeList)
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SKIPNONE</td>
<td>Includes all cells specified in the data set, regardless of their content, during calculation of the variance.</td>
</tr>
<tr>
<td>SKIPMISSING</td>
<td>Excludes all #MISSING values from the data set during calculation of the variance.</td>
</tr>
<tr>
<td>SKIPZERO</td>
<td>Excludes all zero (0) values from the data set during calculation of the variance.</td>
</tr>
<tr>
<td>SKIPBOTH</td>
<td>Excludes all zero (0) values and #MISSING values from the data set during calculation of the variance.</td>
</tr>
<tr>
<td>XrangeList</td>
<td>A list of numeric values across which the variance is calculated. Referred to generically throughout this topic as “the data set.”</td>
</tr>
</tbody>
</table>

Can be a valid member name, a comma-delimited list of member names, cross dimensional members, or a return value from a member set function or range function (including @XRANGE).

For more information about XrangeList, see Range List Parameters in the topic “Range and Financial Functions” on page 35.

### Notes

- @VARIANCEP is different from @VARPER, which calculates the percent variance (difference) between two members.
- @VARIANCEP assumes that the data set (XrangeList) represents the entire population. If you want the data set to represent a sample of the population, use @VARIANCE.
- @VARIANCEP is calculated using the "biased" or "n" method.
- @VARIANCEP uses the following formula:
Example

The following example is based on the Sample Basic database. Assume that the Measures dimension contains an additional member, Sales Var. This example uses the `@RANGE` function to generate the data set, and calculates the variance of the sales values for a product family.

```plaintext
FIX (Product)
"Sales Var" = @VARIANCEP(SKIPBOTH, @RANGE(Sales, @CHILDREN(Product)));
ENDFIX
```

This example produces the following report:

<table>
<thead>
<tr>
<th>Jan</th>
<th>New York</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales</td>
<td>Colas</td>
</tr>
<tr>
<td></td>
<td>Root Beer</td>
</tr>
<tr>
<td></td>
<td>Cream Soda</td>
</tr>
<tr>
<td></td>
<td>Fruit Soda</td>
</tr>
<tr>
<td></td>
<td>Diet Drinks</td>
</tr>
<tr>
<td></td>
<td>Product</td>
</tr>
<tr>
<td></td>
<td>Sales Var</td>
</tr>
</tbody>
</table>

The following example assumes a Year dimension is added to Sample Basic. It calculates variance using cross-dimensional members in the data set.

```plaintext
FIX(Product)
"Sales Var" = @VARIANCEP(SKIPBOTH, @XRANGE("2011"->"Sep", "2012"->"Mar"));
ENDFIX
```

The above calculation is performed across the following multidimensional range specified by `XrangeList`:

- 2011->Sep
- 2011->Oct
- 2011->Nov
- 2011->Dec
- 2012->Jan
- 2012->Feb
- 2012->Mar

See Also

- `@VARIANCE`
- `@WITHATTR`

`@WITHATTR`

Returns all base members that are associated with an attribute or varying attribute that satisfies the conditions you specify. You can use operators such as >, <, =, and IN to specify conditions.
that must be met. @WITHATTR can be used as a parameter of another function, where that parameter is a list of members.

**Syntax**

@WITHATTR (dimName, "operator", value)

**Parameter Description**

<table>
<thead>
<tr>
<th>dimName</th>
<th>Single attribute dimension name or varying attribute dimension name.</th>
</tr>
</thead>
<tbody>
<tr>
<td>operator</td>
<td>Operator specification, which must be enclosed in quotation marks (&quot;&quot;).</td>
</tr>
<tr>
<td>value</td>
<td>A value that, in combination with the operator, defines the condition that must be met. The value can be an attribute member specification, a constant, or a date-format function (that is, @TODATE).</td>
</tr>
</tbody>
</table>

**Notes**

- A varying attribute cannot be included in a FIX command if no perspective is specified in the calculation script.
- The @WITHATTR function is a superset of the @ATTRIBUTE function. The following two formulas return the same member set:
  
  @ATTRIBUTE(Bottle)
  
  @WITHATTR("Pkg Type","==",Bottle)

  However, the following formula can be performed only with @WITHATTR (not with @ATTRIBUTE) because you specify a condition:

  @WITHATTR(Ounces,">","16")

- If you specify a date attribute with the @WITHATTR function, you must use the @TODATE function in the *string* parameter to convert the date string to a number. For more information, see the topic for the @TODATE function.

- The following operators are supported:

<table>
<thead>
<tr>
<th>Operator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;</td>
<td>Greater than</td>
</tr>
<tr>
<td>&gt;=</td>
<td>Greater than or equal to</td>
</tr>
<tr>
<td>&lt;</td>
<td>Less than</td>
</tr>
<tr>
<td>&lt;=</td>
<td>Less than or equal to</td>
</tr>
<tr>
<td>= =</td>
<td>Equal to</td>
</tr>
<tr>
<td>&lt;&gt; or !=</td>
<td>Not equal to</td>
</tr>
<tr>
<td>IN</td>
<td>In</td>
</tr>
</tbody>
</table>

- The IN operator returns the base members that are associated with a subcategory of attributes in the attribute dimension. For example, in the Sample Basic database, @WITHATTR(Population,"IN",Medium) returns the base members that are associated with all attributes under the Medium parent member in the Population dimension.
When using Boolean attributes with @WITHATTR, use only the actual Boolean attribute member name, or use 1 (for True or Yes) or 0 (for False or No). You cannot use True/Yes and False/No interchangeably.

An operator may work differently with different attribute types. For example:

- **Text**—@WITHATTR(Flavors, "<", Orange) returns base members with attributes that precede Orange in the alphabet; for example, Apple, Cranberry, Mango, and Oat, but not Peach or Strawberry.

- **Boolean**—@WITHATTR(Caffeinated, "<", True) returns all base members that have Caffeinated set to False (or No). It does not return base members that do not have Caffeinated set to True (or Yes) or do not have a Caffeinated attribute at all. The behavior is similar for a formula like @WITHATTR(Caffeinated, "<>", True), which returns only base members with Caffeinated set to False.

- **Date**—@WITHATTR("Intro Date","<",@TODATE("mm-dd-yyyy","07-26-2002")) returns all base members with date attributes that are before July 26, 2002.

**Example**

The following table shows examples, based on the Sample Basic database, for each type of operator:

<table>
<thead>
<tr>
<th>Operator</th>
<th>Example</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;</td>
<td>@WITHATTR(Population,&quot;&gt;&quot;,&quot;18000000&quot;)</td>
<td>Returns New York, California, and Texas</td>
</tr>
<tr>
<td>&gt;=</td>
<td>@WITHATTR(Population,&quot;&gt;=&quot;,&quot;10000000&quot;) where 10,000,000 is not a numeric attribute member, but a constant</td>
<td>Returns New York, Florida, California, Texas, Illinois, and Ohio</td>
</tr>
<tr>
<td>&lt;</td>
<td>@WITHATTR(Ounces,&quot;&lt;&quot;,&quot;16&quot;)</td>
<td>Returns Cola, Diet Cola, Old Fashioned, Sasparilla, and Diet Cream</td>
</tr>
<tr>
<td>&lt;=</td>
<td>@WITHATTR(&quot;Intro Date&quot;,&quot;&lt;=&quot;,@TODATE(&quot;mm-dd-yyyy&quot;,&quot;04-01-2002&quot;))</td>
<td>Returns Cola, Diet Cola, Caffeine Free Cola, and Old Fashioned</td>
</tr>
<tr>
<td>= =</td>
<td>@WITHATTR(&quot;Pkg Type&quot;,&quot;= =&quot;,&quot;Can&quot;)</td>
<td>Returns Cola, Diet Cola, and Diet Cream</td>
</tr>
<tr>
<td>&lt;&gt; or !~</td>
<td>@WITHATTR(Caffeinated,&quot;&lt;&gt;&quot;,&quot;True&quot;)</td>
<td>Returns Caffeine Free Cola, Sasparilla, Birch Beer, Grape, Orange Strawberry</td>
</tr>
<tr>
<td>IN</td>
<td>@WITHATTR(&quot;Population&quot;,&quot;IN&quot;,&quot;Medium&quot;)</td>
<td>Returns Massachusetts, Florida, Illinois, and Ohio</td>
</tr>
</tbody>
</table>

The following two examples show @WITHATTR used in a calculation script, based on the Sample Basic database:

```plaintext
/* To increase by 10% the price of products that are greater than or equal to 20 ounces */

FIX (@WITHATTR(Ounces,">=","20"))
Price = Price * 1.1;
ENDFIX
```
/* To increase by 10% the marketing budget for products brought to market after a certain date */

FIX (@WITHATTR("Intro Date",">",
@TODATE("mm-dd-yyyy","06-26-1996")));
Marketing = Marketing * 1.1;
ENDFIX

See Also
- @ATTRIBUTE
- @ATTRIBUTEVAL
- @TODATE
- SET SCAPERSPECTIVE

@XRANGE

Returns the range of members between (and inclusive of) two specified single or cross-dimensional members at the same level.

For example, when you work with the Time and Scenario dimensions, you can use @XRANGE to return a member set combination of Time and Scenario instead of creating a dimension that combines the two (which creates many more individual members than necessary).

@XRANGE is a member set function. Member set functions return a list of members. @XRANGE can appear anywhere in a formula where a range can normally appear.

Syntax
@XRANGE (mbrName1, mbrName2)

Parameter Description
mbrName1 Any valid member name, member combination, or function that returns a single member.
mbrName2 Any valid member name, member combination, or function that returns a single member. If mbrName1 is a cross-dimensional member (such as Actual->Jan), then mbrName2 must be also, and the dimension order must match the order used in mbrName1.

Notes
- The two arguments to @XRANGE can be either both single members or both cross-dimensional members. For example, @XRANGE(Actual->Jan, Budget) is invalid because a single member and a cross dimensional member are used together. Both @XRANGE(Actual->Jan, Budget->Feb) and @XRANGE(Jan, Mar) are valid.
- The dimension order of members must match for both arguments. For example, @XRANGE(Actual->Jun, Jul->Budget) is invalid because the two member components are in different orders. @XRANGE(Actual->Jun, Budget->Jul) is valid.
- Although the syntax is correct, a function such as @XRANGE (Dec, Mar) is meaningless because it results in an empty set.
The member components of each argument must be from the same level. For example, 
@XRANGE(Actual->Jun, Budget->Qtr1) is invalid because Jun and Qtr1 are not from the same level.

**Example**

The following examples are based on the Sample Basic database.

**Example 1**

Here is a very simple example using simple members to return the range between Jan and Mar.

@XRANGE(Jan, Mar)

This example returns the following members:

Jan  
Feb  
Mar

**Example 2**

Here is a very simple example using cross dimensional members to return the range between Actual, Jan and Budget, Mar:

@XRANGE (Actual->Jan, Budget->Mar)

This example returns the following members:

Actual, Jan  
Actual, Feb  
Actual, Mar  
Actual, Apr  
Actual, May  
Actual, Jun  
Actual, Jul  
Actual, Aug  
Actual, Sep  
Actual, Oct  
Actual, Nov  
Actual, Dec  
Budget, Jan  
Budget, Feb  
Budget, Mar

**Example 3**

This example is not based on the Sample Basic database. It is based on database that contains a dimension called Year that contains members for each year, from 2001 to 2003.

The following formula computes the average sales for all months between Mar of 2000 and Jan of 2001.

SalesAvg= @MOVAVG(Sales, 3, @XRANGE("2001"->Mar, "2001"->Jan));

This example returns the following members:

<table>
<thead>
<tr>
<th>Colas</th>
<th>New York</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td></td>
<td>SalesAvg</td>
</tr>
<tr>
<td>Year</td>
<td>Month</td>
<td>Value Target</td>
</tr>
<tr>
<td>------</td>
<td>-------</td>
<td>--------------</td>
</tr>
<tr>
<td>2000</td>
<td>Mar</td>
<td>678</td>
</tr>
<tr>
<td></td>
<td>Apr</td>
<td>645</td>
</tr>
<tr>
<td></td>
<td>May</td>
<td>675</td>
</tr>
<tr>
<td></td>
<td>Jun</td>
<td>712</td>
</tr>
<tr>
<td></td>
<td>Jul</td>
<td>756</td>
</tr>
<tr>
<td></td>
<td>Aug</td>
<td>890</td>
</tr>
<tr>
<td></td>
<td>Sep</td>
<td>924</td>
</tr>
<tr>
<td></td>
<td>Oct</td>
<td>914</td>
</tr>
<tr>
<td></td>
<td>Nov</td>
<td>912</td>
</tr>
<tr>
<td></td>
<td>Dec</td>
<td>723</td>
</tr>
<tr>
<td>2001</td>
<td>Jan</td>
<td>647</td>
</tr>
</tbody>
</table>

See Also

- @AVGRANGE
- @SUMRANGE
- @MINRANGE
- @MINSRANGE
- @MAXRANGE
- @MAXSRANGE
- @STDEVRANGE
- @MOVSUM
- @MOVAVG
- @MOVMIN
- @MOVMAX
- @MOVMED
- @SPLINE

**@XREF**

Enables a database calculation to incorporate values from another Essbase database.

The following terminology is used to describe the @XREF function:

- **Data target**: the database on which the current calculation is running (that is, the database on which the @XREF call originates).
- **Data source**: the database that is queried by the @XREF function. This database may be remote (that is, on a different machine than the data target).
- **Point of view**: the member combination currently being calculated on the data target (that is, the member combination that identifies the left hand side of a calculation).

The @XREF function retrieves values from a data source to be used in a calculation on a data target. @XREF does not impose member and dimension mapping restrictions, which means that the data source and data target outlines can be different.

As arguments, this function takes a location alias, an implied list of members that represents the current point of view, and an optional list of members to qualify the @XREF query on the data source. The second argument (the members making up the current point of view) is implied;
that is, these members are not specified as an @XREF parameter. An @XREF query that omits the third argument indicates that a given data point in the data target will be set to the same data point in the data source.

Syntax

@XREF (locationAlias [, mbrList])

Parameter   Description

locationAlias A location alias for the data source. A location alias is a descriptor that identifies the data source. The location alias must be set on the database on which the calculation script will be run. The location alias is set by the database administrator and specifies a server, application, database, user name, and password for the data source.

mbrList Optional. A comma-delimited list of member names that qualify the @XREF query. The members you specify for mbrList are sent to the data source in addition to the members in the current point of view in the data target. The data source then constructs a member combination, using in order of precedence:

- The members specified in mbrList
- The members in the current point of view
- The top member in any unspecified dimensions in the data source

The mbrList parameter (1) modifies the point of view on the data target or (2) defines a specific point of view on the data source. For example, the following formula modifies the point of view on the data target:

2003 (2003->Jan->Inventory = @XREF(sourceDB, Dec);)

If the cube on the data source (sourceDB) contains data only from 2002, this formula sets Inventory for Jan in 2003 to the Inventory value for Dec from 2002.

The following formula defines a specific point of view on the data target:

Jan = @XREF(sourceDB, January);

Assume that the data target contains the member Jan, while the data source (sourceDB) contains the member January. This formula simply maps the member in the data target (Jan) with its corresponding member in the data source (January), and pulls January from sourceDB.

See Notes for more information about the mbrList parameter.

Notes

- An error is returned if the members supplied in mbrList do not exist in the data source.
- The number of data cells queried on the data source must match the number of data cells expected on the data target.
- The member list cannot contain functions that return more than one member. For example, the following formula is not valid:

  West = @XREF(SourceDb, @LEVMBRS(Market, 0));

- The member list cannot contain ranges. For example, the following formula is not valid:

  West = @XREF(SourceDb, Jan:Mar);

- mbrList can contain attribute members. For example, if the data source classifies products based on a color attribute, the following formula would calculate the sum of the sales of all red products and would assign the result to member RedThings:
RedThings = @XREF(SourceDb, Sales, Red);

- *mbrList* can contain attribute operators. For example, the following formula calculates RedThings as the average sales of all red products:
  
  \[
  \text{RedThings} = @XREF(\text{SourceDb}, \text{Sales}, \text{Red}, \text{Average});
  \]

  For more information on attributes, see the *Oracle Essbase Database Administrator’s Guide*.

- Using this function in a calculation script disables parallel calculation.

- @XREF can query all types of members. For example, members retrieved from a data source can be Dynamic Calc members as well as attribute members. Keep in mind that all performance considerations that apply to dynamic and attribute calculations also apply to @XREF queries that depend on dynamic and attribute members. For more information, see the *Oracle Essbase Database Administrator’s Guide*.

- Over the course of an @XREF calculation, data in the source database may change. @XREF does not incorporate changes made after the beginning of the calculation.

- @XREF is a top-down formula. For more information on top-down formulas, see the *Oracle Essbase Database Administrator’s Guide*.

- For a member that does not exist in either the data source or the data target, @XREF returns the value of the top dimension, not the value #M1.

- If you are using the @PARENT function within @XREF, the @XREF function requires the @NAME function to be used around @PARENT. For example:
  
  \[
  \text{COGS} = @XREF(\text{Sample}, \text{@NAME(\text{@PARENT(Product)})}, \text{Sales});
  \]

- When running a parallel calculation that includes the @XREF calculation function, the application associated with the database returns a timeout error if the number of threads specified for the CALCPARALLEL configuration setting is higher than the number of threads specified by the SERVERTHREADS configuration setting. For example, the default value of SERVERTHREADS is 20. If you set CALCPARALLEL to 25, an application timeout error is generated.

**Example**

For this example, consider the following two databases:

**Main Database**

<table>
<thead>
<tr>
<th>Year</th>
<th>Qtr1</th>
<th>Qtr2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measures</td>
<td>Sales</td>
<td>Units</td>
</tr>
<tr>
<td>Product</td>
<td>100</td>
<td>100-10</td>
</tr>
<tr>
<td>Market</td>
<td>East</td>
<td>West</td>
</tr>
<tr>
<td>Scenario</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Inflation Rates Database

Year
  Qtr1
  Qtr2
Assumptions
  Inflation
    Deflation = Inflation * .5 (Dynamic Calc)
Country
  US
  Canada
  Europe

The following formula is associated with the Main Database:

\[ \text{Units} = \text{Units} \times \@XREF(\text{InflatDB}, \text{Inflation}, \text{US}); \]

Where \text{InflatDB} is the location alias for the Inflation Rates Database and \text{Inflation} is the member for which a data value is retrieved from \text{InflatDB}.

In this example, Essbase calculates the following member combinations:

\[
\begin{align*}
\text{Units-}\rightarrow\text{Qtr1-}\rightarrow\text{100-10-}\rightarrow\text{East-}\rightarrow\text{Budget} &= \text{Units-}\rightarrow\text{Qtr1-}\rightarrow\text{100-10-}\rightarrow\text{East-}\rightarrow\text{Budget} \times \text{Inflation-}\rightarrow\text{Qtr1-}\rightarrow\text{US} \\
\text{Units-}\rightarrow\text{Qtr2-}\rightarrow\text{100-10-}\rightarrow\text{East-}\rightarrow\text{Budget} &= \text{Units-}\rightarrow\text{Qtr2-}\rightarrow\text{100-10-}\rightarrow\text{East-}\rightarrow\text{Budget} \times \text{Inflation-}\rightarrow\text{Qtr2-}\rightarrow\text{US} \text{ and so on.}
\end{align*}
\]

See Also

- \@XWRITE
- “CALCPARALLEL” on page 457
- “SERVERTHREADS” on page 547

@XWRITE

Enables a database calculation to write values to another Essbase database, or to the same database.

The following terminology is used to describe the @XWRITE function:

- Data source: the database on which the current calculation is running (that is, the database on which the @XWRITE call originates).
- Data target: the database that is updated by the @XWRITE function. This database may be remote (that is, on a different machine than the data source).
- Point of view: the member combination currently being calculated on the data source.

The @XWRITE function writes to data blocks, either in the same database or in a remote database, while calculating a block in the current database. @XWRITE does not impose member and dimension mapping restrictions, which means that the data source and data target outlines can be different.
As arguments, this function takes a location alias, an implied list of members that represents the current point of view, and an optional list of members to qualify @XWRITE on the data target. The second argument (the members making up the current point of view) is implied; that is, these members are not specified as an @XWRITE parameter. An @XWRITE that omits the third argument indicates that a given data point in the data source will be set to the same data point in the data target.

**Syntax**

@XWRITE (expression, locationAlias [, mbrList])

**Parameter**  
**Description**

- **expression**: A single member specification, variable name, or other numeric expression corresponding to the value to be stored.

- **locationAlias**: A location alias for the data target. The location alias must be set on the database on which the calculation script will be run. The location alias is set by the database administrator and specifies a server, application, database, username, and password for the data target.

  The same location alias can be used by both @XREF and @XWRITE. For @XREF, it represents the data source, and for @XWRITE it represents the data target.

  For @XWRITE only, a reserved keyword @LOOPBACK can be used to write to the same database.

- **mbrList**: Optional. A comma-delimited list of member names that qualify the @XWRITE operation. The members you specify for mbrList, in addition to the members in the current point of view in the data source, determine what is written to the data target. The data target is written to using the following calculation logic (in order of precedence):

  - The members specified in mbrList
  - The members in the current point of view
  - The top member in any unspecified dimensions in the data target

  Therefore, the remote member list is calculated and written using members from current point of view, overridden with members from the mbrList specified to @XWRITE, and if some dimensions are still absent at the data target, the top most dimension of the data target is used.

  See Notes for more information about the mbrList parameter.

**Notes**

- This function is applicable only to block storage databases.

- An error is returned if the members supplied in mbrList do not exist in the data target.

- The member list cannot contain functions that return more than one member. For example @LEVMBRS(Market, 0).

- The member list cannot contain ranges.

- The member list cannot contain attribute members or attribute operators.

- Using this function in a calculation script disables parallel calculation.

- @XWRITE is a top-down formula. For more information on top-down formulas, see the *Oracle Essbase Database Administrator’s Guide*.

- @XWRITE to dynamic calc cells is not recommended; the data is calculated in memory, but not written.
@XWRITE can be used in calculation scripts as well as outline member formulas.

**Example**

The following Sample Basic formula writes the 100-30 values into 100-20 on the same database.

```plaintext
FIX (East, Actual, Budget, Sales)
"100-30" {
  @XWRITE("100-30", @loopback, "100-20");
}
ENDFIX
```

The following Sample Basic formula writes the 100-30 values into 100-20 on a remote database, Sample2 Basic, using the location alias "sam2basic" defined from Sample Basic to Sample2 Basic.

```plaintext
FIX (East, Actual, Budget, Sales)
"100-30" {
  @XWRITE("100-30", sam2basic, "100-20");
}
ENDFIX
```

The following example shows how to call another function within the @XWRITE function call.

```plaintext
FIX (East, Actual, Budget, Sales)
"100" {
  @XWRITE(@PARENT("100-30"), @loopback, "100-20");
}
ENDFIX
```

**See Also**

- @XREF

---

**Custom-Defined Calculation Functions**

To get you started in creating custom-defined functions for the Essbase calculator, a set of example statistical functions is provided with this release. These examples are compiled and included in the essbase.jar file, located in the ESSBASEPATH\java\ directory.

For information about creating custom-defined functions, see the MaxL DDL Create Function statement. For more information about custom-defined functions, see the Oracle Essbase Database Administrator’s Guide.

- “Java Code Examples” on page 268
- “MaxL Registration Scripts” on page 298

**Java Code Examples**

The Java code for examples of custom-defined functions is provided in the file statisti.jav, copied below. For more information about the classes, methods, and constants in the statisti.jav file, see the Oracle Essbase Statistics Java Package.
The code contained in the statisti.jav file is implemented in the ESSBASEPATH\java \essbase.jar file. The examples in the statisti.jav file use constants which are defined in the essbase.jar file. To use the constants defined in these examples, you must import the Calculator class constants defined in the essbase.jar file.

- “register.mxl Sample Code” on page 298
- “drop.mxl Sample Code” on page 311
- “reglobal.mxl Sample Code” on page 313

Statisti.jav

```java
package com.hyperion.essbase.calculator;

/**
 * This class provides a set of simple statistical routines. Some of them are present native in Essbase as well and some are not.
 * Contains:
 * <ul>
 * <li>min, max</li>
 * <li>sum, weighted sum</li>
 * <li>product, weighted product</li>
 * <li>average, weighted average</li>
 * <li>geometric mean, weighted geometric mean</li>
 * <li>harmonic mean, weighted harmonic mean</li>
 * <li>variance (var and varp), weighted variance</li>
 * <li>standard deviation (stdev and stdevp), weighted standard deviation</li>
 * <li>covariance, weighted covariance</li>
 * <li>correlation, weighted correlation</li>
 * <li>skewness, weighted skewness</li>
 * <li>kurtosis, weighted kurtosis</li>
 * <li>rank, mode, median, percentile, quartile</li>
 * </ul>
 */
public final class Statistics implements CalculatorConstants {

    /**
     * Computes minimum value of given sequence. Missing values are ignored
     * @param data data array
     * @return minimum value in the array
     */
    public static double min (double [] data) {
        int i, n = data.length;
        if (n == 0)
            return MISSG;
        double min = data [0];
        boolean flag = (min == MISSG);
        for (i=1; i<n; i++) {
            double d = data [i];
            if (d != MISSG) {
                if (flag) {
                    min = d;
                    flag = false;
```
else if (d < min) {
    min = d;
}

return min;

/**
* Computes maximum value of given sequence. Missing values are ignored.
* @param data data array
* @return maximum value in the array
*/
public static double max (double [] data) {
    int i, n = data.length;
    if (n == 0)
        return MISSG;
    double max = data [0];
    boolean flag = (max == MISSG);
    for (i=1; i<n; i++) {
        double d = data [i];
        if (d != MISSG) {
            if (flag) {
                max = d;
                flag = false;
            }
            else if (d > max) {
                max = d;
            }
        }
    }
    return max;
}

/**
* Computes sum of a given sequence. Missing values are ignored (treated as 0)
* @param data data array
* @return sum of the data
*/
public static double sum (double [] data) {
    int i, n = data.length;
    double sum = MISSG;
    for (i=0; i<n; i++) {
        double d = data [i];
        if (d != MISSG) {
            sum = Calculator.add (sum, d);
        }
    }
    return sum;
}
/**
 * Computes weighted sum of a given sequence.
 * Missing values are ignored (treated as 0)
 * @param data data array
 * @param weights weights
 * @return weighted sum of the data
 */
public static double sum (double [] data, double [] weights) {
    int i, n = data.length;

    double sum = MISSG;

    for (i=0; i<n; i++) {
        double d = data [i], w = weights [i];
        if (d != MISSG && w != MISSG) {
            sum = Calculator.add (sum, d * w);
        }
    }
    return sum;
}

/**
 * Computes product of a given sequence. Missing values are ignored (treated as 0)
 * @param data data array
 * @return product of the data
 */
public static double product (double [] data) {
    int i, n = data.length;

    if (n == 0)
        return MISSG;

    double product = 1.;
    boolean flag = false;
    for (i=0; i<n; i++) {
        double d = data [i];
        if (d != MISSG) {
            flag = true;
            product = product * d;
        }
    }

    if (!flag)
        return MISSG;

    return product;
}

/**
 * Computes weighted product of a given sequence.
 * Missing values are ignored (treated as 0)
 * @param data data array
 * @param weights weights
 * @return weighted product of the data
 */
public static double product (double [] data, double [] weights) {
    int i, n = data.length;

if (n == 0)
    return MISSG;

double product = 1.;
boolean flag = false;

for (i=0; i<n; i++) {
    double d = data [i], w = weights [i];
    if (d != MISSG && w != MISSG) {
        d = Calculator.pow (d, w);
        if (d != MISSG) {
            flag = true;
            product = product * d;
        }
    }
}
if (!flag)
    return MISSG;
return product;

/**
 * Computes count of non-missing values in a given sequence.
 * @param data data array
 * @return count of the non-missing data
 */
public static int count (double [] data) {
    int i, n = data.length;
    int count = 0;
    for (i=0; i<n; i++) {
        double d = data [i];
        if (d != MISSG) {
            count ++;
        }
    }
    return count;
}

/**
 * Computes count of a given sequence (with prescribed skip directive).
 * @param skip skip instruction; possible values are
 * <ul>
 * <li>SKIPNONE - nothing skipped </li>
 * <li>SKIPZERO - zeros skipped</li>
 * <li>SKIPMISSG - missing values skipped</li>
 * <li>SKIPBOTH - skip both zeros and missing values</li>
 * </ul> (defined in CalculatorConstants interface)
 * @param data data array
 * @return count of the data
 */
public static int count (int skip, double [] data) {
    int i, n = data.length;
    if (skip == SKIPNONE)
        return 0;
    }
}
return n;

if (skip == SKIPMISSG)
    return count (data);
boolean bZero = false, bMissg = false;

bZero = (skip == SKIPZERO) || (skip == SKIPBOTH);
bMissg = (skip == SKIPBOTH);

int count = 0;

for (i=0; i<n; i++) {
    double d = data [i];
    if ((bMissg && d == MISSG) || (bZero && d == 0.))
        continue;
    count ++;
}
return count;

/**
 * Computes the average value of a given sequence. Missing values are ignored.
 * @param data data array
 * @return average of the data
 */
public static double avg (double [] data) {
    int i, n = data.length;
    double sum = MISSG;
    int count = 0;

    for (i=0; i<n; i++) {
        double d = data [i];
        if (d != MISSG) {
            sum = Calculator.add (sum, d);
            count ++;
        }
    }

    if (count == 0)
        return MISSG;

    return sum / count;
}

/**
 * Computes the average value of a given sequence (with prescribed skip directive).
 * @param skip skip instruction; possible values are
 * <ul>
 * <li>SKIPNONE - nothing skipped </li>
 * <li>SKIPZERO - zeros skipped</li>
 * <li>SKIPMISSG - missing values skipped</li>
 * <li>SKIPBOTH - skip both zeros and missing values</li>
 * </ul> (defined in CalculatorConstants interface)
 * @param data data array
 * @return average of the data
 */
public static double avg (int skip, double [] data) {
    int i, n = data.length;
    boolean bZero = false, bMissg = false;

    if (skip == SKIPMISSG)
        return avg (data);

    bZero = (skip == SKIPZERO) || (skip == SKIPBOTH);
    bMissg = (skip == SKIPBOTH);

    double sum = MISSG;
    int count = 0;

    for (i=0; i<n; i++) {
        double d = data [i];
        if ((bMissg && d == MISSG) || (bZero && d == 0.))
            continue;
        sum = Calculator.add (sum, d);
        count ++;
    }

    if (count == 0)
        return MISSG;

    return sum / count;
}

/**
 * Computes weighted average of a given sequence. Missing values are ignored
 * @param data data array
 * @param weights weights
 * @return weighted average of the data
 */
public static double avg (double [] data, double [] weights) {
    int i, n = data.length;

    double sum = MISSG;
    double weight = MISSG;

    for (i=0; i<n; i++) {
        double d = data [i], w = weights [i];
        if (d != MISSG && w != MISSG) {
            sum = Calculator.add (sum, d * w);
            weight = Calculator.add (weight, w);
        }
    }

    if (sum == MISSG || weight == MISSG || weight == 0.)
        return MISSG;

    return sum / weight;
}

/**
 * Computes weighted average value of a given sequence
 * (with prescribed skip directive).
 * @param skip skip instruction; possible values are
/**
 * Computes the geometric average value of a given sequence.
 * Missing values are ignored.
 * @param data data array
 * @return average of the data
 */
public static double geomean (double [] data) {
    int i, n = data.length;
    if (n == 0)
        return MISSG;
    double product = 1.;
    int count = 0;
    for (i=0; i<n; i++) {
        double d = data [i];
        if (d != MISSG) {
            product *= d;
            count ++;
        }
    }
    return product / count;
}
public static double geomean (double [] data, double [] weights) {
    int i, n = data.length;
    double product = 1.;
    double weight = MISSG;
    for (i=0; i<n; i++) {
        double d = data [i], w = weights [i];
        if (d != MISSG && w != MISSG) {
            product = product * Math.pow (d, w);
            weight = Calculator.add (weight, w);
        }
    }
    if (weight == MISSG || weight == 0.)
        return MISSG;
    return Math.pow (product, 1. / weight);
}

/**
 * Computes weighted geometric average of a given sequence.
 * Missing values are ignored
 * @param data data array
 * @param weights weights
 * @return weighted average of the data
 */
public static double harmean (double [] data) {
    int i, n = data.length;
    if (n == 0)
        return MISSG;
    double sum = MISSG;
    int count = 0;
    for (i=0; i<n; i++) {
        double d = data [i];
        if (d != MISSG) {
            if (d == 0.)
                continue;
            sum = Calculator.add (sum, 1. / d);  
            count ++;
        }
    }
    if (count == 0)
        return MISSG;
    return Math.pow (sum, 1. / count);
}

return MISSG;
  sum = sum + 1. / d;
  count ++;
}

if (count == 0 || sum == 0.)
  return MISSG;

return count / sum;
}

/**
 * Computes weighted harmonic mean of a given sequence.
 * Missing values are ignored
 * @param data data array
 * @param weights weights
 * @return weighted harmonic mean of the data
 */
public static double harmean (double [] data, double [] weights) {
  int i, n = data.length;

double sum = MISSG;
double weight = MISSG;

for (i=0; i<n; i++) {
  double d = data [i], w = weights [i];
  if (d != MISSG && w != MISSG) {
    if (d == 0.)
      return MISSG;
    sum = Calculator.add (sum, w / d);
    weight = Calculator.add (weight, w);
  }
}

if (sum == MISSG || sum == 0. || weight == MISSG)
  return MISSG;

return weight / sum;
}

/**
 * Computes variance of a given sequence. Missing values are ignored
 * @param data data array
 * @return variance of the data
 */
public static double var (double [] data) {
  int i, n = data.length;

  double d, sum = MISSG, avg = MISSG;
  int count = 0;

  for (i=0; i<n; i++) {
    d = data [i];
    if (d != MISSG) {
      sum = Calculator.add (sum, d);
      count ++;
    }
  }

  if (count == 0) {
    return MISSG;
  }

  return variance = (double) (sum / count) - (avg * avg);
}
if (count < 2)
    return MISSG;

avg = sum / count;
sum = 0.;
for (i=0; i<n; i++) {
    d = data [i];
    if (d != MISSG) {
        d = d - avg;
        d = d * d;
        sum = sum + d;
    }
}

return (sum / (count - 1));

/**
 * Computes standard deviation of a given sequence. Missing values are ignored
 * @param data data array
 * @return stdev of the data
 */
public static double stdev (double [] data) {
    return Calculator.sqrt (var (data));
}

/**
 * Computes variance of a given sequence (with prescribed skip directive).
 * @param skip skip instruction; possible values are
 * <ul>
 * <li>Skipnone - nothing skipped </li>
 * <li>Skipzero - zeros skipped</li>
 * <li>Skipmissg - missing values skipped</li>
 * <li>Skipboth - skip both zeros and missing values</li>
 * </ul> (defined in CalculatorConstants interface)
 * @param data data array
 * @return variance of the data
 */
public static double var (int skip, double [] data) {
    int i, n = data.length;
    boolean bZero = false, bMissg = false;
    if (skip == SKIPMISSG)
        return var (data);

    bZero = (skip == SKIPZERO) || (skip == SKIPBOTH);
    bMissg = (skip == SKIPBOTH);

double d, sum = MISSG, avg = MISSG;
int count = 0;

for (i=0; i<n; i++) {
    d = data [i];
    if ((bMissg && d == MISSG) || (bZero && d == 0.))
continue;
    sum = Calculator.add (sum, d);
    count ++;
}

if (count < 2)
    return MISSG;

avg = sum / count;
sum = 0.;
for (i=0; i<n; i++) {
    d = data [i];
    if ((bMissg && d == MISSG) || (bZero && d == 0.))
        continue;
    if (d == MISSG)
        d = - avg;
    else
        d = d - avg;
    d = d * d;
    sum = sum + d;
}

return (sum / (count - 1));
}

/**
 * Computes standard deviation of a given sequence
 * (with prescribed skip directive).
 * @param skip skip instruction; possible values are
 *  <ul>
 *  <li>SKIPNONE - nothing skipped </li>
 *  <li>SKIPZERO - zeros skipped</li>
 *  <li>SKIPMISSG - missing values skipped</li>
 *  <li>SKIPBOTH - skip both zeros and missing values</li>
 *  </ul> (defined in CalculatorConstants interface)
 * @param data data array
 * @return standard deviation of the data
 */
public static double stdev (int skip, double [] data) {
    return Calculator.sqrt (var (skip, data));
}

/**
 * Computes weighted variance of a given sequence. Missing values are ignored
 * @param data data array
 * @param weights weights
 * @return weighted variance of the data
 */
public static double var (double [] data, double [] weights) {
    int i, n = data.length;

double d, sum = MISSG, avg = MISSG;
double w, weight = MISSG;

for (i=0; i<n; i++) {
    d = data [i];
    w = weights [i];

if (d != MISSG && w != MISSG) {
    sum = Calculator.add (sum, d * w);
    weight = Calculator.add (weight, w);
}
}

if (sum == MISSG || weight == MISSG || weight == 0. || weight == 1.)
    return MISSG;

avg = sum / weight;
sum = 0.;
for (i=0; i<n; i++) {
    d = data [i];
    w = weights [i];
    if (d == MISSG || w == MISSG)
        continue;
    d = d - avg;
    d = d * d * w;
    sum = sum + d;
}
return (sum / (weight - 1.));
}

/**
 * Computes weighted standard deviation of a given sequence.
 * Missing values are ignored
 * @param data data array
 * @param weights weights
 * @return weighted standard deviation of the data
 * (without taking missing values into account)
 */
public static double stdev (double [] data, double [] weights) {
    return Calculator.sqrt (var (data, weights));
}

/**
 * Computes weighted variance of a given sequence
 * (with prescribed skip directive).
 * @param skip skip instruction; possible values are
 * <ul>
 * <li>SKIPNONE - nothing skipped</li>
 * <li>SKIPZERO - zeros skipped</li>
 * <li>SKIPMISSG - missing values skipped</li>
 * <li>SKIPBOTH - skip both zeros and missing values</li>
 * </ul> (defined in CalculatorConstants interface)
 * @param data data array
 * @param weights weights
 * @return weighted variance of the data
 */
public static double var (int skip, double [] data, double [] weights) {
    int i, n = data.length;
    boolean bZero = false, bMissg = false;
    if (skip == MISSG)
        return var (data, weights);
    bZero = (skip == SKIPZERO) || (skip == SKIPBOTH);
bMissg = (skip == SKIPBOTH);

double sum = MISSG, avg = MISSG;
double weight = MISSG;

for (i=0; i<n; i++) {
    double d = data [i], w = weights [i];
    if ((bMissg && d == MISSG) || (bZero && d == 0.))
        continue;

    if (d != MISSG && w != MISSG)
        sum = Calculator.add (sum, d * w);
    weight = Calculator.add (weight, w);
}

if (sum == MISSG || weight == MISSG || weight == 0. || weight == 1.)
    return MISSG;

avg = sum / weight;
sum = 0.;
for (i=0; i<n; i++) {
    double d = data [i], w = weights [i];
    if ((bMissg && d == MISSG) || (bZero && d == 0.))
        continue;

    if (w != MISSG) {
        if (d == MISSG)
            d = -avg;
        else
            d = d - avg;
        d = d * d * w;
        sum = sum + d;
    }
}
return Math.sqrt (sum / (weight - 1));

/**
 * Computes weighted standard deviation of a given sequence
 * (with prescribed skip directive).
 * @param skip skip instruction; possible values are
 * <ul>
 * <li>SKIPNONE - nothing skipped </li>
 * <li>SKIPZERO - zeros skipped</li>
 * <li>SKIPMISSG - missing values skipped</li>
 * <li>SKIPBOTH - skip both zeros and missing values</li>
 * </ul> (defined in CalculatorConstants interface)
 * @param data data array
 * @param weights weights
 * @return weighted standard deviation of the data
 */
public static double stdev (int skip, double [] data, double [] weights) {
    return Calculator.sqrt (var (skip, data, weights));
}

/**
 * Computes variancecep of a given sequence. Missing values are ignored

public static double varp (double [] data) {
    int i, n = data.length;

    double sum = MISSG, avg = MISSG;
    int count = 0;

    for (i=0; i<n; i++) {
        double d = data [i];
        if (d != MISSG) {
            sum = Calculator.add (sum, d);
            count ++;
        }
    }

    if (count == 0)
        return MISSG;

    avg = sum / count;
    sum = 0.;
    for (i=0; i<n; i++) {
        double d = data [i];
        if (d != MISSG) {
            d = d - avg;
            d = d * d;
            sum = sum + d;
        }
    }

    return (sum / count);
}

/**
 * Computes stdevp of a given sequence. Missing values are ignored
 * @param data data array
 * @return stdevp of the data
 */
public static double stdevp (double [] data) {
    return Calculator.sqrt (varp (data));
}

/**
 * Computes variancep of a given sequence
 * (with prescribed skip directive).
 * @param skip skip instruction; possible values are
 * <ul>
 * <li>SKIPNONE - nothing skipped </li>
 * <li>SKIPZERO - zeros skipped</li>
 * <li>SKIPMISSG - missing values skipped</li>
 * <li>SKIPBOTH - skip both zeros and missing values</li>
 * </ul> (defined in CalculatorConstants interface)
 * @param data data array
 * @return variancep of the data
 */
public static double varp (int skip, double [] data) {
    int i, n = data.length;
boolean bZero = false, bMissg = false;

if (skip == SKIPMISSG)
    return varp (data);

bZero = (skip == SKIPZERO) || (skip == SKIPBOTH);
bMissg = (skip == SKIPBOTH);

double sum = MISSG, avg = MISSG;
int count = 0;

for (i=0; i<n; i++) {
    double d = data [i];
    if ((bMissg && d == MISSG) || (bZero && d == 0.))
        continue;
    sum = Calculator.add (sum, d);
    count ++;
}

if (count == 0)
    return MISSG;

avg = sum / count;
sum = 0.;
for (i=0; i<n; i++) {
    double d = data [i];
    if ((bMissg && d == MISSG) || (bZero && d == 0.))
        continue;
    if (d == MISSG)
        d = - avg;
    else
        d = d - avg;
    d = d * d;
    sum = sum + d;
}
return (sum / count);

/**
 ** Computes stdevp of a given sequence
 ** (with prescribed skip directive).
 ** @param skip skip instruction; possible values are
 **    <ul>
 **    <li>SKIPNONE - nothing skipped</li>
 **    <li>SKIPZERO - zeros skipped</li>
 **    <li>SKIPMISSG - missing values skipped</li>
 **    <li>SKIPBOTH - skip both zeros and missing values</li>
 **    </ul> (defined in CalculatorConstants interface)
 ** @param data data array
 ** @return stdevp of the data
 ***/
public static double stdevp (int skip, double [] data) {
    return Calculator.sqrt (varp (skip, data));
}

/**
 ** Computes weighted varp of a given sequence. Missing values are ignored
 **/
```java
* @param data data array
* @param weights weights
* @return weighted varp of the data
*
public static double varp (double[] data, double[] weights) {
    int i, n = data.length;
    double sum = MISSG, avg = MISSG;
    double weight = MISSG;
    for (i=0; i<n; i++) {
        double d = data[i], w = weights[i];
        if (d != MISSG && w != MISSG) {
            sum = Calculator.add (sum, d * w);
            weight = Calculator.add (weight, w);
        }
    }
    if (sum == MISSG || weight == MISSG || weight == 0.0)
        return MISSG;
    avg = sum / weight;
    sum = 0.0;
    for (i=0; i<n; i++) {
        double d = data[i], w = weights[i];
        if (d == MISSG || w == MISSG)
            continue;
        d = d - avg;
        d = d * d * w;
        sum = sum + d;
    }
    return (sum / weight);
}

/**
 * Computes weighted standard deviation of a given sequence.
 * Missing values are ignored
 * @param data data array
 * @param weights weights
 * @return weighted standard deviation of the data
 */
public static double stdevp (double[] data, double[] weights) {
    return Calculator.sqrt (varp (data, weights));
}

/**
 * Computes weighted varp of a given sequence
 * (with prescribed skip directive).
 * @param skip skip instruction; possible values are
 * <ul>
 * <li>SKIPNONE - nothing skipped </li>
 * <li>SKIPZERO - zeros skipped</li>
 * <li>SKIPMISSG - missing values skipped</li>
 * <li>SKIPBOTH - skip both zeros and missing values</li>
 * </ul> (defined in CalculatorConstants interface)
 * @param data data array
 */
```
public static double varp (int skip, double [] data, double [] weights) {
    int i, n = data.length;
    boolean bZero = false, bMissg = false;
    if (skip == SKIPMISSG)
        return varp (data, weights);
    bZero = (skip == SKIPZERO) || (skip == SKIPBOTH);
    bMissg = (skip == SKIPBOTH);
    double sum = MISSG, avg = MISSG;
    double weight = MISSG;
    for (i=0; i<n; i++) {
        double d = data [i], w = weights [i];
        if ((bMissg && d == MISSG) || (bZero && d == 0.))
            continue;
        if (d != MISSG && w != MISSG)
            sum = Calculator.add (sum, d * w);
        weight = Calculator.add (weight, w);
    }
    if (sum == MISSG || weight == MISSG || weight == 0.)
        return MISSG;
    avg = sum / weight;
    sum = 0.;
    for (i=0; i<n; i++) {
        double d = data [i], w = weights [i];
        if ((bMissg && d == MISSG) || (bZero && d == 0.))
            continue;
        if (w != MISSG) {
            if (d == MISSG)
                d = -avg;
            else
                d = d - avg;
            d = d * d * w;
            sum = sum + d;
        }
    }
    return (sum / weight);
}

/**
 * Computes weighted stdevp value of a given sequence
 * (with prescribed skip directive).
 * @param skip skip instruction; possible values are
 * <ul>
 * <li>SKIPNONE - nothing skipped </li>
 * <li>SKIPZERO - zeros skipped</li>
 * <li>SKIPMISSG - missing values skipped</li>
 * 
 */
public static double stdevp (int skip, double [] data, double [] weights) {
    return Calculator.sqrt (varp (skip, data, weights));
}

/**
 * Computes covariance between two sequences.
 * If a missing value is encountered in either of the sequences,
 * the corresponding position is skipped in both of them.
 * @param x first array
 * @param y second array
 * @return covariance
 */
public static double covariance (double [] x, double [] y) {
    int i, n = x.length;

    if (n == 0)
        return MISSG;

    double d1, d2, avg1 = MISSG, avg2 = MISSG;
    int count = 0;

    for (i=0; i<n; i++) {
        d1 = x [i];
        d2 = y [i];
        if (d1 != MISSG && d2 != MISSG) {
            avg1 = Calculator.add (avg1, d1);
            avg2 = Calculator.add (avg2, d2);
            count ++;
        }
    }

    if (count < 1)
        return MISSG;

    avg1 = avg1 / count;
    avg2 = avg2 / count;

    double covar = 0.;
    for (i=0; i<n; i++) {
        d1 = x [i];
        d2 = y [i];
        if (d1 != MISSG && d2 != MISSG) {
            d1 = d1 - avg1;
            d2 = d2 - avg2;
            covar = covar + d1 * d2;
        }
    }
    return covar / count;
}

/**
* Computes weighted covariance between two sequences
* If a missing value is encountered in either of the sequences,
* the corresponding position is skipped in both of them.
* @param x first array
* @param y second array
* @return correlation
*/
public static double covariance (double [] x, double [] y, double [] weights) {
    int i, n = x.length;

    if (n == 0)
        return MISSG;

    double d1, d2, avg1 = MISSG, avg2 = MISSG;
    double w, weight = MISSG;

    for (i=0; i<n; i++) {
        d1 = x [i];
        d2 = y [i];
        w = weights [i];
        if (d1 != MISSG && d2 != MISSG && w != MISSG) {
            avg1 = Calculator.add (avg1, d1 * w);
            avg2 = Calculator.add (avg2, d2 * w);
            weight = Calculator.add (weight, w);
        }
    }

    if (avg1 == MISSG || weight == MISSG || weight == 0.)
        return MISSG;

    avg1 = avg1 / weight;
    avg2 = avg2 / weight;

    double covar = 0.;
    for (i=0; i<n; i++) {
        d1 = x [i];
        d2 = y [i];
        w = weights [i];
        if (d1 != MISSG && d2 != MISSG && w != MISSG) {
            d1 = d1 - avg1;
            d2 = d2 - avg2;
            covar = covar + w * d1 * d2;
        }
    }
    return covar / weight;
}

/**
 * Computes correlation between two sequences
 * If a missing value is encountered in either of the sequences,
 * the corresponding position is skipped in both of them.
 * @param x first array
 * @param y second array
 * @return correlation
 */
public static double correlation (double [] x, double [] y) {
    int i, n = x.length;
}
if (n == 0)
    return MISSG;

double d1, d2, avg1 = MISSG, avg2 = MISSG;
int count = 0;

for (i=0; i<n; i++) {
    d1 = x[i];
    d2 = y[i];
    if (d1 != MISSG && d2 != MISSG) {
        avg1 = Calculator.add(avg1, d1);
        avg2 = Calculator.add(avg2, d2);
        count ++;
    }
}

if (count < 2)
    return MISSG;

avg1 = avg1 / count;
avg2 = avg2 / count;

double stdev1 = 0.;
double stdev2 = 0.;
double covar = 0.;
for (i=0; i<n; i++) {
    d1 = x[i];
    d2 = y[i];
    if (d1 != MISSG && d2 != MISSG) {
        d1 = d1 - avg1;
        d2 = d2 - avg2;
        covar = covar + d1 * d2;
        stdev1 = stdev1 + d1 * d1;
        stdev2 = stdev2 + d2 * d2;
    }
}

stdev1 = Math.sqrt(stdev1 / (count - 1));
stdev2 = Math.sqrt(stdev2 / (count - 1));
covar = covar / count;

return covar / (stdev1 * stdev2);
}

/**
 * Computes weighted correlation between two sequences
 * If a missing value is encountered in either of the sequences,
 * the corresponding position is skipped in both of them.
 * @param x first array
 * @param y second array
 * @return correlation
 */
public static double correlation (double [] x, double [] y, double [] weights) {
    int i, n = x.length;

    if (n == 0)
return MISSG;

double d1, d2, avg1 = MISSG, avg2 = MISSG;
double w, weight = MISSG;

for (i=0; i<n; i++) {
    d1 = x [i];
    d2 = y [i];
    w = weights [i];
    if (d1 != MISSG && d2 != MISSG && w != MISSG) {
        avg1 = Calculator.add (avg1, d1 * w);
        avg2 = Calculator.add (avg2, d2 * w);
        weight = Calculator.add (weight, w);
    }
}

if (avg1 == MISSG || weight == MISSG || weight == 0. || weight == 1.)
    return MISSG;

avg1 = avg1 / weight;
avg2 = avg2 / weight;

double stdev1 = 0.;
double stdev2 = 0.;
double covar = 0.;
for (i=0; i<n; i++) {
    d1 = x [i];
    d2 = y [i];
    w = weights [i];
    if (d1 != MISSG && d2 != MISSG && w != MISSG) {
        d1 = d1 - avg1;
        d2 = d2 - avg2;
        covar = covar + w * d1 * d2;
        stdev1 = stdev1 + w * d1 * d1;
        stdev2 = stdev2 + w * d2 * d2;
    }
}

stdev1 = Math.sqrt (stdev1 / (weight - 1.));
stdev2 = Math.sqrt (stdev2 / (weight - 1.));
covar = covar / weight;

return covar / (stdev1 * stdev2);

/**
 * Computes skewness of a sequence. Missing values are skipped
 * @param data data array
 * @return skewness of the sequence
 */
public static double skew (double [] data) {
    int i, n = data.length;

    if (n == 0)
        return MISSG;

    double d, avg = MISSG;
int count = 0;

for (i=0; i<n; i++) {
    d = data [i];
    if (d != MISSG) {
        avg = Calculator.add (avg, d);
        count ++;
    }
}

if (count < 3)
    return MISSG;

avg = avg / count;

double stdev = 0.;
for (i=0; i<n; i++) {
    d = data [i];
    if (d != MISSG) {
        d = d - avg;
        stdev = stdev + d * d;
    }
}

stdev = Math.sqrt (stdev / (count - 1));

if (stdev == 0.)
    return MISSG;

double skew = 0.;
for (i=0; i<n; i++) {
    d = data [i];
    if (d != MISSG) {
        d = d - avg;
        d = d / stdev;
        skew = skew + d * d * d;
    }
}

return skew * count / ((count - 1) * (count - 2));

/**
 * Computes weighted skewness of a sequence. Missing values are ignored
 * @param data data array
 * @return skewness of the sequence
 */
public static double skew (double [] data, double [] weights) {
    int i, n = data.length;

    if (n == 0)
        return MISSG;

    double d, avg = MISSG;
    double w, weight = MISSG;

    for (i=0; i<n; i++) {
        d = data [i];
        w = weights [i];
w = weights [i];
if (d != MISSG && w != MISSG) {
    avg = Calculator.add (avg, w * d);
    weight = Calculator.add (weight, w);
}
}
if (avg == MISSG || weight == MISSG || weight == 0. || weight == 1. || weight == 2.)
    return MISSG;
avg = avg / weight;
double stdev = 0.;
for (i=0; i<n; i++) {
    d = data [i];
    w = weights [i];
    if (d != MISSG && w != MISSG) {
        d = d - avg;
        stdev = stdev + w * d * d;
    }
}
stdev = Math.sqrt (stdev / (weight - 1));
if (stdev == 0.)
    return MISSG;
double skew = 0.;
for (i=0; i<n; i++) {
    d = data [i];
    w = weights [i];
    if (d != MISSG && w != MISSG) {
        d = d - avg;
        d = d / stdev;
        skew = skew + w * d * d * d;
    }
}
return skew * weight / ((weight - 1.) * (weight - 2.));

/**
 * Computes kurtosis of a sequence. Missing values are skipped
 * @param data data array
 * @return kurtosis of the sequence
 */
public static double kurt (double [] data) {
    int i, n = data.length;
    if (n == 0)
        return MISSG;
    double d, avg = MISSG;
    int count = 0;
    for (i=0; i<n; i++) {
        d = data [i];
        if (d != MISSG) {
            count++;
            d = d - avg;
            d = d / stdev;
            skew = skew + w * d * d * d;
        }
    }
    return skew * weight / ((weight - 1.) * (weight - 2.));
}
avg = Calculator.add(avg, d);
count ++;
}
}
if (count < 4)
    return MISSG;
avg = avg / count;

double stdev = 0.;
for (i=0; i<n; i++) {
    d = data[i];
    if (d != MISSG) {
        d = d - avg;
        stdev = stdev + d * d;
    }
}

stdev = Math.sqrt(stdev / (count - 1));
if (stdev == 0.)
    return MISSG;

double kurt = 0.;
for (i=0; i<n; i++) {
    d = data[i];
    if (d != MISSG) {
        d = d - avg;
        d = d / stdev;
        kurt = kurt + d * d * d * d;
    }
}
kurt = kurt * count * (count + 1) / (count - 1) - 3 * (count - 1) * (count - 1);
return kurt / ((count - 2) * (count - 3));

/**
 * Computes weighted kurtosis of a sequence. Missing values are ignored
 * @param x data array
 * @return kurtosis of the sequence
 */
public static double kurt(double[] data, double[] weights) {
    int i, n = data.length;

    if (n == 0)
        return MISSG;

    double d, avg = MISSG;
    double w, weight = MISSG;

    for (i=0; i<n; i++) {
        d = data[i];
        w = weights[i];
        if (d != MISSG && w != MISSG) {
            avg = Calculator.add(avg, w * d);
        }
        weight = weight + w;
    }
    return kurt - weight / (count - 1) * (n - 1) / (n - 2) / (n - 3);
weight = Calculator.add (weight, w);
}
}
if (avg == MISSG || weight == MISSG || weight == 0. || weight == 1. || weight == 2. || weight == 3.)
    return MISSG;
avg = avg / weight;

double stddev = 0.;
for (i=0; i<n; i++) {
    d = data [i];
    w = weights [i];
    if (d != MISSG && w != MISSG) {
        d = d - avg;
        stddev = stddev + w * d * d;
    }
}
stddev = Math.sqrt (stddev / (weight - 1));
if (stddev == 0.)
    return MISSG;
double kurt = 0.;
for (i=0; i<n; i++) {
    d = data [i];
    w = weights [i];
    if (d != MISSG && w != MISSG) {
        d = d - avg;
        d = d / stddev;
        kurt = kurt + w * d * d * d * d;
    }
}
kurt = kurt * weight * (weight + 1.) / (weight - 1.) -
    3 * (weight - 1.) * (weight - 1.);
    return kurt / ((weight - 2.) * (weight - 3.));
}

/**
* Computes rank of a value relative to a given sequence.
* Missing elements in the sequence are ignored. Rank is 1-based.
* Missing value is not ranked.
* @param value value to be ranked
* @param data array of data
* @return rank in the sequence as a double
*/
public static double rank (double value, double [] data) {
    int i = 0, n = data.length;
    double d;
    int rank;
    if (value == MISSG)
      return MISSG;
double [] ddd = new double [n];

int j = 0;
for (i=0; i<n; i++) {
    d = data [i];
    if (d != MISSG) {
        ddd [j] = d;
        j ++;
    }
}
n = j;
if (n == 0)
    return MISSG;
if (n == 1)
    if (ddd [0] > value)
        return 2.;
    else
        return 1.;

Calculator.sort (ddd, 0, n-1);

rank = 1;
while (ddd [n - rank] > value) {
    rank++;
    if (rank > n)
        break;
}
return (double) rank;

/**
 * Computes mode of a sequence. Missing values are ignored
 * @param data array of data
 * @return mode of the sequence
 */
public static double mode (double [] data) {
    int i, j, n = data.length, maxFreq, freq;
    double d, mode;
    double [] ddd = new double [n];

    j = 0;
    for (i=0; i<n; i++) {
        if (data [i] != MISSG) {
            ddd [j] = data [i];
            j ++;
        }
    }
n = j;
    if (n == 0)
        return MISSG;
    if (n == 1)
        return ddd [0];
    Calculator.sort (ddd, 0, n-1);
mode = ddd [0];
maxFreq = 1;
while (i < n-1) {
    freq = 1;
    d = ddd [i];
    i++;
    while (ddd [i] == d) {
        freq++;
        i++;
        if (i >= n)
            break;
    }
    if (freq > maxFreq) {
        maxFreq = freq;
        mode = d;
    }
}
return mode;

/**
 * Computes median of a sequence. Missing values are ignored
 * @param data data array
 * @result median of the sequence
 */
public static double median (double [] data) {
    int i, j, n = data.length;
    int midIndex;
    double median;
    double [] ddd = new double [n];
    j = 0;
    for (i=0; i<n; i++) {
        if (data [i] != MISSG) {
            ddd [j] = data [i];
            j ++;
        }
    }
    n = j;
    if (n == 0)
        return MISSG;
    Calculator.sort (ddd, 0, n - 1);
    midIndex = n / 2;
    if (n % 2 == 0) {
        /* Average of the two middle numbers */
        median = (ddd [midIndex] + ddd [midIndex - 1]) / 2;
    }
    else {
        median = ddd [midIndex];
    }
    return median;
}
/**
* Computes percentile of a sequence. Missing values are ignored
* @param percent percent value
* @param data double array
* @result percentile of the sequence
*/
public static double percentile(double percent, double[] data) {
    int i, j, n = data.length;
    int midIndex;
    double median, temp;
    double[] ddd = new double[n];
    j = 0;
    for (i=0; i<n; i++) {
        if (data[i] != MISSG) {
            ddd[j] = data[i];
            j++;
        }
    }
    n = j;
    if (n == 0)
        return MISSG;
    Calculator.sort(ddd, 0, n-1);
    if (percent == 0.)
        return ddd[0];
    if (percent == 1.)
        return ddd[n-1];
    temp = percent * (double)n;
    median = Math.floor(temp);
    midIndex = (int)median;
    if (median != temp) {
        temp -= median;
        median = ddd[midIndex-1];
        median += (ddd[midIndex] - median) * temp;
    } else {
        median = ddd[midIndex];
    }
    return median;
}

/**
* Computes percentile of a part of a sequence. Missing values are ignored
* @param percent percent value
* @param size size to use
* @param data data array
* @result percentile of the subsequence
*/
public static double percentile(double percent, int size, double[] data) {
    int i, j, n = data.length;
    if (n > size)
n = size;
int midIndex;
double median, temp;
double [] ddd = new double [n];

j = 0;
for (i=0; i<n; i++) {
    if (data [i] != MISSG) {
        ddd [j] = data [i];
        j++;
    }
}

n = j;
if (n == 0)
    return MISSG;

Calculator.sort (ddd, 0, n-1);

if (percent == 0.)
    return ddd [0];

if (percent == 1.)
    return ddd [n-1];

temp = percent * (double) n;
median = Math.floor (temp);
midIndex = (int) median;

if (median != temp) {
    temp -= median;
    median = ddd [midIndex-1];
    median += (ddd [midIndex] - median) * temp;
}
else {
    median = ddd [midIndex];
}
return median;

/**
 * Computes quartile of a sequence. Missing values are ignored
 * @param quart indicates which value to return
 * Possible values are:
 * <ul>
 * <li>0 - return minimum</li>
 * <li>1 - return 25% percentile</li>
 * <li>2 - return median</li>
 * <li>3 - return 75% percentile</li>
 * <li>4 - return maximum</li>
 * </ul>
 * @param data double array
 * @result quartile of the sequence
 */
public static double quartile (int quart, double [] data) {
    switch (quart) {
case 0:
    return min (data);
case 1:
    return percentile (0.25, data);
case 2:
    return median (data);
case 3:
    return percentile (0.75, data);
case 4:
    return max (data);
default:
    return MISSG;
}
}
}

MaxL Registration Scripts

Sample scripts for registering and dropping the example custom-defined functions are provided in the following files, located in the following directory of this documentation: samples\cdf\examples:

- register.mxl—To register the functions locally in an application (see register.mxl Sample Code).
- drop.mxl—To drop the functions (if they were registered locally) (see drop.mxl Sample Code).
- reglobal.mxl To register the functions globally (see reglobal.mxl Sample Code).

The sample files can be viewed or modified in any text editor. For more information about registering custom-defined functions, see the Oracle Essbase Database Administrator’s Guide.

register.mxl Sample Code

/* <maxl version="11.1.1" encoding="UTF-8"/> */

/**
 * This script registers methods of the class Statistics as custom-defined functions
 * for a specified application
 * Usage: Log in to MaxL Shell, then call: msh register.mxl appname
 */

/***
 * Register function average
 */
CREATE MACRO $1.'@JAVG'(GROUP)
AS '@_JAVG(@@S)'
SPEC '@JAVG(expList)'
COMMENT 'Computes the average of non-missing values in a data set (expList)';
CREATE FUNCTION $1.'@_JAVG'
AS 'com.hyperion.essbase.calculator.Statistics.avg(double [])';

/**
 * Register function weighted average
 */
CREATE FUNCTION $1.'@JAVGW'
AS 'com.hyperion.essbase.calculator.Statistics.avg(double [],double [])'
SPEC '@JAVGW(@LIST(expList), @LIST(weightExpList))'
COMMENT 'Computes the weighted average of non-missing values in a data set (expList)';

/**
 * Register functions average and weighted average with a skip instruction.
 * These functions will be used through macros, so no spec/comment specified.
 * Since these functions will not be used directly, the names start with '@_'.
 */
CREATE FUNCTION $1.'@_JAVGS'
AS 'com.hyperion.essbase.calculator.Statistics.avg(int,double [])';
CREATE FUNCTION $1.'@_JAVGWS'
AS 'com.hyperion.essbase.calculator.Statistics.avg(int,double [],double [])';

/**
 * Register macro for average with a skip instruction
 */
CREATE MACRO $1.'@JAVGS'(SINGLE,GROUP)
AS
'@@IFSTRCMP (@@1, SKIPNONE)
   @_JAVGS (0, @@2)
@@ELSE
   @@IFSTRCMP (@@1, SKIPMISSING)
      @_JAVGS (1, @@2)
   @@ELSE
      @@IFSTRCMP (@@1, SKIPZERO)
         @_JAVGS (2, @@2)
   @@ELSE
      @@IFSTRCMP (@@1, SKIPBOTH)
         @_JAVGS (3, @@2)
      @@ELSE
         @@ERROR (@@L1, @_INVALIDSKIP)
      @@ENDIF
   @@ENDIF
   @@ENDIF
@@ENDIF'
SPEC '@JAVGS(SKIPNONE|SKIPZERO|SKIPMISSING|SKIPBOTH, expList)'
COMMENT 'Computes the average value of a data set (expList) with skip instructions';

/**
 * Register macro for weighted average with a skip instruction
 */
CREATE MACRO $1.'@JAVGWS'(SINGLE,SINGLE,SINGLE)
AS
'@@IFSTRCMP (@@1, SKIPNONE)
   @_JAVGWS (0, @@2, @@3)
@@ELSE
   @@IFSTRCMP (@@1, SKIPMISSING)
      @_JAVGWS (1, @@2, @@3)
   @@ELSE
      @@IFSTRCMP (@@1, SKIPZERO)
         @_JAVGWS (2, @@2, @@3)
   @@ELSE
      @@IFSTRCMP (@@1, SKIPBOTH)
         @_JAVGWS (3, @@2, @@3)
      @@ELSE
         @@ERROR (@@L1, @_INVALIDSKIP)
      @@ENDIF
   @@ENDIF
   @@ENDIF
@@ENDIF'
SPEC '@JAVGWS(SKIPNONE|SKIPZERO|SKIPMISSING|SKIPBOTH, expList)'
COMMENT 'Computes the weighted average of a data set (expList) with skip instructions';
@ELSE
@IFSTRCMP (@@1, SKIPMISSING)
  @_JAVGWS (1, @@2, @@3)
@ELSE
@IFSTRCMP (@@1, SKIPZERO)
  @_JAVGWS (2, @@2, @@3)
@ELSE
  @IFSTRCMP (@@1, SKIPBOTH)
    @_JAVGS (3, @@2, @@3)
  @ELSE
    @ERROR (@@L1, @_INVALIDSKIP)
@ENDIF
@endif
@endif
@endif
@endif

SPEC '@JAVGWS(SKIPNONE|SKIPZERO|SKIPMISSING|SKIPBOTH, @LIST(expList),
@LIST(weightExpList))'
COMMENT 'Computes the weighted average value of a data set (expList) with skip instructions';

/**
 * Register function correlation
 */
CREATE FUNCTION $1.'@JCORR'
AS 'com.hyperion.essbase.calculator.Statistics.correlation(double [],double [])'
SPEC '@JCORR(@LIST(expList1), @LIST(expList2))'
COMMENT 'Computes the correlation coefficient between two data sets (expList1 and expList2)';

/**
 * Register function weighted correlation
 */
CREATE FUNCTION $1.'@JCORRW'
AS 'com.hyperion.essbase.calculator.Statistics.correlation(double [],double [],double []])'
SPEC '@JCORRW(@LIST(expList1), @LIST(expList2), @LIST(weightExpList))'
COMMENT 'Computes the weighted correlation coefficient between two data sets (expList1 and expList2)';

/**
 * Register function count
 */
CREATE MACRO $1.'@JCOUNT'(GROUP)
AS '@_JCOUNT(@@S)'
SPEC '@JCOUNT(expList)'
COMMENT 'Computes the count of non-missing elements in a data set (expList)';

CREATE FUNCTION $1.'@_JCOUNT'
AS 'com.hyperion.essbase.calculator.Statistics.count(double [])';

/**
 * Register function count with a skip instruction.
 * This function will be used through macros, so no spec/comment specified.
 * Since this function will not be used directly, the name starts with ' @_'.

300
CREATE FUNCTION $1.'@_JCOUNTS'
AS 'com.hyperion.essbase.calculator.Statistics.count(int,double [])';

CREATE MACRO $1.'@JCOUNTS'(SINGLE,GROUP)
AS
'@@IFSTRCMP (@@1, SKIPNONE)
  @_JCOUNTS (0, @@2)
@@ELSE
  @@IFSTRCMP (@@1, SKIPMISSING)
    @_JCOUNTS (1, @@2)
  @@ELSE
    @@IFSTRCMP (@@1, SKIPZERO)
      @_JCOUNTS (2, @@2)
    @@ELSE
      @@IFSTRCMP (@@1, SKIPBOTH)
        @_JCOUNTS (3, @@2)
      @@ELSE
        @@ERROR (@@L1, @_INVALIDSKIP)
      @@ENDIF
    @@ENDIF
  @@ENDIF
@@ENDIF'
SPEC '@JCOUNTS(SKIPNONE|SKIPZERO|SKIPMISSING|SKIPBOTH, expList)'
COMMENT ' Computes the number of elements of a data set (expList) with skip instructions';

CREATE FUNCTION $1.'@JCOVAR'
AS 'com.hyperion.essbase.calculator.Statistics.covariance(double [],double []);'
SPEC '@JCOVAR(@LIST(expList1), @LIST(expList2))'
COMMENT ' Computes the covariance between two data sets (expList1 and expList2)';

CREATE FUNCTION $1.'@JCOVARW'
AS 'com.hyperion.essbase.calculator.Statistics.covariance(double [],double [],double []);'
SPEC '@JCOVARW(@LIST(expList1), @LIST(expList2), @LIST(weightExpList))'
COMMENT ' Computes the weighted covariance between two data sets (expList1 and expList2)';

CREATE MACRO $1.'@JGEOMEAN'(GROUP)
AS '@_JGEOMEAN(@@S)'
SPEC '@JGEOMEAN(expList)'
COMMENT 'Computes the geometric mean of a data set (expList)';

CREATE FUNCTION $1.'@_JGEOMEAN'
AS 'com.hyperion.essbase.calculator.Statistics.geomean(double []);'

/**
 * Register function weighted geometric mean
 */
CREATE FUNCTION $1.'@JGEOMEANW'
AS 'com.hyperion.essbase.calculator.Statistics.geomean(double [],double [])'
SPEC '@JGEOMEANW(@LIST(expList), @LIST(weightExpList))'
COMMENT 'Computes the weighted geometric mean of a data set (expList)';

/**
 * Register function harmonic mean
 */
CREATE MACRO $1.'@JHARMEAN'(GROUP)
AS '@_JHARMEAN(@@S)'
SPEC '@JHARMEAN(expList)'
COMMENT 'Computes the harmonic mean of a data set (expList)';

CREATE FUNCTION $1.'@_JHARMEAN'
AS 'com.hyperion.essbase.calculator.Statistics.harmean(double [])';

/**
 * Register function weighted harmonic mean
 */
CREATE FUNCTION $1.'@JHARMEANW'
AS 'com.hyperion.essbase.calculator.Statistics.harmean(double [],double [])'
SPEC '@JHARMEANW(@LIST(expList), @LIST(weightExpList))'
COMMENT 'Computes the weighted harmonic mean of a data set (expList)';

/**
 * Register function kurtosis
 */
CREATE MACRO $1.'@JKURT'(GROUP)
AS '@_JKURT(@@S)'
SPEC '@JKURT(expList)'
COMMENT 'Computes the kurtosis of a data set (expList)';

CREATE FUNCTION $1.'@_JKURT'
AS 'com.hyperion.essbase.calculator.Statistics.kurt(double [])';

/**
 * Register function weighted kurtosis
 */
CREATE FUNCTION $1.'@JKURTW'
AS 'com.hyperion.essbase.calculator.Statistics.kurt(double [],double [])'
SPEC '@JKURTW(@LIST(expList), @LIST(weightExpList))'
COMMENT 'Computes the weighted kurtosis of a data set (expList)';

/**
 * Register function max
 */
* There is only one function with this name, so no need to specify the signature */
CREATE MACRO $1.'@JMAX'(GROUP)
AS '@JMAX(@@S)'
SPEC '@JMAX(expList)'
COMMENT 'Computes the maximum of a data set (expList)';

CREATE FUNCTION $1.'@_JMAX'
AS 'com.hyperion.essbase.calculator.Statistics.max';
/**
 * Register function median
 * There is only one function with this name, so no need to specify the signature */
CREATE MACRO $1.'@JMEDIAN'(GROUP)
AS '@JMEDIAN(@@S)'
SPEC '@JMEDIAN(expList)'
COMMENT 'Computes the median of a data set (expList)';

CREATE FUNCTION $1.'@_JMEDIAN'
AS 'com.hyperion.essbase.calculator.Statistics.median';
/**
 * Register function min
 * There is only one function with this name, so no need to specify the signature */
CREATE MACRO $1.'@JMIN'(GROUP)
AS '@JMIN(@@S)'
SPEC '@JMIN(expList)'
COMMENT 'Computes the minimum of a data set (expList)';

CREATE FUNCTION $1.'@_JMIN'
AS 'com.hyperion.essbase.calculator.Statistics.min';
/**
 * Register function mode
 * There is only one function with this name, so no need to specify the signature */
CREATE MACRO $1.'@JMODE'(GROUP)
AS '@JMODE(@@S)'
SPEC '@JMODE(expList)'
COMMENT 'Computes the mode of a data set (expList)';

CREATE FUNCTION $1.'@_JMODE'
AS 'com.hyperion.essbase.calculator.Statistics.mode';
/**
 * Register function percentile
 */
CREATE MACRO $1.'@JPTILE'(SINGLE, GROUP)
AS '@JPTILE(@@1, @@SH1)'
SPEC '@JPTILE(percent,expList)'
COMMENT 'Computes the specified (percent) percentile of a data set (expList)';

CREATE FUNCTION $1.'@_JPTILE'
AS 'com.hyperion.essbase.calculator.Statistics.percentile(double,double [])';
CREATE MACRO $1.'@JPROD'(GROUP) AS '$_JPROD(@@S)' SPEC '@JPROD(expList)' COMMENT 'Computes the product of non-missing values in a data set (expList)';

CREATE FUNCTION $1.'@_JPROD' AS 'com.hyperion.essbase.calculator.Statistics.product(double [])';

CREATE FUNCTION $1.'@JPRODW' AS 'com.hyperion.essbase.calculator.Statistics.product(double [],double [])' SPEC '@JPRODW(@LIST(expList), @LIST(weightExpList))' COMMENT 'Computes the weighted product of non-missing values in a data set (expList)';

CREATE MACRO $1.'@JQTILE'(SINGLE, GROUP) AS '$_JQTILE(@@1, @@SH1)' SPEC '@JQTILE(quart,expList)' COMMENT 'Computes the specified (quart) quartile of a data set (expList)';

CREATE FUNCTION $1.'@_JQTILE' AS 'com.hyperion.essbase.calculator.Statistics.quartile';

CREATE MACRO $1.'@JRANK'(SINGLE, GROUP) AS '$_JRANK(@@1, @@SH1)' SPEC '@JRANK(value,expList)' COMMENT 'Computes the rank of a value in a data set (expList)';

CREATE FUNCTION $1.'@_JRANK' AS 'com.hyperion.essbase.calculator.Statistics.rank';

CREATE MACRO $1.'@JSKEW'(GROUP) AS '$_JSKEW(@@S)' SPEC '@JSKEW(expList)' COMMENT 'Computes the skewness of a data set (expList)';

CREATE FUNCTION $1.'@JSKEW' AS 'com.hyperion.essbase.calculator.Statistics.skew(double [])';
/**
 * Register function weighted skewness
 */
CREATE FUNCTION $1.'@JSKEWW'
AS 'com.hyperion.essbase.calculator.Statistics.skew(double [],double [])'
SPEC '@JSKEWW(@LIST(expList), @LIST(weightExpList))'
COMMENT 'Computes the weighted skewness of a data set (expList)';

/**
 * Register function stdev
 */
CREATE FUNCTION $1.'@JSTDEV'(GROUP)
AS '@_JSTDEV(@@S)'
SPEC '@JSTDEV(expList)'
COMMENT 'Computes the standard deviation of non-missing values in a data set (expList)';
CREATE FUNCTION $1.'@_JSTDEV'
AS 'com.hyperion.essbase.calculator.Statistics.stdev(double [])';

/**
 * Register function weighted stdev
 */
CREATE FUNCTION $1.'@JSTDEVW'
AS 'com.hyperion.essbase.calculator.Statistics.stdev(double [],double [])'
SPEC '@JSTDEVW(@LIST(expList), @LIST(weightExpList))'
COMMENT 'Computes the weighted standard deviation of non-missing values in a data set (expList)';
CREATE FUNCTION $1.'@_JSTDEVWS'
AS 'com.hyperion.essbase.calculator.Statistics.stdev(int,double [])';

/**
 * Register functions stdev and weighted stdev with a skip instruction.
 * These functions will be used through macros, so no spec/comment specified.
 * Since these functions will not be used directly, the names start with '@_'.
 */
CREATE FUNCTION $1.'@_JSTDEVS'
AS 'com.hyperion.essbase.calculator.Statistics.stdev(int,double [])';
CREATE FUNCTION $1.'@_JSTDEVWS'
AS 'com.hyperion.essbase.calculator.Statistics.stdev(int,double [],double [])';

/**
 * Register macro for stdev with a skip instruction
 */
CREATE MACRO $1.'@JSTDEVS'(SINGLE,GROUP)
AS ' @@IFSTRCMP (@@1, SKIPNONE)
    @_JSTDEVS (0, @@2)
@@ELSE
    @@IFSTRCMP (@@1, SKIPMISSING)
    @_JSTDEVS (1, @@2)
@@ELSE
    @@IFSTRCMP (@@1, SKIPZERO)
    @_JSTDEVS (2, @@2)
@@ELSE
    @@IFSTRCMP (@@1, SKIPBOTH)

/**
 * Register macro for weighted standard deviation with a skip instruction
 */
CREATE MACRO $1.'@JSTDEVWS' (SINGLE, SINGLE, SINGLE)
AS
'@@IFSTRCMP (@@1, SKIPNONE)
  @_JSTDEVWS (0, @@2, @@3)
@@ELSE
  @@IFSTRCMP (@@1, SKIPMISSING)
    @_JSTDEVWS (1, @@2, @@3)
  @@ELSE
    @@IFSTRCMP (@@1, SKIPZERO)
      @_JSTDEVWS (2, @@2, @@3)
    @@ELSE
      @@IFSTRCMP (@@1, SKIPBOTH)
        @_JSTDEVWS (3, @@2, @@3)
      @@ELSE
        @@ERROR (@@L1, _INVALIDSKIP)
@@ENDIF
@@ENDIF
@@ENDIF
@@ENDIF
@@ENDIF
SPEC 'JSTDEVWS(SKIPNONE|SKIPZERO|SKIPMISSING|SKIPBOTH, expList)' COMMENT 'Computes the weighted standard deviation value of a data set (expList) with skip instructions';

/**
 * Register function stdevp
 */
CREATE MACRO $1.'@JSTDEVP' (GROUP)
AS '@_JSTDEVP(@@S)'
SPEC '@JSTDEVP(expList)' COMMENT 'Computes the standard deviation(p) of non-missing values in a data set (expList)';
CREATE FUNCTION $1.'@JSTDEVP'
AS 'com.hyperion.essbase.calculator.Statistics.stdevp(double [])';

/**
 * Register function weighted stdevp
 */
CREATE FUNCTION $1.'@JSTDEVPW'
AS 'com.hyperion.essbase.calculator.Statistics.stdevp(double [], double [])'
**Register functions stdevp and weighted stdevp with a skip instruction.**
* These functions will be used through macros, so no spec/comment specified.
* Since these functions will not be used directly, the names start with '@_'.

```sql
CREATE FUNCTION $1.'@_JSTDEVPS'
AS 'com.hyperion.essbase.calculator.Statistics.stdevp(int,double [])';
CREATE FUNCTION $1.'@_JSTDEVPWS'
AS 'com.hyperion.essbase.calculator.Statistics.stdevp(int,double [],double [])';

/**
 * Register macro for stdevp with a skip instruction
 */
CREATE MACRO $1.'@JSTDEVPS'(SINGLE,GROUP)
AS
'@@IFSTRCMP (@@1, SKIPNONE)
  @_JSTDEVPS (0, @@2)
@@ELSE
  @@IFSTRCMP (@@1, SKIPMISSING)
    @_JSTDEVPS (1, @@2)
  @@ELSE
    @@IFSTRCMP (@@1, SKIPZERO)
      @_JSTDEVPS (2, @@2)
    @@ELSE
      @@IFSTRCMP (@@1, SKIPBOTH)
        @_JSTDEVPS (3, @@2)
      @@ELSE
        @@ERROR (@@L1, @_INVALIDSKIP)
@@ENDIF
@@ENDIF
@@ENDIF
@@ENDIF'
SPEC '@JSTDEVPS(SKIPNONE|SKIPZERO|SKIPMISSING|SKIPBOTH, expList)'
COMMENT 'Computes the standard deviation(p) value of a data set (expList) with skip instructions';

/**
 * Register macro for weighted stdevp with a skip instruction
 */
CREATE MACRO $1.'@JSTDEVPWS'(SINGLE,SINGLE,SINGLE)
AS
'@@IFSTRCMP (@@1, SKIPNONE)
  @_JSTDEVPWS (0, @@2, @@3)
@@ELSE
  @@IFSTRCMP (@@1, SKIPMISSING)
    @_JSTDEVPWS (1, @@2, @@3)
  @@ELSE
    @@IFSTRCMP (@@1, SKIPZERO)
      @_JSTDEVPWS (2, @@2, @@3)
    @@ELSE
      @@IFSTRCMP (@@1, SKIPBOTH)
        @_JSTDEVPWS (3, @@2, @@3)
      @@ELSE
        @@ERROR (@@L1, @_INVALIDSKIP)
@@ENDIF
@@ENDIF
@@ENDIF
@@ENDIF'
SPEC '@JSTDEVPWS(SKIPNONE|SKIPZERO|SKIPMISSING|SKIPBOTH, expList)'
COMMENT 'Computes the weighted standard deviation(p) of non-missing values in a data set (expList)';
@@IFSTRCMP (@@1, SKIPBOTH)
   @_JSTDEVPS (3, @@2, @@3)
@@ELSE
   @@ERROR (@@L1, _INVALIDSKIP)
@@ENDIF
@@ENDIF
@@ENDIF

SPEC 'JSTDEVPWS(SKIPNONE|SKIPZERO|SKIPMISSING|SKIPBOTH, expList, weightExpList)'
COMMENT 'Computes the weighted standard deviation(p) value of a data set (expList) with skip instructions';

/**
 * Register function sum
 */
CREATE MACRO $1.'@JSUM'(GROUP)
AS '@_JSUM(@@S)'
SPEC '@JSUM(expList)'
COMMENT 'Computes the sum of a data set (expList)';

CREATE FUNCTION $1.'@_JSUM'
AS 'com.hyperion.essbase.calculator.Statistics.sum(double [])';

/**
 * Register function weighted SUM
 */
CREATE FUNCTION $1.'@JSUMW'
AS 'com.hyperion.essbase.calculator.Statistics.sum(double [],double [])'
SPEC '@JSUMW(@LIST(expList), @LIST(weightExpList))'
COMMENT 'Computes the weighted sum of a data set (expList)';

/**
 * Register function var
 */
CREATE MACRO $1.'@JVAR'(GROUP)
AS '@_JVAR(@@S)'
SPEC '@JVAR(expList)'
COMMENT 'Computes the variance of non-missing values in a data set (expList)';

CREATE FUNCTION $1.'@_JVAR'
AS 'com.hyperion.essbase.calculator.Statistics.var(double [])';

/**
 * Register function weighted var
 */
CREATE FUNCTION $1.'@JVARW'
AS 'com.hyperion.essbase.calculator.Statistics.var(double [],double [])'
SPEC '@JVARW(@LIST(expList), @LIST(weightExpList))'
COMMENT 'Computes the weighted variance of non-missing values in a data set (expList)';

/**
 * Register functions var and weighted var with a skip instruction.
 * These functions will be used through macros, so no spec/comment specified.
 */
* Since these functions will not be used directly, the names start with '$_'.
*/
CREATE FUNCTION $1.'$_JVARS'
AS 'com.hyperion.essbase.calculator.Statistics.var(int,double [])';
CREATE FUNCTION $1.'$_JVARWS'
AS 'com.hyperion.essbase.calculator.Statistics.var(int,double [],double [])';

/**
 * Register macro for var with a skip instruction
 */
CREATE MACRO $1.'$_JVARSKP'(SINGLE,GROUP)
AS
'@@IFSTRCMP (@@1, SKIPNONE)
  _$_JVARS (0, @@2)
@@ELSE
  @@IFSTRCMP (@@1, SKIPMISSING)
    _$_JVARS (1, @@2)
  @@ELSE
  @@IFSTRCMP (@@1, SKIPZERO)
    _$_JVARS (2, @@2)
  @@ELSE
  @@IFSTRCMP (@@1, SKIPBOTH)
    _$_JVARS (3, @@2)
  @@ELSE
  @@ERROR (@@L1, _$_INVALIDSKP)
  @@ENDIF
@@ENDIF
@@ENDIF
@@ENDIF
@@ENDIF'
SPEC '$_JVARSKP(SKIPNONE|SKIPZERO|SKIPMISSING|SKIPBOTH, expList)'
COMMENT 'Computes the variance value of a data set (expList) with skip instructions';

/**
 * Register macro for weighted variance with a skip instruction
 */
CREATE MACRO $1.'$_JVARWSKPPW'(SINGLE,SINGLE,SINGLE)
AS
'@@IFSTRCMP (@@1, SKIPNONE)
  _$_JVARWS (0, @@2, @@3)
@@ELSE
  @@IFSTRCMP (@@1, SKIPMISSING)
    _$_JVARWS (1, @@2, @@3)
  @@ELSE
  @@IFSTRCMP (@@1, SKIPZERO)
    _$_JVARWS (2, @@2, @@3)
  @@ELSE
  @@IFSTRCMP (@@1, SKIPBOTH)
    _$_JVARWS (3, @@2, @@3)
  @@ELSE
  @@ERROR (@@L1, _$_INVALIDSKP)
  @@ENDIF
@@ENDIF
@@ENDIF
@@ENDIF
@@ENDIF'
SPEC '$_JVARWSKPPW(SKIPNONE|SKIPZERO|SKIPMISSING|SKIPBOTH, expList, weightExpList)'
COMMENT 'Computes the weighted variance value of a data set (expList) with skip instructions';

/**
 * Register function varp
 */
CREATE MACRO $1.'@JVARP'(GROUP)
AS '@_JVARP(@@S)'
SPEC '@JVARP(expList)'
COMMENT 'Computes the variance(p) of non-missing values in a data set (expList)';

CREATE FUNCTION $1.'@_JVARP'
AS 'com.hyperion.essbase.calculator.Statistics.varp(double []);'

/**
 * Register function weighted varp
 */
CREATE FUNCTION $1.'@JVARPW'
AS 'com.hyperion.essbase.calculator.Statistics.varp(double [],double [])'
SPEC '@JVARPW(@LIST(expList), @LIST(weightExpList))'
COMMENT 'Computes the weighted variance(p) of non-missing values in a data set (expList)';

/**
 * Register functions varp and weighted varp with a skip instruction.
 * These functions will be used through macros, so no spec/comment specified.
 * Since these functions will not be used directly, the names start with '@_'.
 */
CREATE FUNCTION $1.'@_JVARPS'
AS 'com.hyperion.essbase.calculator.Statistics.varp(int,double [])';
CREATE FUNCTION $1.'@_JVARPWS'
AS 'com.hyperion.essbase.calculator.Statistics.varp(int,double [],double [])';

/**
 * Register macro for varp with a skip instruction
 */
CREATE MACRO $1.'@JVARPS'(SINGLE,GROUP)
AS
'@@IFSTRCMP (@@1, SKIPNONE)
  @_JVARPS (0, @@2)
@@ELSE
  @@IFSTRCMP (@@1, SKIPMISSING)
    @_JVARPS (1, @@2)
  @@ELSE
    @@IFSTRCMP (@@1, SKIPZERO)
      @_JVARPS (2, @@2)
    @@ELSE
      @@IFSTRCMP (@@1, SKIPBOTH)
        @_JVARPS (3, @@2)
      @@ELSE
        @@ERROR (@@L1, @_INVALIDSKIP)
    @@ENDIF
  @@ENDIF
@@ENDIF
310
@@ENDIF'
SPEC '@JVARPS(SKIPNONE|SKIPZERO|SKIPMISSING|SKIPBOTH, expList)'
COMMENT 'Computes the variance(p) value of a data set (expList) with skip instructions';

/**
 * Register macro for weighted varp with a skip instruction
 */
CREATE MACRO $1.'@JVARPWS'(SINGLE,SINGLE,SINGLE)
AS
'@@IFSTRCMP (@@1, SKIPNONE)
  @_JVARPWS (0, @@2, @@3)
@@ELSE
  @@IFSTRCMP (@@1, SKIPMISSING)
    @_JVARPWS (1, @@2, @@3)
  @@ELSE
    @@IFSTRCMP (@@1, SKIPZERO)
    @@IFSTRCMP (@@1, SKIPBOTH)
      @_JVARPS (3, @@2, @@3)
    @@ELSE
      @@ERROR (@@L1, _INVALIDSKIP)
    @@ENDIF
  @@ENDIF
@ENDIF
@@ENDIF
@@ENDIF'
SPEC '@JVARPWS(SKIPNONE|SKIPZERO|SKIPMISSING|SKIPBOTH, expList, weightExpList)'
COMMENT 'Computes the weighted variance(p) value of a data set (expList) with skip instructions';

drop.mxl Sample Code

/* <maxl version="7.0.0" encoding="UTF-8"/> */ *

/**
 * This script deregisters methods of the class Statistics as custom-defined functions
 * for a specified application
 * Usage: Log in to MaxL Shell, then call: msh drop.mxl appname
 * *
 */

/**
 * Deregister all functions
 */
DROP FUNCTION $1.'@JAVG';
DROP FUNCTION $1.'@JAVGW';
DROP FUNCTION $1.'@_JAVGS';
DROP FUNCTION $1.'@JAVGWS';
DROP MACRO $1.'@JAVGS';
DROP MACRO $1.'@JAVGWS';
DROP FUNCTION $1.'@JCORR';
DROP FUNCTION $1.'@JCORRW';

DROP FUNCTION $1.'@JCOUNT';
DROP FUNCTION $1.'@_JCOUNTS';
DROP FUNCTION $1.'@JCOUNTS';
DROP FUNCTION $1.'@JCOVAR';
DROP FUNCTION $1.'@JCOVARW';
DROP FUNCTION $1.'@JGEOMEAN';
DROP FUNCTION $1.'@JGEOMEANW';
DROP FUNCTION $1.'@JHARMEAN';
DROP FUNCTION $1.'@JHARMEANW';
DROP FUNCTION $1.'@JKURT';
DROP FUNCTION $1.'@JKURTW';
DROP FUNCTION $1.'@JMAX';
DROP FUNCTION $1.'@JMEDIAN';
DROP FUNCTION $1.'@JMIN';
DROP FUNCTION $1.'@JMODE';
DROP FUNCTION $1.'@JPTILE';
DROP FUNCTION $1.'@JPROD';
DROP FUNCTION $1.'@JPRODW';
DROP FUNCTION $1.'@JQTILE';
DROP FUNCTION $1.'@JRANK';
DROP FUNCTION $1.'@JSKEW';
DROP FUNCTION $1.'@JSKEWW';
DROP FUNCTION $1.'@JSTDEV';
DROP FUNCTION $1.'@JSTDEVP';
DROP FUNCTION $1.'@JSTDEVVP';
DROP FUNCTION $1.'@JSTDEVVPW';
DROP FUNCTION $1.'@JSTDEVFW';
DROP FUNCTION $1.'@JSTDEVFWP';
DROP FUNCTION $1.'@JSTDEVFWW';
DROP FUNCTION $1.'@JSTDEVFWVP';
DROP FUNCTION $1.'@JSTDEVFWVPW';
DROP FUNCTION $1.'@JSUM';
DROP FUNCTION $1.'@JVAR';
DROP FUNCTION $1.'@JVARW';
DROP FUNCTION $1.'@JVARW';
DROP FUNCTION $1.'@JVARS';
DROP FUNCTION $1.'@JVARS';
DROP MACRO $1.'@JCOUNTS';
DROP MACRO $1.'@JCOVAR';
DROP MACRO $1.'@JGEOYAN';
DROP MACRO $1.'@JGEOYANW';
DROP MACRO $1.'@JHARMean';
DROP MACRO $1.'@JHARMeanW';
DROP MACRO $1.'@JKURT';
DROP MACRO $1.'@JKURTW';
DROP MACRO $1.'@JMAX';
DROP MACRO $1.'@JMEDIAN';
DROP MACRO $1.'@JMIN';
DROP MACRO $1.'@JMODE';
DROP MACRO $1.'@JPTILE';
DROP MACRO $1.'@JPROD';
DROP MACRO $1.'@JPRODW';
DROP MACRO $1.'@JQTILE';
DROP MACRO $1.'@JRANK';
DROP MACRO $1.'@JSKEW';
DROP MACRO $1.'@JSKEWW';
DROP MACRO $1.'@JSTDEV';
DROP MACRO $1.'@JSTDEVP';
DROP MACRO $1.'@JSTDEVVP';
DROP MACRO $1.'@JSTDEVVPW';
DROP MACRO $1.'@JSTDEVFW';
DROP MACRO $1.'@JSTDEVFWP';
DROP MACRO $1.'@JSTDEVFWW';
DROP MACRO $1.'@JSTDEVFWVP';
DROP MACRO $1.'@JSTDEVFWVPW';
DROP MACRO $1.'@JSUM';
DROP MACRO $1.'@JVAR';
DROP MACRO $1.'@JVARW';
DROP MACRO $1.'@JVARW';
DROP MACRO $1.'@JVARS';
DROP MACRO $1.'@JVARS';
DROP MACRO $1.'@JCOUNTS';
DROP MACRO $1.'@JCOVAR';
DROP MACRO $1.'@JGEOYAN';
DROP MACRO $1.'@JGEOYANW';
DROP MACRO $1.'@JHARMean';
DROP MACRO $1.'@JHARMeanW';
DROP MACRO $1.'@JKURT';
DROP MACRO $1.'@JKURTW';
DROP MACRO $1.'@JMAX';
DROP MACRO $1.'@JMEDIAN';
DROP MACRO $1.'@JMIN';
DROP MACRO $1.'@JMODE';
DROP MACRO $1.'@JPTILE';
DROP MACRO $1.'@JPROD';
DROP MACRO $1.'@JPRODW';
DROP MACRO $1.'@JQTILE';
DROP MACRO $1.'@JRANK';
DROP MACRO $1.'@JSKEW';
DROP MACRO $1.'@JSKEWW';
DROP MACRO $1.'@JSTDEV';
DROP MACRO $1.'@JSTDEVP';
DROP MACRO $1.'@JSTDEVVP';
DROP MACRO $1.'@JSTDEVVPW';
DROP MACRO $1.'@JSTDEVFW';
DROP MACRO $1.'@JSTDEVFWP';
DROP MACRO $1.'@JSTDEVFWW';
DROP MACRO $1.'@JSTDEVFWVP';
DROP MACRO $1.'@JSTDEVFWVPW';
DROP MACRO $1.'@JSUM';
DROP MACRO $1.'@JVAR';
DROP MACRO $1.'@JVARW';
DROP MACRO $1.'@JVARW';
DROP MACRO $1.'@JVARS';
DROP MACRO $1.'@JVARS';
DROP MACRO $1.'@JVARWS';

DROP FUNCTION $1.'@JVARP';
DROP FUNCTION $1.'@JVARPW';
DROP FUNCTION $1.'@_JVARPS';
DROP FUNCTION $1.'@_JVARPWS';
DROP MACRO $1.'@JVARPS';
DROP MACRO $1.'@JVARPWS';

/**
 * Restart the application
 */
ALTER SYSTEM UNLOAD APPLICATION $1;
ALTER SYSTEM LOAD APPLICATION $1;

reglobal.mxl Sample Code

/* <maxl version="11.1.1" encoding="UTF-8"/> */

/**
 * This script registers methods of the class Statistics as global custom-defined functions
 * Usage: Log in to MaxL Shell, then call: msh reglobal.mxl
 */

/**
 * Register function average
 */
CREATE MACRO `@JAVG'(GROUP)
AS `@_JAVG(@@S)'
SPEC `@JAVG(expList)'
COMMENT 'Computes the average of non-missing values in a data set (expList)';
CREATE FUNCTION `@_JAVG'
AS 'com.hyperion.essbase.calculator.Statistics.avg(double []);'

/**
 * Register function weighted average
 */
CREATE FUNCTION `@JAVGW'
AS 'com.hyperion.essbase.calculator.Statistics.avg(double [],double []);'
SPEC `@JAVGW(@LIST(expList), @LIST(weightExpList))'
COMMENT 'Computes the weighted average of non-missing values in a data set (expList)';

/**
 * Register functions average and weighted average with a skip instruction.
 * These functions will be used through macros, so no spec/comment specified.
 * Since these functions will not be used directly, the names start with '@_'.
 */
CREATE FUNCTION `@_JAVGS'
AS 'com.hyperion.essbase.calculator.Statistics.avg(int,double []);'
CREATE FUNCTION `@_JAVGWS'
AS 'com.hyperion.essbase.calculator.Statistics.avg(int,double [],double []);'
/**
 * Register macro for average with a skip instruction
 */
CREATE MACRO '@JAVGS'(SINGLE,GROUP)
AS
'@@IFSTRCMP (@@1, SKIPNONE)
   @_JAVGS (0, @@2)
@@ELSE
   @@IFSTRCMP (@@1, SKIPMISSING)
   _JAVGS (1, @@2)
@@ELSE
   @@IFSTRCMP (@@1, SKIPZERO)
   _JAVGS (2, @@2)
@@ELSE
   @@IFSTRCMP (@@1, SKIPBOTH)
   _JAVGS (3, @@2)
@@ELSE
   @@ERROR (@@L1, @_INVALIDSKIP)
   @ENDIF
@@ENDIF
@@ENDIF
@@ENDIF
SPEC '@JAVGS(SKIPNONE|SKIPZERO|SKIPMISSING|SKIPBOTH, expList)'
COMMENT 'Computes the average value of a data set (expList) with skip instructions';

/**
 * Register macro for weighted average with a skip instruction
 */
CREATE MACRO '@JAVGWS'(SINGLE,SINGLE,SINGLE)
AS
'@@IFSTRCMP (@@1, SKIPNONE)
   @_JAVGWS (0, @@2, @@3)
@@ELSE
   @@IFSTRCMP (@@1, SKIPMISSING)
   @_JAVGWS (1, @@2, @@3)
@@ELSE
   @@IFSTRCMP (@@1, SKIPZERO)
   @_JAVGWS (2, @@2, @@3)
@@ELSE
   @@IFSTRCMP (@@1, SKIPBOTH)
   @_JAVGWS (3, @@2, @@3)
@@ELSE
   @@ERROR (@@L1, @_INVALIDSKIP)
   @ENDIF
@@ENDIF
@@ENDIF
@@ENDIF
SPEC '@JAVGWS(SKIPNONE|SKIPZERO|SKIPMISSING|SKIPBOTH, @LIST(expList), @LIST(weightExpList))'
COMMENT 'Computes the weighted average value of a data set (expList) with skip instructions';
* Register function correlation
*/
CREATE FUNCTION '@JCORR'
AS 'com.hyperion.essbase.calculator.Statistics.correlation(double [],double []),';
SPEC 'JCORR(@LIST(expList1), @LIST(expList2))'
COMMENT 'Computes the correlation coefficient between two data sets (expList1 and expList2)';

/**
* Register function weighted correlation
*/
CREATE FUNCTION '@JCORRW'
AS 'com.hyperion.essbase.calculator.Statistics.correlation(double [],double [],double [])';
SPEC 'JCORRW(@LIST(expList1), @LIST(expList2), @LIST(weightExpList))'
COMMENT 'Computes the weighted correlation coefficient between two data sets (expList1 and expList2)';

/**
* Register function count
*/
CREATE MACRO '@JCOUNT'(GROUP)
AS ' @_JCOUNT(@@S)'
SPEC 'JCOUNT(expList)'
COMMENT 'Computes the count of non-missing elements in a data set (expList)';
CREATE FUNCTION '@_JCOUNT'
AS 'com.hyperion.essbase.calculator.Statistics.count(double [])';

/**
* Register function count with a skip instruction.
* This function will be used through macros, so no spec/comment specified.
* Since this function will not be used directly, the name starts with '@_'.
*/
CREATE FUNCTION '@_JCOUNTS'
AS 'com.hyperion.essbase.calculator.Statistics.count(int,double []);'

/**
* Register macro for count with a skip instruction
*/
CREATE MACRO '@JCOUNTS'(SINGLE,GROUP)
AS '@IFSTRCMP (@@1, SKIPNONE)
    @_JCOUNTS (0, @@2)
@@ELSE
    @IFSTRCMP (@@1, SKIPMISSING)
        @_JCOUNTS (1, @@2)
@@ELSE
    @IFSTRCMP (@@1, SKIPZERO)
        @_JCOUNTS (2, @@2)
@@ELSE
    @IFSTRCMP (@@1, SKIPBOTH)
        @_JCOUNTS (3, @@2)
@@ELSE

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### JCOUNTS

- **Syntax:**
  ```
  SPEC '@JCOUNTS(SKIPNONE|SKIPZERO|SKIPMISSING|SKIPBOTH, expList)'
  ```
- **Description:**
  Computes the number of elements of a data set (expList) with skip instructions.

### JCOVAR

- **Syntax:**
  ```
  CREATE FUNCTION '@JCOVAR' AS 'com.hyperion.essbase.calculator.Statistics.covariance(double [],double [])'
  SPEC '@JCOVAR(@LIST(expList1), @LIST(expList2))'
  ```
- **Description:**
  Computes the covariance between two data sets (expList1 and expList2).

### JCOVARW

- **Syntax:**
  ```
  CREATE FUNCTION '@JCOVARW' AS 'com.hyperion.essbase.calculator.Statistics.covariance(double [],double [],double []])'
  SPEC '@JCOVARW(@LIST(expList1), @LIST(expList2), @LIST(weightExpList))'
  ```
- **Description:**
  Computes the weighted covariance between two data sets (expList1 and expList2).

### GEOMEAN

- **Syntax:**
  ```
  CREATE MACRO '@JGEOMEAN'(GROUP) AS '@_JGEOMEAN(@@S)'
  SPEC '@JGEOMEAN(expList)'
  ```
- **Description:**
  Computes the geometric mean of a data set (expList).

### GEOMEANW

- **Syntax:**
  ```
  CREATE FUNCTION '@_JGEOMEAN' AS 'com.hyperion.essbase.calculator.Statistics.geomean(double [])'
  CREATE MACRO '@JGEOMEANW'(GROUP) AS '@JGEOMEANW(@LIST(expList), @LIST(weightExpList))'
  ```
- **Description:**
  Computes the weighted geometric mean of a data set (expList).

### HARM MEAN

- **Syntax:**
  ```
  CREATE MACRO '@JHARMEAN'(GROUP) AS '@_JHARMEAN(@@S)'
  SPEC '@JHARMEAN(expList)'
  ```
- **Description:**
  Computes the harmonic mean of a data set (expList).
CREATE FUNCTION '@_JHARMEAN'
AS 'com.hyperion.essbase.calculator.Statistics.harmean(double [])';

/**
 * Register function weighted harmonic mean
 */
CREATE FUNCTION '@JHARMEANW'
AS 'com.hyperion.essbase.calculator.Statistics.harmean(double [],double [])'
SPEC '@JHARMEANW(@LIST(expList), @LIST(weightExpList))'
COMMENT 'Computes the weighted harmonic mean of a data set (expList)';

/**
 * Register function kurtosis
 */
CREATE MACRO '@JKURT'(GROUP)
AS '@_JKURT(@@S)'
SPEC '@JKURT(expList)'
COMMENT 'Computes the kurtosis of a data set (expList)';

CREATE FUNCTION '@_JKURT'
AS 'com.hyperion.essbase.calculator.Statistics.kurt(double [])';

/**
 * Register function weighted kurtosis
 */
CREATE FUNCTION '@JKURTW'
AS 'com.hyperion.essbase.calculator.Statistics.kurt(double [],double [])'
SPEC '@JKURTW(@LIST(expList), @LIST(weightExpList))'
COMMENT 'Computes the weighted kurtosis of a data set (expList)';

/**
 * Register function max
 * There is only one function with this name, so no need to specify the signature
 */
CREATE MACRO '@JMAX'(GROUP)
AS '@_JMAX(@@S)'
SPEC '@JMAX(expList)'
COMMENT 'Computes the maximum of a data set (expList)';

CREATE FUNCTION '@_JMAX'
AS 'com.hyperion.essbase.calculator.Statistics.max';

/**
 * Register function median
 * There is only one function with this name, so no need to specify the signature
 */
CREATE MACRO '@JMEDIAN'(GROUP)
AS '@_JMEDIAN(@@S)'
SPEC '@JMEDIAN(expList)'
COMMENT 'Computes the median of a data set (expList)';

CREATE FUNCTION '@_JMEDIAN'
AS 'com.hyperion.essbase.calculator.Statistics.median';
/**
 * Register function min
 * There is only one function with this name, so no need to specify the signature
 */
CREATE MACRO '@JMIN'(GROUP)
AS '@_JMIN(@@S)'
SPEC '@JMIN(expList)'
COMMENT 'Computes the minimum of a data set (expList)';

CREATE FUNCTION '@_JMIN'
AS 'com.hyperion.essbase.calculator.Statistics.min';

/**
 * Register function mode
 * There is only one function with this name, so no need to specify the signature
 */
CREATE MACRO '@JMODE'(GROUP)
AS '@_JMODE(@@S)'
SPEC '@JMODE(expList)'
COMMENT 'Computes the mode of a data set (expList)';

CREATE FUNCTION '@_JMODE'
AS 'com.hyperion.essbase.calculator.Statistics.mode';

/**
 * Register function percentile
 */
CREATE MACRO '@JPTILE'(SINGLE, GROUP)
AS '@_JPTILE(@@1, @@SH1)'
SPEC '@JPTILE(percent,expList)'
COMMENT 'Computes the specified (percent) percentile of a data set (expList)';

CREATE FUNCTION '@_JPTILE'
AS 'com.hyperion.essbase.calculator.Statistics.percentile(double,double []);'

/**
 * Register function product
 */
CREATE MACRO '@JPROD'(GROUP)
AS '@_JPROD(@@S)'
SPEC '@JPROD(expList)'
COMMENT 'Computes the product of non-missing values in a data set (expList)';

CREATE FUNCTION '@_JPROD'
AS 'com.hyperion.essbase.calculator.Statistics.product(double []);'

/**
 * Register function weighted product
 */
CREATE FUNCTION '@JPRODW'
AS 'com.hyperion.essbase.calculator.Statistics.product(double [],double []);'
SPEC '@JPRODW(@LIST(expList), @LIST(weightExpList))'
COMMENT 'Computes the weighted product of non-missing values in a data set (expList)';

/**
 * Register function quartile
CREATE MACRO '@JQTile'(SINGLE, GROUP)
AS '@_JQTile(@@1, @@SH1)'
SPEC '@JQTile(quart,expList)'
COMMENT 'Computes the specified (quart) quartile of a data set (expList)';

CREATE FUNCTION '@_JQTile'
AS 'com.hyperion.essbase.calculator.Statistics.quartile';

/**
 * Register function rank
 * There is only one function with this name, so no need to specify the signature
 */
CREATE MACRO '@JRank'(SINGLE, GROUP)
AS '@_JRank(@@1, @@SH1)'
SPEC '@JRank(value,expList)'
COMMENT 'Computes the rank of a value in a data set (expList)';

CREATE FUNCTION '@_JRank'
AS 'com.hyperion.essbase.calculator.Statistics.rank';

/**
 * Register function skewness
 */
CREATE MACRO '@JSkew'(GROUP)
AS '@_JSkew(@@S)'
SPEC '@JSkew(expList)'
COMMENT 'Computes the skewness of a data set (expList)';

CREATE FUNCTION '@JSkew'
AS 'com.hyperion.essbase.calculator.Statistics.skew(double [])';

/**
 * Register function weighted skewness
 */
CREATE FUNCTION '@JSkeww'
AS 'com.hyperion.essbase.calculator.Statistics.skew(double [],double [])'
SPEC '@JSkeww(@LIST(expList), @LIST(weightExpList))'
COMMENT 'Computes the weighted skewness of a data set (expList)';

CREATE FUNCTION '@JStdev'(GROUP)
AS '@_JStdev(@@S)'
SPEC '@JStdev(expList)'
COMMENT 'Computes the standard deviation of non-missing values in a data set (expList)';

CREATE FUNCTION '@_JStdev'
AS 'com.hyperion.essbase.calculator.Statistics.stdev(double [])';

/**
 * Register function stdev
 */
* Register function weighted stdev
*/
CREATE FUNCTION '@JSTDEVW'
AS 'com.hyperion.essbase.calculator.Statistics.stdev(double [],double [])'
SPEC '@JSTDEVW(@LIST(expList), @LIST(weightExpList))'
COMMENT 'Computes the weighted standard deviation of non-missing values in a data set (expList)';

/**
 * Register functions stdev and weighted stdev with a skip instruction.
 * These functions will be used through macros, so no spec/comment specified.
 * Since these functions will not be used directly, the names start with '@_'.
 */
CREATE FUNCTION '@_JSTDEVS'
AS 'com.hyperion.essbase.calculator.Statistics.stdev(int,double [])';
CREATE FUNCTION '@_JSTDEVWS'
AS 'com.hyperion.essbase.calculator.Statistics.stdev(int,double [],double [])';

/**
 * Register macro for stdev with a skip instruction
 */
CREATE MACRO '@JSTDEVS'(SINGLE,GROUP)
AS '@IFSTRCMP (@@1, SKIPNONE)
    @_JSTDEVS (0, @@2)
@@ELSE
    @IFSTRCMP (@@1, SKIPMISSING)
    @_JSTDEVS (1, @@2)
@@ELSE
    @IFSTRCMP (@@1, SKIPZERO)
    @_JSTDEVS (2, @@2)
@@ELSE
    @IFSTRCMP (@@1, SKIPBOTH)
    @_JSTDEVS (3, @@2)
@@ELSE
    @@ERROR (@@L1, @_INVALIDSKIP)
@@ENDIF
@@ENDIF
@@ENDIF
@@ENDIF'
SPEC '@JSTDEVS(SKIPNONE|SKIPZERO|SKIPMISSING|SKIPBOTH, expList)'
COMMENT 'Computes the standard deviation value of a data set (expList) with skip instructions';

/**
 * Register macro for weighted standard deviation with a skip instruction
 */
CREATE MACRO '@JSTDEVWS'(SINGLE,SINGLE,SINGLE)
AS '@IFSTRCMP (@@1, SKIPNONE)
    @_JSTDEVWS (0, @@2, @@3)
@@ELSE
    @IFSTRCMP (@@1, SKIPMISSING)
    @_JSTDEVWS (1, @@2, @@3)
@@ELSE
    @IFSTRCMP (@@1, SKIPBOTH)
    @_JSTDEVWS (3, @@2, @@3)
@@ELSE
    @@ERROR (@@L1, @_INVALIDSKIP)
@@ENDIF
@@ENDIF
@@ENDIF
@@ENDIF'
@@ELSE
  @@IFSTRCMP (@@1, SKIPNONE)
    _@JSTDEVWS (2, @@2, @@3)
  @@ELSE
    @@IFSTRCMP (@@1, SKIPZERO)
      _@JSTDEVS (2, @@2, @@3)
    @@ELSE
      @@ERROR (@@L1, @_INVALIDSKIP)
    @@ENDIF
  @@ENDIF
@@ENDIF
@@ENDIF

SPEC '@JSTDEVWS(SKIPNONE|SKIPZERO|SKIPMISSING|SKIPBOTH, expList, weightExpList)'
COMMENT 'Computes the weighted standard deviation value of a data set (expList) with skip instructions';
@@ELSE
@@IFSTRCMP (@@1, SKIPMISSING)
   @_JSTDDEVPS (1, @@2)
@@ELSE
@@IFSTRCMP (@@1, SKIPZERO)
   @_JSTDDEVPS (2, @@2)
@@ELSE
   @@IFSTRCMP (@@1, SKIPBOTH)
      @_JSTDDEVPS (3, @@2)
   @@ELSE
      @@ERROR (@@L1, @_INVALIDSKIP)
   @@ENDIF
@@ENDIF
@@ENDIF
@@ENDIF
@@ENDIF'
SPEC '@JSTDDEVPS(SKIPNONE|SKIPZERO|SKIPMISSING|SKIPBOTH, expList)'
COMMENT 'Computes the standard deviation(p) value of a data set (expList) with skip instructions';

/**
 * Register macro for weighted stdevp with a skip instruction
 */
CREATE MACRO '@JSTDDEVPWSS(SINGLE,SINGLE,SINGLE)
AS '@IFSTRCMP (@@1, SKIPNONE)
   _JSTDDEVPWSS (0, @@2, @@3)
@@ELSE
   @IFSTRCMP (@@1, SKIPMISSING)
      _JSTDDEVPWSS (1, @@2, @@3)
@@ELSE
   @IFSTRCMP (@@1, SKIPZERO)
      _JSTDDEVPWSS (2, @@2, @@3)
@@ELSE
   @IFSTRCMP (@@1, SKIPBOTH)
      _JSTDDEVPS (3, @@2, @@3)
   ELSE
      @ERROR (@@L1, _INVALIDSKIP)
   ENDIF
@@ENDIF
@@ENDIF
@@ENDIF
@@ENDIF'
SPEC '@JSTDDEVPWSS(SKIPNONE|SKIPZERO|SKIPMISSING|SKIPBOTH, expList, weightExpList)'
COMMENT 'Computes the weighted standard deviation(p) value of a data set (expList) with skip instructions';

/**
 * Register function sum
 */
CREATE MACRO '@JSUM(GROUP)
AS '_JSUM(@@S)'
SPEC '@JSUM(expList)'
COMMENT 'Computes the sum of a data set (expList)';

CREATE FUNCTION '@_JSUM'
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AS 'com.hyperion.essbase.calculator.Statistics.sum(double [])';

/**
 * Register function weighted SUM
 */
CREATE FUNCTION '@JSUMW'
AS 'com.hyperion.essbase.calculator.Statistics.sum(double [],double []), double []')'
SPEC '@JSUMW(@LIST(expList), @LIST(weightExpList))'
COMMENT 'Computes the weighted sum of a data set (expList)';

/**
 * Register function var
 */
CREATE MACRO '@JVAR'(GROUP)
AS '@_JVAR(@@S)'
SPEC '@JVAR(expList)'
COMMENT 'Computes the variance of non-missing values in a data set (expList)';

CREATE FUNCTION '@_JVAR'
AS 'com.hyperion.essbase.calculator.Statistics.var(double [])';

/**
 * Register function weighted var
 */
CREATE FUNCTION '@JVARW'
AS 'com.hyperion.essbase.calculator.Statistics.var(double [],double []), double []')'
SPEC '@JVARW(@LIST(expList), @LIST(weightExpList))'
COMMENT 'Computes the weighted variance of non-missing values in a data set (expList)';

/**
 * Register functions var and weighted var with a skip instruction.
 * These functions will be used through macros, so no spec/comment specified.
 * Since these functions will not be used directly, the names start with '@_'.
 */
CREATE FUNCTION '@_JVARS'
AS 'com.hyperion.essbase.calculator.Statistics.var(int,double [])';
CREATE FUNCTION '@_JVARWS'
AS 'com.hyperion.essbase.calculator.Statistics.var(int,double [],double []);'

/**
 * Register macro for var with a skip instruction
 */
CREATE MACRO '@JVARS'(SINGLE,GROUP)
AS
'@@IFSTRCMP (@@1, SKIPNONE)
   @_JVARS (0, @@2)
@@ELSE
   @@IFSTRCMP (@@1, SKIPMISSING)
      @_JVARS (1, @@2)
   @@ELSE
      @@IFSTRCMP (@@1, SKIPZERO)
         @_JVARS (2, @@2)
      @@ELSE

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@@IFSTRCMP (@@1, SKIPBOTH)
    @_JVARWS (3, @@2)
@ELSE
    @ERROR (@@1, _INVALIDSKIP)
@endif
@endif
@endif
@endif'
SPEC '@JVARS(SKIPNONE|SKIPZERO|SKIPMISSING|SKIPBOTH, expList)'
COMMENT 'Computes the variance value of a data set (expList) with skip instructions';

/**
 * Register macro for weighted variance with a skip instruction
 */
CREATE MACRO '@JVARWS'(SINGLE,SINGLE,SINGLE)
AS
    '@@IFSTRCMP (@@1, SKIPNONE)
        @_JVARWS (0, @@2, @@3)
    @ELSE
        @@IFSTRCMP (@@1, SKIPMISSING)
            @_JVARWS (1, @@2, @@3)
        @ELSE
            @@IFSTRCMP (@@1, SKIPZERO)
                @_JVARWS (2, @@2, @@3)
            @ELSE
                @@IFSTRCMP (@@1, SKIPBOTH)
                    @_JVARS (3, @@2, @@3)
                @ELSE
                    @ERROR (@@1, _INVALIDSKIP)
                @ENDIF
            @ENDIF
        @ENDIF
    @ENDIF
@endif
@endif
@endif
@endif'
SPEC '@JVARWS(SKIPNONE|SKIPZERO|SKIPMISSING|SKIPBOTH, expList, weightExpList)'
COMMENT 'Computes the weighted variance value of a data set (expList) with skip instructions';

/**
 * Register function varp
 */
CREATE MACRO '@JVARP'(GROUP)
AS '@_JVARP(@@S)'
SPEC '@JVARP(expList)'
COMMENT 'Computes the variance(p) of non-missing values in a data set (expList)';

CREATE FUNCTION '@_JVARP'
AS 'com.hyperion.essbase.calculator.Statistics.varp(double [])';

/**
 * Register function weighted varp
 */
CREATE FUNCTION '@JVARPW'
AS 'com.hyperion.essbase.calculator.Statistics.varp(double [],double [])'
SPEC '@JVARPW(@LIST(expList), @LIST(weightExpList))'
COMMENT 'Computes the weighted variance(p) of non-missing values in a data set
CREATE FUNCTION '@_JVARPS' AS 'com.hyperion.essbase.calculator.Statistics.varp(int,double [])';
CREATE FUNCTION '@_JVARPWS' AS 'com.hyperion.essbase.calculator.Statistics.varp(int,double [],double [])';

CREATE MACRO '@JVARPS'(SINGLE,GROUP)
AS '@IFSTRCMP (@@1, SKIPNONE)
    @_JVARPS (0, @@2)
@ELSE
    @IFSTRCMP (@@1, SKIPMISSING)
        @_JVARPS (1, @@2)
    @ELSE
        @IFSTRCMP (@@1, SKIPZERO)
            @_JVARPS (2, @@2)
        @ELSE
            @IFSTRCMP (@@1, SKIPBOTH)
                @_JVARPS (3, @@2)
            @ELSE
                @ERROR (@@L1, @_INVALIDSKIP)
            @ENDIF
        @ENDIF
    @ENDIF
@ENDIF
@ENDIF
@ENDIF
SPEC '@JVARPS(SKIPNONE|SKIPZERO|SKIPMISSING|SKIPBOTH, expList)'
COMMENT 'Computes the variance(p) value of a data set (expList) with skip instructions';

CREATE MACRO '@JVARPWS'(SINGLE,SINGLE,SINGLE)
AS '@IFSTRCMP (@@1, SKIPNONE)
    @_JVARPWS (0, @@2, @@3)
@ELSE
    @IFSTRCMP (@@1, SKIPMISSING)
        @_JVARPWS (1, @@2, @@3)
    @ELSE
        @IFSTRCMP (@@1, SKIPZERO)
            @_JVARPWS (2, @@2, @@3)
        @ELSE
            @IFSTRCMP (@@1, SKIPBOTH)
                @_JVARPWS (3, @@2, @@3)
            @ELSE
                @ERROR (@@L1, @_INVALIDSKIP)
            @ENDIF
        @ENDIF
    @ENDIF
@ENDIF
@ENDIF
@ENDIF
SPEC '@JVARPWS(SKIPNONE|SKIPZERO|SKIPMISSING|SKIPBOTH, expList)'
COMMENT 'Computes the weighted variance(p) value of a data set (expList) with skip instructions';
Custom-Defined Macros

Custom-defined macros enable you to combine Essbase calculation functions into a single function, called a macro. Custom-defined macros can also include special directives, variables, and other macros. After you create macros, they can be used in formulas and calculation scripts just like native Essbase calculation functions.

Note: Custom-defined macros cannot include calculation commands.

Topics that discuss custom-defined macros:

- “Custom-Defined Macro Input Parameters” on page 326
- “Using Argument Values in Macro Definitions” on page 328
- “Directives Used in Custom-Defined Macros” on page 329
- “Macro Reference” on page 329

For information about creating custom-defined macros, see the MaxL DDL Create Macro statement. For more information about custom-defined macros, see the Oracle Essbase Database Administrator's Guide.

Custom-Defined Macro Input Parameters

When creating a macro, you can define how many and what kind of arguments are passed into the macro. Specifying the argument set (also known as the signature) for a macro is optional, but specifying it can make the macro easier to use and prevent usage errors.

The argument set is specified as part of the macro name when you create a macro with the Create Macro MaxL statement. In the following macro name, the argument set is enclosed in parentheses:

@SUMRANGE(single, group)

The preceding macro signature indicates that this macro requires two arguments: single, which represents one input parameter, and group, which represents a list of input parameters. These macro arguments do not represent a specific data type (such as a boolean, double, or string); instead, they only indicate how many arguments are accepted by the macro.
Arguments are specified in a comma-delimited list \((\text{argument}_1, \text{argument}_2, \ldots, \text{argument}_X)\) as part of the macro name when the macro is created. Arguments can be specified using the following keywords, which tell the macro processor how to check the arguments for a macro:

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SINGLE</td>
<td>A single argument</td>
</tr>
<tr>
<td>GROUP</td>
<td>A list of arguments. Any argument following GROUP is ignored.</td>
</tr>
<tr>
<td>OPTIONAL</td>
<td>A single argument that is not required</td>
</tr>
<tr>
<td>OPTIONAL_GROUP</td>
<td>A list of arguments that is not required. Any argument following OPTIONAL_GROUP is ignored.</td>
</tr>
<tr>
<td>ANY</td>
<td>No checking of arguments. Any argument following ANY is ignored.</td>
</tr>
</tbody>
</table>

In the macro presented previously, the following sets of arguments are valid:

\[
@\text{SUMRANGE}(\text{Profit}, \@\text{CHILDREN}(\text{East}))
\]
\[
@\text{SUMRANGE}(\text{Profit}, "\text{New York}", "\text{New Jersey}", \text{Connecticut})
\]
\[
@\text{SUMRANGE}(\text{Sales}, @\text{DESCENDANTS}(\text{Product}))
\]

The following table shows examples of how the macro processor interprets arguments for macros with different signatures given different input parameters. The definition of the example macro is:

\[
\text{create macro SUM3(\text{argument}_1, \text{argument}_2, \text{argument}_3) as '}(\@\text{1} + \@\text{2} + \@\text{3})';
\]

<table>
<thead>
<tr>
<th>Macro with Signature of SUM3(signature)</th>
<th>Result when given input of SUM3(\text{X,Y})</th>
<th>Result when given input of SUM3(\text{X,Y,Z})</th>
<th>Result when given input of SUM3(\text{X,Y,Z,T})</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUM3(SINGLE, SINGLE, SINGLE)</td>
<td>Error (wrong number of arguments)</td>
<td>\text{X+Y+Z}</td>
<td>Error (wrong number of arguments)</td>
</tr>
<tr>
<td>SUM3(SINGLE, SINGLE, GROUP)</td>
<td>Error (wrong number of arguments)</td>
<td>\text{X+Y+Z}</td>
<td>\text{X+Y+@LIST(Z,T)}</td>
</tr>
<tr>
<td>SUM3(SINGLE, SINGLE, OPTIONAL_GROUP)</td>
<td>\text{X+Y+@_NULL}</td>
<td>\text{X+Y+Z}</td>
<td>\text{X+Y+@LIST(Z,T)}</td>
</tr>
<tr>
<td>SUM3(SINGLE, SINGLE, OPTIONAL)</td>
<td>\text{X+Y+@_NULL}</td>
<td>\text{X+Y+Z}</td>
<td>Error (wrong number of arguments)</td>
</tr>
<tr>
<td>SUM3(SINGLE, SINGLE, ANY)</td>
<td>\text{X+Y+@_NULL}</td>
<td>\text{X+Y+Z}</td>
<td>\text{X+Y+Z}</td>
</tr>
<tr>
<td>SUM3(SINGLE, ANY)</td>
<td>\text{X+Y+}</td>
<td>\text{X+Y+Z}</td>
<td>\text{X+Y+Z}</td>
</tr>
<tr>
<td>SUM3(SINGLE, GROUP)</td>
<td>\text{X+Y+}</td>
<td>\text{X+@LIST(Y,Z)+}</td>
<td>\text{X+@LIST(Y,Z,T)+}</td>
</tr>
<tr>
<td>SUM3(ANY)</td>
<td>\text{X+Y+}</td>
<td>\text{X+Y+Z}</td>
<td>\text{X+Y+Z}</td>
</tr>
</tbody>
</table>

As noted previously, specification of arguments in the macro name only restricts the number of arguments that are accepted by the macro and does not restrict the data types that may be passed into the macro. Arguments in the Essbase calculator language can represent any of the following data types:
### Data Type Description

<table>
<thead>
<tr>
<th>Data Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>A single, double precision, floating point type number, which can have a special value, #MISSING, or an array of these numbers</td>
</tr>
<tr>
<td>Boolean</td>
<td>A single three-valued variable with the possible values, TRUE, FALSE, and #MISSING, or an array of these variables</td>
</tr>
<tr>
<td>Member</td>
<td>A single database outline member, cross-member combination, or an array of members</td>
</tr>
<tr>
<td>String</td>
<td>A string variable type, or an array of these strings</td>
</tr>
</tbody>
</table>

When developing macros, you should consider the types of data that can be passed into macros to avoid errors in calculation.

**Using Argument Values in Macro Definitions**

Specifying an argument set for a custom-defined macro is only part of creating a macro. You must use the argument values in the macro expansion, which defines what functions the macro performs. Two types of argument variables can be used in a macro definition: numbered argument variables and argument variable shortcuts.

**Using Numbered Argument Variables**

In a macro definition, argument variables can be referenced by the order in which they appear in the macro signature. Consider the following example macro signature with three argument variables:

```
SUM3(single, single, group)
```

To use the input from this function in the macro definition, you reference the arguments using the argument variables `@@1` for the first input parameter, `@@2` for the second input parameter, and `@@3` for the third input parameter. Thus, using the macro in the preceding example and providing the following input,

```
SUM3("New York", "New Jersey", @CHILDREN(Products));
```

results in the macro variables being set to the following values:

```
@@1 = "New York"@@2 = "New Jersey"@@3 = @CHILDREN(Products)
```

Use of the optional argument in the macro signature has no effect on which macro variable represents which incoming argument; for example, the input,

```
Macro signature: SUM3(single, optional, group)
Macro input: SUM3("New York", , @CHILDREN(Products));
```

results in the macro variables being set to the following values:

```
@@1 = "New York"@@2 = @_NULL@@3 = @CHILDREN(Products)
```

**Using Argument Variable Shortcuts**

You can represent sets of arguments with the variable shortcuts `@@S` and `@@SHx`. These shortcuts enable you to specify a set of arguments with one variable, rather than listing a set of numbered arguments.
variables. Using input from the preceding example, the @@S variable would be set to the following value:

@@S = "New York", @_NULL, @CHILDREN(Products)

Argument variables and shortcuts for custom-defined macros can be used in any order within a macro definition and can be repeated in a macro.

**Directives Used in Custom-Defined Macros**

Custom-defined macros can include calculation functions, but cannot include calculation commands.

In addition to the calculation functions, custom-defined macros can include special directives that are available only for macros. These directives are categorized as follows:

**Variable handling**

- “@@x” on page 329
- “@@S” on page 330
- “@@SHx” on page 331

**Error handling**

- “@@ERROR” on page 331
- “@@Lx” on page 332

**Conditionals**

- “@@IFSTRCMP” on page 333
- “@@ELSE” on page 334
- “@@ENDIF” on page 335

**Macro Reference**

The following topics describe the directives.

**@@x**

The @@x statement is a variable representing an input argument for a macro. The number x is the number of the argument in the signature of the macro. So, @@1 represents the first input argument, @@2 represents the second input argument, and so on.

**Syntax**

@@x

Where x is the number of an argument in the signature of the macro.
Notes

- Each @@x input argument variable can be used multiple times within a macro expansion.
- The @@x argument variable can also be used with the @@S and @@SHx argument variables within a macro expansion.
- The meaning of @@x argument variables does not change if an optional variable is not provided; for example, given the following macro signature,
  
  ```
  create macro Sample.'@ADD'(single, optional, single) as '(@@1 + @@2 + @@3)';
  ```
  
  and the following input parameters,
  
  ```
  @ADD("New York", , Connecticut);
  ```
  
  the argument variables would be set to these values:
  
  ```
  @@1 = "New York"
  @@2 = _NULL
  @@3 = Connecticut
  ```

Example

The following example shows a create statement for a macro with three input arguments that are added.

```
create macro Sample.'@SUM3'(single, single, single) as '(@@1 + @@2 + @@3)';
```

See Also

- “@@S” on page 330
- “@@SHx” on page 331

@@S

The @@S statement is a variable representing all input arguments for a macro.

Syntax

@@S

Notes

- The @@S input argument variable can be used multiple times within a macro expansion.
- The @@S input argument variable can also be used with the @@x and @@SHx argument variables within a macro expansion.

Example

The following example shows a macro that divides the sum of all arguments by the sum of the first two arguments.

```
create macro Sample.'@DIVIDE'(single, single, optional_group) as '@SUM(@@S)/(@@1 + @@2)';
```
See Also

- "@@x" on page 329
- "@@SHx" on page 331

@@SHx

The @@SHx statement represents a subset of all arguments starting with position $x$ and including the rest of the arguments for the macro.

Syntax

@@S$x$

Where $x$ is the number of an argument in the signature of the macro, with 0 representing the first position, 1 representing the second position, and so on.

Notes

- The @@SHx argument variable can be used multiple times within a macro expansion.
- The @@SHx argument variable can be used with the @@x and @@S argument variables within a macro expansion.

Example

The following example shows a macro that multiplies the first arguments together and adds them to the sum of the remaining arguments.

```plaintext
create macro Sample.'@MULTANDSUM'(single, single, any)
  as '(@@1 * @@2) + @SUM(@@SH2)';
```

See Also

- "@@x" on page 329
- "@@S" on page 330

@@ERROR

The @@ERROR command forces the macro processor to stop and report an error.

Syntax

@@ERROR( lineNumber , errorCode )

Where:

- `lineNumber` is a number representing a line in the calculation script or formula where the macro is used
- `errorCode` is an error code for the error
Notes

The @@Lx command can be used as the first parameter of an @@ERROR statement to identify a line number in a calculation script or formula where the macro is used.

Example

The following example function checks the first input argument for valid values (SKIPNONE, SKIPMISSING, SKIPZERO, SKIPBOTH). If none of these values is found, the macro returns an error, specifying a line number in a calculation script or formula where the macro is used.

```
@@IFSTRCMP (@@1, SKIPNONE)
   @_JAVGS (0, @@2)
@@ELSE
   @@IFSTRCMP (@@1, SKIPMISSING)
      @_JAVGS (1, @@2)
   @@ELSE
      @@IFSTRCMP (@@1, SKIPZERO)
         @_JAVGS (2, @@2)
      @@ELSE
         @@IFSTRCMP (@@1, SKIPBOTH)
            @_JAVGS (3, @@2)
      @@ELSE
         @@ERROR (@@L1, @_INVALIDSKIP)
      @@ENDIF
   @@ENDIF
@@ENDIF
@@ENDIF
@@ENDIF
```

See Also

- “@@Lx” on page 332
- “@@IFSTRCMP” on page 333

@@Lx

The @@Lx command returns a number representing the line in a calculation script or formula where a macro argument occurs, or the line where the macro name occurs.

Syntax

```
@@Lx
```

Where $x$ is a number specifying a macro input argument number (1, 2, ..., $n$), or the macro name, if zero (0) is specified.

Notes

The @@Lx command can be used only as the first parameter of an @@ERROR statement to identify a line number for an error in a calculation script or formula.
Example

The following example macro checks the first input argument for valid values (SKIPNONE, SKIPMISSING, SKIPZERO, SKIPBOTH). If none of these values is found, the macro returns an error, specifying a line number in a calculation script or formula where the macro is used. The line number is specified using the @@L1 statement, which returns 2, the number of the line in the calculation script or formula where the first parameter of the macro occurs.

Calculation script using macro @AVGS
1: "Average_Revenue" = @AVGS(
2:                     SKIPNONE,
3:                     @CHILDREN(YrlyRevenue)
4:                     );

-----------------------
@AVGS macro definition:
@AVGS macro definition:
@@IFSTRCMP (@@1, SKIPNONE)
 @@_JAVGS (0, @@2)
@@ELSE
 @@IFSTRCMP (@@1, SKIPMISSING)
  @@_JAVGS (1, @@2)
@@ELSE
  @@IFSTRCMP (@@1, SKIPZERO)
   @@_JAVGS (2, @@2)
@@ELSE
  @@IFSTRCMP (@@1, SKIPBOTH)
   @@_JAVGS (3, @@2)
@@ELSE
   @@ERROR (@@L1, _INVALIDSKIP)
@@ENDIF
@@ENDIF
@@ENDIF
@@ENDIF

See Also

"@@ERROR" on page 331

@@IFSTRCMP

The @@IFSTRCMP command compares a macro input parameter to a string. If the input parameters match, the macro statements following the command are processed. Otherwise, the statements following @@ELSE are processed.

Syntax

@@IFSTRCMP( @@x , token ) statement @@ELSE... [statement]
@@ENDIF

Where:

- @@x is a variable representing a macro argument
- token is a string to be compared to the macro argument
- `statement` is operations to be performed depending on the results of the test

**Notes**

The `@IFSTRCMP` statement block must use the `@ELSE` statement as part of its decision syntax. You do not have to include a statement after `@ELSE`.

**Example**

```plaintext
@@IFSTRCMP (@@2, @_NULL)
@@1
@@ELSE
@@1 + @@2
@@ENDIF
```

This test checks to see if the second macro argument is blank. If it is, then only the first argument is used. If the second argument is not blank, then the two arguments are added.

**See Also**

- “`@ELSE`” on page 334
- “`@ENDIF`” on page 335

---

### @@ELSE

The `@ELSE` command designates a conditional action to be performed in an `@IFSTRCMP` statement. All actions placed after the `@ELSE` in an `@IFSTRCMP` statement are performed only if the strings compared in the `@IFSTRCMP` statement do not match.

**Syntax**

```plaintext
@@ELSE... statement [ ...statement ] @@ENDIF
```

Where `statement` is operations to be performed depending on the results of the test.

**Notes**

- The `@ELSE` statement can only be used in conjunction with an `@IFSTRCMP` statement.
- All `@IFSTRCMP` statements must be ended with `@ENDIF` statements.

**Example**

```plaintext
@@IFSTRCMP (@@2, @_NULL)
@@1
@@ELSE
@@1 + @@2
@@ENDIF
```

This test checks to see if the second macro argument is blank. If it is, then only the first argument is used. If the second argument is not blank, then the two arguments are added.
See Also

- “@@IFSTRCMP” on page 333
- “@@ENDIF” on page 335

@@ENDIF

The @@ENDIF command marks the end of an @@IFSTRCMP command sequence. The @@ENDIF command can be used only in conjunction with the @@IFSTRCMP statement.

Syntax

@@ENDIF

Notes

- You must supply an @@ENDIF statement for every @@IFSTRCMP statement in your macro. If you do not supply the required @@ENDIF statements, your formula or calculation script does not verify.
- If you are using an IF statement nested within another IF statement, end each IF with an ENDIF, as in the following example:

```plaintext
@@IFSTRCMP (@@1, SKIPNONE)
  _JAVGS (0, @@2)
@@ELSE
  @@IFSTRCMP (@@1, SKIPMISSING)
    _JAVGS (1, @@2)
@@ELSE
  @@IFSTRCMP (@@1, SKIPZERO)
    _JAVGS (2, @@2)
@@ELSE
  @@IFSTRCMP (@@1, SKIPBOTH)
    _JAVGS (3, @@2)
@@ELSE
  @@ERROR (@@L1, _INVALIDSKIP)
@@ENDIF
@@ENDIF
@@ENDIF
@@ENDIF
```

- All @@IFSTRCMP statements must be ended with @@ENDIF statements.

Example

```plaintext
@@IFSTRCMP (@@2, _NULL)
  @@1
@@ELSE
  (@@1 + @@2)
@@ENDIF
```

This test checks to see if the second macro argument is blank. If it is, then only the first argument is used. If the second argument is not blank, then the two arguments are added.
See Also

- "@@IFSTRCMP" on page 333
- "@@ELSE" on page 334
Calculation Commands Overview

You use calculation scripts to create calculations that differ from those defined in the database outline. Calculation scripts enable development of custom operations to supplement the built-in calculation of the database outline.

Calculation commands are the elements of calculation scripts that instruct Essbase in the calculation rules to be used. You create calculation scripts using the Calculation Script Editor. Within the Calculation Script Editor, a dialog box is available that allows you to paste functions while you develop formulas. For more information, see the Oracle Essbase Administration Services Online Help.

When a database is created, a default calculation script is set to “calculate all”, which means that it will calculate all dimensions based on the database outline’s hierarchical relationships and formulas.

You can override this default script by using a custom script. You can use the custom script(s) temporarily or permanently, without altering the default script. In the custom script, you can refer to calculation rules defined in the database outline or you can specify custom formulas, calculation formats, and calculation orders.

A calculation script contains a series of calculation commands. The order of the commands defines the execution order of the calculation.

Calculation Operators

Calculation operators (mathematical, conditional and logical, and cross-dimensional) define equations for member formulas and calc scripts.

- “Mathematical Operators” on page 338
- “Conditional and Logical Operators” on page 338
Mathematical Operators

Mathematical operators perform common arithmetic operations.

<table>
<thead>
<tr>
<th>Operator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>Adds</td>
</tr>
<tr>
<td>-</td>
<td>Subtracts</td>
</tr>
<tr>
<td>*</td>
<td>Multiplies</td>
</tr>
<tr>
<td>/</td>
<td>Divides</td>
</tr>
<tr>
<td>%</td>
<td>Evaluates percentage, for example: $Member1%Member2$ evaluates $Member1$ as a percentage of $Member2$.</td>
</tr>
<tr>
<td>( )</td>
<td>Controls the order of calculations and nests equations and formulas</td>
</tr>
</tbody>
</table>

Conditional and Logical Operators

Conditional operators build logical condition into calculations.

<table>
<thead>
<tr>
<th>Operator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IF</td>
<td>ELSE</td>
</tr>
<tr>
<td>&gt;</td>
<td>Data value is greater than</td>
</tr>
<tr>
<td>&gt;=</td>
<td>Data value is greater than or equal to</td>
</tr>
<tr>
<td>&lt;</td>
<td>Data value is less than</td>
</tr>
<tr>
<td>&lt;=</td>
<td>Data value is less than or equal to</td>
</tr>
<tr>
<td>= =</td>
<td>If data value is equal to</td>
</tr>
<tr>
<td>&lt; &gt; or !=</td>
<td>Data value is not equal to</td>
</tr>
<tr>
<td>AND</td>
<td>Logical AND linking operator for multiple value tests. Result is TRUE if both conditions are TRUE. Otherwise the result is FALSE.¹</td>
</tr>
<tr>
<td>OR</td>
<td>Logical OR linking operator for multiple value tests. Result is TRUE if either condition is TRUE. Otherwise the result is FALSE.²</td>
</tr>
<tr>
<td>NOT</td>
<td>Logical NOT operator. Result is TRUE if condition is FALSE. Result is FALSE if condition is TRUE.³</td>
</tr>
</tbody>
</table>

¹The logical constants TRUE and FALSE are interpreted as 1 (TRUE) and 0 (FALSE) where appropriate.
²The logical constants TRUE and FALSE are interpreted as 1 (TRUE) and 0 (FALSE) where appropriate.
³The logical constants TRUE and FALSE are interpreted as 1 (TRUE) and 0 (FALSE) where appropriate.
Cross-Dimensional Operator

The cross-dimensional operator points to data values of specific member combinations. It is created with a hyphen ( - ) and a right angle bracket ( > ), with no space between them: ->

Calculation Command Groups

This section lists calculation commands grouped by type:

- “Conditional Commands” on page 339
- “Control Flow Commands” on page 340
- “Data Declaration Commands” on page 340
- “Functional Commands” on page 340
- “Member Formulas” on page 341

Conditional Commands

Conditional commands control the flow of events in formulas. You can control which formulas are executed within a calculation, test conditions, and calculate a formula based on the result of the test.

- IF
- ENDIF
- ELSE
- ELSEIF

When you use an IF statement as part of a member formula in a calc script, you need to:

- Associate it with a single member
- Enclose it in parentheses

For example:

```
Profit (IF (Sales > 100)
    Profit = (Sales - COGS) * 2;
ELSE
    Profit = (Sales - COGS) * 1.5;
ENDIF);
```

Essbase cycles through the database, performing the following calculations:

1. The IF statement checks to see if the value of Sales for the current member combination is greater than 100.
2. If Sales is greater than 100, Essbase subtracts the value in COGS from the value in Sales, multiplies it by 2, and places the result in Profit.
3. If Sales is less than, or equal to 100, Essbase subtracts the value in COGS from the value in Sales, multiplies it by 1.5, and places the result in Profit.

The entire IF fixend.htm ENDIF statement is enclosed in parentheses and associated with the Profit member, Profit (IF(fixend.htm)fixend.htm).

**Control Flow Commands**

Control Flow commands are used to iterate a set of commands or to restrict the commands' effect to a subset (partition) database. They control the flow of a calculation script. The FIX...ENDFIX and EXCLUDE...ENDEXCLUDE commands restrict calculations to specified members. The LOOP...ENDLOOP command enables repetition. The FIXPARALLEL...ENDFIXPARALLEL command block enables parallel calculation controls on a subset.

**Data Declaration Commands**

These commands are used to declare and set the initial values of temporary variables. The values stored in a variable are not returned in queries, because they only exist while the calculation script is being processed. If you want to report these values, you need to create members within the database outline, or assign the values from the variables into existing members.

- ARRAY
- VAR

**Functional Commands**

Functional commands are used to perform operations such as calculation, data copying, exporting data, clearing data, and Currency Conversion.

- AGG
- CALC ALL
- CALC AVERAGE
- CALC DIM
- CALC FIRST
- CALC LAST
- CALC TWOPASS
- CCONV
- CLEARBLOCK
- CLEARCCTRACK
- CLEARDATA
- DATACOPY
- DATAEXPORT
Member Formulas

Member Formulas are used to calculate the default outline format on a custom formula within the script. As with formulas in the database outline, a formula in a calculation script defines mathematical relationships between database members. For example, the following expressions are valid within a calculation script:

"Profit_%"

Specifying a member name with a formula defined in the outline calculates the member using its formula.

Expenses = Payroll + Marketing;

The above formula expresses a simple mathematical relationship, which is used in place of the database outline formula on the Expenses member.

Interdependent Member Formulas

Essbase optimizes calculation performance by calculating formulas for a range of members in the same dimension. However, some formulas require values from members of the same dimension. A good example is that of cash flow, in which the opening inventory is dependent on the closing inventory from the previous month.

For examples of interdependent formulas, see the Oracle Essbase Database Administrator's Guide.
When you use an interdependent formula in a calc script, the same rules apply as for the IF statement. You need to:

- Associate the formula with a single member
- Enclose the formula in parentheses

If you place the following interdependent formula in a calc script, you construct it as follows:

"Opening Inventory" (IF(NOT @ISMBR (Jan))"Opening Inventory" = @PRIOR("Ending Inventory"));
ENDIF;
"Ending Inventory" = "Opening Inventory" - Sales + Additions;)

The entire formula is enclosed in parentheses and associated with the Opening Inventory member, "Opening Inventory" (IF(fixend.htm)…) .

**Calculation Command List**

Consult the Contents pane for a categorical list of calculation commands.

<table>
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<tr>
<th>Command</th>
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</tr>
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<tr>
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<tr>
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<td>DATAIMPORTBIN</td>
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<tr>
<td>&amp;</td>
<td>ELSE</td>
</tr>
<tr>
<td>AGG</td>
<td>ELSEIF</td>
</tr>
<tr>
<td>ARRAY</td>
<td>ENDIF</td>
</tr>
<tr>
<td>CALC ALL</td>
<td>EXCLUDE...ENDEXCLUDE</td>
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<td>CALC FIRST</td>
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<tr>
<td>CALC TWOPASS</td>
<td>POSTFIXPARALLEL</td>
</tr>
<tr>
<td>CCONV</td>
<td>SET AGGMISSG</td>
</tr>
<tr>
<td>CLEARBLOCK</td>
<td>SET CACHE</td>
</tr>
<tr>
<td>CLEARCCTRACK</td>
<td>SET CALCDIAGNOSTICS</td>
</tr>
<tr>
<td>CLEARDATA</td>
<td>SET CALCPARALLEL</td>
</tr>
<tr>
<td>DATACOPY</td>
<td>SET CALCTASKDIMS</td>
</tr>
<tr>
<td>DATAEXPORT</td>
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</tr>
<tr>
<td>DATAEXPORTCOND</td>
<td>SET CLEARUPDATESTATUS</td>
</tr>
<tr>
<td>DATAIMPORTBIN</td>
<td>SET COPYMISSINGBLOCK</td>
</tr>
</tbody>
</table>
&

Prefaces a substitution variable in a calculation script.

**Syntax**

&variableName;

**Parameter**  **Description**

variableName  The name of the substitution variable set on the database.

**Notes**

Essbase treats strings beginning with & as substitution variables, replacing them with values before parsing the calculation script.

**Example**

&CURQTR;

becomes

QTR1;

if substitution variable &CurQtr has the value "Qtr1".

**AGG**

Consolidates database values. This command ignores all member formulas, consolidating only parent/child relationships.

The AGG command performs a limited set of high-speed consolidations. Although AGG is faster than the CALC commands when calculating sparse dimensions, it cannot calculate formulas; it can only perform aggregations based on the database structure. AGG aggregates a list of sparse dimensions based on the hierarchy defined in the database outline. If a member has a formula, it is ignored, and the result does not match the relationship defined by the database outline.

If you want to aggregate a dimension that contains formulas:

1. Calculate any members that are "leaf" members (that is, level 0).
2. Aggregate the dimension, using the AGG command.
3. Calculate all other members with formulas that have not been calculated yet.

**Syntax**

AGG (dimList);

**Parameter**  **Description**

dimList  Name of a dimension or comma-separated list of dimensions.

**Notes**

- AGG only works with sparse dimensions.
- When a dimension contains fewer than six consolidation levels, AGG is typically faster than CALC. Conversely, the CALC command is usually faster on dimensions with six or more levels.
- AGG follows the rules for any defined FIX command.

**Example**

AGG(Market);
AGG(Product,Market,Scenario);

**See Also**

- CALC ALL
- CALC DIM
- SET AGGMISSG

## ARRAY

Declares one-dimensional array variables.

**Syntax**

```
ARRAY arrayVariableName [dimName] = { constList};
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>arrayVariableName</td>
<td>Comma-delimited list of one or more array variable names.</td>
</tr>
<tr>
<td>dimName</td>
<td>Dimension whose size determines the size of the array variable. Surround (dimName) with brackets [ ].</td>
</tr>
<tr>
<td>constList</td>
<td>Optional list of data values used to initialize the array variable(s). If no initialization is performed, the array variables are set to #MISSING. The order of the values corresponds to the order of the members in the dimension used to define the array.</td>
</tr>
</tbody>
</table>

**Notes**

- Typically, arrays are used to temporarily store variables as part of a member formula. The variables cease to exist after the calculation script ends. The size of the array variable is determined by the corresponding dimension (for example, if dimension Period has 12 members, ARRAY Discount[Period] has 12 members).
- To create multiple arrays simultaneously, separate the array declarations in the ARRAY command with commas, as shown in the Example.
- You can calculate data for an array directly as part of a member formula. As the member formula is processed, each value in the array is assigned as its member is evaluated in the calculation.
- Do not use quotation marks ('') in variables; for example:
  ```
  ARRAY "discount"
  ```

**Example**

```
ARRAY discount[Scenario];
```
yields an array of 4 entries, with the values 1 through 4 entered in those four entries.

```
ARRAY discount[Scenario] = {1, 2, 3, 4};
ARRAY discount[Scenario], tmpProduct[Product];
```

yields two arrays:
1. discount, corresponding to Scenario and containing four members
2. tmpProduct, corresponding to Product and containing nine members

**See Also**
- VAR

---

## CALC ALL

Calculates and aggregates the entire database based on the database outline.

**Syntax**

```
CALC ALL [EXCEPT DIM (dimList) | MBR (mbrList)];
```

**Parameter Description**

- **EXCEPT** Defines an exception list of dimensions or members to be excluded from calculation.
- **DIM** Single-dimension specification.
- **dimList** Optional comma-delimited list of dimensions.
- **MBR** Single-member specification.
- **mbrList** Optional comma-delimited list of members, member set functions, or range functions.

**Notes**

The order in which dimensions are processed depends on their characteristics in the outline. For more information, see "Defining Calculation Order" in the *Oracle Essbase Database Administrator's Guide*.

**Example**

```
CALC ALL;
CALC ALL EXCEPT DIM(Product);
```

**See Also**
- CALC DIM
- SET UPDATECALC
- SET FRMLBOTTOMUP

---

## CALC AVERAGE

Calculates members tagged as time balance Average or Average Non-Missing. All other member calculations are ignored.
Syntax

CALC AVERAGE;

Notes

This command calculates based on the Accounts dimension; it does not do a Time Series calculation on the Time dimension.

Example

CALC AVERAGE;

See Also

- CALC FIRST
- CALC LAST

**CALC DIM**

Calculates formulas and aggregations for each member of the specified dimensions.

Syntax

CALC DIM (dimList);

Parameter Description

dimList  Dimension or comma-delimited list of dimensions to be calculated.

Notes

The order in which dimensions are calculated depends on whether they are dense or sparse. Dense dimensions are calculated first, in the order of dimList. The sparse dimensions are then calculated in a similar order.

Example

CALC DIM(Accounts);

CALC DIM(Dense1,Sparse1,Sparse2,Dense2);

In the above example, the calculation order is: Dense1, Dense2, Sparse1, Sparse2. If your dimensions need to be calculated in a particular order, use separate CALC DIM commands:

CALC DIM(Dense1);
CALC DIM(Sparse1);
CALC DIM(Sparse2);
CALC DIM(Dense2);

See Also

- CALC ALL
- SET UPDATECALC
- SET CLEARUPDATESTATUS
**CALC FIRST**

Calculates all members tagged in the database outline as time balance First.

**Note:** Only members tagged as time balance First are calculated using this command. Other members are ignored.

**Syntax**

```
CALC FIRST;
```

**Notes**

This command calculates based on the Accounts dimension; it does not do a Time Series calculation on the Time dimension.

**Example**

```
CALC FIRST;
```

**See Also**

- **CALC AVERAGE**
- **CALC LAST**

---

**CALC LAST**

Calculates all members tagged in the database outline as time balance Last.

**Note:** Only members tagged as time balance Last are calculated using this command. Other members are ignored.

**Syntax**

```
CALC LAST;
```

**Notes**

This command calculates based on the Accounts dimension; it does not do a Time Series calculation on the Time dimension.

**Example**

```
CALC LAST;
```

**See Also**

- **CALC AVERAGE**
- **CALC FIRST**
CALC TWOPASS

Calculates all members tagged in the database outline as two-pass. These members must be on a dimension tagged as Accounts.

Syntax

CALC TWOPASS;

Notes

Member formulas are applied at each consolidated level of the database. All non two-pass members are ignored during this process.

Example

CALC TWOPASS;

CCONV

Calculates currency conversions. This command is available only if your company has purchased the Currency Conversion option.

Syntax

CCONV currExchMbr | TOLOCALRATE curType;

Parameter Description

currExchMbr Currency name containing the required exchange rate. This is a member from the currency database.

TOLOCALRATE Converts a converted currency back to the original, local rate.

curType Currency type. This is a member from the CurType dimension in the currency database.

Notes

You convert data values from a local to a common, converted currency using the CCONV currExchMbr command. For example, you might convert data from a European currency into US$. You can then convert the data values back to the local currency using the CCONV TOLOCALRATE curType command.

Note: The CCTRACK setting in the essbase.cfg file must be set to TRUE (the default) to enable the CCONV TOLOCALRATE command.

You can convert all or part of the main database using the rates defined in the currency database. You can keep both the local and converted values in the main database, or you can overwrite the local values with the converted values.

If you want to overwrite local values with converted values:

You do not need to create a CURPARTITION dimension in the main database. Use the CCONV command in a calculation script to convert all the data in the database.
Note: You cannot use the FIX command if the CCTRACK setting is set to TRUE (the default) in the `essbase.cfg` file and you are not using a CURPARTITION dimension.

If you want to keep both local and converted values:
In the main database, define the members that store the local and converted values. You do this by creating a CURPARTITION dimension. The CURPARTITION dimension has two partitions, one for local values and one for converted values.

➢ To convert data:
   1. Use the DATACOPY command to copy data from the local to the converted partition.
   2. Use the FIX command to calculate only the converted partition and use the CCONV command to convert the data.
   3. Use the CALC command to recalculate the database.

To convert currencies, you must create a currency database and define specific dimensions in the main database. For more information, see the *Oracle Essbase Database Administrator's Guide*.

**Example**

```c
CCONV YEN;
```

converts the data values from local currency values to Japanese Yen using the YEN exchange rate from the currency database.

```c
CCONV TLOCALRATE "Act xchg";
```

converts the data values back to the local currencies using the Act xchg currency type from the currency database.

```c
CCONV Actual->US$;
```

converts the data values from local currencies to US$ using the Actual, US$ exchange rate from the currency database.

```c
FIX (Act)
    CCONV TLOCALRATE "Act xchg";
ENDFIX
```

converts the data in the Act currency partition back to the local currencies using the Act xchg currency type from the currency database.

```c
DATACOPY Act TO Actual;
FIX (Actual)
    CCONV "Act xchg"->US$;
ENDFIX
CALC ALL;
```
copies Actual data values from the local currency partition to the converted currency partition. Fixes on the Actual data (in the converted partition) and converts it using the Act xchg, US$ rate from the currency database. Recalculates the database.

See Also
- SET UPTOLOCAL
- SET CCTRACKCALC
- CLEARCCTRACK
- “CCTRACK” on page 460

**CLEARBLOCK**

Sets cell values to `#MISSING`, and if all the cells are empty or `#MISSING`, removes the block. This command is useful when you need to clear old data values across blocks before loading new values.

CLEARBLOCK helps optimize database calculation speed. For example, if an initial calculation creates numerous consolidated level blocks, subsequent recalculations take longer, because Essbase must pass through the additional blocks. CLEARBLOCK clears blocks before a calculation occurs.

Another example: if a database to be copied contains a lot of empty blocks, copying the database also copies the empty blocks, resulting in a many more empty blocks. Using CLEARBLOCK EMPTY first makes the copy process more efficient.

If you use CLEARBLOCK within a FIX command, Essbase clears only the cells within the fixed range, and not the entire block.

**Syntax**

```
CLEARBLOCK ALL | UPPER | NONINPUT | DYNAMIC | EMPTY;
```

**Parameter**  
**Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL</td>
<td>Clears and removes all blocks.</td>
</tr>
<tr>
<td>UPPER</td>
<td>Clears consolidated level blocks.</td>
</tr>
<tr>
<td>NONINPUT</td>
<td>Clears blocks containing derived values. Applies to blocks that are completely created by a calculation operation. Cannot be a block into which any values were loaded.</td>
</tr>
<tr>
<td>DYNAMIC</td>
<td>Clears blocks containing values derived from Dynamic Calc and Store member combinations.</td>
</tr>
<tr>
<td>EMPTY</td>
<td>Removes empty blocks (blocks where all values are <code>#MISSING</code>).</td>
</tr>
</tbody>
</table>

**Notes**

- If you regularly enter data values directly into a consolidated level, the UPPER option overwrites your data. In this case, you should use the NONINPUT option, which only clears blocks containing calculated values.
If you use CLEARBLOCK EMPTY, the resulting, smaller database can be processed more efficiently; however, the CLEARBLOCK EMPTY process itself can take some time, depending on the size and density of the database.

If CLEARBLOCK is used within a FIX command on a dense dimension, the FIX statement is ignored and all blocks are scanned for missing cells.

In a FIX statement, blocks are cleared only if the entire CLEARBLOCK block is selected by the FIX (no dense dimensions in the FIX), and the block is update-able (it is not a replicated-partition target region). If you wish to retain empty blocks, then in the FIX statement, set the blocks to #MISSING, instead of using CLEARBLOCK.

For example, the following command block clears New York data and removes the block (because Market is sparse):

```plaintext
FIX("East")
  CLEARBLOCK "New York";
ENDFIX
```

The following command block sets New York data values to #MISSING without removing the blocks:

```plaintext
FIX("East")
  "New York" = #Missing;
ENDFIX
```

Example

Example 1

CLEARBLOCK ALL;
CLEARBLOCK UPPER;
CLEARBLOCK NONINPUT;
CLEARBLOCK DYNAMIC;
CLEARBLOCK EMPTY;

Example 2

```plaintext
FIX("Actual")
  CLEARBLOCK "200-10";
ENDFIX;
```
clears data from the 200-10 block, but does not remove the block, as this is not a whole-block fix (a dense dimension is selected in the FIX).

See Also

- CLEARDATA

CLEARCCTRACK

Clears the internal exchange rate tables created by the “CCTRACK” on page 460 setting.
Syntax

CLEARCCTRACK;

Notes

Use this command after a data load, to reset the exchange rate tables before rerunning a currency conversion. You can use this command inside a FIX statement to clear the exchange rates for a currency partition.

Example

CLEARDATA Actual;
FIX(Actual)
CLEARCCTRACK;
ENDFIX

Clears the Actual data, fixes on the Actual data (in the converted partition) and clears the internal exchange rate tables for the Actual data.

See Also

- “CCTRACK” on page 460
- SET CCTRACKCALC
- CCONV
- SET UPTOLOCAL

CLEARDATA

Clears data values from the database and sets them to #MISSING.

This command is useful when you need to clear existing data values before loading new values into a database. CLEARDATA can only clear a section of a database. It cannot clear the entire database. To clear the entire database:

- Use the following MaxL statement:
  ```
  alter database <dbs-name> reset;
  ```
  or
- Use Administration Services. See the Oracle Essbase Administration Services Online Help.

Syntax

CLEARDATA mbrName;

Parameter Description

mbrName Any valid single member name or member combination, or a function that returns a single member or member combination.

Notes

- CLEARDATA does not work if placed in an IF statement.
- Use CLEARBLOCK instead of CLEARDATA if you wish to remove blocks from the database, which can improve performance.
Example

CLEARDATA Budget;

clears all Budget data.

CLEARDATA Budget->Colas;

clears only Budget data for the Colas product family.

FIX("Actual")
    CLEARDATA "200-10";
ENDFIX;

clears data from the 200-10 block, but does not remove the block, as this is not a whole-block fix (a dense dimension is selected in the FIX).

See Also

- CLEARBLOCK

DATACOPY

Copies a range of data cells to another range within the database.

This command is useful when you must maintain an original set of data values and perform changes on the copied data set.

DATACOPY is commonly used as part of the Currency Conversion process. DATACOPY is also useful when you need to define multiple iterations of plan data.

To reduce typing, if any dimension(s) represented by the members in mbrName1 are not represented in mbrName2, then by default the same member or members from mbrName1 are assumed to exist in mbrName2 to complete the range. The reverse is not true. Any dimension explicitly represented in mbrName2 MUST be represented by another member of the same dimension in mbrName1.

The ranges specified by both mbrName1 and mbrName2 must be of the same size. The same dimensions represented by the members that make up mbrName1 must also be present in mbrName2.

Syntax

DATACOPY mbrName1 TO mbrName2;

Parameter Description

mbrName1 and mbrName2 Any valid single member name or member combination.

Notes

- The size of the copied dimensions must be equal to the destination (TO) size.
- DATACOPY follows the rules for any defined FIX command.
To prevent creation of #MISSING blocks, add the following calculation command to your script:

```
SET COPYMISSINGBLOCK OFF;
```

**Example**

```
DATACOPY Plan TO Revised_Plan;
```

**See Also**

- `SET COPYMISSINGBLOCK`

## DATAEXPORT

Writes data to a text file, binary file, or as direct input to a relational file using ODBC.

### Syntax

For a text output file:

```
DATAEXPORT "File" "delimiter" "fileName" "missingChar"
```

For a binary output file:

```
DATAEXPORT "Binfile" "fileName"
```

Note that DATAEXPORT to binary files is not supported across Essbase releases or between 32-bit and 64-bit operating systems.

For direct export to a relational database using ODBC:

```
DATAEXPORT "DSN" "dsnName" "tableName" "userName" "password"
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;File&quot;&quot;Binfile&quot;&quot;DSN&quot;</td>
<td>Required keyword for the type of output file. Specify the appropriate keyword, then use the associated syntax.</td>
</tr>
</tbody>
</table>
| "delimiter" | Required for "File" exports  
The character that separates fields; for example, ","  
Do not use with "Binfile" or "DSN" exports |
| "fileName" | Required for "File" and "Binfile" exports  
Full path name for the export file.  
Do not use with "DSN" exports. |
| "missingChar" | Optional for output type "File"  
A text string to represent missing data values. Maximum length: 128 characters.  
"NULL" to skip the field, resulting in consecutive delimiters (such as ",").  
Default value: #MI  
Do not use with "Binfile" or "DSN" exports, or in combination with the SET DATAEXPORTRELATIONALFILE command. |
### Parameter Description

**"dsnName"**
- Required for output type "DSN"
- The DSN name used to communicate with the SQL database. A substitution variable can be used.
- Do not use with output type "File" or "Binfile."

**"tableName"**
- Required for "DSN" exports
- Name of the table where the exported data is to be inserted. The table must exist, and table and column names cannot contain spaces.
- Do not use with "File" or "Binfile" exports.

**"userName"**
- Required for "DSN" exports
- The user name that is used when communicating with the database. A substitution variable can be used.
- Do not use with "File" or "Binfile" exports.

**"password"**
- Required for "DSN" exports
- The password that is used when communicating with the database. A substitution variable can be used.
- Do not use with "File" or "Binfile" exports.

### Notes

- In general, specify SET commands within the calculation script to specify various options, and then use FIX…ENDFIX to refine data to be exported, including the DATAEXPORT command within the FIX…ENDFIX command set. Without FIX…ENDFIX, the entire database is exported.

- If outputting a file, and **fileNam**e:
  - Does not include a path, the file is written in the application directory.
  - Includes a path, Essbase interprets the path in context to the server. Export files cannot be written to a client.

- When using DATAEXPORT "DSN" to export data for direct insertion to a relational database:
  - You can use the “DATAEXPORTENABLEBATCHINSERT” on page 467 configuration setting to enable the batch insert method, which is faster than the default row-insert method. With batch insert, Essbase determines the batch size, but you can use the “DEXPSQLROWSIZE” on page 471 configuration setting to specify the number of rows (from 2 to 1000) to be batch inserted. Essbase inserts the rows when the specified batch size is reached.
  - The table to which the data is to be written must exist prior to data export.
  - Table and column names cannot contain spaces.

**Note:** 64-bit Essbase does not support using the DATAEXPORT batch-insert method to export data directly into a SQL data source.
For information on configuring ODBC DSNs, refer to “Configuring Data Sources” in the Oracle Essbase SQL Interface Guide:

- Windows—Follow the instructions in “Configuring Data Sources on Windows”.
- UNIX—Follow steps 1 and 2 in “Configuring Data Sources on UNIX”. Ignore steps 3 and 4 and, instead, set the \texttt{ODBCINI} environment variable to the location of the \texttt{odbc.ini} file.

\textbf{Note:} Anytime you make changes to \texttt{odbc.ini}, you must restart Essbase.

- The export process does not begin if users have data block locks on the database.
- After the export process begins, the database is in read-only mode. Users can read the data but they cannot change it. After the export process is finished, Essbase returns the database to read-write mode and users can make changes to the data.
- Use the \texttt{DATAIMPORTBIN} command to import a previously exported binary export file.

\textbf{Description}

The DATAEXPORT calculation command writes data into a text or binary output file, or connects directly to an existing relational database wherein the selected exported data is inserted.

Whereas both the MaxL \texttt{Export Data} statement and the ESSCMD \texttt{EXPORT} command can export all, level 0, or input data from the entire database as text data, the DATAEXPORT calculation command also enables you to:

- Use \texttt{FIX\ldots ENDFIX} or \texttt{EXCLUDE\ldots ENDEXCLUDE} calculations to select a slice of the database and use a \texttt{DATAEXPORTCOND} command to select data based on data values.
- Use parameters to qualify the type and destination of the export data.
- Use options provided by the \texttt{SET DATAEXPORTOPTIONS} command to refine export content, format, or process.
- Use the \texttt{SET DATAIMPORTIGNORETIMESTAMP} command to manage the import requirement for a matching outline timestamp.

Using Report Writer to create an "export" file also provides extensive flexibility in selecting and formatting the data; however, using DATAEXPORT outputs the data more quickly. For information about using Report Writer to export data, see the Oracle Essbase Database Administrator's Guide.

\textbf{Example}

\textbf{Text Output File Example 1}

\begin{verbatim}
SET DATAEXPORTOPTIONS {
    DataExportLevel "LEVEL0";
};
DATAEXPORTCOND ("Sales">=1000);
FIX (*100-10","New York","Actual","Sales");
DATAEXPORT "File" "," "b:\exports\jan.txt" "#MI";
ENDFIX;
\end{verbatim}
Specifies a level 0 data export level, limits output to data only with 1000 or greater Sales, fixes the data slice, then exports to a text file located at \b:\exports\jan.txt, using comma (,) delimiters and specifying #MI for missing data values.

**Text Output File Example 2**

```plaintext
SET DATAEXPORTOPTIONS
{
    DataExportLevel "LEVEL0";
    DataExportRelationalFile ON;
};
DATAEXPORTCOND ("Sales">=1000);
FIX ("100-10","New York","Actual","Sales");
DATAEXPORT "File" "," "b:\exports\jan.txt";
ENDFIX;
```

Specifies the same export content as Example 1; however, the output file is formatted for input to a relational database. Notice the missingChar parameter is intentionally excluded.

**Binary Example 1: Export**

```plaintext
SET DATAEXPORTOPTIONS
{
    DataExportLevel "ALL";
};
FIX ("New York");
DATAEXPORT "BinFile" "b:\backup\newyork.bin";
ENDFIX;
```

Exports all New York blocks. Binary exports can be fixed only on sparse dimensions. Essbase uses the same bitmap compression technique to create the file as is used by Essbase Kernel.

**Binary Example 2: Import**

```plaintext
SET DATAIMPORTIGNORETIMESTAMP OFF;
DATAIMPORTBIN "b:\backup\newyork.bin"
```

Imports the previously exported file. The timestamp must match. The data is imported to the database on which the calculation script is executed. Because only data was exported, to recreate a database after using DATAIMPORT to read in the data, you must recalculate the data.

**Direct Input to Relational Database Example**

```plaintext
SET DATAEXPORTOPTIONS
{
    DataExportLevel "ALL";
};
FIX("100-10","New York","Actual","Sales");
    DATAEXPORT "DSN" "cur_sale" "newyork" "admin" "password";
ENDFIX;
```

Inserts the selected records directly to the table named newyork. By default, Essbase inserts exported data row-by-row. If the “DATAEXPORTENABLEBATCHINSERT” on page 467 configuration setting is set to TRUE in essbase.cfg, records are batch inserted. To control the number of rows that are batch inserted at a time, use the “DEXPSQLROWSIZE” on page 357.
471 configuration setting in conjunction with “DATAEXPORTENABLEBATCHINSERT” on page 467 set to TRUE.

See Also
- FIX...ENDFIX
- SET Commands
- “DATAEXPORTENABLEBATCHINSERT” on page 467
- “DEXPSQLROWSIZE” on page 471
- SET DATAEXPORTOPTIONS
- SET DATAIMPORTIGNORETIMESTAMP
- DATAEXPORTCOND
- DATAIMPORTBIN

**DATAEXPORTCOND**

Specifies value conditions that select export records to be included or marked as "#NoValue" in the export output file.

**Syntax**

```
DATAEXPORTCOND  "conditionExpression"  ReplaceAll;
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>conditionExpression</td>
<td>One or more conditions separated by a logical AND or OR. Each condition specifies a member name the value of which is equal to (=), greater than (&gt;), greater than or equal (&gt;=), less than (&lt;), or less than or equal (&lt;=) to a specified value or the value of another member; for example, &quot;Sales&quot; &gt; 500 AND &quot;Ending Inventory&quot; &lt; 0. The condition list is processed from left to right. Thus the result of cond1 is calculated first, then the operator (AND or OR) is calculated against cond2, and so on. While processing conditions, if a resultant condition is found to be false, the entire record is omitted from the output file.</td>
</tr>
</tbody>
</table>
| ReplaceAll       | The keyword that indicates whether exported records are to be excluded from the initial export set of records, or included but marked as "#NoValue". The initial export set of records is determined by the region defined by the FIX command and SET commands that apply to the data export.  
  - When ReplaceAll is not specified, only those records within the initial export set are exported that meet the specified conditions.  
  - When ReplaceAll is specified, all records within the initial export set are exported, but the AND and OR specifications are ignored. All fields that do not satisfy any of the specified conditions are marked as #NoValue. |

**Notes**

Use DATAEXPORTCOND to specify conditions that identify records to be exported based on field values. Whether a condition can specify a member compared to a numeric value or compared to another member depends the member being a row or column element of the output. In order to represent multidimensional data within a two-dimension file, the members of one dense dimension become columns. The combinations of the members of the other dense dimensions and the sparse dimensions create rows. (You can use the DataExportColHeader
option of the \texttt{SET DATAEXPORTOPTIONS} calculation command to specify which dimension defines the columns.)

- If a condition is placed on a column member, the value of the specified member can be compared to a specific value (for example, Sales $> 500$) or to the value of another member of the same export record (for example, Sales $< \text{Cost}$).
- If a condition is placed on a row member, the value of the specified member can be compared only to a specific value (for example, Cost $< 500$).

\section*{Example}

\subsection*{Not Using ReplaceAll}

\begin{verbatim}
SET DATAEXPORTOPTIONS {
   DataExportLevel "ALL";
};
DATAEXPORTCOND (Actual $\geq 2$ AND Sales $> 2000$ OR COGS $> 600$);
FIX("100-10","East");
   DATAEXPORT "File" "," "E:\temp\2222.txt";
ENDFIX;
\end{verbatim}

Sets the contents of the initial export file through the DataExportLevel option of the \texttt{SET DATAEXPORTOPTIONS} command and \texttt{FIX...ENDFIX} command. The \texttt{DATAEXPORTCOND} command specifies the records to be included when the Actual value is greater than or equal to 2 and Sales are greater than 2000, or when the Actual value is greater than or equal to 2 and COGS is greater than 600. The conditions are specified on the column Actual, the column Sales, and the column COGS. The exported data includes only records that meet the conditions.

Sample output:

\begin{verbatim}
"Sales","COGS","Marketing","Payroll","Misc","Opening Inventory","Additions","Ending Inventory"
"100-10","East"
"Jun","Actual",2205,675,227,177,2,3775,2028,3598
"Jul","Actual",2248,684,231,175,2,3598,1643,2993
"Sep","Actual",2012,633,212,175,4,2389,1521,1898
"Jun","Budget",2070,620,180,120,#Mi,2790,1700,2420
"Jul","Budget",2120,620,180,120,#Mi,2420,1400,1700
"Aug","Budget",2120,620,180,120,#Mi,1700,1400,980
\end{verbatim}

\subsection*{Using ReplaceAll}

\begin{verbatim}
SET DATAEXPORTOPTIONS {
   DataExportLevel "ALL";
};
DATAEXPORTCOND (Actual $\geq 2$ AND Sales $> 2000$ OR COGS $> 600$);
FIX("100-10","East");
   DATAEXPORT "File" "," "E:\temp\2222.txt" ReplaceAll;
ENDFIX;
\end{verbatim}

Using the same conditions as the prior example, but including "ReplaceAll" in the \texttt{DATAEXPORT} command, the exported data includes all records specified by the \texttt{FIX} command. \#NoValue is inserted for fields that do not meet the specified conditions.

Sample output:
"Sales", "COGS", "Marketing", "Payroll", "Misc", "Opening Inventory", "Additions", "Ending Inventory" "100-10", "East" "Jan", "Actual", #NoValue, #NoValue, 199, 175, 2, 4643, 1422, 4253 "Feb", "Actual", #NoValue, #NoValue, 196, 175, 3, 4253, 1413, 3912
"Mar", "Actual", #NoValue, #NoValue, 199, 175, 3, 3912, 1640, 3747 "Apr", "Actual", #NoValue, #NoValue, 606, 204, 177, 3, 3747, 1824, 3701
"May", "Actual", #NoValue, 622, 210, 177, 4, 3701, 2023, 3775
"Jun", "Actual", 2205, 675, 227, 177, 2, 3775, 2028, 3598
"Jul", "Actual", 2248, 684, 231, 175, 2, 3598, 1643, 2993
"Aug", "Actual", 2245, 684, 231, 175, #NoValue, 2993, 1641, 2389
"Sep", "Actual", 2012, 633, 212, 175, 4, 2389, 1521, 1898
"Oct", "Actual", #NoValue, #NoValue, 196, 175, 3, 1898, 1535, 1677
"Nov", "Actual", #NoValue, #NoValue, 192, 175, #NoValue, 1677, 1584, 1553
"Dec", "Actual", #NoValue, #NoValue, 200, 175, 2, 1553, 1438, 1150
"Jan", "Budget", #NoValue, #NoValue, 160, 120, #Mi, 4490, 1100, 3900
"Feb", "Budget", #NoValue, #NoValue, 160, 120, #Mi, 3900, 1200, 3460
"Mar", "Budget", #NoValue, #NoValue, 160, 120, #Mi, 3460, 1400, 3170
"Apr", "Budget", #NoValue, #NoValue, 150, 120, #Mi, 3170, 1500, 2920
"May", "Budget", #NoValue, #NoValue, 160, 120, #Mi, 2920, 1700, 2790
"Jun", "Budget", 2070, 620, 180, 120, #Mi, 2790, 1700, 2420
"Jul", "Budget", 2120, 620, 180, 120, #Mi, 2420, 1400, 1700
"Aug", "Budget", 2120, 620, 180, 120, #Mi, 1700, 1400, 980
"Sep", "Budget", #NoValue, #NoValue, 150, 120, #Mi, 980, 1300, 390
"Oct", "Budget", #NoValue, #NoValue, 110, 70, #Mi, 390, 1180, 110
"Nov", "Budget", #NoValue, #NoValue, 150, 120, #Mi, 110, 1460, 60
"Dec", "Budget", #NoValue, #NoValue, 150, 120, #Mi, 60, 1300, -260

See Also
- DATAEXPORT
- FIX...ENDFIX
- SET Commands
- SET DATAEXPORTOPTIONS

### DATAIMPORTBIN
Imports the binary output file previously exported with the DATAEXPORT "Binfile" calculation command.

You can use DATAIMPORTBIN to import previously exported binary files. For example, you can use DATAEXPORT "Binfile" and DATAIMPORTBIN as a method for data backup and recovery.

**Note:** DATAIMPORTBIN is not supported across Essbase releases or between 32-bit and 64-bit operating systems.

**Syntax**

```
DATAIMPORTBIN fileName;
```

**Parameter Description**

*fileName*  Full path name for the binary input file to be imported.
**Notes**

- The outline timestamp is included with the export file created by DATAEXPORT. By default, the DATAIMPORTBIN process checks the timestamp. Use the SET DATAIMPORTIGNORETIMESTAMP calculation command with DATAIMPORT to bypass checking the timestamp. See SET DATAIMPORTIGNORETIMESTAMP for details.

- Use DATAIMPORTBIN only with files created by DATAEXPORT "Binfile".

**Example**

```
DATAIMPORTBIN e:\january\sales.bin;
```

Specifies the binary file e:\january\sales.bin is to be imported to the database for which the calculation script is being run.

**See Also**

- DATAEXPORT
- SET DATAIMPORTIGNORETIMESTAMP

## ELSE

The ELSE command designates a conditional action to be performed in an IF statement. All actions placed after the ELSE in an IF statement are performed only if the test in the IF statement generates a value of FALSE.

**Syntax**

```
ELSE statement ; [ ...statement; ] ENDIF;
```

**Parameter Description**

- `statement` Those operations that are to be performed in the event that the IF test including the ELSE command produces a FALSE, or 0, result.

**Notes**

- The ELSE command can only be used in conjunction with an IF command.

- You do not need to end ELSE statements with ENDIF statements. Only IF statements should be ended with ENDIF statements.

**Example**

The following example is based on the Sample Basic database. This calculation script tests to see if the current member in the Market dimension is a descendant of West or East. If so, Essbase multiplies the value for Marketing by 1.5. If the current member is not a descendant of West or East, Essbase multiplies the value for Marketing by 1.1.

```
Marketing
(IF (@ISMBR(@DESCENDANTS(West))
   OR
   (@ISMBR(@DESCENDANTS(East)))
Marketing = Marketing * 1.5;
ELSE
```

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ELSEIF

Designates a conditional test and conditions that are performed if the preceding IF test generates a value of FALSE. For this reason, multiple ELSEIF commands are allowed following a single IF.

Syntax

```
ELSEIF ( condition ) statement ; [ ...statement ; ] ELSEIF | ELSE | ENDIF
```

Parameter Description

| condition | Formula or function that returns a Boolean value of TRUE (a nonzero value) or FALSE (a zero value). |
| statement | Those operations that are to be performed in the event that the IF test (including the ELSE command) produces a FALSE, or 0, result. |

Notes

- The ELSEIF command must be used in conjunction with an IF command.
- You do not need to end ELSEIF statements with ENDIF statements. Only IF statements should be ended with ENDIF statements. For example:

```
IF (condition)
    statement;
IF (condition)
    statement;
ELSEIF (condition)
    statement;
    ENDIF;
    statement;
    ENDIF;
```

Example

The following example is based on the Sample Basic database. This calculation script tests to see if the current member in the Market dimension is a descendant of West or East. If so, Essbase multiplies the value for Marketing by 1.5. The calculation script then tests to see if the current member is a descendant of South. If so, Essbase multiplies the value for Marketing by .9. If the current member is not a descendant of West, East, or South, Essbase multiplies the value for Marketing by 1.1.

```
IF (@ISMBR(@DESCENDANTS(West))
    OR
    @ISMBR(@DESCENDANTS(East))
)
Marketing = Marketing * 1.5; ELSEIF(@ISMBR(@DESCENDANTS(South)) ELSE Marketing = Marketing * .9; ELSE Marketing = Marketing * 1.1; ENDIF;

See Also
- ELSE
- ENDIF
- IF

**ENDIF**

Marks the end of an IF command sequence. The ENDIF command can be used only in conjunction with IF or IF ... ELSEIF statements.

**Syntax**

```plaintext
ENDIF;
```

**Notes**

- You must supply an ENDIF statement for every IF statement in your formula or calculation script. If you do not supply the required ENDIF statements, your formula or calculation script does not verify.
- If you are using an IF statement nested within another IF statement, end each IF with an ENDIF. For example:

  ```plaintext
  "Opening Inventory"
  (IF (@ISMBR(Budget))
   IF (@ISMBR(Jan))
    "Opening Inventory" = Jan;
   ELSE
    "Opening Inventory" = @PRIOR("Ending Inventory");
   ENDIF;
  ENDIF;
  )
```

- You do not need to end ELSE or ELSEIF statements with ENDIF statements.
- Although ending ENDIF statements with a semicolon is not required, it is good practice to follow each ENDIF statement in your formula or calculation script with a semicolon.
- IF, ELSE, ELSEIF, and ENDIF must all be used within a database outline formula, or must be associated with a member in the database outline when used in a calculation script. For more information, see the *Oracle Essbase Database Administrator's Guide*.

**Example**

The following example is based on the Sample Basic database. This calculation script tests to see if the current member in the Market dimension is a descendant of West or East. If so, Essbase multiplies the value for Marketing by 1.5. The calculation script then tests to see if the current member is a descendant of South. If so, Essbase multiplies the value for Marketing by .9. If the
current member is not a descendant of West, East, or South, Essbase multiplies the value for Marketing by 1.1.

```plaintext
IF (@ISMBR(@DESCENDANTS(West))
  OR 
  @ISMBR(@DESCENDANTS(East))
)
  Marketing = Marketing * 1.5;
ELSEIF (@ISMBR(@DESCENDANTS(South))
)
  Marketing = Marketing * .9;
ELSE
  Marketing = Marketing * 1.1;
ENDIF;
```

See Also
- ELSE
- ELSEIF
- IF

**EXCLUDE…ENDEXCLUDE**

The EXCLUDE command allows you to define a fixed range of members which are not affected by the associated commands. The ENDEXCLUDE command ends an EXCLUDE command block.

As shown in the example, you call ENDEXCLUDE after all of the commands in the EXCLUDE command block have been called, and before the next element of the calculation script.

Specifying members that should not be calculated in an EXCLUDE...ENDEXCLUDE command may be simpler than specifying a complex combination of member names in a FIX...ENDFIX command.

**Syntax**

```plaintext
EXCLUDE (Mbrs)
COMMANDS ;
ENDEXCLUDE
```

**Parameter**
- **Mbrs**
  A member name or list of members from any number of database dimensions. *Mbrs* can also contain:
  - AND/OR operators. Use the AND operator when all conditions must be met. Use the OR operator when one condition of several must be met.
  - Member set functions, which are used to build member lists based on other members.

**COMMANDS**
- The commands to be executed for the duration of the EXCLUDE.

**Notes**
- Use EXCLUDE…ENDEXCLUDE commands only within calculation scripts, not in outline member formulas.
- You can include EXCLUDE commands within FIX command blocks.
- If a FIX command within an EXCLUDE command block specifies cells already specified by the EXCLUDE statement, those cells are not calculated, and a warning message is posted to the application log file.

- An EXCLUDE command block cannot include CALC ALL, CLEARDATA, and DATACOPY commands.

- AND and OR operators have the same precedence and are evaluated from left to right. Use parentheses to group the expressions. For example: A OR B AND C is the same as ((A OR B) AND C). However, subexpressions (for example, (A OR (B AND C))) are evaluated before the whole expression, producing a different result.

- Inside EXCLUDE command blocks, the AND operator represents the intersection of two sets; the OR operator represents the union of two sets. In formulas, these operators are Boolean operators. Using the AND or OR operators on members that are from different dimensions, returns:
  - AND: An empty set. The EXCLUDE statement is ignored and the calculation continues with a warning message.
  - OR: The union of two members sets. EXCLUDE (Jan OR Market) is identical to FIX (Jan, Market).

- NOT operators are not supported in EXCLUDE command blocks. Use the @REMOVE function.

- You do not need to follow ENDEXCLUDE with a semicolon.

- Use the @ATTRIBUTE and @WITHATTR functions to specify attributes within EXCLUDE command blocks; for example EXCLUDE (@ATTRIBUTE (Can)) FIX (Can) is not supported.

- You cannot use EXCLUDE on a dimension if it is a subset of a dimension that you calculate within the EXCLUDE command block. For example you could not use Market "New Mkt" in an EXCLUDE statement if you calculate all of Market within the command block.

- Dynamic Calc members are ignored in an EXCLUDE statement. If the only member in an EXCLUDE statement is a Dynamic Calc member, an error message is displayed stating that the EXCLUDE statement cannot contain a Dynamic Calc member.

- If the EXCLUDE command is issued from a calculation script and produces an empty set, that part of the calculation is ignored, and the calculation continues to the next statement. The application log entry for the calculation shows that the EXCLUDE statement evaluated to an empty set (Calculating […] with fixed members []).

For example, consider the following statement in a Sample Basic calculation script:

```plaintext
EXCLUDE (@children(Jan))
CALC DIM (Accounts, Product, Market)
ENDEXCLUDE
```

Since @children(Jan) is empty (Jan is a level 0 member), the EXCLUDE parameter is ignored; the calculation operates on the entire database.

Similarly, if a region defining a partition or a security filter evaluates to an empty set, Essbase behaves as if the region definition or security filter does not exist.
Calculator function @RANGE and the cross-dimensional operator (->) cannot be used inside an EXCLUDE Mbrs parameter).

Example

The following example excludes calculations on the children of Qtr4, enabling calculation of other quarters in the Year dimension.

```plaintext
EXCLUDE (@CHILDREN(Qtr4))
CALC DIM (Year)
ENDEXCLUDE
```

See Also

- FIX...ENDFIX
- LOOP...ENDLOOP

**FIX...ENDFIX**

The FIX…ENDFIX command block restricts database calculations to a subset of the database. All commands nested between the FIX and ENDFIX statements are restricted to the specified database subset.

This command is useful because it allows you to calculate separate portions of the database using different formulas, if necessary. It also allows you to calculate the sub-section much faster than you would otherwise.

The ENDFIX command ends a FIX command block. As shown in the example, you call ENDFIX after all of the commands in the FIX command block have been called, and before the next element of the calculation script.

**Syntax**

```plaintext
FIX (fixMbrs)
COMMANDS ;
ENDFIX
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>fixMbrs</td>
<td>A member name or list of members from any number of database dimensions. fixMbrs can also contain:</td>
</tr>
<tr>
<td></td>
<td>- AND/OR operators. Use the AND operator when all conditions must be met. Use the OR operator when one condition of several must be met.</td>
</tr>
<tr>
<td></td>
<td>- Member set functions, which are used to build member lists based on other members.</td>
</tr>
<tr>
<td>COMMANDS</td>
<td>The commands you want to be executed for the duration of the FIX.</td>
</tr>
</tbody>
</table>

**Notes**

- You can use `SET EMPTYMEMBERSETS` to stop the calculation within a FIX command if the FIX evaluates to an empty member set.
- FIX commands can be nested within other FIX command blocks. For an example of an incorrect use of nested FIX commands, see “Using the FIX Command” in the *Oracle Essbase Database Administrator’s Guide*. 

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• FIX statements can only be used in calculation scripts, not in outline member formulas. Use an IF command instead of a FIX statement in member formulas. For example:

    Jan(
    IF (Sales)
    Actual=5;
    ENDIF;)

• AND/OR operators have the same precedence; Essbase evaluates them from left to right. Use parentheses to group the expressions. For example: A OR B AND C is the same as ((A OR B) AND C). However, if you use (A OR (B AND C)), Essbase evaluates the sub-expression in parentheses (B AND C) before the whole expression, producing a different result.

• Inside FIX statements, the AND operator represents the intersection of two sets; the OR operator represents the union of two sets. In formulas, these operators are Boolean operators. Using the AND or OR operators on members that are from different dimensions, returns:
  - AND: An empty set. The FIX statement is ignored and the calculation continues with a warning message.
  - OR: The union of two members sets. FIX (Jan OR Market) is identical to FIX (Jan, Market).

• In FIX statements, members from the same dimension are always acted on as OR unless you specify otherwise.

• NOT operators are not supported in FIX statements. Use the @REMOVE function with FIX statements.

• You do not need to follow ENDFIX with a semicolon.

• You can specify attributes in FIX statements using the @ATTRIBUTE and @WITHATTR functions; for example FIX (@ATTRIBUTE (Can)). You must use these functions; FIX (Can) is not supported.

• You cannot use a FIX statement on a dimension if it is a subset of a dimension that you calculate within the FIX statement. For example you could not use Market "New Mkt" in a FIX statement if you calculate all of Market within the FIX statement.

• Dynamic Calc members are ignored in a FIX statement. If the only member in a FIX statement is a Dynamic Calc member, an error message is displayed stating that the FIX statement cannot contain a Dynamic Calc member.

• If the FIX command is issued from a calculation script and produces an empty set, that part of the calculation is ignored, and the calculation continues to the next statement. The application log entry for the calculation shows that the FIX statement evaluated to an empty set (Calculating […] with fixed members []).

For example, using Sample Basic, assume this statement is in a calculation script:

    FIX (@children(Jan))
    CALC DIM (Accounts, Product, Market)
    ENDFIX

Since @children(Jan) is empty, the FIX is ignored; the calculation issues a warning and operates on the entire database.
Similarly, if a region defining a partition or a security filter evaluates to an empty set, Essbase issues a warning and behaves as if the region definition or security filter did not exist.

- The calculator function @RANGE and the cross-dimensional operator (->) cannot be used inside a FIX fixMbrs parameter.

- Using an EXCLUDE…ENDEXCLUDE command to specifying members that should not be calculated may be simpler than specifying a complex combination of member names in a FIX…ENDFIX command.

**Example**

```plaintext
FIX (Budget)
   CALC DIM (Year, Measures, Product, Market);
ENDFIX
FIX (Budget, Jan, Feb, Mar, @DESCENDANTS(Profit))
   CALC DIM (Product, Market);
ENDFIX
```

The following example fixes on the children of East and the Market dimension members with the UDA "New Mkt".

```plaintext
FIX (@CHILDREN(East) OR @UDA(Market, "New Mkt"))
```

The following example fixes on the children of East with the UDA "New Mkt" and Market dimension members with the UDA "Big Mkt".

```plaintext
FIX((@CHILDREN(East) AND @UDA(Market, "New Mkt")) OR @UDA(Market, "Big Mkt"))
```

**See Also**

- EXCLUDE...ENDEXCLUDE
- LOOP...ENDLOOP
- SET EMPTYMEMBERSETS

### FIXPARALLEL...ENDFIXPARALLEL

Enables parallel calculation on a block of commands by using up to a specified number of parallel threads.

The ENDFIXPARALLEL command ends a FIXPARALLEL command block.

**Syntax**

```plaintext
FIXPARALLEL (numThreads, mbrList)
   COMMANDS;
   [ POSTFIXPARALLEL ([ varName = ACCUMULATEVAR (threadVarName); ];]* ); ]
ENDFIXPARALLEL
```

**Parameter**

- **numThreads**: A positive integer specifying the number of threads to be made available for parallel calculation.
**Parameter**  | **Description**  
--- | ---  
mbrList | A selection of slices for restricting the calculation. These slices become the task members for the FIXPARALLEL calculation. Can be one of the following:  
  - A member name or list of members. Note: If *mbrList* is a single member from one or more sparse dimensions, then it only generates one task, and cannot benefit from parallel execution. Multiple members from one or more sparse dimensions generate multiple tasks.  
  - Member set functions, which are used to build member lists based on other members.  
The database regions (slices) you specify must be independent of one another.  
From *mbrList*, Essbase generates tasks to be calculated in parallel.  
Essbase uses only non-dynamic, non-shared, sparse members to create the tasks, which in turn determine the blocks to be calculated. Therefore, *mbrList* must contain at least one non-dynamic, non-shared, sparse member. In order to use multiple threads, *mbrList* should contain two or more members from each sparse dimension. *mbrList* should indicate at least as many tasks as the *numThreads* you specify.  
To avoid setting too many tasks in a FIXPARALLEL calculation, only those member combinations that are to be used for tasks should be in the *mbrList*. All other sparse member combinations belong in an inner or outer FIX.  

**COMMANDS**  
The commands you want to be executed for the duration of the FIXPARALLEL. These commands are applied to the database regions described by *mbrList*. May include THREADVAR commands.  

**POSTFIXPARALLEL** | Optional block of operations to copy THREADVAR variables to VAR variables. Essbase executes POSTFIXPARALLEL block once, before the FIXPARALLEL command finishes. See POSTFIXPARALLEL.  

**varName** | Name of a VAR variable.  

**threadVarName** | Name of a THREADVAR variable.  

**ACCUMULATEVAR** | Used within optional POSTFIXPARALLEL. Add up all the thread values of a given THREADVAR variable. The sum is then assigned to a specified VAR variable.  

**ENDFIXPARALLEL** | Closes the FIXPARALLEL command block.  

**Notes**  
You control thread activity by using:  
  - The *numThreads* parameter  
  - The THREADVAR command  
  - The ACCUMULATEVAR command (inside POSTFIXPARALLEL)  
  - The *mbrList* parameter. The member list is an important tool for optimizing calculations, because it tells Essbase how to divide the calculation regions into tasks. As *mbrList* becomes larger, each task becomes smaller. When tasks become too small, calculation memory overhead could slow down performance. However, when tasks are too large, there might not be enough tasks for parallel calculation threads to work on.
Overview of FIXPARALLEL

Although parallel calculation can be performed using the CALCPARALLEL configuration setting, in certain cases it might be beneficial to use the FIXPARALLEL command block method. In a FIXPARALLEL command block, you input some commands to be executed, along with a number of threads (numThreads) and a member list (mbrList) specifying the database regions (slices) to be calculated. Essbase creates a list of tasks from the combinations in the member list, and divides the tasks across the threads.

The FIXPARALLEL method can be advantageous in the following cases:

- If you need to use temporary variables during parallel calculation.
- If you need to use the DATACOPY, DATAEXPORT, or CLEARBLOCK commands.
- In conjunction with the @XREF or @XWRITE functions.
- If you need to export regions of the database in parallel. See the Example in this topic.
- In cases where CALCPARALLEL is not meeting performance requirements, and your outline generates many empty tasks, or contains many task groupings with fewer tasks than threads made available to the calculation. See also “Task Selection Comparison of FIXPARALLEL and CALCPARALLEL.”

When considering converting FIX statements to FIXPARALLEL within a calculation script, follow these guidelines:

- Focus on FIX statements that do not meet your performance needs using CALCPARALLEL.
- Focus on FIX statements that require a substantial amount of work. Parallelizing a FIX statement requires some overhead, so trying to parallelize calculation passes with light workloads may not be beneficial. Heavier workloads, such as AGG and CALC DIM, are good candidates for FIXPARALLEL.
- First, try parallelism with a single large sparse dimension, or by restricting mbrList to one or more hierarchies with a limited stored member count. You may continue adding dimensions to the member list to see if the calculation time continues to improve.

Note that when "parallel" calculation of tasks occurs, it means that the tasks are divided and executed concurrently in any order. In other words, there is no guarantee that any task will be executed before any other tasks. This is why the regions you specify must not have any data or calculation dependencies. For example, assume there are two parallel threads, and there is a division of work into tasks A, B, C, and D.

The possible sequence of calculation might be:

- Thread #1 executes A and then C.
- Thread #2 executes B and then D.

Or,

- Thread #1 executes A.
- Thread #2 executes B, then C, then D.
Or,
- Thread #1 executes C and then A.
- Thread #2 executes D and then B.

Task Selection Comparison of FIXPARALLEL and CALCPARALLEL

CALCPARALLEL creates tasks from the last sparse dimension first, then the second from the last, and so on, until it has enough tasks. FIXPARALLEL can choose from any sparse dimension that is not in its COMMANDS block. For example (as is true with FIX), you cannot FIXPARALLEL on (Level 0, Product) and also AGG (Product).

FIXPARALLEL can help you customize task selection, but it also assumes no interdependencies when generating tasks from the selected region. CALCPARALLEL must consider sparsity, outline order, dependencies, and member formulas in generating a task list.

Calculator Cache Sizing Notes for FIXPARALLEL Parallel Calculation

For FIXPARALLEL, calculator cache sizing is as important as it is for CALCPARALLEL, and follows the same methodology as described in the Oracle Essbase Database Administrator's Guide, in the chapter "Optimizing Essbase Caches," and in the section "Calculating the Calculator Cache Size."

When selecting dimensions to include in the calculator cache, Essbase always begins with the first sparse dimension, and progresses in outline order, selecting bitmap dimensions until no more will fit in the calculator cache.

The following is unique for FIXPARALLEL calculations:
- Task dimensions may be scattered throughout the sparse dimension list, rather than clustered at the bottom of the outline as is the case with CALCPARALLEL.
- For task dimensions included in the bitmap, the appropriate stored member count to use for calculator cache size estimation is 1, rather than the total stored members in the dimension. This is because each FIXPARALLEL task contains a single member from each task dimension.

For all other bitmap dimensions, the stored member count is the appropriate value to use to estimate calculator cache (same as for CALCPARALLEL).

Limitations of FIXPARALLEL Parallel Calculation

- FIXPARALLEL is not supported on partitioned databases.
- The following calculation commands are not supported in a FIXPARALLEL block:
  - DATAEXPORT with options other than flat files
  - DATAIMPORTBIN
  - EXCLUDE...ENDEXCLUDE
- FIXPARALLEL supports up to 8 threads (more if Essbase is running on Oracle Exalytics In-Memory machine). The data structures created in each thread and the algorithms used for scheduling and executing tasks require significant CPU and memory resources. Executing
highly parallelized activities on servers with limited resources might have a negative impact on performance and system stability. Therefore, using FIXPARALLEL with more than 8 threads, when the ORACLEHARDWAREACCELERATION configuration setting is set to FALSE, is not supported.

Example

FIXPARALLEL used with DATAEXPORT enables you to export restricted regions of database in parallel. The following example uses two threads to export data relating to [California], [Oregon], [Washington], [Utah], and [Nevada].

```sql
FIXPARALLEL (2, @CHILDREN("West"))
   DATAEXPORT "File" "dataOfWest.txt" "#MI";
ENDFIXPARALLEL
```

See also the example for POSTFIXPARALLEL.

See Also

- POSTFIXPARALLEL
- THREADVAR
- “WORKERTHREADS” on page 569

**IF**

Performs conditional tests within a formula. Using the IF statement, you can define a Boolean test, as well as formulas to be calculated if the test returns either a TRUE or FALSE value.

**Syntax**

```sql
IF( condition ) statement ; [ ...statement ; ] [ ELSEIF...statement | ELSE...statement] ENDF;
```

**Parameter Description**

- condition: Formula or function that returns a Boolean value of TRUE (a nonzero value) or FALSE (a zero value).
- statement: Operations to be performed depending on the results of the test.

**Notes**

- The IF statement block can also use the ELSE and ELSEIF statements as part of its decision syntax.
- For information about using ENDIF statements and semicolons with IF, ELSE, and ELSEIF statements, see ENDIF.
- In calculation scripts, IF statements must be placed within parentheses and associated with a specific database member. They must also be closed with ENDIF statements. For more information, see the Oracle Essbase Database Administrator’s Guide.
- You can specify attributes in IF statements using the @ATTRIBUTE and @WITHATTR functions; for example IF (@ISMBR(@ATTRIBUTE(Can))) .... You must use these functions; IF (@ISMBR(Can)) is not supported.
Example

Example 1

IF(
    @ISMBR(@DESCENDANTS(Europe))
    OR
    @ISMBR(@DESCENDANTS(Asia))
)
    Taxes = "Gross Margin" * "Foreign Tax Rate";
ELSE
    Taxes = "Gross Margin" * "Domestic Tax Rate";
ENDIF;

This test checks to see if the current cell includes a member that is a descendant of either the Europe or Asia members. If it does, the formula calculates the taxes for the member based on the foreign tax rate. If the current cell does not include a member from one of those groups, then the domestic tax rate is used for the tax calculation.

Example 2

When you use an IF statement as part of a member formula in a calculation script, you need to perform both of the following tasks:

- Associate the IF statement with a single member
- Enclose the IF statement in parentheses

A sample IF statement is illustrated in the following example:

Profit
(IF (Sales > 100)
    Profit = (Sales - COGS) * 2;
ELSE
    Profit = (Sales - COGS) * 1.5;
ENDIF;)

Essbase cycles through the database and performs the following calculations:

1. The IF statement checks to see if the value of Sales for the current member combination is greater than 100.
2. If Sales is greater than 100, Essbase subtracts the value in COGS from the value in Sales, multiplies the difference by 2, and places the result in Profit.
3. If Sales is less than or equal to 100, Essbase subtracts the value in COGS from the value in Sales, multiplies the difference by 1.5, and places the result in Profit.

The whole of the IF ... ENDIF statement is enclosed in parentheses and associated with the Profit member, Profit (IF(...)...).

See Also

- ELSE
- ELSEIF
- ENDIF
**LOOP...ENDLOOP**

The LOOP...ENDLOOP command block specifies the number of times to iterate calculations. All commands between the LOOP and ENDLOOP statements are performed the number of times that you specify.

**Syntax**

```plaintext
LOOP (integer, [break]) COMMANDS ;
ENDLOOP
```

**Parameter Description**

- **integer**: The integer constant that indicates the number of times to execute the commands contained in the loop block.
- **break**: Optional parameter used to break the iterative process of a loop. `break` must be the name of a temporary variable (VAR). Setting the value of the variable to 1 during the execution of the loop causes the loop to break at the beginning of its next iteration.

**COMMANDS**: Those commands that you want to be executed for the duration of the LOOP.

**Notes**

LOOP is a block command that defines a block of commands for repeated execution. As with the FIX command, you can nest LOOP statements if necessary.

The ENDLOOP command ends a LOOP command block. It terminates the LOOP block and occurs after the commands in the LOOP block, but before any other commands.

**Example**

In this example, the LOOP command finds a solution for Profit and Commission. This operation is done as a loop because Profit and Commission are interdependent: Profit is needed to evaluate Commission, and Commission is needed to calculate Profit. This example thus provides a model for solving simultaneous formulas.

```plaintext
FIX("New York",Camera,Actual,Mar)
  LOOP(30)
    Commission = Profit * .15;
    Profit = Margin - "Total Expenses" - Commission;
  ENDLOOP;
ENDFIX
```

**See Also**

- FIX...ENDFIX

---

**POSTFIXPARALLEL**

The POSTFIXPARALLEL command block is an optional, post-processing block within FIXPARALLEL...ENDFIXPARALLEL. You can use it to copy temporary, thread-level THREADVAR values into longer-persisting VAR variables that you can use outside the FIXPARALLEL block.
Syntax

POSTFIXPARALLEL ( [ varName = ACCUMULATEVAR (threadVarName ); ]* );

Parameter Description

varName Name of a VAR variable to store the sum of all the thread’s values of a specified THREADVAR variable.

ACCUMULATEVAR Keyword to add up all the thread values of a specified THREADVAR variable. The sum is then assigned to a specified VAR variable.

threadVarName Name of a THREADVAR variable.

Notes

To copy temporary THREADVAR values into VAR variables you can use outside FIXPARALLEL, use the following task flow:

1. Declare a VAR variable (outside of FIXPARALLEL block) to store the computed result.
2. Declare a THREADVAR variable that you use within the FIXPARALLEL block.
3. Use a POSTFIXPARALLEL block to copy the THREADVAR to the VAR.

Example

The following example accumulates Sales values from THREADVAR variables to a VAR variable.

/* Store computed result of four tasks */
VAR totalSalesAmnt = 0;
/* Four tasks */
FIXPARALLEL (2, "New York", "California", "Oregon", "Florida")
/* Accumulate results of tasks into threads */
THREADVAR s_entitySalesAmnt;
/* Use for computation in each task */
THREADVAR entitySalesAmnt;
/* Use/change THREADVARs within member formula blocks */
"Sales"
{
  /* Initialize variables for this task */
  entitySalesAmnt = 2;
  /* Use the THREADVARS ... */
  /* Accumulate task-data into thread-data */
  s_entitySalesAmnt = s_entitySalesAmnt + entitySalesAmnt;
}
/* Copy computed data into longer-persisting VAR */
POSTFIXPARALLEL ( totalSalesAmnt = ACCUMULATEVAR ( s_entitySalesAmnt ););
ENDFIXPARALLEL

See Also

- FIXPARALLEL...ENDFIXPARALLEL
- THREADVAR
SET Commands

SET commands in a calculation script are procedural. The first occurrence of a SET command in a calculation script stays in effect until the next occurrence of the same SET command.

Example

In the following example, Essbase displays messages at the DETAIL level when calculating the Year dimension. However, when calculating the Measures dimension, Essbase displays messages at the SUMMARY level.

```
SET MSG DETAIL;CALC DIM(Year);
SET MSG SUMMARY;CALC DIM(Measures);
```

In the following example, Essbase calculates member combinations for Qtr1 with the SET AGGMISSG setting turned on. Essbase then does a second calculation pass through the database and calculates member combinations for East with the AGGMISSG setting turned off. For more information on calculation passes, see the Oracle Essbase Database Administrator’s Guide.

```
SET AGGMISSG ON;Qtr1;
SET AGGMISSG OFF;East;
```

SET AGGMISSG

Specifies whether Essbase consolidates #MISSING values in the database.

The default behavior of SET AGGMISSG is determined by the global setting for the database, as described in the Oracle Essbase Database Administrator’s Guide.

Syntax

```
SET AGGMISSG ON | OFF ;
```

Notes

SET AGGMISSG commands apply to calculating sparse dimensions.

Example

```
SET AGGMISSG OFF;
CALC ALL;
CALC PERCENTS;
```

See Also

- SET Commands

SET CACHE

Specifies the size of the calculator cache.

Syntax

```
SET CACHE HIGH | DEFAULT | LOW | OFF | ALL;
```
### Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH, DEFAULT, and LOW</td>
<td>Levels defining the size of the calculator cache. You set the values of HIGH, DEFAULT and LOW in the <code>essbase.cfg</code> file. If you do not set the value of DEFAULT in the <code>essbase.cfg</code> file, Essbase uses a default value of 200,000 bytes. The maximum calculator cache size that you can specify is 200,000,000 bytes.</td>
</tr>
<tr>
<td>OFF</td>
<td>Essbase does not use the calculator cache.</td>
</tr>
<tr>
<td>ALL</td>
<td>Essbase uses the calculator cache, even when you do not calculate at least one full sparse dimension.</td>
</tr>
</tbody>
</table>

**Caution!** Forcing use of the calculator cache inside a `FIXPARALLEL` statement could increase calculation time.

### Notes

Essbase uses the calculator cache to create and track data blocks during calculation. Using the calculator cache significantly improves your calculation performance. The size of the performance improvement depends on the configuration of your database.

You can choose one of three levels. The size of the calculator cache at each level is defined using the `CALCCACHE {HIGH | DEFAULT | LOW}` settings in the `essbase.cfg` file.

The level you choose depends on the amount of memory your system has available and the configuration of your database.

For detailed information on setting the size of your calculator cache, see the *Oracle Essbase Database Administrator’s Guide*.

You can specify whether, by default, Essbase uses a calculator cache using the `CALCCACHE TRUE | FALSE` setting in the `essbase.cfg` file. By default, `CALCCACHE` is set to `TRUE`.

Essbase uses the calculator cache providing that:

- Your database has at least two sparse dimensions.
- You calculate at least one, full sparse dimension (unless you specify the `CALCCACHE ALL` option).

You can use this command more than once within a calculation script.

You can display the calculator cache setting using the `SET MSG` command.

### Example

If the `essbase.cfg` file contains the following settings:

```
CALCCACHEHIGH  1000000
CALCCACHEDEFAULT  300000
CALCCACHELOW    200000
```

Then:

```
SET CACHE HIGH;
```

Sets a calculator cache of up to 1,000,000 bytes for the duration of the calculation script.

```
SET CACHE DEFAULT;
```
Sets a calculator cache of up to 300,000 bytes for the duration of the calculation script.

```
SET CACHE LOW;
```

Sets a calculator cache of up to 200,000 bytes for the duration of the calculation script.

```
SET CACHE ALL;
SET CACHE LOW;
```

Sets a calculator cache of 200,000 bytes to be used even when you do not calculate at least one, full sparse dimension.

```
SET CACHE OFF;
```

Specifies that Essbase does not use a calculator cache.

**See Also**
- CALCCACHE
- CALCCACHEHIGH
- SET MSG
- SET Commands

### SET CALCDIAGNOSTICS

Enables diagnostic logging for parallel calculation tasks. Parallel tasks are those generated by CALCPARALLEL or FIXPARALLEL commands.

Enabling diagnostic logging instructs Essbase to log the calculation time of the first `numTasks` longest parallel tasks.

**Syntax**

```
SET CALCDIAGNOSTICS { LOGSIZE numTasks };
```

**Parameter Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOGSIZE</td>
<td>A required keyword.</td>
</tr>
<tr>
<td>numTasks</td>
<td>How many of the top longest tasks to log. To disable diagnostic logging in the calculation script, set <code>numTasks</code> to 0.</td>
</tr>
</tbody>
</table>

**Notes**

- Diagnostics logging is not on by default, because it has performance overhead. After you are finished designing or optimizing your calculation script, you should turn off diagnostic logging.
- When used inside a FIXPARALLEL block, this command only takes effect within that block.

**Example**

The following example enables diagnostic logging for all parallel calculations in the calculation script.

```
SET CALCDIAGNOSTICS { LOGSIZE 4; };
```
The following example enables diagnostic logging for a specific `FIXPARALLEL` block.

```plaintext
FIXPARALLEL (2, @IDESCENDANT("US_Market"))
    SET CALCDIAGNOSTICS { LOGSIZE 4; }
    AGG ("Product");
ENDFIXPARALLEL
```

Sample Diagnostic Log Output for `FIXPARALLEL`

The following sample output pertains to `FIXPARALLEL` parallel calculation.

```
OK/INFO - 1012899 - Statistics for [Calc1.csc], FIXPARALLEL of index [1] at line [14]:
Number of FIXPARALLEL Threads = [2], Total Tasks = [261], Min/Max/Avg Thread's Time =
[103.453]/[103.519]/[103.486] secs.
OK/INFO - 1012899 - For [4] Longest tasks, next rows display : Time(secs), Thread_id,
(Task_index/Task_count), Task_id, Member-combinations.
OK/INFO - 1012899 - 15.131, 1, (30/132), 53, [ID_051341].
OK/INFO - 1012899 - 10.759, 2, (124/129), 211, [ID_050092].
OK/INFO - 1012899 - 9.690, 1, (42/132), 125, [ID_052230].
OK/INFO - 1012899 - 7.192, 1, (38/132), 105, [ID_052073].
OK/INFO - 1012899 - Summary for thread[1]: Total Time = [103.519] secs, Total Tasks =
[132].
OK/INFO - 1012899 - Longest tasks executing on thread[1] : Time(secs), Thread_id,
(Task_index/Task_count), Task_id.
OK/INFO - 1012899 - 15.131, 1, (30/132), 53.
OK/INFO - 1012899 - 7.192, 1, (38/132), 105.
OK/INFO - 1012899 - 9.690, 1, (42/132), 125.
OK/INFO - 1012899 - Summary for thread[2]: Total Time = [103.453] secs, Total Tasks =
[129].
OK/INFO - 1012899 - Longest tasks executing on thread[2] : Time(secs), Thread_id,
(Task_index/Task_count), Task_id.
OK/INFO - 1012899 - 10.759, 2, (124/129), 211.
```

The diagnostic output is organized into 3 sections.

**Log Section 1**

The following section contains general information about the command being diagnosed.

```
OK/INFO - 1012899 - Statistics for [Calc1.csc], FIXPARALLEL of index [1] at line [14]:
Number of FIXPARALLEL Threads = [2], Total Tasks = [261], Min/Max/Avg Thread's Time =
[103.453]/[103.519]/[103.486] secs.
```

- **Calc script name:** Calc1.csc
- **Command ID:** FIXPARALLEL at index[1] (the first FIXPARALLEL command in Calc1.csc)
- **Other information:** Up to 2 threads are used for this calculation. It contains 261 parallel
tasks. The calculation time is about 104 seconds.

**Log Section 2**
The following section contains information about the longest running tasks.

OK/INFO - 1012899 - For [4] Longest tasks, next rows display: Time(secs), Thread_id, (Task_index/Task_count), Task_id, Member-combinations.
OK/INFO - 1012899 - 15.131, 1, (30/132), 53, [ID_051341].
OK/INFO - 1012899 - 10.759, 2, (124/129), 211, [ID_050092].
OK/INFO - 1012899 - 9.690, 1, (42/132), 125, [ID_052230].
OK/INFO - 1012899 - 7.192, 1, (38/132), 105, [ID_052073].

The per-task diagnostic information is in columnar format. The following table describes each column, to help you interpret the data.

<table>
<thead>
<tr>
<th>Diagnostic Message ID</th>
<th>Time(secs)</th>
<th>Thread ID</th>
<th>Task Index/Task Count</th>
<th>Task ID</th>
<th>Member Combinations</th>
</tr>
</thead>
<tbody>
<tr>
<td>The message ID. For example, OK/INFO - 1012899. This ID can be used to extract diagnostic information from the application log into a file.</td>
<td>Task execution time in seconds. For example, 15.131. The tasks are listed in decreasing order based on execution time.</td>
<td>Calculation thread ID. For example, 1. This calculation uses up to 2 threads, so the thread ID will always be 1 or 2.</td>
<td>The task index and the total task count. For example, 30/132, which indicates that this is the 30th task executed by this thread, and that this thread executes a total of 132 tasks.</td>
<td>The task ID number. For example, 53. The first task has an ID of 1, but 53 is listed first because it was the longest running task. Note that as indicated by Log Section 1, there are 261 total tasks.</td>
<td>The member names that form the slice corresponding to a task ID. For example, 53, [ID_051341] means that this calculation task is defined by the slice specified by task 53 and the member [ID_051341].</td>
</tr>
</tbody>
</table>

Log Section 3

The following section contains a summary of information already shown in Section 2, but groups the information per separate thread.

OK/INFO - 1012899 - Summary for thread[1]: Total Time = [103.519] secs, Total Tasks = [132].
OK/INFO - 1012899 - Longest tasks executing on thread[1]: Time(secs), Thread_id, (Task_index/Task_count), Task_id.
OK/INFO - 1012899 - 15.131, 1, (30/132), 53.
OK/INFO - 1012899 - 7.192, 1, (38/132), 105.
OK/INFO - 1012899 - 9.690, 1, (42/132), 125.
OK/INFO - 1012899 - Summary for thread[2]: Total Time = [103.453] secs, Total Tasks = [129].
OK/INFO - 1012899 - Longest tasks executing on thread[2]: Time(secs), Thread_id, (Task_index/Task_count), Task_id.
OK/INFO - 1012899 - 10.759, 2, (124/129), 211.

See Also
- **SET CALCPARALLEL**
- **FIXPARALLEL...ENDFIXPARALLEL**

**SET CALCPARALLEL**

Enables parallel calculation in place of the default serial calculation.
Essbase analyzes each pass of a calculation to determine whether parallel calculation is possible. If it is not, Essbase uses serial calculation even if CALCPARALLEL is set.

**Syntax**

```
SET CALCPARALLEL n;
```

**Parameter Description**

- **n**: A required parameter, an integer from 1 to 64 on 32-bit platforms or from 1 to 128 on 64-bit platforms, specifying the number of threads to be made available for parallel calculation. The default value specifies serial calculation: no parallel calculation takes place. Values 1 to 64 (1 to 128 on 64-bit) specify parallel calculation with 1 to 64 (or 1 to 128) threads. Values of 0 specify serial calculation. Values less than 0 return an error. Values greater than the maximum are interpreted as the maximum (64 or 128).

**Note:** Values less than 0 are treated differently than they are by the “CALCPARALLEL” on page 457 configuration file setting.

**Notes**

- A number of features are affected by parallel calculation. See the *Oracle Essbase Database Administrator’s Guide* for a list of these effects and for detailed information about how Essbase performs parallel calculation.
- If your outline generates many empty tasks, thus reducing opportunities for parallel calculation, consider setting the CALCTASKDIMS configuration setting to increase the number of tasks and to decrease the size of each task identified for parallel calculation. See the *Oracle Essbase Database Administrator’s Guide* for more information about what kind of outlines or calculation scripts generate many empty tasks.
- Consider setting the value of CALCPARALLEL to one less than the number of available processors. This saves one processor for use either by the operating system or by the Essbase process that writes out dirty blocks from the calculator cache.
- You can use SET CALCPARALLEL in a calculation script to override a CALCPARALLEL configuration setting entry in the Essbase configuration file (*essbase.cfg*).

**Example**

```
SET CALCPARALLEL 3;
```

Enables up to three threads to be used to perform calculation tasks at the same time.

**See Also**

- `SET CALCTASKDIMS`
- `SET Commands`
- `CALCTASKDIMS`
- `CALCPARALLEL`

---

**SET CALCTASKDIMS**

Specifies the number of sparse dimensions included in the identification of tasks for parallel calculation.
Syntax

SET CALCTASKDIMS n;

Parameter Description

n A required parameter, an integer specifying the number of sparse dimensions to be included when Essbase identifies tasks that can be performed at the same time.

A value of 1 indicates that only the last sparse dimension in the outline will be used to identify tasks. A value of 2, for example, indicates that the last and second-to-last sparse dimensions in the outline are used.

Because each unique combination of members from the selected sparse dimensions is a potential task, the potential number of parallel tasks is the product of the number of members of the selected dimensions. The maximum value is the number of sparse dimensions in the outline.

Essbase issues an error if the value is less than 1. A value greater than the number of sparse dimensions in the outline is interpreted as the largest valid value.

Using the calculator bitmap cache can affect this value. See the Oracle Essbase Database Administrator’s Guide discussion of parallel calculation for more information.

Note: Values less than 0 are treated differently than they are by the “CALCTASKDIMS” on page 459 configuration setting.

Notes

- A number of features are affected by parallel calculation. See the Oracle Essbase Database Administrator’s Guide for a list of these effects and for detailed information about how Essbase performs parallel calculation.

- Use the SET CALCTASKDIMS calculation command only if your outline generates many empty tasks, thus reducing opportunities for parallel calculation.

- If you do not notice an improvement in performance after increasing the value of SET CALCTASKDIMS, consider returning the value to the optimal number that Essbase selected. Sometimes using more task dimensions can generate such a large number of tasks that performance may decrease instead of increase, because the overhead of generating and managing the tasks is too great. See “Identifying Additional Tasks for Parallel Calculation” and “Tuning CALCPARALLEL with Log Messages” in the Oracle Essbase Database Administrator’s Guide.

- You can use SET CALCTASKDIMS to override a CALCTASKDIMS configuration setting entry in the Essbase configuration file (essbase.cfg). For example, you might want to set all applications to use a single dimension for parallel calculation, but issue a calculation script command against a single application or database to use two dimensions.

Example

SET CALCTASKDIMS 2;

Specifies that the last two sparse dimensions in the outline will be used to identify potential tasks to be performed at the same time during a calculation pass.

See Also

- SET CALCPARALLEL
- SET Commands
SET CCTRACKCALC

Specifies whether Essbase checks the flags set by the “CCTRACK” on page 460 setting to determine if the currency data has already been converted.

By default CCTRACK is turned on. Essbase tracks which currency partitions have been converted and which have not. The tracking is done at the currency partition level: a database with two partitions would have two flags that could be either "converted" or "unconverted." Essbase does not store a flag for member combinations within a partition.

When you load or clear data in a currency partition, Essbase does not reset the CCTRACK flag to "uncoverted". You can use the SET CCTRACKCALC OFF command to force the conversion of the reloaded data, ignoring the CCTRACK flag.

Syntax

SET CCTRACKCALC ON | OFF;

Parameter Description

ON Uses the flags set by the CCTRACK setting to determine whether the data needs to be converted. The default value is ON.

OFF Always converts the data, regardless of whether CCTRACK has flagged the data as already-converted. Note that during the conversion CCTRACK is still active and tracks the exchange rates used during the conversion.

Notes

The SET CCTRACKCALC command is valid only when CCTRACK is set to TRUE (the default).

Example

SET CCTRACKCALC OFF;
FIX(Actual)
CCONV "XchR"->US$;
ENDFIX
CALC ALL;

Fixes on the the Actual currency partition and forces the conversion of the Actual data regardless of whether Essbase has flagged the data as already being converted, converting the data using the XchR, US$ rate from the currency database. Recalculates the database.

See Also

- CCTRACK
- CLEARCCTRACK
- CCONV
- SET UPTOLOCAL
SET CLEARUPDATESTATUS

Specifies when Essbase marks data blocks as clean. This clean status is used during Intelligent Calculation.

Syntax

```
SET CLEARUPDATESTATUS AFTER | ONLY | OFF;
```

Parameter  Description
---  --------------------------------------------------
AFTER  Essbase marks calculated data blocks as clean, even if you are calculating a subset of your database.
ONLY   Essbase marks the specified data blocks as clean but does not actually calculate the data blocks. This does the same as AFTER, but disables calculation.
OFF    Essbase does not mark the calculated data blocks as clean. Data blocks are not marked as clean, even on a default calculation (`CALC ALL;`) of your database. The existing clean or dirty status of the calculated data blocks remains unchanged.

Notes

SET CLEARUPDATESTATUS specifies when Essbase marks data blocks as clean.

The data blocks in your database have a calculation status of either clean or dirty. When Essbase does a full calculation of your database, it marks the calculated data blocks as clean. When a data block is clean, Essbase will not recalculate the data block on subsequent calculations, provided that Intelligent Calculation is turned on.

To ensure the accuracy of your calculation results, consider carefully the effect of the SET CLEARUPDATESTATUS AFTER command on your calculation.

If you do not use SET CLEARUPDATESTATUS, Essbase does not mark calculated data blocks as clean when you calculate a subset of your database. Essbase marks data blocks as clean only on a full calculation (`CALC ALL;`) or when Essbase calculates all members in a single calculation pass through your database.

If you calculate a subset of your database, you may want to use the SET CLEARUPDATESTATUS AFTER command to ensure that the calculated blocks are marked as clean. However, consider carefully the effect of this command on your calculation to ensure that your calculation results are correct.

Warnings

When you use the SET CLEARUPDATESTATUS command to mark calculated data blocks as clean, consider carefully the following questions:

Which data blocks are calculated?

Only calculated data blocks are marked as clean.

Are concurrent calculations going to affect the same data blocks?

Do not use the SET CLEARUPDATESTATUS AFTER command with concurrent calculations unless you are certain that the different calculations do not need to calculate the same data block or blocks. If concurrent calculations attempt to calculate the same data blocks, with Intelligent
Calculation turned on, Essbase may not recalculate the data blocks, because they are already marked as clean.

*Are the same data blocks to be recalculated on a second calculation pass through the database?*

If you calculate data blocks on a first calculation pass through your database, Essbase marks them as clean. If you then attempt to calculate the same data blocks on a subsequent pass with Intelligent Calculation turned on, Essbase does not recalculate the data blocks, because they are already marked as clean.

**Example**

The following examples are based on the Sample Basic database. They assume that Intelligent Calculation is turned on (the default). For information on turning Intelligent Calculation on and off, see the `SET UPDATECALC` command.

**Example 1**

```plaintext
SET CLEARUPDATESTATUS AFTER;
FIX ("New York")
CALC DIM(Product);
ENDFIX
```

New York is a member on the sparse Market dimension. Essbase searches for dirty parent data blocks for New York (for example "New York"->Colas in which Colas is a parent member). It calculates these dirty blocks based on the Product dimension and marks them as clean. Essbase does not mark the child, Input blocks as clean, because they are not calculated.

**Example 2**

```plaintext
SET CLEARUPDATESTATUS ONLY;
CALC ALL;
```

Essbase searches for all the dirty blocks in the database and marks them as clean. It does *not* calculate the blocks, even though a `CALC ALL;` command is used.

**Example 3**

```plaintext
SET CLEARUPDATESTATUS ONLY;
FIX ("New York")
CALC DIM(Product);
ENDFIX
```

New York is a member on the sparse Market dimension. Essbase searches for dirty parent data blocks for New York (for example "New York"->Colas in which Colas is a parent member). It marks them as clean. It does *not* calculate the data blocks. It does not mark the child blocks as clean because they are not calculated. For example, if

"New York"->100-1.0

is dirty, it remains dirty.
Example 4

SET CLEARUPDATESTATUS OFF;
CALC ALL;
CALC TWOPASS;

Essbase calculates all the dirty data blocks in the database. The calculated data blocks remain dirty; Essbase does not mark them as clean. Essbase then calculates those members tagged as Two-Pass on the dimension tagged as Accounts. Again, it does not mark the calculated data blocks as clean.

See Also

- SET UPDATECALC
- “UPDATECALC” on page 567
- SET Commands

**SET COPYMISSINGBLOCK**

Sets whether the DATACOPY calculation command creates #MISSING blocks during the copy of data from a dense dimension.

This setting does not apply to aggregate storage databases.

SET COPYMISSINGBLOCK allows DATACOPY to avoid creating #MISSING blocks during the copy of data from a dense dimension.

Using DATACOPY on a dense dimension can create blocks populated with #MISSING. This is done deliberately in some instances, because most batch calculations operate only on existing data blocks. Therefore, DATACOPY can be used to ensure that all necessary data blocks are created prior to batch calculation.

But if the creation of #MISSING blocks is not required, you may want to avoid the increase in database size, and the possibly slower performance that results when, for example, a default calculation visits every #MISSING block.

**Syntax**

```
SET COPYMISSINGBLOCK ON | OFF
```

**Parameter Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td>This is the default value. Allows missing blocks to be created during a data copy.</td>
</tr>
<tr>
<td>OFF</td>
<td>Suppresses the creation of missing blocks during a data copy.</td>
</tr>
</tbody>
</table>

**Notes**

- Existing #MISSING blocks are not removed.
- A message is added to the Essbase Server log to indicate the number of data blocks being copied from the source data blocks. The number of #MISSING blocks skipped, if any, is also reported in the log.
Example

SET COPYMISSINGBLOCK OFF;

The following log message indicates that SET COPYMISSINGBLOCK is OFF:

[Fri May 31 10:35:03 2002]Local/Test6/Test6/essexer/Info(1012574)
Datacopy command copied [1] source data blocks to [0] target data blocks

[Fri May 31 10:35:03 2002]Local/Test6/Test6/essexer/Info(1012576)
Datacopy command skipped creating [1] target data blocks with CopyMissingBlock OFF

See Also

- DATACOPY

SET CREATENONMISSINGBLK

Controls whether potential blocks are created in memory for calculation purposes, and whether #MISSING blocks are stored. It affects the results of calculations on sparse and dense dimensions.

By default, Essbase applies dense-member formulas only to existing data blocks. SET CREATENONMISSINGBLK ON enables Essbase to create potential blocks in memory where the dense-member formulas are performed. Of these potential blocks, Essbase writes to the database only blocks that contain values; blocks resulting in only #MISSING are not written to the database.

The creation of #MISSING blocks resulting from sparse-member formulas is governed by the Create Block on Equations setting. (See SET CREATEBLOCKONEQ.) The SET CREATENONMISSINGBLK ON command ensures that only non-empty blocks are created, regardless of the Create Block on Equations setting.

In order to create new blocks, setting SET CREATENONMISSINGBLK to ON requires Essbase to anticipate the blocks that will be created. Working with potential blocks can affect calculation performance. Consider the following situations carefully:

- When SET CREATENONMISSINGBLK is ON, all sparse-member formulas are executed in top-down mode. Dense member formulas are flagged for top-down calculation when they contain the following:
  - Sparse members
  - Constants (for example, Sales = 100,000)
  - The @VAR function
  - The @XREF function

- If Essbase encounters the @CALCMODE(BOTTOMUP) in a member formula, it ignores the @CALCMODE command. A message about the member is written in the application log saying that the command is being ignored.

- If a batch calculation contains top-down formulas and SET CREATENONMISSINGBLK is ON, Intelligent Calculation is turned off. Within the scope of the calculation script, all blocks are calculated, regardless if they are marked clean or dirty.
To reduce the number of blocks to be calculated, use this command within FIX/ENDFIX regions. As a warning, when the potential number of blocks exceeds 20 million, Essbase writes an entry to the application log showing the number of blocks to be calculated and recommending using FIX/ENDFIX.

You can use multiple SET CREATENONMISSINGBLK commands in a calc script, each affecting calculations that follow. However, consider that each time SET CREATENONMISSINGBLK is encountered within a set of FIX and ENDFIX statements, the calculator cycles through the database, potentially affecting calculation performance.

**Syntax**

```
SET CREATENONMISSINGBLK ON|OFF;
```

**Parameter Description**

- **ON**
  - Calculations are performed on potential blocks as well as existing blocks. If the result of the calculation is not #MISSING, the block is stored. The Create Blocks on Equations setting is ignored.

- **OFF**
  - Calculations are performed only on existing blocks. This is the default setting.

**Notes**

- SET CREATENONMISSINGBLK affects only creation of new blocks. If existing blocks become #MISSING after formula execution, they are not deleted.

- The value set by SET CREATENONMISSINGBLK stays in effect until the next SET CREATENONMISSINGBLK is processed, or the calculation script terminates.

- When the calculation script includes both SET CREATENONMISSINGBLK ON and SET MSG DETAIL, any non-stored #MISSING block is indicated in the application log.

- If SET MSG is set to SUMMARY, when SET CREATENONMISSINGBLK is set to ON, Essbase writes an entry to the application log stating that Create Non #MISSING Blocks is enabled.

- If SET MSG is set to SUMMARY, and SET CREATENONMISSINGBLK is set to ON, at the end of the calculation, Essbase writes an entry to the application log showing the total number of #MISSING blocks that were not created.

**Example**

The following example is based on a variation of Sample Basic. Assume that the Scenario dimension, of which Actual is a member, is sparse. "Jan Rolling YTD Est" is a member of the dense time dimension, Year.

```
FIX (Budget)
  SET MSG DETAIL;
  SET CREATENONMISSINGBLK ON;
  "Jan Rolling YTD Est" = (Jan->Actual+Feb+Mar+Apr+May+Jun+Jul+Aug+Sep+Oct+Nov+Dec);
ENDFIX
```

**See Also**

- `SET CREATEBLOCKONEQ`
SET CREATEBLOCKONEQ

Controls, within a calculation script, whether new blocks are created when a calculation formula assigns anything other than a constant to a member of a sparse dimension. SET CREATEBLOCKONEQ overrides the Create Block on Equation setting for the database.

Syntax

SET CREATEBLOCKONEQ ON|OFF;

Parameter Description

ON When a formula assigns a non-constant value to a sparse dimension member for which no block exists, Essbase creates a block.

OFF When a formula assigns a non-constant value to a sparse dimension member for which no block exists, Essbase does not create a block.

Notes

If calculations result in a value for a sparse dimension member for which no block exists, Essbase creates a block. Sometimes, new blocks are not desired; for example, when they contain no other values. In large databases, creation and processing of unneeded blocks can increase processing time and storage requirements.

The Create Blocks on Equation setting is designed for situations when blocks would be created as a result of assigning something other than a constant to a member of a sparse dimension. For example, when Create Blocks on Equation is ON and West is assigned a value where it did not have a value before, new blocks are created. When this setting is OFF, blocks are not created.

Create Blocks on Equation setting is a database property. Its initial value is OFF; no blocks are created when something other than a constant is assigned to a sparse dimension member. Use Administration Services or MaxL to turn the setting ON at the database-level. For more information about enabling Create Blocks on Equation, see the MaxL documentation in the Oracle Essbase Technical Reference or the Oracle Essbase Administration Services Online Help.

For more specific control, you can use the SET CREATEBLOCKONEQ calculation command within a calculation script to control creation of blocks at the time the command is encountered in the script. Use of SET CREATEBLOCKONEQ has the following characteristics:

- When Essbase encounters SET CREATEBLOCKONEQ within a calculation script, the database-level setting is ignored.
- You can use multiple SET CREATEBLOCKONEQ commands in the calculation script to define the Create Blocks on Equation setting value for the calculations following each command.
- The value set by the SET CREATEBLOCKONEQ command stays in effect until the next SET CREATEBLOCKONEQ command is processed or the calculation script is finished.
- The Create Blocks on Equation setting is overridden by SET CREATENONMISSINGBLK ON (see SET CREATENONMISSINGBLK).
- The SET CREATEBLOCKONEQ command does not change the database-level Create Blocks on Equation property.
If no SET CREATEBLOCKONEQ command is encountered, Essbase uses the database-level setting to determine whether to create blocks.

When the Create Blocks on Equation setting is ON, Essbase uses the top-down calculation method to calculate each sparse member.

The Create Blocks on Equation setting is not consulted when Essbase assigns constants to members of sparse dimensions. The following table shows examples of sparse member calculations where constants or non-constants are assigned to them.

<table>
<thead>
<tr>
<th>Assigned Value</th>
<th>Sparse Member Formula Example</th>
<th>New Block Created?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>West = 350</td>
<td>Yes</td>
</tr>
<tr>
<td>Non-constant</td>
<td>West = California + 120</td>
<td>Yes, if the Create Blocks on Equation setting is ON. Otherwise, no.</td>
</tr>
<tr>
<td>Non-constant</td>
<td>West = California * 1.05</td>
<td>Yes, if the Create Blocks on Equation setting is ON. Otherwise, no.</td>
</tr>
</tbody>
</table>

For a tip on controlling creation of blocks when you work with non-constants and sparse dimensions, in the Oracle Essbase Database Administrator’s Guide check for information about improving performance for non-constants assigned to members in sparse dimensions.

Example

The following example is based on Sample.Basic. West and East are members of the sparse Markets dimension.

```
FIX (Colas);
SET CREATEBLOCKONEQ OFF
West = California + 120;
SET CREATEBLOCKONEQ ON
East = "New York" + 100;
ENDFIX
```

Because of the preceding SET CREATEBLOCKONEQ OFF command, Essbase does not create blocks for new values of West. Because the setting has been reversed to ON in the next command, Essbase creates blocks for new values of East.

See Also

- SET CREATENONMISSINGBLK

**SET DATAEXPORTOPTIONS**

Specifies options for data export operations.

**Syntax**

```
SET DATAEXPORTOPTIONS

{    
    DataExportLevel ALL | LEVEL0 | INPUT;
    DataExportDynamicCalc ON | OFF;
    DataExportNonExistingBlocks ON | OFF;
    DataExportDecimal n;
}  
```
Notes

Each SET DATAEXPORTOPTIONS command specifies a set of option values that are in place until the next SET DATAEXPORTOPTIONS command is encountered. At that time, option values are reset to default and newly specified option values are set.

The option list must start with a left brace ({) and end with a right brace followed by a semicolon (};). Each option ends with a semicolon (;). The options can be listed in any order. When an option is not specified, the default value is assumed.

The options are described here in three categories:

- **Content Options**
- **Output Format Options**
- **Processing Options**

**Content Options**

**DataExportLevel** ALL | LEVEL0 | INPUT

- **ALL**—(Default) All data, including consolidation and calculation results.
- **LEVEL0**—Data from level 0 data blocks only (blocks containing only level 0 sparse member combinations).
- **INPUT**—Input blocks only (blocks containing data from a previous data load or grid client data-update operation). This option excludes dynamically calculated data. See also the **DataExportDynamicCalc** option.

In specifying the value for the **DataExportLevel** option, use these guidelines:

- The values are case-insensitive. For example, you can specify LEVEL0 or level0.
- Enclosing the value in quotation marks is optional. For example, you can specify "LEVEL0" or “LEVEL0”.
- If the value is not specified, Essbase uses the default value of ALL.
- If the value is incorrectly expressed (for example, LEVEL 0 or LEVEL2), Essbase uses the default value of ALL.

**Description**

Specifies the amount of data to export.

**DataExportDynamicCalc** ON | OFF

- **ON**—(Default) Dynamically calculated values are included in the export.
- OFF—No dynamically calculated values are included in the report.

Description
Specifies whether a text data export excludes dynamically calculated data.

Notes:
- Text data exports only. If DataExportDynamicCalc ON is encountered with a binary export (DATAEXPORT BINFILE …) it is ignored. No dynamically calculated data is exported.
- The DataExportDynamicCalc option does not apply to attribute values.
- If DataExportLevel INPUT is also specified and the FIX statement range includes sparse Dynamic Calc members, the FIX statement is ignored.

DataExportNonExistingBlocks ON | OFF
- ON—Data from all possible data blocks, including all combinations in sparse dimensions, are exported.
- OFF—(Default) Only data from existing data blocks is exported.

Description
Specifies whether to export data from all possible data blocks. For large outlines with a large number of members in sparse dimensions, the number of potential data blocks can be very high. Exporting Dynamic Calc members from all possible blocks can significantly impact performance.

DataExportPrecision n
n (Optional; default 16)—A value that specifies the number of positions in exported numeric data. If \( n < 0 \), 16-position precision is used.

Description
Specifies that the DATAEXPORT calculation command will output numeric data with emphasis on precision (accuracy). Depending on the size of a data value and number of decimal positions, some numeric fields may be written in exponential format; for example, \( 678123e+008 \). You may consider using DataExportPrecision for export files intended as backup or when data ranges from very large to very small values. The output files typically are smaller and data values more accurate. For output data to be read by people or some external programs, you may consider specifying the DataExportDecimal option instead.

Notes:
- By default, Essbase supports 16 positions for numeric data, including decimal positions.
- The DataExportDecimal option has precedence over the DataExportPrecision option.

Example
```
SET DATAEXPORTOPTIONS
  {
      DataExportPrecision 6;
      DataExportLevel ALL;
  }
```
DataExportColHeader "Measures";
DataExportDynamicCalc ON;
);
DATAEXPORT "File" "," "output1.out";

Initial Data Load Values
"Sales" "COGS" "Margin" "Marketing" "Payroll" "Misc" "Total Expenses" "Profit" "Opening Inventory" "Additions" "Ending Inventory" "Margin %" "Profit %"
"100-10" "New York"
"Jan" "Actual" 678123456.0 271123456.0 941234567890123456.0 51123456.0 0 145123456.0 262123456.0 2101123456.0 644123456.0 60123456.0 0.29 38123456.6430
"Feb" "Actual" 645123 258123 3871234 90123456.0 5112345 112345678 14212345 24512345 2067123456 61912345 204112345 60123456.0 37123456.98
"Mar" "Actual" 675 270 405 94 51 1 146 259 2041 742 2108 60 38.37037037037037
"Qtr1" "Actual" 1998 799 1199 278 153 2 433 766 2101 2005 2108 60.01001001001001 38.33833833833834

Exported Data Format
"Sales","COGS","Margin","Marketing","Payroll","Misc","Total Expenses","Profit","Opening Inventory","Additions","Ending Inventory","Margin %","Profit %","Profit per Ounce","100-10","New York"
"Jan","Actual",6.78123e+008,2.71123e+008,9.41235e+017,5.11235e+007,0.9.41235e+017,-9.41235e+017,2.10112e+009,6.44123e+008,2.06712e+009,60.0186,-1.388e+011,-7.84362e+016
"Feb","Actual",645123,258123,387000,9.01235e+006,5.11235e+006,1.12346e+008,1.2647e+008,-1.26083e+008,2.06712e+009,6.19123e+007,2.04112e+007,59.9886,-19544.1,-1.05069e+007
"Mar","Actual",675,270,405,94,51,1,146,259,2041,742,2108,60,38.3704,21.5833

DataExportDecimal \( n \)
Where \( n \) is a value between 0 and 16.

If no value is provided, the number of decimal positions of the data to be exported is used, up to 16 positions, or a value determined by the DataExportPrecision option if that is specified.

Description
Specifies that the DATAEXPORT calculation command will output numeric data with emphasis on legibility; output data is in straight text format. Regardless of the number of decimal positions in the data, the specified number is output. It is possible the data can lose accuracy, particularly if the data ranges from very large values to very small values, above and below the decimal point.

Notes:
- By default, Essbase supports 16 positions for numeric data, including decimal positions.
- If both the DataExportDecimal option and the DataExportPrecision option are specified, the DataExportPrecision option is ignored.

Example
SET DATAEXPORTOPTIONS
{DataExportDecimal 4;
 DataExportLevel "ALL";
 DataExportColHeader "Measures";
 DataExportDynamicCalc ON;
}
Initial Data Load Values

Sales "COGS" "Margin" "Marketing" "Payroll" "Misc" "Total Expenses" "Profit" "Opening Inventory" "Additions" "Ending Inventory" "Margin %" "Profit %"
"100-10" "New York"
"Jan" "Actual" 678123456.0 271123456.0 941234567890123456.0 51123456.0 0 145123456.0 262123456.0 210123456.0 64123456.0 2067123456.0 0 60123456.0 029 38123456.6430
"Feb" "Actual" 645123 258123 3871234 9012335 5112345 112345678 14212345 24512345 2067123456 61912345 20411234 601234 37123456.98
"Mar" "Actual" 675 270 405 94 51 1 146 259 2041 742 2108 60 38.37037037037037 38123456.6430
"Qtr1" "Actual" 1998 799 1199 278 153 2 433 766 2101 2005 2108 60 0.01001001001001 38.33833833834

Exported Data Format

"100-10", "New York"
"Jan", "Actual", 678123456.0000, 271123456.0000, 407123456.0000, 941234567890123456.0000, 51123456.0000, 0.0000, 941234567890123520.0000, 51123456.0000, 0.0000, 941234567941246980.0000, -941234567534246910.0000, 2101123456.0000, 64123456.0000, 2067123456.0000, 0.0000, 60.0186, -13879983591.4395, -78436213961187248.0000
"Feb", "Actual", 645123.0000, 258123.0000, 387000.0000, 9012345.0000, 5112345.0000, 112345678.0000, 126470368.0000, -126083368.0000, 2067123456.0000, 61912345.0000, 20411234.0000, 60.01001001001001 38.37037037037037 38.33833833834
"Mar", "Actual", 675.0000, 270.0000, 405.0000, 94.0000, 51.0000, 1.0000, 146.0000, 259.0000, 2041.0000, 742.0000, 2108.0000, 60.0000, 38.3704, 21.5833

Output Format Options

DataExportColFormat ON | OFF

- ON—The data is output in columnar format.
- OFF—Default. The data is output in non-columnar format.

Description

Specifies if data is output in columnar format. Columnar format displays a member name from every dimension; names can be repeated from row to row, enabling use by applications other than Essbase tools. In non-columnar format, sparse members identifying a data block are included only once for the block. Non-columnar export files are smaller, enabling faster loading to an Essbase database.

Notes

Do not use the DataExportColFormat option in combination with the DataExportRelationalFile option, which already assumes columnar format for files destined as input files to relational databases.

Example

```
SET DATAEXPORTOPTIONS
{
  DATAEXPORTCOLFORMAT ON;
}
```
DataExportColHeader dimensionName

Description

Specifies the name of the dense dimension that is the column header (the focus) around which other data is referenced in the export file. Use the DataExportColHeader option only when you export data to a text file. For example, if from Sample Basic the Year dimension is specified, the output data starts with data associated with the first member of the Year dimension: Year. After all data for Year is output, it continues with the second member: Qtr1, and so on.

Notes

MaxL, ESSCMD, and Essbase exports do not provide a similar capability. With these methods, Essbase determines the focal point of the output data.

Exporting through Report Writer enables you to specify the header in the report script.

Example

SET DATAEXPORTOPTIONS {DATAEXPORTCOLHEADER Scenario;};

Sets Scenario as the page header in the export file. The Scenario dimension contains three members: Scenario, Actual, and Budget. All Scenario data is shown first, followed by all Actual data, then all Budget data.

DataExportDimHeader ON | OFF

- ON—The header record is included.
- OFF—Default. The header record is not included.

Description

Use the DataExportDimHeader option to insert the optional header record at the beginning of the export data file. The header record contains all dimension names in the order as they are used in the file. Specifying this command always writes the data in "column format".

Example

SET DATAEXPORTOPTIONS {
  DATAEXPOTITLE "ALL";
  DATAEXPORTDIMHEADER ON;
};
FIX("100-10", "New York", "Actual")
DATAEXPORT "File" "," "E:\temp\2222.txt" ;
ENDFIX;

Specifying the DataExportDimHeader ON option while exporting Sample Basic writes the data in column format, with common members repeated in each row. The data begins with a dimension header, as shown in the first two rows of the example file below:

"Product","Market","Year","Scenario","Measures"
"Sales","COGS","Marketing","Payroll","Misc","Opening Inventory","Additions","Ending..."
Inventory
"100-10","New York","Jan","Actual",678,271,94,51,0,2101,644,2067
"100-10","New York","Feb","Actual",645,258,90,51,1,2067,619,2041
"100-10","New York","Mar","Actual",675,270,94,51,1,2041,742,2108
"100-10","New York","Apr","Actual",712,284,99,53,0,2108,854,2250
"100-10","New York","May","Actual",756,302,105,53,1,2250,982,2476
"100-10","New York","Jun","Actual",890,356,124,53,0,2476,1068,2654
"100-10","New York","Jul","Actual",912,364,127,51,0,2654,875,2617
"100-10","New York","Aug","Actual",910,364,127,51,0,2617,873,2580
"100-10","New York","Sep","Actual",790,316,110,51,1,2580,758,2548
"100-10","New York","Oct","Actual",650,260,91,51,1,2548,682,2580
"100-10","New York","Nov","Actual",623,249,87,51,0,2580,685,2642
"100-10","New York","Dec","Actual",699,279,97,51,1,2642,671,2614

DataExportRelationalFile ON | OFF

- ON—The output text export file is formatted for import to a relational database.
  - Data is in column format; sparse member names are repeated. (The DataExportColFormat option is ignored.)
  - The first record in the export file is data; no column heading or dimension header is included, even if specified. (The DataExportColHeader and DataExportDimHeader options are ignored.)
  - Missing and invalid data is skipped, resulting in consecutive delimiters (commas) in the output. The optional "missing_char" parameter for DATAEXPORT is ignored
- OFF—Default. The data is not explicitly formatted for use as input to a relational database.

Description
Using the DataExportRelationalFile option with DATAEXPORT enables you to format the text export file to be used directly as an input file for a relational database.

Example
SET DATAEXPORTOPTIONS {
  DataExportLevel "ALL";
  DataExportRelationalFile ON;
};

FIX (Jan)
  DATAEXPORT "File" "," c:\monthly\jan.txt
ENDFIX;

Processing Options
DataExportOverwriteFile ON | OFF

- ON—The existing file with the same name and location is replaced.
- OFF—Default. If a file with the same name and location already exists, no file is output.

Description
Manages whether an existing file with the same name and location is replaced.

DataExportDryRun ON | OFF

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- ON—**DATAEXPORT** and associated commands are run, without exporting data.
- OFF—Default. Data is exported

**Description**

Enables running the calculation script data export commands to see information about the coded export, without exporting the data. When the DataExportDryRun option value is ON, the following information is written to the output file specified in the **DATAEXPORT** command:

- Summary of data export settings
- Info, Warning, and Error messages
- Exact number of blocks to be exported
- Estimated time, excluding I/O time.

**Notes**

- The DataExportDryRun option does not work with exports to relational databases.
- If you modify the script for reuse for the actual export, besides removing the DataExportDryRun option from the script you may want to change the name of the export file.

**Example**

```plaintext
SET DATAEXPORTOPTIONS
{
  DataExportLevel "ALL";
  DataExportColHeader "Measures";
  DataExportColFormat ON;
  DataExportDimHeader ON;
  DataExportDynamicCalc OFF;
  DataExportDecimal 0;
  DataExportDryRun ON;
  DataExportOverwriteFile ON;
}

FIX("Qtr1")
DATAEXPORT "File" "," "E:\temp\log.txt" ;
ENDFIX;

Creates the file "E:\temp\log.txt" containing the following information:

```xml
<EXPORT_OPTIONS>
  <DELIMITER>
    ,
  </DELIMITER>
  <MISSING_VALUE>
    #Mi
  </MISSING_VALUE>
  <EXPORT_LEVEL>
    ALL
  </EXPORT_LEVEL>
  <DYNAMIC_CALC_EXPORT>
    OFF
</EXPORT_OPTIONS>
```
See Also

- **DATAEXPORT**
- **FIX...ENDFIX**
- **SET Commands**

### SET DATAIMPORTIGNORETIMESTAMP

Specifies whether to ignore the outline timestamp captured at the time the data was exported.

#### Syntax

```
SET DATAIMPORTIGNORETIMESTAMP  ON|OFF;
```

#### Parameter Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td>Ignore the outline timestamp.</td>
</tr>
<tr>
<td>OFF</td>
<td>Default. Check the outline timestamp.</td>
</tr>
</tbody>
</table>
Notes
The DATAEXPORT "Binfile" command captures the outline timestamp when it creates a binary export file. By default, when the file is imported, Essbase checks the import file timestamp against the existing outline timestamp to ensure the correct import file is read. You can use SET DATAIMPORTIGNORETIMESTAMP to bypass checking the timestamp.

Caution!   Bypassing the check enables potentially importing the wrong file.

Example
SET DATAIMPORTIGNORETIMESTAMP ON;
DATAIMPORTBIN e:january\basic.bin

Specifies to ignore comparing the outline timestamp with the timestamp on the import tile, and to import the binary export file to the database on which the calculation script is running.

See Also
- DATAEXPORT
- DATAIMPORTBIN
- SET Commands

SET EMPTYMEMBERSETS
EMPTYMEMBERSETS stops the calculation within a FIX...ENDFIX command if the FIX evaluates to an empty member set.

Syntax
SET EMPTYMEMBERSETS ON|OFF

Parameter   Description
ON           Calculation within FIX command stops if FIX evaluates to an empty member set.
OFF          Entire database is calculated, even if FIX evaluates to an empty member set.

Notes
If EMPTYMEMBERSETS is ON, and a FIX command evaluates to a empty member set, the calculation within the FIX command stops and the following information message is displayed: "FIX statement evaluates to an empty set. Please refer to SET EMPTYMEMBERSETS command."
The calculation resumes after the FIX command. If a calculation script contains nested FIX commands, the nested FIX commands are not evaluated.

Example
The following calculation script does not calculate Calc Dim(Year) within the FIX command. 100-10 has no children and therefore the FIX statement evaluates to an empty member set.

SET EMPTYMEMBERSETS ON;
...
The following calculation script has nested FIX commands. Calc Dim(Product) is not calculated because FIX(@CHILDREN("100-10")) evaluates to empty member set. Calc Dim(Year) is not calculated even though the nested FIX("New York") does not evaluate to an empty member set.

SET EMPTYMEMBERSETS ON;
...
FIX(@CHILDREN("100-10"))
    FIX("New York")
        Calc Dim(Year);
    ENDFIX
Calc Dim (Product);
ENDFIX
...

SET FRMLBOTTOMUP

Optimizes the calculation of complex formulas on sparse dimensions in large database outlines. This command tells Essbase to perform a bottom-up calculation on formulas that would otherwise require a top-down calculation.

You might want to turn on this setting when using the \texttt{CALC ALL} and \texttt{CALC DIM} commands to calculate the database.

\textbf{Syntax}

\begin{verbatim}
SET FRMLBOTTOMUP ON|OFF;
\end{verbatim}

\textbf{Parameter Description}

\begin{itemize}
  \item \texttt{ON} \quad Turns on the bottom-up sparse formula calculation method.
  \item \texttt{OFF} \quad Turns off the bottom-up sparse formula calculation method. The default setting is \texttt{OFF}. You can change this setting by using \texttt{CALCOPTFRMLBOTTOMUP TRUE} in the \texttt{essbase.cfg} file.
\end{itemize}

\textbf{Notes}

\begin{itemize}
  \item For information on complex formulas and top-down calculations, see the \textit{Oracle Essbase Database Administrator's Guide}.
  \item Forcing a bottom-up calculation on a formula may produce results that are inconsistent with a top-down calculation if:
    \begin{itemize}
      \item The formula contains complex functions (for example, range functions)
      \item The formula's dependencies are not straightforward
    \end{itemize}
  \item Before using the \texttt{SET FRMLBOTTOMUP} command in a production environment, be sure to check the validity of calculation results produced when the command is enabled (set to \texttt{ON}).
\end{itemize}
**SET FRMLRTDYNAMIC**

Enables you to turn off calculation of all dense Dynamic Calc members during batch calculation if runtime dependent functions are included in formulas on stored members. (The preprocessing phase of a calculation script cannot determine if an outline contains dense Dynamic Calc members.)

This command improves batch calculation performance by removing the overhead of calculating all Dynamic Calc members.

The `SET FRMLRTDYNAMIC` command can be applied to an entire calculation script segment, as shown in the example below.

**Syntax**

```
SET FRMLRTDYNAMIC ON | OFF;
```

**Parameter Description**

- **ON**: Calculation of Dynamic Calc members is performed. The default value is ON.
- **OFF**: Calculation of Dynamic Calc members is not performed.

**Notes**

- Runtime-dependent functions include:
  - `@ANCEST`
  - `@SANCEST`
  - `@PARENT`
  - `@SPARENT`
  - `@CURRMBR`
- If a stored member formula includes a runtime-dependent function on a Dynamic Calc member, it may get #MISSING as the result instead of the expected value after executing the formula on the Dynamic Calc member.

**Example**

The following example turns off all dense Dynamic Calc members:

```
SET FRMLRTDYNAMIC OFF;
FIX(@LEVABRS(Product, 0)))"
"Avg Sales" = @AVGRANGE(SKIPNONE,Sales, @CHIDREN(@CURRMBR(Product)));```
SET LOCKBLOCK

Specifies the maximum number of blocks that Essbase can get addressability to concurrently when calculating a sparse member formula.

You can choose one of three levels. The number of blocks that Essbase can get addressability to at each level is defined using the CALCLOCKBLOCK setting in the essbase.cfg file.

Syntax

```
SET LOCKBLOCK HIGH | DEFAULT | LOW;
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH, DEFAULT, and LOW</td>
<td>Levels defining the number of blocks that Essbase can get addressability to concurrently.</td>
</tr>
</tbody>
</table>

Notes

When a block is calculated, Essbase locks (gets addressability to) the block along with the blocks containing its children. Essbase calculates the block and then releases it along with the blocks containing its children.

By default, Essbase allows up to 100 blocks to be locked (addressable) concurrently when calculating a block. This is sufficient for most database calculations.

However, you may want to set a number higher than 100 if you are consolidating very large numbers of children in a formula calculation. This setting ensures that Essbase can get addressability to all the required blocks when calculating a data block and that performance will not be impaired.

For more information on data blocks, see the Oracle Essbase Database Administrator’s Guide.

Example

If the essbase.cfg file contains the following settings:

```
CALCLOCKBLOCKHIGH 500
CALCLOCKBLOCKDEFAULT 200
CALCLOCKBLOCKLOW 50
```

then:

```
SET LOCKBLOCK HIGH;
```

means that Essbase can get addressability to up to 500 data blocks when calculating one block.

```
SET LOCKBLOCK DEFAULT;
```

means that Essbase can get addressability to up to 200 data blocks when calculating one block.

```
SET LOCKBLOCK LOW;
```

means that Essbase can get addressability to up to 50 data blocks when calculating one block.
See Also
- CALCBLOCK
- SET Commands

SET MSG

Sets the level of messaging you want returned about calculations, and enables simulated calculations.

The SET MSG command applies only to the calculation script in which it is used.

Syntax

```
SET MSG SUMMARY | DETAIL | ERROR | INFO | NONE | ONLY;
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUMMARY</td>
<td>Displays calculation settings and provides statistics on the number of:</td>
</tr>
<tr>
<td></td>
<td>- Data blocks created, read, and written</td>
</tr>
<tr>
<td></td>
<td>- Data cells calculated</td>
</tr>
<tr>
<td>DETAIL</td>
<td>Provides the same information as SUMMARY. In addition, it displays a detailed information message every time Essbase calculates a data block.</td>
</tr>
<tr>
<td>ERROR</td>
<td>Displays only error messages.</td>
</tr>
<tr>
<td>INFO</td>
<td>Displays information and error messages.</td>
</tr>
<tr>
<td>NONE</td>
<td>Displays no messages during the life of the calculation script. However, because error messages may contain vital information, they are still displayed.</td>
</tr>
<tr>
<td>ONLY</td>
<td>Instructs Essbase to perform a simulated calculation only. You may disregard any error message during validation that indicates Essbase does not recognize a command.</td>
</tr>
</tbody>
</table>

**Note:** When you use this parameter, Essbase generates some empty upper-level blocks. Make sure to clear upper-level blocks (or non-input blocks if you load data into upper level blocks in your model) at the end of the simulation/command.

We recommend using SET MSG ONLY with the calculation script commands SET NOTICE HIGH and CALC ALL. For more information, see the Oracle Essbase Database Administrator’s Guide sections on optimizing calculations.

SET MSG ONLY does not generate a completion notice.

Notes

SET MSG SUMMARY and SET MSG DETAIL tell you:

- The status of calculation settings (for example, whether completion notice messages are enabled)
- The total number of data blocks created
- The number of data blocks read and written on sparse calculations
The number of data blocks read and written on dense calculations
The number of data cells calculated on sparse calculations
The number of data cells calculated on dense calculations

In addition, the SET MSG DETAIL command provides an information message every time Essbase calculates a data block. It is useful for testing your database’s consolidation path. Because it causes a high processing overhead, it should be used during test calculations only.

SET MSG SUMMARY causes a processing overhead of approximately 1% to 5%, depending on the database size.

**Example**

```plaintext
SET MSG ERROR;
```
Displays only the error messages.

```plaintext
SET MSG SUMMARY;
```
Produce the following sample output:

```
[Tue Apr  4 05:11:16 1995] local/Sample/Basic/Qatest/Info(1012672)
Calculator Information Message:

Maximum Number of Lock Blocks: [100] Blocks
Completion Notice Messages: [Disabled]
Calculations On Updated Blocks Only: [Enabled]
Clear Update Status After Full Calculations: [Enabled]
Calculator Cache With Multiple Bitmaps For: [Market]
```

```
[Tue Apr  4 05:11:19 1995] local/Sample/Basic/Qatest/Info(1012672)
Calculator Information Message:

Total Block Created: [0.0000e+00] Blocks
Sparse Calculations: [4.3000e+01] Writes and [4.3000e+01] Reads
Dense Calculations: [4.3200e+02] Writes and [4.3200e+02] Reads
Sparse Calculations: [1.7200e+02] Cells
Dense Calculations: [4.3200e+02] Cells
```

```plaintext
SET MSG DETAIL;
```
Produces the following sample output:

```
Calculator Information Message:

Maximum Number of Lock Blocks: [100] Blocks
```

404
Completion Notice Messages: [Disabled]
Calculations On Updated Blocks Only: [Enabled]
Clear Update Status After Partial Calculations: [Disabled]
Calculator Cache With Multiple Bitmaps For: [Market]

Calculator Information Message: Executing Block - [100], [East]

Calculator Information Message: Executing Block - [Product], [East]

Calculator Information Message: Executing Block - [100], [Market]

Calculator Information Message: Executing Block - [Product], [Market]

Calculator Information Message:

Total Block Created: [0.0000e+00] Blocks
Dense Calculations: [0.0000e+00] Writes and [0.0000e+00] Reads
Sparse Calculations: [3.8080e+03] Cells
Dense Calculations: [0.0000e+00] Cells

See Also
● CLEARBLOCK
● SET NOTICE
● SET Commands

SET NOTICE

Monitors the progress of your calculation by providing completion notices at intervals during the calculation. The number of notices depends on the level you specify.

Syntax

SET NOTICE HIGH | DEFAULT | LOW;
### Parameter | Description
---|---
HIGH, DEFAULT, and LOW | Levels defining the frequency and number of completion notices.

You can set the values of HIGH, DEFAULT, and LOW using the CALCNOTICE setting in the `essbase.cfg` file. If you do not set the value of DEFAULT in the `essbase.cfg` file, Essbase uses a default value of 10, which provides 10 completion messages at 10% intervals during the calculation.

### Notes
- You can specify the number of notices for each level using the CALCNOTICE setting in the `essbase.cfg` file.
- The interval between notices is approximate. Essbase measures the interval by taking the number of data blocks already calculated as a percentage of the total number of possible data blocks in your database. For example, if there are 10,000 possible blocks and you specify 5 notices, Essbase notifies you when the calculation approximately reaches block 2000, 4000, 6000, 8,000 and 10,000. However, if only the blocks 1,000 - 4,000 exist, then Essbase displays only two notices.
- For partial calculations and calculations with multiple passes through your database, the interval between completion notices is very approximate.
- Completion notices do not significantly reduce the calculation performance, except when used with a very small database.

### Example
If the `essbase.cfg` file contains the following settings:

```
CALCNOTICEHIGH  50
CALCNOTICEDEFAULT  20
CALCNOTICELOW  5
```

then:

```
SET NOTICE HIGH;
```

displays 50 completion notices at 2% intervals.

```
SET NOTICE DEFAULT;
```

displays 20 completion notices at 5% intervals.

```
SET NOTICE LOW;
```

displays 5 completion notices at 20% intervals.

```
SET NOTICE LOW;
```

might produce the following sample output:

```
[Thu Apr  6 10:09:19 1995] Local/Sample/Basic/Qatest/Info(1012669)
Calculating [ Measures(All members) Year(All members) Scenario(All members) Product(All members) Market(All members)]
```

```
[Thu Apr  6 10:09:19 1995] Local/Sample/Basic/Qatest/Info(1012672)
Calculator Information Message:
```
Maximum Number of Lock Blocks: [100] Blocks
Completion Notice For Every: [ 10.000%] Of Blocks
Calculations On Updated Blocks Only: [Disabled]
Clear Update Status After Full Calculations: [Enabled]
Calculator Cache With Multiple Bitmaps For: [Market]

[Thu Apr  6 10:09:21 1995] Local/Sample/Basic/Qatest/Info(1012672)
Calculator Information Message: Completion Notice For Block Number [49]

[Thu Apr  6 10:09:22 1995] Local/Sample/Basic/Qatest/Info(1012672)
Calculator Information Message: Completion Notice For Block Number [97]

[Thu Apr  6 10:09:24 1995] Local/Sample/Basic/Qatest/Info(1012672)
Calculator Information Message: Completion Notice For Block Number [145]

[Thu Apr  6 10:09:25 1995] Local/Sample/Basic/Qatest/Info(1012672)
Calculator Information Message: Completion Notice For Block Number [193]

[Thu Apr  6 10:09:27 1995] Local/Sample/Basic/Qatest/Info(1012672)
Calculator Information Message: Completion Notice For Block Number [241]

See Also
● CALCNOTICE
● SET MSG
● SET Commands

SET REMOTECALC

For applications with transparent partitions, turns remote calculation to the source on or off.

Syntax
SET REMOTECALC ON | OFF;

Parameter Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td>Default. Essbase connects to the source partition enabling remote calculations.</td>
</tr>
<tr>
<td>OFF</td>
<td>Essbase does not connect to the source partition. Use this option only when absolutely sure the calculation script does not involve access to remote data.</td>
</tr>
</tbody>
</table>

Notes
● When you are working with transparent partitions and are sure that a calculation script does not include remote values in the calculations, you can use SET REMOTECALC OFF to improve calculation performance.
● Performance improvement is visible only when batch calculation is run on the target application.

Example
SET REMOTECALC ON;

SET REMOTECALC OFF;
SET RUNTIMESUBVARS

Declares runtime substitution variables that are used in a calculation script.

Every runtime substitution variable used in a calculation script must be declared in the SET RUNTIMESUBVARS command. The name of a runtime substitution variable is required. Specifying a default value for the runtime substitution variable is optional. Also optional is a description of the runtime substitution variable’s data type and data input limit, which is a string in the `<RTSV_HINT>rtsv_description</RTSV_HINT>` tag. Each runtime substitution variable declaration must end in a semicolon.

Syntax

```plaintext
SET RUNTIMESUBVARS
{
  runtime_substitution_variable [= value] [<RTSV_HINT>rtsv_description</RTSV_HINT>];
};
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>runtime_substitution_variable</td>
<td>Name of a runtime substitution variable</td>
</tr>
<tr>
<td>value</td>
<td>(Optional) Default value of the named runtime substitution variable. The value can be expressed as a string, a constant, a member name, or a member combination. Default values specified in the SET RUNTIMESUBVARS command can be overwritten at runtime. See “Using Runtime Substitution Variables in Calculation Scripts” in the Oracle Essbase Database Administrator’s Guide.</td>
</tr>
<tr>
<td><code>&lt;RTSV_HINT&gt;rtsv_description&lt;/RTSV_HINT&gt;</code></td>
<td>(Optional) A string that describes the data type and data input limit (for example, an integer not greater than 100) of the named runtime substitution variable. This string is not used in the calculation. The EssGetRuntimeSubVars API retrieves all of the information (name, value, and description) that is specified in the runtime substitution variable declaration. The <code>&lt;RTSV_HINT&gt;</code> string can then be used to prompt a user to input a value at runtime or to validate input data before passing the value to the calculation script.</td>
</tr>
</tbody>
</table>

Notes

- If you specify a runtime substitution variable in SET RUNTIMESUBVARS but do not use the runtime substitution variable in the calculation script, Essbase ignores the runtime substitution variable declaration.
- If multiple runtime substitution variables have the same name but have different values, only the value of the first instance of the runtime substitution variable is used; all other subsequent values are ignored.
- To log the runtime substitution variables that are used in a calculation script, set the ENABLERTSVLOGGING configuration setting to TRUE.
Example

In the following example, three runtime substitution variables are defined with a name and a default value; for example, the runtime substitution variable named myMarket has a value of “New York”.

```plaintext
SET RUNTIMESUBVARS
{  myMarket = "New York";
   salesNum = 100;
   pointD = "Actual"->"Final";
};
```

In the following example, the runtime substitution variables do not include default values. The EssGetRuntimeSubVars API can be implemented to retrieve all of the information (name, value, and description) about the runtime substitution variable. The `<RTSV_HINT>` string can then be used to prompt a user to input a value at runtime or to validate input data before passing the value to the calculation script.

```plaintext
SET RUNTIMESUBVARS
{  myMarket <RTSV_HINT>myMarket: Input the value as a string, such as "New York"</RTSV_HINT>;
   salesNum <RTSV_HINT>salesNum: Input the value as an integer, such as 100</RTSV_HINT>;
   pointD <RTSV_HINT>pointD: Input the value as a member name or a member combination, such as "Actual"->"Final"</RTSV_HINT>;
};
```

See Also

- Execute Calculation
- ENABLERTSVLOGGING

SET SCAPERSPECTIVE

Sets the perspective for varying attribute calculations.

Syntax

```plaintext
SET SCAPERSPECTIVE (mbrName1) [, (mbrName2)] ... [, (mbrNamen)] on Attribute_Dimension | OFF ;
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>mbrName1 [... ] on Attribute_Dimension</td>
<td>Any valid single member name, or list of member names, on the specified varying attribute dimension.</td>
</tr>
<tr>
<td>OFF</td>
<td>Turn off the perspective setting for the calculation block.</td>
</tr>
</tbody>
</table>

Notes

- For use only in applications enabled with varying attributes.
- Only one independent member from each independent dimension is supported.
**Example**

Once the perspective is specified using this command, `@WITHATTR` can be used on a varying attribute inside a FIX statement. In the following example, the SET SCAPERSPECTIVE statements indicate that for attribute dimensions TYPE and TITLE, the subsequent FIX statement with `@WithATTR` will use their attribute association as defined at time FY03 and Jan.

```plaintext
set SCAPerspective ((FY03), (Jan)) on TYPE;
set SCAPerspective ((FY03), (Jan)) on TITLE;

FIX (@WithAttr (TYPE, "==", Contractor), @withattr (Title, "==", Senior_QA_Engineer),
Local, "HSP_Historical", "BU Version_1", Target, Local, FY03)
HSP_INPUTVALUE = 100;
ENDFIX;
```

**See Also**

- `@ISATTRIBUTE`
- `@ISMBRWITHATTR`
- `@WITHATTR`

---

**SET UPDATECALC**

Turns Intelligent Calculation on or off.

**Syntax**

```plaintext
SET UPDATECALC ON | OFF;
```

**Parameter Description**

- **ON**
  Essbase calculates only blocks marked as dirty (see Description). Dirty blocks include updated blocks and their dependent parents (see Notes). The default setting is ON. You can change this default using the UPDATECALC TRUE | FALSE setting in the essbase.cfg file.

- **OFF**
  Essbase calculates all data blocks, regardless of whether they have been updated.

**Notes**

- Using Intelligent Calculation, Essbase calculates only dirty blocks, such as updated data blocks and their dependent parents. Therefore, the calculation is very efficient.
- All data blocks in the database are marked as either clean or dirty. If a data block is clean, then Essbase knows that the block does not need to be recalculated.
- By default, all data blocks are marked as clean after a full calculation of the database but not after a partial calculation of the database. If required, you can change this default behavior using the SET CLEARUPDATESTATUS command in your calculation script.
- There are several possible reasons blocks might be marked as dirty. See the *Oracle Essbase Database Administrator’s Guide* for information on Intelligent Calculation and clean and dirty blocks.
Example

SET UPDATECALC ON;

SET UPDATECALC OFF;

See Also

- SET CLEARUPDATESTATUS
- “UPDATECALC” on page 567
- SET Commands

SET UPTOLOCAL

Restricts consolidations to those parents with the same defined currency. The default is OFF.

For example, all cities in Switzerland use the Swiss franc (CHF) as the unit of currency. Therefore, all children of Switzerland, such as the cities Geneva, Zurich, and Lucerne, consolidate to Switzerland. Consolidation stops at this level, however, because Europe also contains countries that use other currencies. The following database outline example illustrates this situation:

```
  Market
   sparse
      Europe (+)
        United Kingdom (+)
        France (-)
          Nancy (+)
          Paris (+)
          Marseille (+)
          Avignon (+)
          Strasbourg (+)
        Germany (+)
        Italy (+)
        Spain (+)
        Belgium (+)
```

If you want to consolidate values above this level, you must use CCONV to convert the values to a master rate before consolidating.

Syntax

```
SET UPTOLOCAL ON | OFF ;
```

Notes

SET UPTOLOCAL ON has no effect on databases with no currency definitions.

Example

```
SET UPTOLOCAL ON;

SET UPTOLOCAL OFF;
```

See Also

- CCONV
- SET CCTRACKCALC
THREADVAR

Declares one or more temporary, thread-level variables within a FIXPARALLEL...ENDFIXPARALLEL block.

Syntax

THREADVAR varName [, varName ] ;

Parameter Description

varName  Name of the temporary variable(s).

Notes

- THREADVAR variables must be declared within the FIXPARALLEL...ENDFIXPARALLEL block, and can only be used within that context.
- Essbase creates an instance of a THREADVAR variable for each child thread.
- A THREADVAR variable cannot be initialized; Essbase initializes it to #MISSING.
- A THREADVAR variable cannot have the same name as a VAR variable.

Example

See the example for POSTFIXPARALLEL.

See Also

- FIXPARALLEL...ENDFIXPARALLEL
- POSTFIXPARALLEL

VAR

Declares a temporary variable that contains a single value. The variable lasts for the scope of the calculation script.

Note: You can also use a single VAR command to declare multiple variables by supplying a comma-delimited list of variable names.

Syntax

VAR varName [= value] ;

Parameter Description

varName  Name of the temporary variable.
Parameter  Description

value        Optional parameter that declares the data value.

Notes

● The name of the variable cannot duplicate a database member name.
● If a value is not declared, it is set to #MISSING.
● VAR commands can only be assigned values within a member calculation or when VAR is declared.

Example

VAR Target = 1200;

VAR Break1, Break2, Break3;

See Also

● ARRAY
Configuration File Overview

With the `essbase.cfg` configuration file, you can customize your Essbase Server configuration. Settings specified in the `essbase.cfg` file usually apply to the entire Essbase Server. These settings override the Essbase defaults and apply to all databases within all applications on the Essbase Server.

You can create one `essbase.cfg` file for server settings, and another for client settings. Assume settings are for the server unless otherwise noted.

**Note:** The Oracle Hyperion Enterprise Performance Management System Configurator may add entries to `essbase.cfg` during Essbase Server configuration, cluster configuration, ODBC driver configuration, and JVM setup. For more information, see *Oracle Enterprise Performance Management System Installation and Configuration Guide*.

## Configuring Essbase.cfg

A default `essbase.cfg` file exists in the Essbase `bin` directory.

1. Open the file with a text editor.
2. Enter each setting on a separate line in the file. Semicolon terminators are not required.
3. Save the file as `essbase.cfg` in the `bin` directory.
4. After editing the configuration file, perform the proper action to have the configuration file reread:
   - If the setting applies to the server, stop and restart Essbase Server.
If the setting applies to a specific application, stop the application (if it is running) and restart it.
If the setting applies only to a database, restart the application.

Notes

- Oracle recommends that you make sure there are no duplicate settings in the `essbase.cfg` file.
- You can override many `essbase.cfg` values using:
  - MaxL statements
  - Administration Services dialogs
  - ESSCMD commands
- When you use MaxL or Administration Services to change `essbase.cfg` values, many values are effective immediately. See the Oracle Essbase Database Administrator’s Guide for details.
- Some `essbase.cfg` settings affect performance. Before you override Essbase defaults, see information about performance optimization and storage settings in the Oracle Essbase Database Administrator’s Guide.
- `essbase.cfg` settings apply to all databases unless the values are noted as database- or application-specific.
- Essbase uses the keywords and their unparsed values "as is." No syntax check is performed.
- You can use an `essbase.cfg` file on the client to override Essbase default network settings. Only the following settings can be used in an `essbase.cfg` client file:
  - “AGENTPORT” on page 432
  - “APSRESOLVER” on page 438
  - “NETDELAY” on page 523
  - “NETRETRYCOUNT” on page 524
  - “PORTINC” on page 533
  - “SERVERPORTBEGIN” on page 545
  - “SERVERPORTEND” on page 546
- All other configuration settings are intended for the server `essbase.cfg` file only.

Example

The following is an example of `essbase.cfg` server file entries:

```
SSPROCROWLIMIT  20000
LOCKTIMEOUT    1200
```

See the Oracle Essbase Database Administrator’s Guide.
Essbase.cfg Setting Categorical List

This section lists all of the Essbase.cfg settings, grouped categorically. Some may appear in more than one category.

- Backup and Recovery Configuration Settings
- Calculation Configuration Settings
- Data Import and Export Configuration Settings
- Oracle Exalytics In-Memory Machine Configuration Settings
- Failover Clustering Configuration Settings
- Logging and Error Handling Configuration Settings
- Memory Management Configuration Settings
- Miscellaneous Configuration Settings
- Partitioning Configuration Settings
- Ports and Connections Configuration Settings
- Query Management Configuration Settings
- “Security File Configuration Settings” on page 422

Backup and Recovery Configuration Settings

- “TRANSACTIONLOGDATALOADARCHIVE” on page 562
- “TRANSACTIONLOGLOCATION” on page 563

Calculation Configuration Settings

- “AGGRESSIVEBLKOPTIMIZATION” on page 435
- “ASODYNAMICAGGINBSO” on page 439
- “ASODYNAMICAGGINB5OFOLDERPATH” on page 441
- “CALCCACHE” on page 446
- “CALCCACHEHIGH” on page 449
- “CALCCACHEDEFAULT” on page 447
- “CALCCACHELOW” on page 450
- “CALCLIMITFORMULARECURSION” on page 451
- “CALCLOCKBLOCK” on page 452
- “CALCMODE” on page 454
- “CALCNOTICE” on page 454
- “CALCOPTFRMLBOTTOMUP” on page 456
- “CALCPARALLEL” on page 457
Data Import and Export Configuration Settings

- “DATAEXPORTENABLEBATCHINSERT” on page 467
- “DEXPSQLROWSIZE” on page 471
- “DLSINGLETHREADPERSTAGE” on page 477
- “DLTHREADSPREPARE” on page 479
- “DLTHREADSWRITE” on page 481
- “EXPORTTHREADS” on page 499

Oracle Exalytics In-Memory Machine Configuration Settings

- “INPLACEDATAWRITE” on page 511
- “ORACLEHARDWAREACCELERATION” on page 529

Failover Clustering Configuration Settings

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See the Oracle Enterprise Performance Management System Security Configuration Guide.
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Comparison

Subtopics

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- Aggregate Storage Configuration Settings
- Block Storage Configuration Settings

Block Storage and Aggregate Storage Configuration Settings

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CALCTASKDIMS  JAVAMAXMEMBERSPEROUTLINE  SSINVALIDTEXTDETECTION
CCTRACK  JAVAMAXSMARTLISTSPPEROUTLINE  SSLCIPHERSUITES
AGENTDELAY

Specifies the number of seconds an Agent thread waits for a resource to become available so it can perform a specific action. If the resource is still unavailable when the specified value for AGENTDELAY is completely used, the agent times out and does not complete the transaction.

Syntax

AGENTDELAY n

n: Specifies the number of seconds an Agent thread waits before performing an action. The value must be an integer, and must be 5 or higher.

The default value is 20.
Notes
A higher value of AGENTTHREADS produces a greater contention for resources. Therefore, set the value for AGENTDELAY as high as possible.

Example
AGENTDELAY 60

See Also
“AGENTTHREADS” on page 434
“AGTSVRCONNECTIONS” on page 436

AGENTDESC
When the Configuration Utility is used to register an Essbase Server Agent as a Windows service, the text entered in the Service Name Identifier field is stored as AGENTDESC in the Essbase configuration file (essbase.cfg).

Syntax
AGENTDESC description

Where description is the unique description provided for an Essbase Agent Windows service when it was registered through the Configuration Utility.

See Also
“AGENTPORT” on page 432
“SERVERPORTBEGIN” on page 545
“SERVERPORTEND” on page 546
“PORTINC” on page 533

AGENTDISPLAYMESSAGELEVEL
Specifies the message types (level of messages) that are displayed in the Essbase Server window. The Essbase Server log (essbase.log) is not affected by this setting.

Syntax
AGENTDISPLAYMESSAGELEVEL ERROR | WARNING | INFO | DEBUG

Where ERROR, WARNING, INFO, and DEBUG are levels:
- ERROR—Only error messages are displayed in the Essbase Server window.
- WARNING—Warning and error messages are displayed in the Essbase Server window.
INFO—Info, warning, and error messages are displayed in the Essbase Server window. INFO is the default setting.

DEBUG—Debug, info, warning, and error messages are displayed in the Essbase Server window.

Notes
This setting affects only the messages displayed in the Essbase Server window. To set the level of messages written to the Essbase Server log (essbase.log), use “AGENTLOGMESSAGELEVEL” on page 432.

To set the same level for both the Essbase Server window and log, use both settings.

Example
AGENTDISPLAYMESSAGELEVEL WARNING

Sets the message level at WARNING. Only warning and error messages are displayed in the Essbase Server window.

See Also
SETMSGLEVEL
“AGENTLOGMESSAGELEVEL” on page 432

AGENTLEASEEXPIRATIONTIME
Sets the maximum amount of time that Essbase Agent can own a lease before the lease is terminated.

Syntax
AGENTLEASEEXPIRATIONTIME n

Where n is an integer specifying the number of seconds before a lease expires. The default value is 20.

Example
AGENTLEASEEXPIRATIONTIME 20

See Also
“AGENTLEASEMAXRETRYCOUNT” on page 431
“AGENTLEASERENEWALTIME” on page 431
“SERVERLEASEEXPIRATIONTIME” on page 544
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AGENTLEASEMAXRETRYCOUNT

Specifies the number of times that Essbase Agent attempts to acquire or renew a lease. If the attempts are unsuccessful, the agent terminates itself.

Syntax
AGENTLEASEMAXRETRYCOUNT \( n \)

Where \( n \) is an integer. The default value is 5.

Example
AGENTLEASEMAXRETRYCOUNT 5

See Also
“AGENTLEASEEXPIRATIONTIME” on page 430
“AGENTLEASERENEWALTIME” on page 431
“SERVERLEASEEXPIRATIONTIME” on page 544
“SERVERLEASEMAXRETRYCOUNT” on page 544
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AGENTLEASERENEWALTIME

Specifies the time interval, in seconds, after which Essbase Agent attempts to renew a lease. This value must be less than the value of AGENTLEASEEXPIRATIONTIME.

Syntax
AGENTLEASERENEWALTIME \( n \)

Where \( n \) is an integer specifying the number of seconds to reestablish ownership after a lease expires. The default value is 10.

Example
AGENTLEASERENEWALTIME 10

See Also
“AGENTLEASEEXPIRATIONTIME” on page 430
“AGENTLEASEMAXRETRYCOUNT” on page 431
“SERVERLEASEEXPIRATIONTIME” on page 544
“SERVERLEASEMAXRETRYCOUNT” on page 544
“SERVERLEASERENEWALTIME” on page 545
AGENTLOGMESSAGELEVEL

Specifies the message types (level of messages) that are written to the Essbase Server log (essbase.log).

This setting does not affect the Essbase Server window.

Syntax

AGENTLOGMESSAGELEVEL ERROR | WARNING | INFO | DEBUG

Where ERROR, WARNING, INFO, and DEBUG are levels:

- ERROR—Only error messages are written to the Essbase Server log. No warning or info messages are written.
- WARNING—Warning and error messages are written to the Essbase Server log.
- INFO—Info, warning, and error messages are written to the Essbase Server log. INFO is the default setting.
- DEBUG—Debug, info, warning, and error messages are included in the Essbase Server log.

Notes

To control the messages displayed in the Agent window, use “AGENTDISPLAYMESSAGELEVEL” on page 429.

To set the same level for both the window and the log, use both settings.

Example

AGENTLOGMESSAGELEVEL WARNING

Sets the message level at WARNING. Only warning and error messages are written to the Essbase Server log.

See Also

SETMSGLEVEL

“AGENTDISPLAYMESSAGELEVEL” on page 429

AGENTPORT

Specifies the port that the Agent uses.

Syntax

AGENTPORT n

Where n is the port number for the Agent. This port number should not be in use by any other process. The default value is 1423.
Description

AGENTPORT specifies the port that the Agent uses.

You may wish to change the default for many reasons. These are two common reasons:
- The first server port, 1423, is inappropriate for your site.
- You may wish to install a second Agent on a single computer to facilitate testing. Use AGENTPORT and the related configuration settings to assign the second Agent to a different port than the first. Use AGENTPORT with SERVERPORTBEGIN, SERVERPORTEND, and PORTINC.

Caution! Do not use more than one Agent per computer in production systems.

Notes

- The setting is needed only in the server configuration file.
- You must perform other steps to enable multiple agents on one computer. See the Oracle Essbase Database Administrator’s Guide for instructions.

Example

AGENTPORT 1478
SERVERPORTBEGIN 32470
SERVERPORTEND 32600
PORTINC 5

This example produces these results:
- AGENTPORT sets the port that the Agent will use at 1478.
- SERVERPORTBEGIN sets the value that the first server process will try to use for a port at 32470.
- SERVERPORTEND sets the highest port number value this installation can use.
- PORTINC controls the increment value used for each port. In this example, if the first server process used port number 32470, then the next process would use 32475.

See Also

“SERVERPORTBEGIN” on page 545
“SERVERPORTEND” on page 546
“PORTINC” on page 533
“PORTUSAGELOGINTERVAL” on page 534

AGENTSECUREPORT

Specifies the port that the agent uses for secure communication using Secure Socket Layer (SSL).
Syntax
AGENTSECUREPORT n

Where n is the port number for the agent. This port number should not be in use by any other process. The default value is 6423.

Description
AGENTSECUREPORT specifies the port that the agent uses for secure communication using SSL.

Example
AGENTSECUREPORT 16001

See Also
“CLIENTPREFERREDMODE” on page 462
“ENABLECLEARMODE” on page 492
“ENABLESECUREMODE” on page 494
“NETSSLHANDSHAKETIMEOUT” on page 524
“SSLCIPHERSUITES” on page 555
“WALLETPATH” on page 568

For information on implementing SSL, see the Oracle Enterprise Performance Management System Security Configuration Guide.

AGENTTHREADS

Specifies the maximum number of threads that the Agent process (ESSBASE) can spawn. Agent threads are used for logging in and out of Essbase Server, starting and stopping an application, etc.

One agent thread is used in conjunction with a thread spawned by the AGTSVRCONNECTIONS configuration setting to allow the initial login through the Agent and to establish the first connection to an application and database. When a connection is requested, the Agent assigns a thread to the request and releases the thread when the connection is made.

The rest of the agent threads are used for other Agent tasks unrelated to AGTSVRCONNECTIONS. Once connected, AGTSVRCONNECTIONS threads are no longer used. Client requests are managed by threads spawned by the application process (ESSSVR).

Syntax
AGENTTHREADS n

n: Specifies the number of threads that the Agent process (ESSBASE) can spawn.

- 32-bit platform: 2 to 500, inclusive
64-bit platform: 2 and 1024, inclusive

The default value is 5.

Notes

- Oracle strongly recommends that you use the default value when running Essbase on a 32-bit platform.
- While the actual maximum value you can set is 500 (32-bit platform) or 1024 (64-bit platform), the maximum number of threads an operating system can handle might be much lower. Before specifying a value greater than the default value, check with your system administrator, as higher values can significantly consume system resources.
- If you specify a number less than 2, over the maximum, or a decimal value, Essbase overrides the value with a closely approximate value of its own.
- One thread is required for each initial connection to an application and database.

Example

AGENTTHREADS 15

See Also

- “AGTSVRCONNECTIONS” on page 436
- “SERVERTHREADS” on page 547
- “AGENTDELAY” on page 428

AGGRESSIVEBLKOPTIMIZATION

Improves batch calculation time for block storage outlines.

This setting does not apply to aggregate storage databases.

Syntax

AGGRESSIVEBLKOPTIMIZATION TRUE | FALSE

- TRUE—Essbase uses batch calculation on smaller kernel blocks. Use only if there is no formula dependency on dense Dynamic Calc members.
- FALSE—Essbase does not use batch calculation on smaller kernel blocks. The default value is FALSE.

Description

When there are dense Dynamic Calc members in the outline, a batch calculation with formulas uses blocks that contain data cells for all dense Dynamic Calc members. Setting AGGRESSIVEBLKOPTIMIZATION to TRUE makes batch calculation work on kernel blocks (smaller blocks) directly, which may improve performance. Use this setting only if there is no
formula dependency on dense Dynamic Calc members; otherwise, the calculation may produce incorrect results.

**Example**

**AGGRESSIVEBLKOPTIMIZATION TRUE**

Improves calculation performance for outlines in which there is no formula dependency on dense Dynamic Calc members.

**AGTMAXLOGFILESIZE**

Sets the maximum size of the Essbase Server log file.

**Syntax**

```plaintext
AGTMAXLOGFILESIZE n
```

Where `n` is the file size in bytes:

- Minimum file size is 1 MB (1048576 bytes). User-specified values less than the minimum are not recognized and are reset to 1 MB.
- Maximum file size is 2 GB (2147483648 bytes). User-specified values greater than the maximum are not recognized and are reset to 2 GB.
- If no value is specified, the default value of 2 GB (2147483648 bytes) is used.

**Description**

This parameter enables the user to specify the maximum size for the Essbase Server log file. For the location of `essbase.log`, see the *Oracle Essbase Database Administrator’s Guide*.

The current log file is always `essbase.log`. When maximum log file size is reached, the file is renamed `essbase.log.n` (for example, `essbase.log.0`, `essbase.log.1`, and so on), and a new `essbase.log` file is created.

**Example**

**AGTMAXLOGFILESIZE 1500000**

Sets the maximum Essbase Server log file size to 1500000 bytes.

**AGTSVRCONNECTIONS**

Specifies the maximum number of threads that Essbase can spawn to allow the first connection to an application and database, negotiated between the Agent process (ESSBASE) and application process (ESSSVR). AGTSVRCONNECTIONS threads make the Agent process (ESSBASE) communicate with the application process (ESSSVR).
Each AGTSVRCONNECTIONS thread uses one Agent process (ESSBASE) thread only while logging in and connecting to an application and database. Once connected, client requests are managed by threads spawned by the application process (ESSSVR).

Syntax

AGTSVRCONNECTIONS n

n: Specifies the maximum number of AGTSVRCONNECTIONS threads that Essbase can spawn.

- Default value: 5
- Minimum value: 1

Caution! Oracle recommends a maximum value of 10.

Notes

- Make sure you have enough open file descriptors configured in the operating system to accommodate the value you set for AGTSVRCONNECTIONS.
- Consider specifying a value greater than the default value, if you are expecting a large number of users to login and select the same application within a short period of time.

Example

AGTSVRCONNECTIONS 7

Sets the maximum number of AGTSVRCONNECTIONS threads that Essbase can spawn to 7.

See Also

- “AGENTTHREADS” on page 434
- “SERVERTHREADS” on page 547

APPMAXLOGFILESIZE

Sets the maximum size of application log files (appname.log).

Syntax

APPMAXLOGFILESIZE n

n: Specifies the file size in bytes.

- Minimum file size is 1 MB (1048576 bytes). User-specified values less than the minimum are not recognized and are reset to 1 MB.
- Maximum file size is 2 GB (2147483648 bytes). User-specified values greater than the maximum are not recognized and are reset to 2 GB.
- If no value is specified, the default value of 2 GB (2147483648 bytes) is used.
Description
This parameter enables the user to specify the maximum size for application log files.
The location of application log files depends on the value of the DEFAULTLOGLOCATION configuration setting.
The current log file is appname.log. When maximum log file size is reached, the file is renamed appname.log.n (for example, appname.log.0, appname.log.1, and so on), and a new appname.log file is created.

Example
APPMAXLOGFILESIZE 1500000
Sets the maximum application log file size to 1500000 bytes.

See Also
“DEFAULTLOGLOCATION” on page 468

APSRESOLVER
Specifies the Oracle Hyperion Provider Services server to use for name resolution, which enables connections to be made using logical Essbase cluster names.

Syntax
APSRESOLVER APSurl[;APSurl]
Where APSurl is the URL to a Provider Services server, in this format:
http[s]://host:port/contextRoot

Description
This configuration setting enables the use of logical Essbase cluster names instead of the Essbase URL (for example, http[s]://host:port/aps/Essbase?ClusterName=logicalName&Secure=yesORno) during the login process.
When logging in to an Essbase Server, if the server name specified is not a URL, the Essbase client treats the name as a logical name. The Provider Services server specified in APSRESOLVER then resolves the logical name to a physical host.

Notes
- Multiple URLs can be given, delimited by semicolons
- Use https:// for SSL
- The logical name must be of the form name:secure.
- If Provider Services cannot resolve the logical name, the name is treated as a physical name.
- On successful resolution of the logical name of a standalone Essbase Server, the mapping is cached for 5 minutes (not configurable). Subsequent attempts to log in on the same API
handle are resolved by the cache. After 5 minutes, the cache entry is discarded and Oracle
Hyperion Provider Services is used to resolve the logical name.

- This setting applies only for server-to-server communication (Essbase and C API). For
  client-to-server communication (Java API), use the `essbase.properties` file. See the
  Oracle Hyperion Provider Services Administration Guide and the Oracle Enterprise
  Performance Management System Installation and Configuration Guide.

Examples

http://qtfsvr1:1234/aps
http://qtfsvr1:1234/aps;http://qtfsvr2:1234/aps
https://qtfsvr1:1234/aps
https://qtfsvr1:1234/aps;http://qtfsvr2:1234/aps

**ASODYNAMICAGGINBSO**

Controls whether block storage databases use hybrid aggregation mode. Hybrid aggregation for
block storage databases means that wherever possible, block storage data calculation executes
with efficiency similar to that of aggregate storage databases.

This setting applies only to block storage databases.

The following are some scenarios where hybrid aggregation is likely to improve calculation
performance:

- A block storage database has stored members that are not level 0, and are calculated
  according to hierarchy (rather than by calculation scripts).

- A Dynamic Calc member has more than 100 children.

- You are using a transparent partition between an empty aggregate storage target and a block
  storage source. If the formulas on the aggregate storage target are simple and translatable to
  block storage formula language, you can achieve fast results on block storage using hybrid
  aggregation.

- You are using a transparent partition between two block storage databases, and calculation
  performance is a concern.

Syntax

```
ASODYNAMICAGGINBSO [appname [dbname]] NONE | PARTIAL | FULL
```

- `appname`—Optional. Specifies the application for which hybrid aggregation mode is used.

  If you specify a value for `appname` and do not specify a value for `dbname`, the setting applies
to all databases in the specified application.

  To enable the setting for a specific database, you must specify an application and database.

  If you do not specify an application, you cannot specify a database, and the setting applies
to all applications and databases on Essbase Server.
- `dbname`—Optional. Specifies the database, in the application specified by `appname`, for which hybrid aggregation mode is used.

  If you specify a value for `dbname` but do not specify a value for `appname`, your specification is ignored.

- NONE—Disable hybrid aggregation in block storage databases. This is the default.

- PARTIAL—Turn on hybrid aggregation only for simple outline aggregations based on the consolidation operators `+`, `−`, and `~`, but excluding the operators `∗`, `/`, and `%`. Leave formulas to be calculated in block storage mode.

- FULL—Turn on hybrid aggregation for simple aggregations and formula calculations. See Notes for formula limitations.

Outline Structure for Hybrid Aggregation

To use hybrid aggregation most effectively:

- If there are non-level-0 stored members that are batch calculated based solely on their hierarchy, Oracle recommends that you convert them to Dynamic Calc members.

- If the conversion to Dynamic Calc members affects solve order for dependent formulas, you may also need to adjust the outline's order of dimensions, and/or their dense or sparse configurations, to align the solve order with the previous batch calculation order.

Notes

During hybrid aggregation, Dynamic Calc and Store members are treated as stored members. If enabled, hybrid aggregation is in effect for member formulas using any of the supported functions. For a list of supported and unsupported functions, see “Functions Supported in Hybrid Aggregation Mode” on page 41.

The following types of calculations are not supported for hybrid mode. Essbase detects when these conditions are present, and calculates them in block storage mode.

- Attribute calculations

- Formulas with cross-dimensional operators

- Dynamic Calc members with formulas that are a target of transparent partitions

- Queries which include both two-pass and one-pass dynamic calc members from the same dimension

- XOLAP

- Text measures / text lists

If a query mixes supported and unsupported hybrid mode calculation types, Essbase defaults to block storage execution.

Formulas with dimension references can run in hybrid mode in the following cases:

- Sparse-to-Sparse: The formula is set on a sparse dimension member, and the formula only references member combinations from sparse dimensions.
Dense-to-Dense: The formula is set on a dense dimension member, and the formula only references member combinations from dense dimensions.

Sparse-to-Dense/Sparse: The formula is set on a sparse dimension member, and the formula references member combinations from both dense and sparse dimensions. The dense dimension members must be stored.

Example: On a sparse Product dimension, a Dynamic Calc member [Stereo_HY1] has the formula @MINSRANGE("Stereo","Qtr1":"Qtr2").

The formula depends on the dense Year dimension for [Qtr1] and [Qtr2], and the sparse Product dimension for [Stereo].

Example

ASODYNAMICAGGINBSSO Sample PARTIAL

See Also

“ASODYNAMICAGGINBSSOFOLDERPATH” on page 441

Alter Application set cache_size and Query Application get cache_size, for managing the size of block-storage application cache.

ASODYNAMICAGGINBSSOFOLDERPATH

Changes the location specification for hybrid aggregation mode directories.

This setting applies only to block storage databases.

When a block storage database uses hybrid aggregation mode, the following subdirectories are created under $ARBORPATH/hybrid/AppName:

- default
- log
- metadata
- temp

These subdirectories are similar to those found in aggregate storage application directories. When the application stops, the directories are removed, and when the application restarts, they are replaced.

Syntax

ASODYNAMICAGGINBSSOFOLDERPATH [appname] path_to_directory

- appname—Optional application specification.
  - If you do not specify an application, the setting applies to all applications and databases on Essbase Server.
- path_to_directory—Path to the new directory after you have moved it.
Example

ASODYNAMICAGGINBSONFOLDERPATH Sample \machine-name\directory

See Also

“ASODYNAMICAGGINBSO” on page 439

ASOLOADBUFFERWAIT

Specifies the maximum amount of time (in seconds) Essbase waits for aggregate storage cache resources to become available in order to process load buffer operations. If cache resources do not become available within the specified amount of time, Essbase aborts the load buffer operation.

This setting applies to the creation of aggregate storage data load buffers with the wait_for_resources option, and applies to allocations, custom calculations, and lock and send operations.

This setting applies only to aggregate storage databases.

Syntax

ASOLOADBUFFERWAIT [appname [dbname]] n

- appname—Optional. Specifies the application for which the wait for resources option is to be set.
  
  If you specify a value for appname and do not specify a value for dbname, the setting applies to all databases in the specified application.
  
  To enable the setting for a specific database, you must specify an application and database.
  
  If you do not specify an application, you cannot specify a database, and the setting applies to all applications and databases on Essbase Server.

- dbname—Optional. Specifies the database, in the application specified by appname, for which the wait for resources option is to be set.
  
  If you specify a value for dbname but do not specify a value for appname, your specification is ignored.

- n—Specifies the maximum number of seconds Essbase waits for cache resources to become available.
  
  The default value is 10 seconds.

For changes to the configuration file to take effect, you must restart Essbase Server.

Example

ASOLOADBUFFERWAIT ASOsamp Sample 20

Sets 20 seconds as the maximum wait time for cache resources to become available on the ASOSamp.Sample database.
ASOSAMPLESIZEPERCENT

Specifies the number of cells sampled from the input-level data. The sampled data is used to estimate the size of aggregate views. Larger sample sizes enable Essbase to make increasingly accurate estimates of average view sizes. View selection using a larger sample size enables Essbase to more closely meet the stop size.

Sample sizes are specified as a percentage of input-level data.

Syntax

ASOSAMPLESIZEPERCENT [appname [dbname]] n

- **appname**—Optional. Application for which sampled data is to be set.
  
  If you specify a value for **appname** and do not specify a value for **dbname**, the setting applies to all databases in the specified application.

  To enable the setting for a specific database, you must specify an application and database.

  If you do not specify an application, you cannot specify a database, and the setting applies to all applications and databases on Essbase Server.

- **dbname**—Optional. Specifies the database, in the application specified by **appname**, for which sampled data is to be set.
  
  If you specify a value for **dbname** but do not specify a value for **appname**, your specification is ignored.

- **n**—A value ranging from 0.0 to 100.0, representing a percentage of input-level cells that are to be used for the aggregate storage cell sample. To specify 0.5% for the sample size, enter 0.5, not 0.005. You do not need to divide by 100.
  
  To calculate the number of sample cells, multiply the number of input-level cells by the percentage specified in **n**. The default, and minimum, sample size is 1 million (1,000,000) cells.

  **Note:** For databases that have 1 million or more cells, if the percentage specified results in a sample size of fewer than 1 million cells, the setting is ignored and Essbase uses 1 million cells. For databases that have fewer than 1 million cells, the sample size is the same size as the database.

Performance Impact

Estimates using larger sample sizes take longer to complete, which may have a significant performance impact on view selection. The recommendation for a database with more than 1 billion input-level cells is to start with a small setting such as 0.1 (meaning 0.1%). Slowly increase this setting until the preferred trade-off between view selection performance and accuracy is reached. The optimal setting for a database with more than 1 billion cells will probably be less
than 3%. See “Performance Improvement When Building Aggregate Views on Aggregate Storage Databases” in the Oracle Essbase Database Administrator’s Guide.

To gauge the accuracy of view size estimates for aggregate views that have been built, use the following MaxL command:

```
query database appname.dbname list existing_views
```

Compare the values in the columns named size_ratio_estimate and size_ratio_actual. The accuracy of each view size estimate differs for each aggregate view.

**Example**

ASOSAMPLESIZEPERCENT ASOsamp.Sample 1

---

**AUTHENTICATIONMODULE**

Enables Essbase to use the Oracle Enterprise Performance Management System security platform for external authentication.

When you run Oracle Hyperion Enterprise Performance Management System Configurator, Essbase is automatically registered with Oracle Hyperion Shared Services and this setting is automatically added to `essbase.cfg`.

**Syntax**

```
AUTHENTICATIONMODULE CSS
```

**Notes**

- You must restart Essbase Server to initialize the changes.
- Shared Services must be running before you restart Essbase Server, so that Essbase can find the URL to Shared Services.

---

**AUTOMERGE**

Specifies whether incremental data slices are automatically merged during a data load to an aggregate storage database.

This setting applies only to aggregate storage databases.

**Syntax**

```
AUTOMERGE ALWAYS | NEVER | SELECTIVE
```

- **ALWAYS**—Specifies to automatically merge incremental data slices during a data load to an aggregate storage database. By default, merges are executed once for every four consecutive incremental data slices. If, however, the AUTOMERGEMAXSLICENUMBER configuration setting is used, the auto-merge process is activated when the AUTOMERGEMAXSLICENUMBER value is exceeded.
  - The size of the incremental data slices is not a factor in selecting which ones are merged.
The default value is ALWAYS.

- NEVER—Specifies to never automatically merge incremental data slices during a data load to an aggregate storage database.

To manually merge incremental data slices, use the `alter database MaxL statement with the merge` grammar. Also, see the Oracle Essbase Database Administrator’s Guide.

- SELECTIVE—Specifies to activate the incremental data slice auto-merge process when the number of incremental data slices specified in the AUTOMERGEMAXSLICENUMBER configuration setting is exceeded. If the number of incremental data slices in the data load does not exceed the value of AUTOMERGEMAXSLICENUMBER, the auto-merge process is not activated.

Example

```
AUTOMERGE SELECTIVE
```

Specifies that the value of the AUTOMERGEMAXSLICENUMBER configuration setting determines whether the process of automatically merging incremental data slices is activated.

See Also

“AUTOMERGEMAXSLICENUMBER” on page 445

### AUTOMERGEMAXSLICENUMBER

Specifies the maximum number of incremental data slices that can exist in a data load without activating the process of automatically merging incremental data slices. When the value of AUTOMERGEMAXSLICENUMBER is exceeded, the auto-merge process is activated.

**Note:** To use the AUTOMERGEMAXSLICENUMBER configuration setting, the AUTOMERGE configuration setting must be set to SELECTIVE or ALWAYS.

This setting applies only to aggregate storage databases.

**Syntax**

```
AUTOMERGEMAXSLICENUMBER  n
```

- **n**—Specifies the maximum number of incremental data slices that can exist in a data load without activating the process of automatically merging incremental data slices.

- When the number of incremental data slices is equal to (=) or less than (<) n, the incremental data slices are not merged.

- When the number of incremental data slices is greater than (>) n, the auto-merge process is activated.

The default value is 4.
During the auto-merge process, Essbase determines the maximum size, as a percentage, that any one incremental data slice can contribute to the maximum number of incremental input cells. Essbase counts the number of cells in all committed incremental data slices. Assume that \( r \) represents the maximum percentage. If the size of an incremental data slice, as a percentage, is:

- Equal to or less than \( r \), the incremental data slice is added to the list of incremental data slices to be automatically merged
- Greater than \( r \), the incremental data slice is not added to the list of incremental data slices to be automatically merged

**Example**

**AUTOMERGEMAXSLICENUMBER 5**

Activates the incremental data slice auto-merge process when the number of incremental data slices exceeds 5.

**See Also**

“AUTOMERGE” on page 444

**CALCCACHE**

Specifies whether Essbase uses a calculator cache when calculating the database. This setting does not apply to aggregate storage databases.

**Syntax**

`CALCCACHE [appname [dbname]] TRUE | FALSE`

- **appname**—Optional. Specifies the application for which the setting applies.
  - If you specify a value for `appname` and do not specify a value for `dbname`, the setting applies to all databases in the specified application.
  - To enable the setting for a specific database, you must specify an application and database.
  - If you do not specify an application, you cannot specify a database, and the setting applies to all applications and databases on Essbase Server.

- **dbname**—Optional. Specifies the database, in the application specified by `appname`, for which the setting applies.
  - If you specify a value for `dbname` but do not specify a value for `appname`, your specification is ignored.

- **TRUE**—Essbase uses a calculator cache when calculating the database. This is the default.
- **FALSE**—Essbase does not use a calculator cache when calculating the database.
Description

Essbase uses the calculator cache to create and track data blocks during calculation. Using the calculator cache significantly improves calculation performance. The size of the performance improvement depends on the database configuration.

If required during a calculation, you can override this default setting using the `SET CACHE` command in a calculation script.

You can specify the size of the calculator cache using the SETCACHE command in a calculation script and the CALCCACHE {HIGH | DEFAULT | LOW} settings in the `essbase.cfg` file.

When the CALCCACHE setting is set to TRUE, Essbase uses the calculator cache, providing that:

- The database has at least two sparse dimensions.
- You calculate at least one full sparse dimension (unless you specify the CALCCACHE ALL option in a calculation script).

**Note:** For detailed information on setting the size of the calculator cache, see the *Oracle Essbase Database Administrator's Guide*.

Example

```
CALCCACHE Sample Basic FALSE
```

**Note:** In `essbase.cfg`, the parameter is not followed by a semicolon; in a calculation script, the parameter must be followed by a semicolon.

See Also

- “CALCCACHEDEFAULT” on page 447
- “CALCCACHEHIGH” on page 449
- “CALCCACHELOW” on page 450

`SET CACHE` (calculation script)

**CALCCACHEDEFAULT**

Sets a default value for the calculation script `SET CACHE` command.

This setting does not apply to aggregate storage databases.

Syntax

```
CALCCACHEDEFAULT [appname [dbname]] n
```

- **appname**—Optional. Specifies the application for which the setting applies.
If you specify a value for `appname` and do not specify a value for `dbname`, the setting applies to all databases in the specified application.

To enable the setting for a specific database, you must specify an application and database.

If you do not specify an application, you cannot specify a database, and the setting applies to all applications and databases on Essbase Server.

- `dbname`—Optional. Specifies the database, in the application specified by `appname`, for which the setting applies.
  
  If you specify a value for `dbname` but do not specify a value for `appname`, your specification is ignored.

- `n`—The default calculator cache size, in bytes. If you do not set a default value, it is 200,000 bytes.

**Description**

Essbase uses the calculator cache to create and track data blocks during calculation. Using the calculator cache significantly improves calculation performance. The size of the performance improvement depends on the database configuration.

For detailed information on setting the size of the calculator cache, see the *Oracle Essbase Database Administrator's Guide*.

You can specify whether Essbase uses a calculator cache by default using the `CALCCACHE` setting in the `essbase.cfg` file. If required during a calculation, override this default setting using the `SET CACHE` command in a calculation script.

**Example**

Assume the `essbase.cfg` file contains these settings:

```plaintext
CALCCACHEHIGH 1000000
CALCCACHEDEFAULT 300000
CALCCACHELOW 200000
```

**Note:** In `essbase.cfg`, a parameter is not followed by a semicolon; in a calculation script, a parameter must be followed by a semicolon.

You could then use the following `SET CACHE` commands in a calculation script:

```plaintext
SET CACHE HIGH;

Sets a calculator cache of 1,000,000 bytes for the duration of the calculation script.

SET CACHE DEFAULT;

Sets a calculator cache of 300,000 bytes for the duration of the calculation script.

SET CACHE LOW;

Sets a calculator cache of 200,000 bytes for the duration of the calculation script.
```
CALCCACHEHIGH

Sets the high value for the calculation script SET CACHE command.

This setting does not apply to aggregate storage databases.

Syntax
CALCCACHEHIGH [appname [dbname]] n

- **appname**—Optional. Specifies the application for which the setting applies.
  
  If you specify a value for appname and do not specify a value for dbname, the setting applies to all databases in the specified application.
  
  To enable the setting for a specific database, you must specify an application and database.
  
  If you do not specify an application, you cannot specify a database, and the setting applies to all applications and databases on Essbase Server.

- **dbname**—Optional. Specifies the database, in the application specified by appname, for which the setting applies.
  
  If you specify a value for dbname but do not specify a value for appname, your specification is ignored.

- **n**—The maximum calculator cache size, in bytes (not to exceed 200,000,000 bytes).

Description

Essbase uses the calculator cache to create and track data blocks during calculation. Using the calculator cache significantly improves calculation performance. The size of the performance improvement depends on the database configuration.

For detailed information on setting the size of the calculator cache, see the Oracle Essbase Database Administrator’s Guide.

You can specify whether Essbase uses a calculator cache by default using the CALCCACHE TRUE | FALSE command in the essbase.cfg file. If required during a calculation, override this default setting using the SET CACHE command in a calculation script.

Example

Assume the essbase.cfg file contains these settings:
CALCCACHEHIGH  1000000
CALCCACHEDEFAULT 300000
CALCCACHELOW  200000

Note:  In essbase.cfg, a parameter is not followed by a semicolon; in a calculation script, a parameter must be followed by a semicolon.

You could use the following **SET CACHE** calculator commands in a calculation script:

**SET CACHE HIGH;**

Sets a calculator cache of 1,000,000 bytes for the duration of the calculation script.

**SET CACHE DEFAULT;**

Sets a calculator cache of 300,000 bytes for the duration of the calculation script.

**SET CACHE LOW;**

Sets a calculator cache of 200,000 bytes for the duration of the calculation script.

See Also

“CALCCACHE” on page 446
“CALCCACHEDEFAULT” on page 447
“CALCCACHELOW” on page 450

**SET CACHE** (calculation script command)

### CALCCACHELOW

Sets the low value for the calculation script **SET CACHE** command.

This setting does not apply to aggregate storage databases.

**Syntax**

```
CALCCACHELOW [appname [dbname]] n
```

- **appname**—Optional. Specifies the application for which the setting applies.
  
  If you specify a value for `appname` and do not specify a value for `dbname`, the setting applies to all databases in the specified application.

  To enable the setting for a specific database, you must specify an application and database.

  If you do not specify an application, you cannot specify a database, and the setting applies to all applications and databases on Essbase Server.

- **dbname**—Optional. Specifies the database, in the application specified by `appname`, for which the setting applies.

  If you specify a value for `dbname` but do not specify a value for `appname`, your specification is ignored.
- $n$—The minimum calculator cache size, in bytes.

**Description**

Essbase uses the calculator cache to create and track data blocks during calculation. Using the calculator cache significantly improves calculation performance. The size of the performance improvement depends on the database configuration.

For detailed information on setting the size of the calculator cache, see the *Oracle Essbase Database Administrator's Guide*.

You can specify whether Essbase uses a calculator cache by default using the CALCCACHE setting in the essbase.cfg file. If required during a calculation, override this default setting using the SET CACHE command in a calculation script.

**Example**

Assume the essbase.cfg file contains these settings:

```
CALCCACHEHIGH 1000000
CALCCACHEDEFAULT 300000
CALCCACHELOW 200000
```

**Note:** In essbase.cfg, a parameter is not followed by a semicolon; in a calculation script, a parameter must be followed by a semicolon.

You could then use the following SET CACHE commands in a calculation script:

```
SET CACHE HIGH;
    Sets a calculator cache of 1,000,000 bytes for the duration of the calculation script.

SET CACHE DEFAULT;
    Sets a calculator cache of 300,000 bytes for the duration of the calculation script.

SET CACHE LOW;
    Sets a calculator cache of 200,000 bytes for the duration of the calculation script.
```

**See Also**

“CALCCACHE” on page 446
“CALCCACHEHIGH” on page 449
“CALCCACHEDEFAULT” on page 447
SET CACHE (calculation script command)

---

**CALCLIMITFORMULARECURSION**

When set to true, prevents the server from going beyond 31 formula execution levels.
Syntax
CALCLIMITFORMULARECURSION TRUE | FALSE

- TRUE—Imposes a limit of 31 on the number of formula execution levels. This is the default.
- FALSE—Imposes no limit on the number of formula execution levels.

Description
CALCLIMITFORMULARECURSION limits the number of execution levels of Essbase formulas. If a calculation involves formulas referencing one or more members from sparse dimensions and there are formulas along dense dimension members, the formula execution may be recursive (have multiple execution levels). Formulas with excessive execution levels may crash the server. Setting CALCLIMITFORMULARECURSION to TRUE prevents excessive execution levels from crashing the Essbase Server.

If a formula reaches 31 execution levels and CALCLIMITFORMULARECURSION is set to TRUE (or default), Essbase stops processing that formula and writes error messages in the application log. If a formula reaches 31 execution levels and CALCLIMITFORMULARECURSION is set to FALSE, Essbase continues processing that formula and writes an information message in the application log.

Note: This setting does not affect formulas in MDX queries (for example, calculated members).

Example
If you added a member named "Payroll Share In Similar Markets" to Sample Basic and used the following formula to calculate it, you would get a recursion error.

IF (@ISUDA(Market, "Major Market"))
    Payroll / @SUMRANGE(Payroll, @UDA(Market, "Major Market");
ELSEIF (@ISUDA(Market, "Small Market"))
    Payroll / @SUMRANGE(Payroll, @UDA(Market, "Small Market");
ENDIF;

CALCLOCKBLOCK
Sets the HIGH, DEFAULT, and LOW values for the calculation script SET LOCKBLOCK command, which specifies the maximum number of blocks that Essbase can fix (get addressability to) when calculating one block.

This setting does not apply to aggregate storage databases.

Syntax
CALCLOCKBLOCKHIGH | CALCLOCKBLOCKDEFAULT | CALCLOCKBLOCKLOW n

Where HIGH, DEFAULT, and LOW are levels:

- HIGH—Maximum number of blocks that a user can choose to fix concurrently when one data block is calculated. Maximum: half the number of blocks that fit into the data cache.
- **DEFAULT**—Default number of blocks that can be fixed concurrently.
- **LOW**—Minimum number of blocks that a user can choose to fix concurrently.
- **n**—Integer value for each level, representing the total number of blocks that can be locked concurrently.

**Description**

CALCLOCKBLOCK specifies the number of blocks that can be fixed at each level of the SET LOCKBLOCK HIGH | DEFAULT | LOW calculation script command. When a block is calculated, Essbase fixes (gets addressability to) the block along with the blocks containing its children. Essbase calculates the block and then releases it along with the blocks containing its children. By default, Essbase allows up to 100 blocks to be fixed concurrently when calculating a block. This is sufficient for most database calculations. However, you may want to set a number higher than 100 if you are consolidating very large numbers of children in a formula calculation. This ensures that Essbase can fix all the required blocks when calculating a data block and that performance will not be impaired.

**Notes**

- For more information on data blocks, see the *Oracle Essbase Database Administrator's Guide*.
- The maximum you can specify for CALCLOCKBLOCK is half the number of blocks that fit into the data cache. If you specify a number great than this, Essbase defaults to a number equal to half the number of blocks that fit into the data cache.
- You can calculate the number of blocks that fit into the data cache by dividing the data cache size (in bytes) by the block size (in bytes). Values for the data cache size and the block size are available in Administration Services.

**Example**

If the `essbase.cfg` file contains the following settings:

```
CALCLOCKBLOCKHIGH 500
CALCLOCKBLOCKDEFAULT 200
CALCLOCKBLOCKLOW 50
```

Then you can use the following SET LOCKBLOCK setting commands in a calculation script:

```
SET LOCKBLOCK HIGH;

Essbase can fix up to 500 data blocks when calculating one block.

SET LOCKBLOCK DEFAULT;

Essbase can fix up to 200 data blocks when calculating one block.

SET LOCKBLOCK LOW;

Essbase can fix up to 50 data blocks when calculating one block.
```
Note: In essbase.cfg, a parameter is not followed by a semicolon; in a calculation script, a parameter must be followed by a semicolon.

See Also

SET LOCKBLOCK (calculation script command)

CALCMODE

Enables global setting of formula execution mode.
This setting does not apply to aggregate storage databases.

Syntax

CALCMODE [appname \[dbname\]] [BLOCK | BOTTOMUP]

- **appname**—Optional. If you specify an application, all the databases in that application are affected by the CALCMODE setting. If you leave out the application and database name parameters, the CALCMODE setting applies to the entire server.
- **dbname**—Optional. If you specify an application and database, the database you specify is affected by the CALCMODE setting. If you do not specify an application with the database, the CALCMODE setting will fail.
- **BLOCK**—Turns on block calculation mode.
- **BOTTOMUP**—Turns on bottom-up calculation mode.

Description

CALCMODE configuration setting allows you to set the calculation mode at the server, application, or database level instead of indicating it in a calculation script using @CALCMODE.

Example

CALCMODE BLOCK

Turns on block calculation mode for all databases and applications in the server.

See Also

@CALCMODE function

CALCNOTICE

Sets the HIGH, DEFAULT, and LOW values for the SET NOTICE calculation command, which displays completion notices about the progress of the calculation.
This setting does not apply to aggregate storage databases.
Syntax

CALCNOTICEHIGH | CALCNOTICEDEFAULT | CALCNOTICELOW n

where HIGH, DEFAULT, and LOW are levels.

- HIGH—Maximum number of completion notices that a user can choose to display.
- DEFAULT—Default number of completion notices.
- LOW—Minimum number of completion notices that a user can choose to display.
- n—Integer value for each level. It represents the number of notices to be displayed at set intervals during the calculation.

Description

CALCNOTICE defines the values for each of the three levels of the SET NOTICE calculation command.

SET NOTICE HIGH | DEFAULT | LOW provides completion notices during a calculation. The frequency and number of completion notices depends on the level specified.

The interval between notices is approximate. Essbase measures the interval by taking the number of data blocks already calculated as a percentage of the total number of possible data blocks in your database.

For partial calculations and calculations with multiple passes through your database, the interval between completion notices is approximate.

Notes

- The intervals between completion notices are approximate.
- Completion notices do not significantly reduce the calculation performance, except when used with a very small database.

Example

If you use the following settings in the essbase.cfg file:

```plaintext
CALCNOTICEHIGH 50
CALCNOTICEDEFAULT 20
CALCNOTICELOW 5
```

Then SET NOTICE commands in a script produce the following results:

```plaintext
SET NOTICE HIGH;

Displays 50 completion notices at 2% intervals.

SET NOTICE DEFAULT;

Displays 20 completion notices at 5% intervals.

SET NOTICE LOW;

Displays 5 completion notices at 20% intervals.
```
In `essbase.cfg`, a parameter is not followed by a semicolon; in a script, a parameter must be followed by a semicolon.

See Also

`SET NOTICE` (calculation command)

**CALCOPTFRMLBOTTOMUP**

Specifies whether Essbase optimizes the calculation of complex formulas on sparse dimensions in large database outlines. If enabled, Essbase performs a bottom-up calculation on formulas that would otherwise require a top-down calculation.

This setting does not apply to aggregate storage databases.

**Syntax**

```
CALCOPTFRMLBOTTOMUP TRUE | FALSE
```

- **TRUE**—Optimizes the calculation of formulas on sparse dimensions in large database outlines by forcing a bottom-up calculation.
- **FALSE**—Does not force a bottom-up calculation for formulas on sparse dimensions in large database outlines. This is the default.

**Description**

This setting tells Essbase whether to optimize the calculation of formulas on sparse dimensions in large database outlines, so that you can efficiently use `CALC ALL` and `CALC DIM` commands to calculate the database.

You can override the `CALCOPTFRMLBOTTOMUP essbase.cfg` setting by using the `SET FRMLBOTTOMUP` command in a calculation script.

**Notes**

- For information on complex formulas and top-down calculations, see the *Oracle Essbase Database Administrator’s Guide*.
- Forcing a bottom-up calculation on a formula may produce results that are inconsistent with a top-down calculation if:
  - The formula contains complex functions (for example, range functions)
  - The formula's dependencies are not straightforward
- Before using the `CALCOPTFRMLBOTTOMUP` setting in a production environment, be sure to check the validity of calculation results produced when the setting is enabled (set to `TRUE`).
- The `SET CREATENONMISSINGBLK` calculation command can force top-down calculations, regardless of the value of the `CALCOPTFRMLBOTTOMUP` setting.
Example
CALCOPTFRMLBOTTOMUP TRUE

See Also
SET FRMLBOTTOMUP (calculation command)
SET CREATENONMISSINGBLK (calculation command)

CALCREUSEDYNCALCBLOCKS
Controls whether dynamically calculated values are re-used during retrievals.
This setting does not apply to aggregate storage databases.

Syntax
CALCREUSEDYNCALCBLOCKS TRUE | FALSE

• TRUE—Dynamically calculated values are re-used. This is the default.
• FALSE—Dynamically calculated values are not re-used.

Description
By default, Essbase re-uses dynamically calculated values during retrievals. This can speed up
retrievals that involve a large number of dynamically calculated blocks that are each required to
compute several other blocks, such as when there is a large hierarchy of sparse Dynamic Calc
members. However, a large dynamic calculator cache size or a large value for the
CALCLOCKBLOCK may adversely affect the retrieval performance when this method is used.
In such cases, CALCREUSEDYNCALCBLOCKS should be set to FALSE.

Example
CALCREUSEDYNCALCBLOCKS TRUE

CALCPARALLEL
Enables parallel calculation, defining the number of processing threads.

Syntax
CALCPARALLEL [appname [dbname]] n

• appname—Optional. Specifies that parallel calculation applies to all databases on the named
  application. If you specify a value for appname and do not specify a value for dbname, the
  setting applies to all databases in the specified application. If you do not specify an
  application, you cannot specify a database and the setting applies to all applications and
databases on the Essbase Server.
dbname—Optional. Specifies that parallel calculation applies only to the database named. If you specify a value for dbname but do not include appname, the parameter is ignored and parallel calculation is enabled for all applications and databases on the Essbase Server.

n—A required parameter that specifies the number of threads to be made available for parallel calculation.

- For block storage on 32-bit platforms, an integer from 1-64. For block storage on 64-bit platforms, an integer between 1-128. The default value, 1, specifies serial calculation: no parallel calculation takes place.
- For aggregate storage, an integer from 1-128, with 2 the default value.

A value less than 1 is interpreted as the default size. A value greater than the maximum size is interpreted as the maximum size.

You must restart Essbase Server to initialize any change to the configuration file.

Description

This setting enables parallel calculation. For block storage databases, Essbase analyzes each pass of a calculation to determine whether parallel calculation would optimize the calculation. If it would not, Essbase uses serial calculation even if CALCPARALLEL is set to a number greater than 1.

Notes

- For detailed information about how Essbase performs parallel calculation with block storage databases, see the Oracle Essbase Database Administrator’s Guide.

- With block storage databases, Essbase dynamically calculates the number of cutting dimensions for parallel calculation by starting with a value of 1, determining how many potential tasks are generated, and increasing the number of cutting dimensions until an optimal limit is reached. If CALCTASKDIMS has been used to increase the number of tasks and to decrease the size of each task identified for parallel calculation, the number of sparse dimensions set with CALCTASKDIMS is used. See the Oracle Essbase Database Administrator’s Guide for more information about what kind of outlines or calculation scripts generate many empty tasks.

- If you increase the number of threads for aggregate storage databases, since the aggregate storage cache is split up amongst the threads, consider increasing the size of aggregate storage memory cache. For details, see the Oracle Essbase Database Administrator’s Guide for information about aggregate storage cache.

- When running a parallel calculation that includes the @XREF calculation function, the application associated with the database returns a timeout error if the number of threads specified for the CALCPARALLEL configuration setting is higher than the number of threads specified by the SERVERTHREADS configuration setting. For example, the default value of SERVERTHREADS is 20. If you set CALCPARALLEL to 25, an application timeout error is generated.

- To learn about another type of parallel calculation, see FIXPARALLEL...ENDFIXPARALLEL.
Example
CALCPARALLEL 3

Enables up to three threads to perform calculation tasks at the same time.

See Also
“CALCTASKDIMS” on page 459
SET CALCPARALLEL calculation command
SET CALCTASKDIMS calculation command
“SERVERTHREADS” on page 547
FIXPARALLEL . . . ENDFIXPARALLEL
“WORKERTHREADS” on page 569
@XREF calculation function
@XWRITE calculation function

CALCTASKDIMS

Specifies the number of sparse dimensions included in the identification of tasks for parallel calculation.

This setting does not apply to aggregate storage databases.

Syntax
CALCTASKDIMS [appname [dbname]] n

- **appname**—Optional. CALCTASKDIMS applies to all databases on the named application. If you specify a value for appname and do not specify a value for dbname, the setting applies to all databases in the specified application. If you do not specify an application, you cannot specify a database, and the setting applies to all applications and databases on the Essbase Server.

- **dbname**—Optional. Database name to which CALCTASKDIMS applies. If you specify a value for dbname but do not include appname, the parameter is ignored and the setting applies to all applications and databases on the Essbase Server.

- **n**—Required. An integer specifying the number of sparse dimensions to be included when Essbase identifies tasks that can be performed at the same time.

A value of 1 indicates that only the last sparse dimension in the outline is used to identify tasks. A value of 2, for example, indicates that the last and second-to-last sparse dimensions in the outline are used. Because each unique combination of members from selected sparse dimensions is a potential task, the potential number of parallel tasks is the product of the number of members of the selected dimensions. The maximum value is the number of sparse dimensions in the outline.
Any value less than 1 is interpreted as 1, any value greater than the number of sparse
dimensions in the outline is converted to the largest valid value.

**Note:** Values less than 0 treated differently than `SET CALCTASKDIMS` configuration setting.

You must restart Essbase Server to initialize any change to the configuration file.

**Description**

CALCTASKDIMS specifies how many of the sparse dimensions in an outline are used to identify
potential tasks that can be run in parallel.

**Notes**

- A number of features are affected by parallel calculation. See the *Oracle Essbase Database
  Administrator’s Guide* for a list of these effects and for detailed information about how
  Essbase performs parallel calculation.
- If you do not notice an improvement in performance after increasing the value of
  CALCTASKDIMS, see the note in the SET CALCTASKDIMS topic.
- Use this configuration setting only if your outline generates many empty tasks, thus reducing
  opportunities for parallel calculation. See the *Oracle Essbase Database Administrator’s
  Guide* for more information about what kind of outlines or calculation scripts generate many
  empty tasks.

**Example**

CALCTASKDIMS Sample Basic 2

Specifies that for application Sample and database Basic, the last two sparse dimensions in
an outline will be used to identify potential tasks to perform at the same time during a
calculation pass.

**See Also**

“CALCPARALLEL” on page 457

`SET CALCPARALLEL` calculation command

`SET CALCTASKDIMS` calculation command

### CCTRACK

Controls whether exchange rates are tracked as Essbase calculates currency conversions.
This setting does not apply to aggregate storage databases.

**Syntax**

```
CCTRACK TRUE | FALSE
```

- **TRUE**—Exchange rates are tracked while conversions are calculated. This is the default.
FALSE—Turns off the tracking system.

Description

CCTRACK controls whether exchange rates are tracked while Essbase calculates currency conversions. Tracking exchange rates has the following advantages:

- Allows conversion to occur at report time through the grid client or Report Writer
- Allows you to convert a converted currency back to its original, local rate using the CCONV command
- Prevents data inaccuracies due to accidental reconversion of data during a calculation

After loading data, you can clear the tracked exchange rates for the new data using the CLEARCCTRACK command. During a calculation, you can enable or disable CCTRACK using the SET CCTRACKCALC calculation command.

Notes

- When CCTRACK is turned on, the following restrictions apply:
  - If you are using currency partitions, you cannot use a CCONV command with a FIX statement to convert a subset of a currency partition (a calculation script attempting such a FIX will not validate).
  - If you are not using currency partitions, you must use CCONV with a FIX statement.
- Setting CCTRACK to FALSE turns off the tracking system with the following results:
  - The CCONV assumes that the data is unconverted (in local currency). If you accidentally run the CCONV command multiple times on the same data, the resulting data will be inaccurate.
  - Similarly, the currency report options assume that the data is unconverted (in local currency). If the data has already been converted in the database, it is reconverted at report time, resulting in inaccurate data.
  - The restrictions on using the FIX...ENDFIX and DATACOPY commands in currency conversions do not apply. For example, if you are using currency partitions, you can now use the FIX command with the CCONV command to calculate a subset of a currency partition. If you are not using currency partitions, you can use CCONV without a FIX statement.

Example

CCTRACK TRUE

See Also

CCONV (calculation command)
SET UPTOLOCAL
SET CCTRACKCALC (calculation command)
CLEARCCTRACK (calculation command)
CLEARLOGFILE

Determines whether the Essbase Server and application logs are overwritten.

Syntax

CLEARLOGFILE TRUE | FALSE

- TRUE—Overwrites the Essbase Server and application logs.
- FALSE—Appends to the existing logs. The default setting is FALSE.

Description

CLEARLOGFILE determines whether the Essbase Server log (essbase.log) is overwritten whenever Essbase Server is restarted and whether the application log (application_name.log) is overwritten whenever the application is restarted.

Notes

This setting affects both the application and Essbase Server logs. Essbase logs the error to the appropriate files automatically.

Examples

Example 1

If Essbase logs an application message and this setting is in effect:

CLEARLOGFILE TRUE

Essbase logs the message in the application_name.log file in the application directory: ARBORPATH\app\application_name, where application_name is the name of the current application. The contents of this log are replaced with new entries each time the application is started.

Example 2

If Essbase logs a server message and this setting is in effect:

CLEARLOGFILE FALSE

Essbase logs the message in the essbase.log file in the directory pointed to by ARBORPATH, appending the existing file.

See Also

“SSLOGUNKNOWN” on page 556

CLIENTPREFERREDMODE

Enables SSL connectivity to Essbase.
Syntax

CLIENTPREFERREDMODE SECURE | CLEAR

- SECURE—Essbase communicates with clients using only SSL.
- CLEAR—Client sessions are based on the transport specified in the login API. If the secure transport is specified, then the session uses SSL; otherwise, the session uses clear. The default value is CLEAR.

Description

This setting determines whether Essbase allows only SSL connectivity. It applies only to clients.

Example

CLIENTPREFERREDMODE SECURE

See Also

“AGENTSECUREPORT” on page 433
“ENABLECLEARMODE” on page 492
“ENABLESECUREMODE” on page 494
“NETSSLHANDSHAKETIMEOUT” on page 524
“SSLCIPHERSUITES” on page 555
“WALLETPATH” on page 568

For information on implementing SSL, see the Oracle Enterprise Performance Management System Security Configuration Guide.

**CONNECTIONTIMEOUT**

Specifies the maximum time that Essbase should wait for a SQL connection before timing out.

Syntax

CONNECTIONTIMEOUT n

Where $n$ is an integer value specifying the wait time, in seconds, to wait for a connection to open. The default value is 15 seconds.

Description

This setting determines how long Essbase should wait for a SQL connection before timing out. It applies only to XOLAP-enabled cubes.

Example

CONNECTIONTIMEOUT 10
CRASHDUMP

Sets whether Essbase saves a core dump to a file when an abnormal termination of an agent or server process occurs.

Syntax

```
CRASHDUMP TRUE | FALSE
```

- **TRUE**—Creates a directory containing a core file for each abnormal termination.
- **FALSE**—No core file is created. This is the default value.

Description

CRASHDUMP helps diagnose abnormal program terminations. For each agent crash, when CRASHDUMP is set to TRUE, Essbase creates a file named `core`. It places the core file in an `ESSBASE.abc` directory under `ESSBASEPATH`, where `abc` displays the date and time. For example:

```
ESSBASE.Mon_Jun_3_18_16_17_2003/core
```

In each instance of a server crash, when CRASHDUMP is set to TRUE, Essbase creates the core file in a directory under `ARBORPATH/app/appname`, where `appname` is the name of the application. The name of the new directory is `ESSSVR.abc`, where `abc` displays the date and time. For example:

```
/EssbaseServer/app/Sample/ESSSVR.Mon_Jun_3_18_16_17_2003/core
```

If the an agent or server process is automatically shut down, the core file contains a core dump of that moment. If an agent or server process is shut down manually, the core file may be empty.

Look for the core file any time you experience abnormal Essbase program terminations. If the file is not empty, provide it to Support and then remove it and its directory from the computer. If the core file is empty, remove it and its directory from the computer.

In normal operations without abnormal terminations, core files are not created.

Example

```
CRASHDUMP TRUE
```

See Also

“CRASHDUMPLOCATION” on page 465
CRASHDUMPLOCATION

Set the location where Essbase saves a core dump file when an abnormal termination occurs. This setting must be used in conjunction with CRASHDUMP TRUE.

Syntax

CRASHDUMPLOCATION path

Where path is the fully-qualified path to the directory where Essbase should save the core dump file.

Description

In the event of abnormal program terminations, if CRASHDUMP is set to true and a CRASHDUMPLOCATION path is specified, the core files are generated in a uniquely named core file directory under the specified path. Agent core files are saved under path, and application core files are saved under path/app/appname.

If the location specified by path does not exist or does not have write permissions, the core files are generated in the default location, and an error message is logged in the server log files. The default location is described in “CRASHDUMP” on page 464.

Example

CRASHDUMP /EssbaseServer/crash

See Also

“CRASHDUMP” on page 464

DATACACHESIZE

Defines the initial value for the data cache size for any new databases that are created after Essbase is restarted. The data cache is a buffer in memory that holds data blocks. Essbase allocates this memory during data load, calculation, and retrieval operations, as needed.

This setting does not apply to aggregate storage databases.

Syntax

DATACACHESIZE n

Where n is an integer value expressed in bytes (B), kilobytes (K), megabytes (M), or gigabytes (G):

* Minimum value: 3 megabytes (3 M)
* Maximum value: 2 gigabytes (2 G)
* Default value: 3 megabytes (3 M)

If a value is given without a B, K, M, or G qualifier, it is assumed the value is in bytes.
The qualifier can be in upper or lowercase and can be entered adjacent to the value (10M) or separated by a space (10 M).

Description

DATACACHESIZE specifies, in bytes, kilobytes, megabytes, or gigabytes, the size of the data cache for new databases. The specified value takes effect for all new databases that are created after the server is started.

Example

DATACACHESIZE 90M

Sets the data cache size of all newly created or migrated databases as 90 megabytes.

See Also

“DATAFILECACHESIZE” on page 468
“MEMSCALINGFACTOR” on page 522

DATAERRORLIMIT

Determines the number of records that can be written to an error log during a data load operation.

Syntax

DATAERRORLIMIT n

Where n is the number of records, per data load or dimension build, that can be written to the error log, dataload.err. Default: 1000. Maximum: 65,000.

Description

DATAERRORLIMIT determines the number of records that can be written to the error log during data load or dimension build operations.

After the specified number of errors have been recorded, Essbase fails the operation and issues an error message.

Notes

- Essbase logs data load errors in \EAS_HOME\client\dataload.err.
- Essbase logs dimension build errors in \EAS_HOME\client\dimbuild.err.
- Messages are still written to the application log unless you set NOMSGLOGGINGONDATAERRORLIMIT.

Example

DATAERRORLIMIT 1000
DATAEXPORTENABLEBATCHINSERT

Specifies whether to use the batch-insert method, instead of the default row-insert method, when the DATAEXPORT calculation command is used to export Essbase data for direct insertion into a relational database.

The DATAEXPORTENABLEBATCHINSERT and DEXPSQLROWSIZE configuration settings apply to block storage databases only.

DATAEXPORTENABLEBATCHINSERT TRUE | FALSE

- TRUE—Enables batch insert of exported data into a relational database
- FALSE—(Default) Inserts exported data row-by-row into a relational database

Description

When DATAEXPORTENABLEBATCHINSERT is set to TRUE, Essbase determines whether the relational database and the ODBC driver permit batch insert. If they do, Essbase uses the batch-insert method, and, thus, performance is optimized.

Essbase determines the batch size; however, you can control the number of rows (from 2 to 1000) that are inserted at one time by using the DEXPSQLROWSIZE configuration setting.

If Essbase cannot determine whether the relational database and the ODBC driver support batch insert, it uses the row-insert method, and DEXPSQLROWSIZE (if set) is ignored.

When DATAEXPORTENABLEBATCHINSERT is set to FALSE, an INSERT command is called for each row of exported data, and, thus, performance is slowed.

Notes

- If DATAEXPORTENABLEBATCHINSERT is set to TRUE and DEXPSQLROWSIZE is set to 1, batch insert is disabled (as a DEXPSQLROWSIZE setting of 1 inserts one row at a time).
- When using DATAEXPORT to export data for direct insertion into a relational database:
  - The table to which the data is to be written must exist prior to the data export
  - Table and column names cannot contain spaces

See Also

DATAEXPORT calculation command

“DEXPSQLROWSIZE” on page 471 configuration setting
**DATAFILECACHESIZE**

Sets the initial value for the data file cache size. The data file cache is a buffer in memory that holds data files. Essbase allocates this memory during data load, calculation, and retrieval operations, as needed.

This setting does not apply to aggregate storage databases.

**Syntax**

```
DATAFILECACHESIZE n
```

Where `n` is an integer value expressed in bytes (B), kilobytes (K), megabytes (M), or gigabytes (G):

- Minimum value: 8 megabytes (8 M)
- Maximum value: 2 gigabytes (2 G)
- Default value: 32 megabytes (32 M)

If a value is given without a B, K, M, or G qualifier, it is assumed the value is in bytes.

The qualifier can be in upper or lowercase and can be entered adjacent to the value (10M) or separated by a space (10 M).

**Notes**

If this setting is added to the `essbase.cfg` file while Essbase is running, the effect begins after a restart.

**Example**

```
DATAFILECACHESIZE 800M
```

Defines the data file cache size of all subsequently created databases on the server as 800 megabytes.

**See Also**

“DATACACHESIZE” on page 465
“MEMSCALINGFACTOR” on page 522

---

**DEFAULTLOGLOCATION**

Sets the location of application log files.

**Syntax**

```
DEFAULTLOGLOCATION TRUE | FALSE
```

- TRUE—(the default value). The logs are written to one of three locations, based upon the following:
If the `HYPERION_LOGHOME` environment variable is set, the log files are written to the `HYPERION_LOGHOME` directory.

- If the `HYPERION_LOGHOME` environment variable is not set, then the log files are written to `EPM_ORACLE_INSTANCE/diagnostics/logs/essbase`
- If the `EPM_ORACLE_INSTANCE` environment variable is not set, the log files are written to `HYPERION_HOME/logs/essbase`

**FALSE**—The logs are written to one of two locations, based upon the following:

- Log files for the agent (ESSBASE) are written to `$ARBORPATH/<logfilename>`
- Log files for the server (ESSSVR) are written to `$ARBORPATH/app/<appname>/<logfilename>`

**Example**

```
DEFAULTLOGLOCATION FALSE
```

**See Also**

“`APPMAXLOGFILESIZE`” on page 437

### DELAYEDRECOVERY

Determines whether Essbase delays free space recovery after an application crashes or terminates abnormally.

This setting does not apply to aggregate storage databases.

**Syntax**

```
DELAYEDRECOVERY [appname] TRUE | FALSE
```

- **appname**—Optional. The name of an application to which this setting should apply. If omitted, all applications are affected.
- **TRUE**—Essbase delays freespace recovery
- **FALSE**—Essbase does not delay freespace recovery.

**Description**

This setting controls whether Essbase delays freespace recovery.

Database recovery takes place any time you load an application that has just crashed or terminated abnormally. Essbase does not perform free space recovery automatically because it is the most expensive part of database recovery. You must either trigger freespace recovery explicitly or change the default setting so that Essbase will recover free space automatically.

**Example**

```
DELAYEDRECOVERY TRUE
```

Essbase delays freespace recovery.
See Also

Alter Database<DBS-NAME> recover freespace, which is the statement you use to explicitly recover freespace.

**DELIMITEDMSG**

Separate fields when writing log files, using the default (\~) character.

**Syntax**

DELIMITEDMSG [TRUE | FALSE]

**Description**

DELIMITEDMSG specifies whether Essbase Server and application logs are delimited in Essbase. If set to TRUE, and no value for “DELIMITER” on page 470 is supplied, the default tilde (\~) is used to delimit fields. If set to FALSE, any value specified in DELIMITER is ignored, and no special delimiter is used for logs.

**Example**

DELIMITEDMSG TRUE
DELIMITER *

Essbase produces logs that use the asterisk (*) symbol as a delimiter between fields in a log.

See Also

“DELIMITER” on page 470

**DELIMITER**

Delimits Essbase Server and application logs using one of five allowed symbols.

**Syntax**

DELIMITER [\~ | ^ | * | : | & ]

**Description**

DELIMITER specifies which of five symbols that Essbase will use to delimit fields in logs. DELIMITER is ignored unless DELIMITEDMSG TRUE is also present in the configuration file.

**Example**

DELIMITEDMSG TRUE
DELIMITER *

Essbase produces logs that use the asterisk (*) symbol as a delimiter between fields in a log.
DEXPSQLROWSIZE

When the DATAEXPORT calculation command is used to export data directly into a relational database and when the batch-insert method is used, the DEXPSQLROWSIZE configuration setting allows you to specify the number of rows to be inserted at one time.

To enable batch insert, set the DATAEXPORTENABLEBATCHINSERT configuration setting to TRUE. Essbase determines whether the relational database and the ODBC driver permit batch insert. If they do, Essbase determines the batch size unless you set DEXPSQLROWSIZE. If Essbase cannot determine whether the relational database and the ODBC driver support batch insert, it uses the row-insert method, and DEXPSQLROWSIZE (if set) is ignored.

The DEXPSQLROWSIZE and DATAEXPORTENABLEBATCHINSERT configuration settings apply to block storage databases only.

**DEXPSQLROWSIZE** [appname [dbname]] \( n \)

- **appname**—Optional. Specifies the application for which to set the number of rows to be inserted at one time.
  
  If you specify a value for appname and do not specify a value for dbname, the setting applies to all databases in the specified application.
  
  To enable the setting for a specific database, you must specify an application and database. If you do not specify an application, you cannot specify a database, and the setting applies to all applications and databases on Essbase Server.

- **dbname**—Optional. Specifies the database, in the application specified by appname, for which to set the number of rows to be inserted at one time.
  
  If you specify a value for dbname but do not specify a value for appname, your specification is ignored, and data associated with logged transactions is archived for all applications and databases on Essbase Server.

- **n**—The number of rows in the batch (from 2 to 1000).

**Notes**

- If DATAEXPORTENABLEBATCHINSERT is set to TRUE and DEXPSQLROWSIZE is set to 1, batch insert is disabled (as a DEXPSQLROWSIZE setting of 1 inserts one row at a time).

- When using DATAEXPORT to export data for direct insertion into a relational database:
  
  - The table to which the data is to be written must exist prior to the data export
  
  - Table and column names cannot contain spaces

**Example**

DEXPSQLROWSIZE Sample Basic 300
Specifies a 300-record batch size for data exported from Sample.Basic to a relational database using DATAEXPORT.

DEXPSQLROWSIZE Sample 500

Specifies a 500-record batch size for data exported from any database within the Sample application to a relational database using DATAEXPORT.

See Also
DATAEXPORT
“DATAEXPORTENABLEBATCHINSERT” on page 467

DIMBUILDERRORLIMIT

Determines the number of records that can be written to an error log during a dimension build operation.

Syntax

DIMBUILDERRORLIMIT n

Where n is the number of records, per dimension build, that can be written to the error log, dimbuild.err. Default: 20,000. Maximum: 65,000.

Description

DIMBUILDERRORLIMIT determines the number of records that can be written to the error log during dimension build operations.

After the specified number of errors have been recorded, Essbase no longer records any more errors, but continues the dimension build process.

Notes

- Essbase logs dimension build errors in EAS_HOME\client\dimbuild.err.
- Essbase logs data load errors in EAS_HOME\client\dataload.err.

Example

DIMBUILDERRORLIMIT 40000

See Also
“DATAERRORLIMIT” on page 466

DIMBUILDSTATSINTERVAL

When performing a cube deployment operation in Oracle Essbase Studio, DIMBUILDSTATSINTERVAL specifies the number of records to process before reporting on dimension build progress. Progress information is displayed in the Essbase application window.
Load status information is written to the Essbase log file.
The default value is 20000, meaning that dimension build progress information is updated in
the build status window after each 20000 records is processed.

Syntax

DIMBUILDSTATSINTERVAL [n]

n—Required. An integer specifying the number of records to process before updating the
dimension build progress information in the Essbase application window.

Example

DIMBUILDSTATSINTERVAL 20000

If there are 50000 records to process in the data source, and DIMBUILDSTATSINTERVAL
is defined at 20000, Essbase shows the dimension build progress in the Essbase application
window after processing 20000 records, and then 40000 records.

DIRECTIO

Sets the file access mode to direct I/O instead of the default buffered I/O. Applies only to new
databases or to databases migrated from Release 6.2 or earlier.
This setting does not apply to aggregate storage databases.

Syntax

DIRECTIO TRUE | FALSE

- TRUE—Direct I/O is used, when possible, for newly created or migrated databases.
- FALSE—This is the default. Buffered I/O is used for newly created or migrated databases.

Description

For each database, a security file setting tells Essbase whether to use buffered or direct I/O when
it accesses the database. By default, when Essbase creates a new database or migrates one from
release 6.2 or earlier, it sets this I/O access mode setting to buffered I/O. You can specify the
DIRECTIO TRUE configuration setting to change the default setting for new or migrated
databases to be direct I/O.
To alter the I/O access mode setting for a database thereafter, use Administration Services or
MaxL.

Notes

- Effective use of direct I/O requires a larger index cache than is needed for buffered I/O. See
  the Oracle Essbase Database Administrator’s Guide section on sizing caches for details.
- On operating systems and file systems that do not support direct I/O, buffered I/O is used
  regardless of the setting in the security file.
Example

DIRECTIO TRUE

When Essbase is restarted, the file access mode is set to direct I/O for new databases and databases migrated from release 6.2 or earlier.

**DISABLEREPLMISSINGDATA**

Instructs Essbase not to replicate #MISSING values to the target partition, thus improving performance, potentially with less accurate data.

You can specify DISABLEREPLMISSINGDATA for individual databases, all databases within an application, or for all applications and databases on the server.

**Syntax**

DISABLEREPLMISSINGDATA [appname [dbname]] TRUE | FALSE

- **appname**—Application name. Optional parameter for applying the TRUE or FALSE setting to one or all databases within the application. If you specify a value for `appname` and do not specify a value for `dbname`, the setting applies to all databases in the specified application. If you do not specify an application, you cannot specify a database and the setting applies to all applications and databases on the Essbase Server.
- **dbname**—Database name. Optional parameter for applying the TRUE or FALSE setting to the specified database within the specified application. If you do not specify a value for `dbname`, the setting applies to all databases within the specified application. If `appname` is not specified, you cannot specify `dbname`.
- **TRUE**—#MISSING values are not replicated to the target for those applications and databases specified through the `appname` and `dbname` parameters.
- **FALSE**—(Default value) #MISSING values are replicated to the target for those applications and databases specified through the `appname` and `dbname` parameters.

**Notes**

This setting applies only to replicated partitions on block storage databases.

When #MISSING data is not replicated a warning message is logged in the application log file.

**Example**

Assume a partition exists from Sample1.Basic (source) to Sample2.Basic (target). To prevent replication of #MISSING data, add the following settings to `essbase.cfg`.

DISABLEREPLMISSINGDATA Sample1 Basic TRUE
DISABLEREPLMISSINGDATA Sample2 Basic TRUE
**DISKVOLUMES**

Defines the volumes that can be used to store multiple index and data files, and the amount of space that those volumes can occupy.

For new files, disk volume settings become effective after the database is restarted. Previously existing files and volumes are not affected.

This setting does not apply to aggregate storage databases.

**Syntax**

**DISKVOLUMES [volume_name] [disk_space]...**

- **volume_name**—The name of the directory where a hard disk is mounted.
  
  On Windows, **volume_name** is one of the following:
  
  - a letter corresponding to a disk drive.
  
  - a drive location specified using Uniform Naming Convention (UNC) syntax, which is `\\ComputerName\SharedFolder\Resource`.

  Use UNC syntax only if ARBORPATH is also specified in UNC. Mixed path types are not supported.

  On UNIX, **volume_name** is a UNIX file path that you must specify up to the directory that you are using for Essbase. Do not specify the `/app` directory; Essbase appends `/app` automatically.

  **Note:** Use only valid volume types. Do not use NFS, floppy, CD-ROM, or network drives.

- **disk_space**—The maximum number of bytes allocated to the volume.

  Specify this setting in bytes, kilobytes (K), megabytes (M) or gigabytes (G). Do not use commas or spaces. Avoid decimals (such as 2.5G).

  - The value is read as bytes.

  - The maximum value is 2147483648 (2^{31}).

  - If you need to specify a value over 2^{31}, you must use a qualifier (K, M, or G); for example, 2000G.

  If you enter a value with a qualifier (K, M, or G), the acceptable value range per volume is 0 to 2 terabytes. Do not exceed this amount by specifying, for example, 50000G.

  If you specify **volume_name** without specifying **disk_space**, all the disk space on that volume is used, as needed.

  If you do not specify **volume_name**, Essbase uses the volume where the ARBORPATH directory resides.
DISKVOLUMES, with its values, can be up to 2 kilobytes long. You can specify 64 items per line; for example, DISKVOLUMES D 5M E 2M C 5G contains 7 items.

Notes

- Use DISKVOLUMES only if you need backward compatibility with earlier releases, or if you are setting up a large number of databases at the same time with the same DISKVOLUMES value. Otherwise, to set or change disk volumes, use Administration Services or MaxL.
- You can specify disk volume names in any order.
- If you wish to use a volume in the ARBORPATH directory, you must specify ARBORPATH as one of your parameters. Otherwise, you do not need to specify ARBORPATH.

Example

On Windows, the following setting causes index and data files to be stored as follows:

```
DISKVOLUMES D 5M E 2M C 5G
```

- The first 5 megabytes on drive D
- The next 2 megabytes on drive E
- The next 5 gigabytes on drive C

On Windows, the following UNC-style setting causes index and data files to be stored as follows:

```
DISKVOLUMES \machine-name\shared\disk1 5M \machine-name\shared\disk2 10M
```

- The first 5 megabytes on disk1
- The next 10 megabytes on disk2

On UNIX platforms the following setting causes index and data files to be stored as follows:

```
DISKVOLUMES /vol2/essbase 5M /vol3/essbase 2M /vol1/essbase 5G
```

- The first 5 megabytes on volume vol2
- The next 2 megabytes on volume vol3
- The next 5 gigabytes on volume vol1

See Also

Alter Database (disk volumes)

**DISPLAYMESSAGELEVEL**

Sets the level of messages displayed in the application window. To set the level of messages written to the application log, use LOGMESSAGELEVEL.

Syntax

```
DISPLAYMESSAGELEVEL ERROR | WARNING | INFO
```

476
Where ERROR, WARNING, and INFO are priority levels:

- **ERROR**—Only error messages are written to the application window.
- **WARNING**—Warning and error messages are written to the application window.
- **INFO**—Info, warning, and error messages are written to the application window. This is the default.

**Notes**

This setting affects only the messages displayed in the application window. To control the messages written to the application log, use “LOGMESSAGELEVEL” on page 514.

For both the application log (LOGMESSAGELEVEL) and application window (DISPLAYMESSAGELEVEL), you can set the same level for ERROR, WARNING, and INFO. DISPLAYMESSAGELEVEL does not support DEBUG.

**Example**

```
DISPLAYMESSAGELEVEL WARNING
```

Sets the application window message level to WARNING. Only warning and error messages are displayed in the application window.

**See Also**

SETMSGLEVEL

“LOGMESSAGELEVEL” on page 514

---

**DLSINGLETHREADPERSTAGE**

Instructs Essbase to load data using a single thread per processing stage, or to use the thread values specified in the “DLTHREADSPREPARE” on page 479 and “DLTHREADSWRITE” on page 481 configuration settings. By working with these three configuration settings, you may be able to test and improve data load performance.

You can specify this setting for individual databases, for all databases within an application, or for all applications and databases on the server.

**Syntax**

```
DLSINGLETHREADPERSTAGE [appname [dbname]] TRUE | FALSE
```

- **appname**—Application name. Optional parameter for applying the TRUE or FALSE setting to one or all databases within the application. If you specify a value for `appname` and do not specify a value for `dbname`, the setting applies to all databases in the specified application. If you do not specify an application, you cannot specify a database and the setting applies to all applications and databases on the Essbase Server.

- **dbname**—Database name. Optional parameter for applying the TRUE or FALSE setting to a specific database within the specified application. If you do not specify a value for
dbname, the setting applies to all databases within the specified application. If appname is not specified, you cannot specify dbname.

- TRUE—Tells Essbase not to use the values in the “DLTHREADSPREPARE” on page 479 and “DLTHREADSWRITE” on page 481 configuration settings when it performs a data load. Consequently, it performs all data load processes in single-thread stages.

- FALSE—Tells Essbase to use the thread values specified in the configuration settings “DLTHREADSPREPARE” on page 479 and “DLTHREADSWRITE” on page 481 as the numbers of threads to use in the preparation and write stages of data load processing. The default value is FALSE.

Description

This setting, and related settings “DLTHREADSPREPARE” on page 479 and “DLTHREADSWRITE” on page 481, are related to parallel data load processing. Data load processing is divided up into stages that are performed by Essbase using separate processing threads for each stage. By default, a single thread is used for each stage. Taking advantage of the multithreading capabilities of the server machine, the separate single-thread stages can be performed in parallel.

To improve data load performance by maximizing use of processor resource for your situation, you can use these settings to enable additional multiple-thread processing within the preparation and write stages of data load processing. For more information about parallel thread processing in data loads, see the "Optimizing Data Loads" chapter in the Oracle Essbase Database Administrator’s Guide.

Notes

- While testing thread values for the “DLTHREADSPREPARE” on page 479 and “DLTHREADSWRITE” on page 481 configuration settings, you can use the DLSINGLETHREADPERSTAGE setting to quickly revert to using a single thread per stage.

- Enabling use of multiple threads during the preparation and write stages may produce little if any benefit on a single-processor machine.

- Optimizing factors such as the content and organization of the data source can enhance performance more than increasing the numbers of threads to be used. See the "Optimizing Data Loads" chapter in the Oracle Essbase Database Administrator’s Guide.

Examples

Example 1

DLSINGLETHREADPERSTAGE Sample Basic TRUE
DLTHREADSPREPARE Sample Basic 3
DLTHREADSWRITE Sample Basic 4

Essbase ignores any values specified by “DLTHREADSPREPARE” on page 479 and “DLTHREADSWRITE” on page 481 while loading data to the Sample Basic application and database. As a result, Essbase uses single threads in each stage.
Example 2

DLSINGLETHREADPERSTAGE FALSE
DLTHREADSPREPARE Sample Basic 3
DLTHREADSWRITE Sample Basic 4

Based on the first setting, Essbase uses the number of threads specified by the “DLTHREADSPREPARE” on page 479 and “DLTHREADSWRITE” on page 481 configuration settings for all data bases on the server. The settings on the second and third lines specify use of 3 processing threads for the preparation stages and 4 processing threads for the write stages when loading the Sample Basic application and database. Assuming that there are no further related settings, the default value 1 (one) is assumed for all other applications and databases on the server.

Example 3

DLSINGLETHREADPERSTAGE Sample FALSE
DLTHREADSWRITE Sample Basic 3
DLTHREADSWRITE Sample Interntl 4

In this example Essbase uses the number of threads specified by the “DLTHREADSPREPARE” on page 479 and “DLTHREADSWRITE” on page 481 configuration settings for all databases within the application named Sample. To enable usage of different numbers of threads for the write stage for the two different databases, two “DLTHREADSWRITE” on page 481 settings are included with different thread values for each specific database. Because no “DLTHREADSPREPARE” on page 479 setting is specified, the preparation stage is single-threaded.

See Also

“DLTHREADSPREPARE” on page 479
“DLTHREADSWRITE” on page 481

DLTHREADSPREPARE

Specifies how many threads Essbase may use during the data load preparation stage, which organizes the source data in memory in preparation for storing the data into blocks. Multiple threads, processing in parallel, may improve data load performance.

You can specify this setting for individual databases, for all databases within an application, or for all applications and databases on the server.

In order for Essbase to use the value specified for this setting, the “DLSINGLETHREADPERSTAGE” on page 477 setting must be set to FALSE.

Syntax

DLTHREADSPREPARE [appname [dbname]] n

- appname—Application name. Optional parameter for using the specified number of threads in one or all databases within the application. If you specify a value for appname and do not specify a value for dbname, the setting applies to all databases in the specified
application. If you do not specify an application, you cannot specify a database and the setting applies to all applications and databases on the Essbase Server.

- `dbname`—Database name. Optional parameter for using the specified number of threads when loading the specified database within the specified application. If you do not specify a value for `dbname`, the setting applies to all databases within the specified application. If `appname` is not specified, you cannot specify `dbname`.

- `n`—The number of threads the data load process may use for preparing the data to be loaded. Specify an integer between 1 and 16 (on 32-bit platforms), or between 1 and 32 (on 64-bit platforms). The default value is 1.

  If `n` is greater than the maximum or a negative number, the value is assumed to be 16 (on 32-bit platforms) or 32 (on 64-bit platforms).

**Description**

This setting, and related settings “DLTHREADSWRITE” on page 481 and “DLSINGLETHREADPERSTAGE” on page 477, are related to parallel data load processing. The concept of a *pipeline* is relevant to Essbase data loads. A pipeline is a series of data processing elements in memory that may be executed serially or in parallel. An Essbase data load operation uses a pipeline consisting of 5 stages. By default, a single thread is used for each stage. Therefore, all data load operations need a minimum of 5 threads.

To improve data load performance by maximizing use of processor resource for your situation, you can use these settings to enable additional multiple-thread processing within the preparation and write stages of data load processing. For more information about parallel thread processing in data loads, see the "Optimizing Data Loads" chapter in the *Oracle Essbase Database Administrator’s Guide*.

**Notes**

- You can use another configuration setting, “DLTHREADSWRITE” on page 481, to specify the number of threads for the write stage of data load processing.

- Many factors affect the possible optimal values for DLTHREADSPREPARE including the number of processors on the machine and the number of other processes running on the machine. If you want to set this setting to a value higher than the default (1), check with your system administrator, as higher values can consume considerable system resources. As a rule of thumb, do not expect performance advantages if the number of threads for this setting is greater than the number of processors on the server machine.

- Setting the value for DLTHREADSPREPARE to be greater than 1 (one) may produce little if any benefit on a single-processor machine.

**Example**

```
DLSINGLETHREADPERSTAGE Sample Basic FALSE
DLTHREADSPREPARE Sample Basic 3
```

Because “DLSINGLETHREADPERSTAGE” on page 477 is set to FALSE for the Sample Basic application and database, Essbase uses 3 parallel threads during the preparation stage when loading data to Sample Basic.
DLTHREADSWRITE

Specifies how many threads Essbase may use during the stage of the data load process that writes blocks on the disk. Multiple threads, processing in parallel, may improve data load performance.

Since Essbase uses a single thread during the write stage of the aggregate storage data load process, this setting does not apply to aggregate storage databases.

Syntax

DLTHREADSWRITE [appname [dbname]] n

- appname—Application name. Optional parameter for using the specified number of threads in one or all databases within the application. If you specify a value for appname and do not specify a value for dbname, the setting applies to all databases in the specified application. If you do not specify an application, you cannot specify a database and the setting applies to all applications and databases on the Essbase Server.

- dbname—Database name. Optional parameter for using the specified number of threads when loading the specified database within the specified application. If you do not specify a value for dbname, the setting applies to all databases within the specified application. If appname is not specified, you cannot specify dbname

- n—The number of threads the data load process may use for writing data blocks to the disk. Specify an integer between 1 and 16 (on 32-bit platforms), or between 1 and 32 (on 64-bit platforms). The default value is 1.
  - If n>16 (on 32-bit platforms), or a negative number, the value is assumed to be 16.
  - If n>32 (on 64-bit platforms), or a negative number, the value is assumed to be 32.

See Notes below.

Description

This setting, and related settings “DLTHREADSPREPARE” on page 479 and “DLSINGLETREADPERSTAGE” on page 477, are related to parallel data load processing. The concept of a pipeline is relevant to Essbase data loads. A pipeline is a series of data processing elements in memory that may be executed serially or in parallel. An Essbase data load operation uses a pipeline consisting of 5 stages. By default, a single thread is used for each stage. Therefore, all data load operations need a minimum of 5 threads.

To improve data load performance by maximizing use of processor resource for your situation, you can use these settings to enable additional multiple-thread processing within the preparation and write stages of data load processing.
You can specify DLTHREADSWRITE for individual databases, all databases within an application, or for all applications and databases on the server.

In order for Essbase to use the value specified for DLTHREADSWRITE, the configuration setting “DLSINGLETHREADPERSTAGE” on page 477 must be set to FALSE.

For more information about parallel thread processing in data loads, see the "Optimizing Data Loads" chapter in the *Oracle Essbase Database Administrator’s Guide*.

**Notes**

- You can use another configuration setting, “DLTHREADSPREPARE” on page 479, to specify the number of threads for the preparation stage of data load processing.

- Many factors affect the possible optimal values for DLTHREADSWRITE including the number of processors on the machine and the number of other processes running on the machine. If you want to set this setting to a value higher than the default (1), check with your system administrator, as higher values can consume considerable system resources. As a rule of thumb, do not expect performance advantages if the number of threads for this setting is greater than the number of processors on the server machine.

- Setting the value for DLTHREADSWRITE to be greater than 1 (one) may produce little if any benefit on a single-processor machine.

**Example**

DLSINGLETHREADPERSTAGE Sample Basic FALSE
DLTHREADSWRITE Sample Basic 3

Because “DLSINGLETHREADPERSTAGE” on page 477 is set to FALSE for the Sample Basic application and database, Essbase uses 3 parallel threads during the write stage when loading data to Sample Basic.

**See Also**

“DLTHREADSPREPARE” on page 479
“DLSINGLETHREADPERSTAGE” on page 477
“WORKERTHREADS” on page 569

---

**DYNCALCCACHEBLKRELEASE**

Enables Essbase to create a temporary buffer for dynamic calculations in cases where the wait for space in the dynamic calculator cache has exceeded the specified wait time.

This setting does not apply to aggregate storage databases.

**Syntax**

DYNCALCCACHEBLKRELEASE [appname [dbname]] TRUE | FALSE
• **appname**—If you specify an application name, the setting applies to all databases within the application. If you do not specify an application name, the setting applies to all applications and databases on the server.

• **dbname**—If you specify a database name, the setting applies only to the database. If you do not also specify an application name, the setting applies to all applications and databases on the server.

• **TRUE**—Tells Essbase to make room available in the dynamic calculator cache by temporarily storing inactive blocks in a separate, compressed-block buffer.

• **FALSE**—This is the default value. Tells Essbase not to find room in the dynamic calculator cache for a different set of blocks. Instead, if allowed by the “**DYNCALCCACHEONLY**” on page 488 setting, Essbase attempts to perform calculations on these blocks in memory outside the dynamic calculator cache

**Description**

Use this setting to tell Essbase to make room available in the dynamic calculator cache, if needed, by compressing inactive blocks from that cache and attempting to temporarily store them in a separate, compressed-block buffer.

The dynamic calculator cache is a memory buffer that holds data blocks that are expanded to include dynamically calculated members. Essbase allocates memory in the dynamic calculator cache to store these blocks during retrievals or calculations that involve dynamically calculated members.

Using the dynamic calculator cache may improve retrieval performance by reducing the number of calls to the operating system to do memory allocations. The size of the improvement depends on your database configuration.

**Notes**

The following sequence of events must occur and settings must be defined before Essbase releases space in the dynamic calculator cache:

• The area allocated in the dynamic calculator cache has reached the maximum allowed (specified by “**DYNCALCCACHEMAXSIZE**” on page 487).

• “**DYNCALCCACHEWAITFORBLK**” on page 489 is set as TRUE and the wait period specified by “**DYNCALCCACHEBLKTIMEOUT**” on page 484 has been reached.

• **DYNCALCCACHEBLKRELEASE** is set to TRUE. Essbase releases an area in the dynamic calculator cache by compressing blocks from this cache and attempting to store them temporarily in a compressed-block buffer. The size of this buffer is defined by the “**DYNCALCCACHECOMPRBLKBUFSIZE**” on page 485 configuration setting.

**Example**

```plaintext
DYNCALCCACHEBLKRELEASE  TRUE
```

Essbase makes needed space available in the dynamic calculator cache by compressing inactive blocks and temporarily storing them in a dynamic calculator cache compressed-block buffer.
See Also
“DYNCALCCACHEMAXSIZE” on page 487
“DYNCALCCACHEWAITFORBLK” on page 489
“DYNCALCCACHEBLKTIMEOUT” on page 484
“DYNCALCCACHEONLY” on page 488
“DYNCALCCACHECOMPRBLKBUFSIZE” on page 485

**DYNCALCCACHEBLKTIMEOUT**

Specifies maximum time to wait for free space in the dynamic calculator cache.

This setting does not apply to aggregate storage databases.

**Syntax**

```
DYNCALCCACHEBLKTIMEOUT [appname [dbname]] n
```

- **appname**—If you specify an application name, the setting applies to all databases within the application. If you do not specify an application name, the setting applies to all applications and databases on the server.
- **dbname**—If you specify a database name, the setting applies only to the database. If you do not also specify an application name, the setting applies to all applications and databases on the server.
- **n**—A number of seconds. May or may not include a decimal point. Any number less than 0.001 will be treated as 0.001. The default value is 10 seconds.

**Description**

Use this setting to specify the maximum number of seconds that Essbase should wait for space in the dynamic calculator cache in order to perform the requested calculation there. If Essbase waits the entire number of seconds specified in this setting, it then checks the “DYNCALCCACHEBLKRELEASE” on page 482 setting to determine what to do next:

- To make room in the dynamic calculator cache by temporarily swapping out blocks in the dynamic calculator cache that are inactive
- If “DYNCALCCACHEONLY” on page 488 is set to FALSE, to write and calculate the blocks in memory outside the dynamic calculator cache

The dynamic calculator cache is a memory buffer that holds data blocks that are expanded to include dynamically calculated members. Essbase allocates memory in the dynamic calculator cache to store these blocks during retrievals or calculations that involve dynamically calculated members.

Using the dynamic calculator cache may improve retrieval performance by reducing the number of calls to the operating system to do memory allocations. The size of the improvement depends on your database configuration.
Notes

- Use the “DYNCALCCACHEBLKRELEASE” on page 482 setting to tell Essbase where to store and calculate data blocks containing Dynamic Calc members if the wait for space in the dynamic calculator cache has exceeded the specified wait time.
- The DYNCALCCACHEBLKTIMEOUT configuration setting is meaningful only when the “DYNCALCCACHEWAITFORBLK” on page 489 configuration setting is set to TRUE.

Example

```
DYNCALCCACHEBLKTIMEOUT 20
```

Essbase waits up to 20 seconds for space in the dynamic calculator cache before checking the “DYNCALCCACHEBLKRELEASE” on page 482 setting to determine the next step to take before performing the requested calculation.

See Also

“DYNCALCCACHEMAXSIZE” on page 487
“DYNCALCCACHEONLY” on page 488
“DYNCALCCACHEWAITFORBLK” on page 489
“DYNCALCCACHEBLKRELEASE” on page 482
“DYNCALCCACHECOMPRBLKBFSIZE” on page 485

**DYNCALCCACHECOMPRBLKBFSIZE**

Specifies the size of a temporary buffer for storing compressed blocks in order to make more space in the dynamic calculator cache.

This setting does not apply to aggregate storage databases.

Syntax

```
DYNCALCCACHECOMPRBLKBFSIZE   [appname [dbname]]   n
```

- **appname**—If you specify an application name, the setting applies to all databases within the application. If you do not specify an application name, the setting applies to all applications and databases on the server.
- **dbname**—If you specify a database name, the setting applies only to the database. If you do not also specify an application name, the setting applies to all applications and databases on the server.
- **n**—An integer expressed in bytes (B), kilobytes (K), megabytes (M), or gigabytes (G)
  - Minimum value: 0 megabytes (0 M). If the value is 0, Essbase does not use the compressed block buffer.
  - Default value: 1 megabyte (1M, which is 1,048,576 bytes)
  - If a value is given without a B, K, M, or G qualifier, it is assumed the value is in bytes.
The qualifier can be in upper or lowercase and can be entered adjacent to the value (10M) or separated by a space (1M)

Description
In order to make space available in the dynamic calculator cache, Essbase uses the value specified by the DYNCALCCACHECOMPRBLKBUFSIZE configuration setting to size the dynamic calculator cache compressed-block buffer. Essbase temporarily stores compressed blocks from the dynamic calculator cache into this buffer under the following circumstances:

- The area allocated in the dynamic calculator cache has reached the maximum allowed (specified by “DYNCALCCACHEMAXSIZE” on page 487) and Essbase requires additional space for blocks to be calculated in the current query.
- “DYNCALCCACHEWAITFORBLK” on page 489 is set to TRUE and the wait period specified by “DYNCALCCACHEBLKTIMEOUT” on page 484 has been reached.
- “DYNCALCCACHEBLKRELEASE” on page 482 is set to TRUE, indicating Essbase should release dynamic calculator cache area.

The dynamic calculator cache compressed-block buffer is an area in memory where Essbase compresses and temporarily stores blocks from the dynamic calculator cache to free space for other blocks for other calculations. When space is again available, Essbase decompresses blocks stored in the compressed-block buffer and returns them to the dynamic calculator cache.

The dynamic calculator cache is a memory buffer that holds data blocks that are expanded to include dynamically calculated members. Essbase allocates memory in the dynamic calculator cache to store these blocks during retrievals or calculations that involve dynamically calculated members.

Using the dynamic calculator cache may improve retrieval performance by reducing the number of calls to the operating system to do memory allocations. The size of the improvement depends on your database configuration.

Notes
Essbase uses the temporary compressed-block buffer only when the “DYNCALCCACHEBLKRELEASE” on page 482 configuration parameter is set to TRUE and the DYNCALCCACHECOMPRBLKBUFSIZE setting is greater than 0.

Example

```
DYNCALCCACHECOMPRBLKBUFSIZE 1000000
```

Sets 1,000,000 (one million) bytes as the size for the dynamic calculator cache compressed-block buffer.

See Also

“DYNCALCCACHEMAXSIZE” on page 487
“DYNCALCCACHEONLY” on page 488
“DYNCALCCACHEWAITFORBLK” on page 489
**DYNCALCCACHEMAXSIZE**

Specifies the maximum amount of memory allocated for the dynamic calculator cache for each database. The specified value takes effect for all databases that are opened after the server is started.

The dynamic calculator cache is a memory buffer that holds data blocks that are expanded to include dynamically calculated members. Essbase allocates memory in the dynamic calculator cache to store these blocks during retrievals or calculations that involve dynamically calculated members.

Using dynamic calculator cache may improve retrieval performance by reducing the number of calls to the operating system to do memory allocations.

This setting does not apply to aggregate storage databases.

**Syntax**

```
DYNCALCCACHEMAXSIZE [appname [dbname]] n
```

- **appname**—If you specify an application name, the setting applies to all databases within the application. If you do not specify an application name, the setting applies to all applications and databases on the server.
- **dbname**—If you specify a database name, the setting applies only to the database. If you do not also specify an application name, the setting applies to all applications and databases on the server.
- **n**—An integer expressed in bytes (B), kilobytes (K), megabytes (M), or gigabytes (G)
  - Minimum value: 0 megabytes (0 M). If the value is 0, Essbase does not use dynamic calculator cache.
  - Default value: 20 megabytes (20M, which is 20,971,520 bytes)
  - The maximum amount of memory that can be allocated depends on the bitness of Essbase:
    - Essbase 64-bit: 256 GB
    - Essbase 32-bit: 4 GB
  - If a value is given without a B, K, M, or G qualifier, it is assumed the value is in bytes.
  - The qualifier can be in upper or lowercase and can be entered adjacent to the value (10M) or separated by a space (10 M).

**Notes**

- When the DYNCALCCACHEMAXSIZE setting is not equal to 0, you should also consider the following settings that affect how Essbase uses dynamic calculator cache:
  - “DYNCALCCACHEONLY” on page 488
"DYNCALCCACHEWAITFORBLK" on page 489

"DYNCALCCACHEBLKTIMEOUT" on page 484

"DYNCALCCACHEBLKRELEASE" on page 482

"DYNCALCCACHECOMPRBLKBUFSIZE" on page 485

- Use "DYNCALCCACHEWAITFORBLK" on page 489 and "DYNCALCCACHEONLY" on page 488 to set or change how Essbase handles the situation when it has reached the maximum dynamic calculator cache size and needs more memory in the dynamic calculator cache to store dynamically calculated blocks.

- See the Oracle Essbase Database Administrator’s Guide for more information about Dynamic Calculator Cache and the related configuration file settings.

Example

DYNCALCCACHEMAXSIZE 30M

Sets 30 megabytes as the maximum size for the dynamic calculator cache.

**DYNCALCCACHEONLY**

Specifies whether dynamic calculations can use memory outside the dynamic calculator cache in the case that it is full.

This setting does not apply to aggregate storage databases.

**Syntax**

DYNCALCCACHEONLY [appname [dbname]] TRUE | FALSE

- **appname**—If you specify an application name, the setting applies to all databases within the application. If you do not specify an application name, the setting applies to all applications and databases on the server.

- **dbname**—If you specify a database name, the setting applies only to the database. If you do not also specify an application name, the setting applies to all applications and databases on the server.

- **TRUE**—Disallows the use of memory outside the dynamic calculator cache. If space for blocks with dynamically calculated members cannot be obtained from the dynamic calculator cache, Essbase generates an error message.

- **FALSE**—Allows the use of memory outside the dynamic calculator cache, if necessary, for blocks containing dynamically calculated members. The default value is FALSE.

**Description**

When no room is available in the dynamic calculator cache, the "DYNCALCCACHEWAITFORBLK" on page 489 and "DYNCALCCACHECOMPRBLKBUFSIZE" on page 485 configuration settings provide options that could result in Essbase using memory outside the dynamic calculator cache to store blocks that contain dynamically calculated members. If you are experiencing a severe memory shortage,
you can use the DYNCALCCACHEONLY setting to disallow the use of memory outside the
dynamic calculator cache. If DYNCALCCACHEONLY is set to TRUE, instead of using memory
outside the dynamic calculator cache, Essbase generates the error message, "Allocation outside
the dynamic calculator cache is disallowed."

The dynamic calculator cache is a memory buffer that holds data blocks that are expanded to
include dynamically calculated members. Essbase allocates memory in the dynamic calculator
cache to store these blocks during retrievals or calculations that involve dynamically calculated
members.

Using the dynamic calculator cache may improve retrieval performance by reducing the number
of calls to the operating system to do memory allocations. The size of the improvement depends
on your database configuration.

Notes
The default value of this setting is FALSE. Only set this value to TRUE for one or more of the
following circumstances:

- The operating system is not properly reclaiming memory outside the dynamic calculator
  cache.
- There is a severe memory shortage
- Tighter control is required over memory usage for dynamic calculations

Example

DYNCALCCACHEONLY TRUE

Specifies that the dynamic calculator cache is the only memory area that Essbase may use to
store blocks that contain dynamically calculated blocks. If a retrieval requires space that is
not available in the dynamic calculator cache, the execution of the retrieval is aborted. The
user sees an error message that is also posted to the application log.

See Also

“DYNCALCCACHEMAXSIZE” on page 487
“DYNCALCCACHEWAITFORBLK” on page 489
“DYNCALCCACHEBLKTIMEOUT” on page 484
“DYNCALCCACHECOMPRBLKBUFSIZE” on page 485
“DYNCALCCACHEBLKRELEASE” on page 482

DYNCALCCACHEWAITFORBLK

Specifies whether Essbase should wait for memory to be freed in the dynamic calculator cache,
or use outside memory.

This setting does not apply to aggregate storage databases.
Syntax

DYNCALCCACHEWAITFORBLK [appname [dbname]] TRUE | FALSE

- **appname**—If you specify an application name, the setting applies to all databases within the application. If you do not specify an application name, the setting applies to all applications and databases on the server.

- **dbname**—If you specify a database name, the setting applies only to the database. If you do not also specify an application name, the setting applies to all applications and databases on the server.

- **TRUE**—Tells Essbase to wait for memory to be freed in the dynamic calculator cache.

- **FALSE**—This is the default. If allowed by the “DYNCALCCACHEONLY” on page 488 setting, tells Essbase attempt to perform calculations on these blocks in memory outside the dynamic calculator cache.

If the “DYNCALCCACHEONLY” on page 488 setting is TRUE, tells Essbase to generate an error message instead of using memory outside the dynamic calculator cache.

Description

Use this setting to set or change how Essbase handles the situation when it needs additional memory to store blocks in the dynamic calculator cache for the database.

When the setting is TRUE, Essbase waits to store and calculate data blocks in the dynamic-calculator-cache area that is currently in use by other queries.

When the setting is FALSE, if the “DYNCALCCACHEONLY” on page 488 setting is also FALSE, instead of waiting for area in the dynamic calculator cache, Essbase attempts to store and calculate data blocks for the current query in memory outside the dynamic calculator cache. If the “DYNCALCCACHEONLY” on page 488 setting is TRUE, Essbase generates an error message instead of using memory outside the dynamic calculator cache.

The dynamic calculator cache is a memory buffer that holds data blocks that are expanded to include dynamically calculated members. Essbase allocates memory in the dynamic calculator cache to store these blocks during retrievals or calculations that involve dynamically calculated members.

Using the dynamic calculator cache may improve retrieval performance by reducing the number of calls to the operating system to do memory allocations. The size of the improvement depends on your database configuration.

Notes

Use the “DYNCALCCACHEBLKTIMEOUT” on page 484 setting to specify the maximum number of seconds that Essbase waits for space in the dynamic calculator cache.

Example

DYNCALCCACHEONLY FALSE
DYNCALCCACHEWAITFORBLK FALSE
Essbase attempts to perform the block calculation in memory outside the dynamic calculator cache, instead of waiting for space to become available in the dynamic calculator cache.

See Also

“DYNCALCCACHEMAXSIZE” on page 487
“DYNCALCCACHEONLY” on page 488
“DYNCALCCACHEBLKTIMEOUT” on page 484
“DYNCALCCACHEBLKRELEASE” on page 482
“DYNCALCCACHECOMPRBLKBUFSIZE” on page 485

ENABLE_DIAG_TRANSPARENT_PARTITION

Specifies whether to log transaction response times for requests sent from a data source to a transparent partition target. The target can be either a block storage or aggregate storage database. Logging these diagnostic messages is helpful when troubleshooting response times that are too slow.

Syntax

ENABLE_DIAG_TRANSPARENT_PARTITION [appname [dbname]] TRUE | FALSE

- **appname**—Optional. Specifies the application for which logging diagnostic messages is to be enabled.
  
  If you specify a value for *appname* and do not specify a value for *dbname*, the setting applies to all databases in the specified application.

  To enable the setting for a specific database, you must specify an application and database.

  If you do not specify an application, you cannot specify a database, and the setting applies to all applications and databases on Essbase Server.

- **dbname**—Optional. Specifies the database, in the application specified by *appname*, for which logging diagnostic messages is to be enabled.

  If you specify a value for *dbname* but do not specify a value for *appname*, your specification is ignored, and logging diagnostic messages is enabled for all applications and databases on Essbase Server.

- **TRUE | FALSE**—Specifies whether to enable or disable logging transaction response times for requests to a transparent partition.

You must restart Essbase Server to initialize any change to the configuration file.

Description

When logging is enabled, Essbase writes messages to the source and target database log files during querying.

For every partial response sent to the target from the source, Essbase logs these messages:
In the source database log file, the following message, of type INFO, provides the size of the response grid:

Sending response grid of size xxxxx.

In the target database log file, the following message provides the size of the request grid issued to the source and an estimated response time:

Waiting for data from source system:application:database grid size sizeOfRequestGrid. Approximately one second is needed to fetch a grid of size one million cells with non-missing cell density of 7% from the source.

For every partial grid received from the source, Essbase logs the following message about the density of the grid to the target database log file:

Density of the grid xxxxxx of fetch size xxxxxx.

When an aggregate storage database is the target of a transparent partition, you can set the request and response grid size.

Example

ENABLE_DIAG_TRANSPARENT_PARTITION ASOSamp TRUE

Enables logging of transaction response times for all databases associated with the ASOSamp application.

See Also

“MAX_REQUEST_GRID_SIZE” on page 518 configuration setting

“MAX_RESPONSE_GRID_SIZE” on page 519 configuration setting

**ENABLECLEARMODE**

Determines whether Essbase allows SSL connectivity. This setting applies only to Essbase Agent and applications.

**Syntax**

ENABLECLEARMODE TRUE | FALSE

- TRUE—Essbase handles plain TCP requests. The default value is TRUE.
- FALSE—Essbase handles only SSL requests, not plain TCP requests

**Example**

ENABLECLEARMODE FALSE

See Also

“AGENTSECUREPORT” on page 433

“CLIENTPREFERREDMODE” on page 462

“ENABLESECUREMODE” on page 494
For information on implementing SSL, see the Oracle Enterprise Performance Management System Security Configuration Guide.

**ENABLERTSVLOGGING**

Determines whether Essbase logs runtime substitution variables that are used in a calculation script.

Runtime substitution variable log entries are written to the application log file.

**Syntax**

```
ENABLERTSVLOGGING [ appname [ dbname]] TRUE | FALSE
```

- **appname**—Optional. Specifies the application for which runtime substitution variable logging is to be set.
  
  If you specify a value for `appname` and do not specify a value for `dbname`, the setting applies to all databases in the specified application.
  
  To enable the setting for a specific database, you must specify an application and database.
  
  If you do not specify an application, you cannot specify a database, and the setting applies to all applications and databases on Essbase Server.
  
- **dbname**—Optional. Specifies the database, in the application specified by `appname`, for which runtime substitution variable logging is to be set.
  
  If you specify a value for `dbname` but do not specify a value for `appname`, your specification is ignored.
  
- **TRUE**—Runtime substitution variables that are used in a calculation script are logged. For information about the format of these log entries, see “Logging Runtime Substitution Variables” in the Oracle Essbase Database Administrator’s Guide.
  
- **FALSE**—Runtime substitution variables that are used in a calculation script are not logged. The default value is FALSE.

**Example**

```enablertsvlogging true```

**See Also**

SET RUNTIMESUBVARS calculation command
### ENABLESECUREMODE

Allows Secure Socket Layer (SSL) connectivity to Essbase. This setting applies only to Essbase Agent and applications.

**Syntax**

ENABLESECUREMODE TRUE | FALSE

- TRUE—SSL is enabled. Essbase can handle SSL requests.
- FALSE—SSL is not loaded and not used. The default value is FALSE.

**Example**

ENABLESECUREMODE TRUE

**See Also**

“AGENTSECUREPORT” on page 433
“CLIENTPREFERREDMODE” on page 462
“ENABLECLEARMODE” on page 492
“NETSSLHANDSHAKETIMEOUT” on page 524
“SSLCIPHERSUITES” on page 555
“WALLETPATH” on page 568

For information on implementing SSL, see the *Oracle Enterprise Performance Management System Security Configuration Guide*.

### ENABLESWITCHTOBACKUPFILE

Specifies whether to load the latest, valid backup security file (essbase_timestamp.bak) at startup if the essbase.sec file is invalid.

**Syntax**

ENABLESWITCHTOBACKUPFILE TRUE | FALSE

- TRUE—If essbase.sec is invalid at startup, Essbase cycles through the essbase_timestamp.bak files, starting with the backup file with the latest timestamp, until it finds a valid backup file with which to start Essbase.
- FALSE—If essbase.sec is invalid, Essbase startup is aborted and a message is written to the essbase.log file. The Essbase administrator must restore essbase.sec by copying the latest, valid backup file to it.

The default value is FALSE.

**Note:** You can configure the number of backup security files that Essbase creates and maintains, and the interval in which Essbase creates backup security files.
Example
ENABLESWITCHTOBACKUPFILE TRUE

See Also
“NUMBEROFSECFILEBACKUPS” on page 527
“SECFILEBACKUPINTERVAL” on page 542

**ESSBASEFAILOVERTRACELEVEL**
Sets the trace level for messages written to the Lease Manager log files.

Syntax
ESSBASEFAILOVERTRACELEVEL USER | ADMIN

Where USER and ADMIN are priority levels:
- USER—Lease renewal messages are written to the log files whenever a new lease is acquired. Lease ownership messages are not written to the log files. This is the default setting.
- ADMIN—Lease renewal and lease ownership messages are written to the log files every time a lease is renewed.

Example
ESSBASEFAILOVERTRACELEVEL ADMIN

Sets the trace level to ADMIN which writes the messages Lease manager has a current lease and Lease Manager successfully acquired/renewed its lease to the Lease Manager log files every time a lease is renewed.

See Also
“FAILOVERMODE” on page 500

**ESSBASESERVERHOSTNAME**
Specifies the computer host name to which Essbase Agent and Essbase Server bind and where an Essbase application process runs.

Syntax
ESSBASESERVERHOSTNAME server_name

Where server_name is the name of the host where your Essbase application process runs. ESSBASESERVERHOSTNAME uses the current server by default.
Description

ESSEBASESERVERHOSTNAME identifies the host where your Essbase application process runs. The value must be a valid host name and must map to an IP address assigned to the computer. If ESSEBASESERVERHOSTNAME is not specified in essbase.cfg, Essbase and the applications listen on all interfaces (IP_ANY).

Notes

- You can use ESSEBASESERVERHOSTNAME to restrict the network interface provide on which Essbase and the applications listen when multiple instances are running on the same host computer.
- For information on running multiple Essbase instances on a single computer, see:
  - “AGENTPORT” on page 432
  - “SERVERPORTBEGIN” on page 545
  - “SERVERPORTEND” on page 546
  - “PORTINC” on page 533
- The behavior of the client is not necessarily tied to this configuration setting. For example, the MaxL client always uses localhost as the default, irrespective of this configuration setting.
- In Report Writer, you can display ESSEBASESERVERHOSTNAME values on a report. For example, you can use the *MACHINE replacement value in the Report Writer [Mask] command to display the ESSEBASESERVERHOSTNAME value as the server name.
- In a clustered environment, the IP address must be accessible from both nodes of the cluster. Therefore, the IP address must be virtual/floating, rather than the computer’s physical IP address. Essbase must be installed and configured on a virtual IP, so that the EPM Registry stores the information that Essbase is tied to a virtual IP address rather than the physical IP address.

Example

ESSEBASESERVERHOSTNAME Hyper

Identifies the host name "Hyper".

**ESTIMATEDHASHSIZE**

Specifies, in millions, the estimated number of member name and alias name strings that are loaded into memory for optimal performance of name lookup and name insertion during dimension build and outline editing.

This configuration setting allows you to configure a new hashtable implementation, which has an increased memory footprint. The value that you set for this configuration setting affects the amount of memory used when editing an outline. If you set the value to a number that is lower than the estimated number of strings, dimension build performance might be impacted.

Set this configuration setting in the essbase.cfg file on Essbase Server.
Syntax

ESTIMATEDHASHSIZE [appname] x

- **appname**—Optional. Specifies the application for which the estimated hash size applies. If you do not specify an application, the setting applies to all applications on Essbase Server. This configuration setting applies to block storage and aggregate storage applications.
- **x**—Specifies the estimated number of strings that are populated in an extended hash table. The value must be an integer between 1 and 256. A value of 1 represents 1 million strings; a value of 256 represents 256 million strings.
  The default value is 5 (5 million strings).

Example

ESTIMATEDHASHSIZE Sample 50

Sets the estimated number of member name and alias name strings that are loaded into memory to 50 million for the Sample application.

**EXCEPTIONLOGOVERWRITE**

Determines whether Essbase overwrites the existing exception log or creates a new exception log.

Syntax

EXCEPTIONLOGOVERWRITE TRUE | FALSE

- **TRUE**—Essbase overwrites the existing exception log.
- **FALSE**—Essbase keeps the existing exception log and creates new logs for every exception. The default value is FALSE.

Description

This setting determines whether Essbase overwrites existing exception log data or creates a new log for each exception condition. The exception log name is normally log00001.xcp.

When EXCEPTIONLOGOVERWRITE is FALSE:

- Essbase creates a new log instead of overwriting the previous one.
- Subsequent logs are numbered sequentially; for example, if log00001.xcp exists, the next log has the file name log00002.xcp, and the next has log00003.xcp, and so on.

The Essbase exception handler writes the information into the exception log on the local disk in a text file as follows:

- If the server crashed, the log is written in the directory pointed to by ESSBASEPATH; for example, D:\essbase
● If the application crashed and the application name is unknown, the log is written into the
APP subdirectory under the directory pointed to by ARBORPATH; for example, D:\
\essbase\app.

● If the application crashed and the application name is known, but the database name is
unknown, the log is written to the appropriate application directory; for example, D:\
\essbase\app\app1.

● If the application crashed and both the application and database names are known, the log
is written to the appropriate database directory; for example, D:\\essbase\app
\app1\db1.

Notes

● When an exception occurs, Essbase displays and logs an error message telling users the path
to the exception log.

● Essbase logs errors to the Essbase Server log or to the application log, depending on where
the error occurs.

Example

EXCEPTIONLOGOVERWRITE FALSE

See Also

Oracle Essbase Database Administrator's Guide

EXCLUSIVECALC

Determines whether Essbase allows concurrent calculations.

This setting does not apply to aggregate storage databases.

Syntax

EXCLUSIVECALC TRUE | FALSE

● TRUE—If a calculation operation (command or script) is running, Essbase fails any other
calculation operations.

● FALSE—Essbase allows concurrent calculation operations. This is the default.

Description

This setting determines whether Essbase runs calculations concurrently in the same database.
Essbase prevents any other calculation operations from executing on the same database.

Example

EXCLUSIVECALC TRUE
**EXPORTTHREADS**

Sets the default number of threads that can be produced during parallel data export.

**Syntax**

```
EXPORTTHREADS appname dbname n
```

- `appname`—This is the name of the application. You can also use `xxxxx` as a wildcard to indicate all application names.
- `dbname`—This is the name of the database. You can also use `xxxxx` as a wildcard to indicate all database names.
- `n`—This integer sets the default for the number of export threads that can be used to export data. The default is 1.

- **Block storage databases**: The number of threads is an integer, between 1 and 1024, inclusive. The number of available block-address ranges limits the number of export threads. Essbase divides the number of actual data blocks by the specified number of export threads. If there are fewer actual data blocks than the specified number of export threads, the number of export threads that are created is based on the number of actual data blocks. This approach results in a more even distribution of data blocks between export threads.

  **Note:** In specifying the number of export files, it is important to consider the number of available CPU cores and I/O bandwidth on the computer on which Essbase Server runs. Specifying too large a number can result in poor performance.

- **Aggregate storage databases**: The number of threads is an integer, between 1 and 8, inclusive. This number should generally be equal to the number of processors on the machine that you wish to commit to doing parallel export. However, for parallel export on a very small aggregate storage database with a small number of data blocks, it is possible that only a single file will be created (in effect, performing serial export), even though parallel export to multiple files is requested. In this case, the export file name will be the first file name given as input.

**Description**

This setting enables the user to specify the number of threads that can be used to export data. The export process is then executed in parallel, and multiple threads can retrieve data and write to their corresponding export files concurrently. If EXPORTTHREADS is not specified, or is not followed by its arguments, then the default value of 1 is used.

**Notes**

For more information about the export utility, see the *Oracle Essbase Database Administrator’s Guide*.

**Example**

```
EXPORTTHREADS sample basic 4
```
See Also
Export Data (MaxL)
PAREXPORT (ESSCMD)
“WORKERTHREADS” on page 569

**FAILOVERMODE**

Determines whether Essbase is deployed as a failover cluster.

**Syntax**

FAILOVERMODE TRUE | FALSE

- TRUE—Essbase runs as a failover cluster managed by Oracle Process Manager and Notification Server.
  
  Note that on UNIX systems, enabling FAILOVERMODE sets FILELOCKINGMODE to NONE.

- FALSE—Essbase runs as a stand-alone server. The default value is FALSE.

**Description**

This setting determines whether Essbase is deployed as a failover cluster that is managed by OPMN, or as a stand-alone server.

When FAILOVERMODE is TRUE:

- The Essbase cluster must be started and stopped using OPMN.
- The opmn.xml file must be modified to ensure that OPMN is aware of the Essbase cluster.

**Example**

FAILOVERMODE FALSE

See Also

Oracle Essbase Database Administrator's Guide

“AGENTLEASEEXPIRATIONTIME” on page 430

“AGENTLEASEMAXRETRYCOUNT” on page 431

“AGENTLEASERENEWALTIME” on page 431

“SERVERLEASEEXPIRATIONTIME” on page 544

“SERVERLEASEMAXRETRYCOUNT” on page 544

“SERVERLEASERENEWALTIME” on page 545
FILELOCKINGMODE

On UNIX, provides a way for the operating system to limit file access to only one process (user).

**Note:** This setting does not apply to Windows systems.

**Syntax**
FILELOCKINGMODE Advisory | Mandatory | None

- **Advisory**—Locks files. All applications that follow rules (like Essbase) will honor the locks. This is the default setting.

  **Note:** When FAILOVERMODE is set to TRUE, setting FILELOCKINGMODE to Advisory or Mandatory has no effect.

- **Mandatory**—Locks files at the kernel level. This setting provides extra security to protect against malicious software.

- **None**—No files are locked. Two Essbase instances can modify the same data and potentially corrupt it. This option is added for Failover mode where file access is not done by the operating system, but by an application acquiring a lease (use database).

**Description**

FILELOCKINGMODE specifies how files are locked on UNIX systems.

**Example**

FILELOCKINGMODE Advisory

**See Also**

FAILOVERMODE

FORCEALLDENSECALCON2PASSACCOUNTS

Normally, a two-pass tagged member of a dense accounts dimension triggers a second calculation pass on all dense cells of the data block. The false parameter value for this setting blocks the second pass for all other than the cells for the member tagged as two-pass.

**Syntax**

FORCEALLDENSECALCON2PASSACCOUNTS TRUE | FALSE

- **TRUE**—(Default value) When a two-pass member of a dense accounts dimension is calculated, the second calculation pass calculates all dense cells of the data block.

- **FALSE**—In the same situation, the FALSE setting blocks the second calculation pass for all dense cells except those affiliated with the two-pass member.
Description
This setting addresses the situation where a two-pass member of a dense accounts dimension links through @XREF to a two-pass member of a dense accounts dimension in another database outline, and that two-pass member links back to the original outline. The additional calculations in the second calculation pass can result in an infinite loop. The FALSE parameter value blocks the additional calculations. If you are very cautious about data correctness, check calculation results.

Example
FORCEALLDENSECALCON2PASSACCOUNTS FALSE

**FORCEGRIDEXPANSION**

When set to ON, forces the expansion of the grid when transparent partitions are queried, thus ensuring that correct results are retrieved when most data values are displayed as #MISSING, whether or not cells contain data.

The FORCEGRIDEXPANSION configuration setting is used with the GRIDEXPANSION configuration setting.

**Syntax**

FORCEGRIDEXPANSION [ appname [ dbname]] ON | OFF

- **appname**—Optional. If you specify an application name, the setting applies to all databases within the named application. If you do not specify an application name, the setting applies to all applications and databases on the Essbase Server.

- **dbname**—Optional. If you specify a database name and an application name, the setting applies only to the named database. If you do not also specify an application name, the database is ignored and the setting applies to all applications and databases on the Essbase Server.

- **ON**— Forces grid expansion for transparent partition queries.

- **OFF**— This is the default value. Does not force grid expansion for transparent partition queries.

**Description**

If GRIDEXPANSION is set to ON, the grid is not expanded if all of the following conditions are met, and, thus, incorrect results are returned:

- The client queries the target database of a transparent partition.

- The client query requests values from a dynamically calculated block.

- Cells requested from the dynamically calculated block reference dense, dynamically calculated members.

- Dense, dynamically calculated members depend on values from one or more source databases.
When both GRIDEXPANSION and FORCEGRIDEXPANSION are set to ON, the grid is expanded and the correct values for cells that contain data are displayed. Query performance, however, is slowed.

If GRIDEXPANSION is set to OFF, the FORCEGRIDEXPANSION setting is ignored.

See Also

“GRIDEXPANSION” on page 503
“GRIDEXPANSIONMESSAGES” on page 504

GRIDEXPANSION

When set to ON, improves performance when transparent partitions are queried.

Syntax

GRIDEXPANSION [ appname [ dbname] ] ON | OFF

- **appname**—Optional. If you specify an application name, the setting applies to all databases within the named application. If you do not specify an application name, the setting applies to all applications and databases on the Essbase Server.

- **dbname**—Optional. If you specify a database name and an application name, the setting applies only to the named database. If you do not also specify an application name, the database is ignored and the setting applies to all applications and databases on the Essbase Server.

- **ON**—This is the default value. Enables grid expansion.

- **OFF**—Suppresses grid expansion.

Description

GRIDEXPANSION improves performance of some queries. If all of the following conditions are met, however, client queries may receive incorrect results (such as most data values displaying as #MISSING, whether or not cells contain data):

- The client queries the target database of a transparent partition.

- The client query requests values from a dynamically calculated block.

- Cells requested from the dynamically calculated block reference dense, dynamically calculated members.

- Dense, dynamically calculated members depend on values from one or more source databases.

If client queries receive incorrect results, set FORCEGRIDEXPANSION to ON. (If GRIDEXPANSION is set to OFF, the FORCEGRIDEXPANSION setting is ignored.)

See Also

“FORCEGRIDEXPANSION” on page 502
GRIDEXPANSIONMESSAGES

Sets whether grid expansion-related messages are displayed to Oracle Smart View for Office and other grid client users, and are written to the application log.

Syntax

GRIDEXPANSIONMESSAGES [ appname [ dbname] ] ON | OFF

- **appname**—Optional. If you specify an application name, the setting applies to all databases within the named application. If you do not specify an application name, the setting applies to all applications and databases on the Essbase Server.

- **dbname**—Optional. If you specify a database name and an application name, the setting applies only to the named database. If you do not also specify an application name, the database is ignored and the setting applies to all applications and databases on the Essbase Server.

- **ON**—Allows grid-expansion-related messages.

- **OFF**—This is the default value. Suppresses grid-expansion-related messages.

Description

If a grid client user retrieves data from a partition, the following message may be displayed repeatedly and written to the application log:

Grid expansion enabled for this query

To prevent this message from appearing, set GRIDEXPANSIONMESSAGES to OFF.

Example

GRIDEXPANSIONMESSAGES OFF

See Also

“GRIDEXPANSION” on page 503

“FORCEGRIDEXPANSION” on page 502

HISLEVELDRILLTHROUGH

For an intersection to be available in a drill-through report, specifies that for each member in the intersection the generation must be equal to or greater than the generation defined in the report and the level must be equal to or lesser than the level defined in the report.

When HISLEVELDRILLTHROUGH is set, intersections whose members do not meet this criteria are not available for drill-through. For example, when a member is promoted in the hierarchy while creating an outline, the parent in the source database becomes null and the
hierarchy becomes ragged. The intersection that contains the null parent is excluded in the drill-through report.

**Syntax**

```
HISLEVELDRILLTHROUGH appname
```

Where *appname* specifies the application for which intersections must be well formed to be available in drill-through reports.

You must restart the application to initialize any change to the configuration file.

**Example**

```
HISLEVELDRILLTHROUGH Sample
```

Specifies that, in the Sample application, intersections must be well formed to be available in drill-through reports.

### IBHFIXTHRESHOLD

Controls how many invalid block-header messages are returned to the client or server log, relative to the number of level-0 blocks written to disk.

This setting does not apply to aggregate storage databases.

**Syntax**

```
IBHFIXTHRESHOLD appname | xxxx dbname | xxxx percentage
```

- **appname**—Optional. If you specify an application name but use *xxxx* in place of *dbname*, the setting applies to all databases within the named application. If you use *xxxx* in place of *appname* and *dbname*, the setting applies to all applications and databases on the server.

- **dbname**—Optional. If you specify a database name and an application name, the setting applies only to the named database. If you use *xxxx* in place of *dbname*, the setting applies to all databases within the named application. If you specify a database name, you must also supply an application name.

- **xxxx**—If used in place of *appname*, and *dbname*, specifies all databases on the Essbase Server.

If used in place of *dbname*, specifies all databases on the application.

- **percentage**—Percentage of invalid block-header errors to report, relative to the number of level-0 blocks on disk. Once the threshold is reached, a message is sent to the client requesting that the user rebuild the database, and the Essbase Server shuts down. Valid values are integers 0 to 100.

**Description**

You must set the server configuration setting IBHFIXTHRESHOLD in the server `essbase.cfg` file and restart Essbase Server before you can find and fix invalid block-header problems.
This setting controls how many invalid block-header messages are returned to the client or server log, relative to the number of level 0 blocks written to disk. After the threshold is reached, no corrective action can be performed, and a message is sent to the client suggesting that the database be rebuilt.

If messages are written to the client or server log indicating the presence of invalid block-header errors, but the threshold that requires the database be rebuilt is not reached, you can either rebuild the database or you can find and fix the errors using MaxL: `Alter Database DBS-NAME validate data to local | server logfile FILE-NAME`.

Notes
- If Essbase runs in uncommitted mode when it receives an invalid block-header error message, the current transaction may stop without any rollback, meaning that some data may have changed. Be sure to verify that all transactions that you expected to finish have finished. If not, you may need to clean up the data or rebuild the database.
- For information about types of invalid block-header errors and how to rebuild a database, see the *Oracle Essbase Database Administrator’s Guide*.

Example

```
IBHFIXTHRESHOLD sample basic 10
```

Specifies that on Sample Basic, if 10% of the data blocks have invalid block-header errors, it is time to rebuild the database.

```
IBHFIXTHRESHOLD sample xxxx 15
```

Specifies that for any database in the Sample application, if 15% of the data blocks have invalid block-header errors, it is time to rebuild the database.

```
IBHFIXTHRESHOLD xxxx xxxx 5
```

Specifies that for any database, if 5% of the data blocks have invalid block-header errors, it is time to rebuild the database.

See Also

*Alter Database* (MaxL statement)

**IDMIGRATION**

Controls whether the unique identifiers from Shared Services are added to Essbase user and group IDs.

Syntax

```
IDMIGRATION CHECKANDMIGRATE | NOMIGRATION | FORCEREMIGRATION
```

- **CHECKANDMIGRATE**—Default option. Checks for identity attributes that have changed in Shared Services and updates them in Essbase security.
- **NOMIGRATION**—Makes no changes in Essbase security.
FORCEMIGRATION—Updates Essbase users and groups without checking whether identity attributes have changed.

Description
With release 9.2.0.3, a unique identity field was added to user and group IDs to ensure the IDs across Shared Services and Essbase could be uniquely identified. By default, after installing release 9.2.0.3 (or 9.3.1 if release 9.2.0.3 was skipped), when Essbase Server is started it migrates changed Shared Services user and group IDs to include the unique identity field. You can use the IDMIGRATION configuration setting to skip this migration or to force migration of all user and group IDs.

Example
IDMIGRATION NOMIGRATION

**IMPLIED_SHARE**
Sets the default implied shared behavior for the Essbase Server, or for the specified application.

Syntax
IMPLIED_SHARE [app_name] TRUE | FALSE

- **app_name**—Optional. If provided, the setting applies only to the specified application; otherwise, the setting applies to the Essbase Server.
- **TRUE**—Default value. Parent is treated as an implied share because it has only one child or because it has only one child that consolidates to the parent.
- **FALSE**—Never use Implied Share.

Notes
- If the IMPLIED_SHARE configuration setting is absent from Essbase.cfg, the default setting of TRUE is used.
- Application-specific settings overrides any general Essbase Server settings.

Changing Implied Share Settings
The following steps must be performed any time the IMPLIED_SHARE setting is changed in essbase.cfg:
1. Add IMPLIED_SHARE FALSE to essbase.cfg.
2. Restart Essbase Server.
3. Create a new application and database, with the IMPLIED_SHARE setting in place.
4. Rebuild the outline, with the IMPLIED_SHARE setting in place.
5. Reload the data.
6. Run aggregation or calculation scripts.
7. Restart the application.

Example

IMPLIED_SHARE Sample FALSE

Never use Implied Share for application Sample.

**INCRESTRUC**

Specifies whether incremental restructuring is enabled for a database. You can enable incremental restructuring for individual databases or for all databases.

This setting does not apply to aggregate storage databases.

**Syntax**

INCRESTRUC [ appname [ dbname ] ] TRUE | FALSE

- **appname**—Application name. Optional parameter for enabling incremental restructuring for one or all databases in an application. This parameter may be used in combination with **dbname**. If you omit **appname**, you cannot specify **dbname**, and INCRESTRUC will be enabled for all applications and databases. See Example below.

- **dbname**—Database name. Optional parameter for enabling incremental restructuring for an individual database. This parameter must be used in combination with **appname**. If you specify **dbname**, you must also specify **appname**. See Example below.

- **TRUE**—When you make certain outline or dimension changes that normally result in immediate database restructuring, Essbase defers restructuring until the next time it accesses the affected blocks. See Notes below.

- **FALSE**—Essbase immediately restructures the database whenever an outline or dimension change calls for it. The default value is FALSE (for all databases).

**Notes**

- Use the value xxxx to indicate "all" for any application or database argument. For example: INCRESTRUC xxxx Basic TRUE enables incremental restructuring for any application with a Basic database.

- Settings for nonexistent applications or databases are ignored.

- You can issue up to ten (total) INCRESTRUC statements per application.

**Description**

This setting specifies whether incremental restructuring is enabled for a database. You can enable incremental restructuring for individual databases, for all databases in an application, or for all databases on a server.

When incremental restructuring is enabled, the changes to index files (*essxxxx.xxx.ind*) and data files (*essxxxx.xxx.pag*) are deferred until they must subsequently be accessed for certain outline
operations. In a database with a large amount of data, this deferral can result in significant time savings.

If you make outline or dimension changes that normally result in immediate database restructuring, Essbase defers restructuring of the index and data files until the next time the affected block is accessed, or until a full restructure is forced (e.g., by a full calculation). For example, if you add a member to any dimension, or delete a member from a dense dimension, Essbase defers restructuring of index and data files if you have enabled INCRESTRUC.

When incremental restructuring is enabled, Essbase defers restructuring if you change the database outline or a dimension in a way that does not cause structural changes.

Incremental restructuring is applicable for the following changes:

- Adding a member to a sparse or dense dimension
- Deleting a member from a dense dimension
- Moving a member within a dense dimension
- Adding, moving, or deleting a Dynamic Calc member
- Adding, moving, or deleting a Dynamic Calc and Store member in a dense dimension
- Adding a Dynamic Calc and Store member in a sparse dimension
- Re-defining a Dynamic Calc member as type Dynamic Calc and Store
- Re-defining a Dynamic Calc and Store member as type Dynamic Calc
- Re-defining a Dynamic Calc or Dynamic Calc and Store member as a regular member
- Re-defining a regular member as type Dynamic Calc or Dynamic Calc and Store

Restructuring for Dynamic Calc members is different from restructuring for Dynamic Calc and Store members. In general, Dynamic Calc and Store members have a greater impact on restructuring.

The following changes result in immediate restructuring, regardless of whether incremental restructuring is enabled:

- Adding or deleting a dimension
- Deleting a stored member of a sparse dimension
- Moving a member in a sparse dimension
- Moving or deleting a Dynamic Calc and Store member in a sparse dimension
- Changing dimension definition from sparse to dense, or from dense to sparse
- Changing the order of sparse dimensions. Certain member additions or changes to sparse dimensions can also trigger immediate restructuring
- Changing the order of dense dimensions

If an incremental restructure has already occurred and shared members are added to the outline, Essbase ignores the INCRESTRUC setting and performs a full restructure.

Essbase logs outline changes in an internal file, database_name.ocl. Essbase clears the file whenever it does a full database restructure or when you clear or reset a database.
The `database_name.ocl` file can grow quite large in the meantime. To clear this file, issue `VALIDATE` in ESSCMD. `VALIDATE` causes Essbase to restructure any blocks whose restructure was deferred, and clears the file. When you issue `VALIDATE`, make sure the database is not in Read-only mode (Read-only mode is used for archiving).

If set to TRUE, `INCRESTRUC` affects all databases in all applications on the Essbase Server (except databases containing LROs), unless you have specified an `appname` and `dbname`.

The settings for `INCRESTRUC` are applied according to their order of appearance in the `essbase.cfg` file. For example:

```
INCRESTRUC TRUE
INCRESTRUC Sample Basic FALSE
```

enables incremental restructuring for all databases except Sample Basic.

If you are using Linked Reporting Objects (LROs) in a database, incremental restructuring is automatically disabled on that database. When you have incremental restructuring enabled for all databases in all applications (that is, you have set `INCRESTRUC` to TRUE), the presence of an LRO in a database disables incremental restructuring for that database, but does not affect the other databases on the Essbase Server.

If you add shared members to an outline, incremental restructuring is automatically turned off. If a restructure is triggered by outline changes, it will be done.

For more information about incremental restructuring, see the *Oracle Essbase Database Administrator’s Guide*.

**Examples**

```
INCRESTRUC Sample Basic TRUE
```

Defers restructuring of index and data files in the Basic database in the Sample application, whenever certain outline or dimension changes are made, until the next time Essbase accesses the affected blocks; that is, it enables incremental restructuring for that database.

```
INCRESTRUC Sample TRUE
```

Defers restructuring of index and data files for all databases in the Sample application, whenever certain outline or dimension changes are made, until the next time Essbase accesses the affected blocks; that is, it enables incremental restructuring for those databases.

```
INCRESTRUC TRUE
```

Defers restructuring of index and data files for all databases, whenever certain outline or dimension changes are made, until the next time Essbase accesses the affected blocks; that is, it enables incremental restructuring for all databases in all applications on that server.

```
INCRESTRUC FALSE
```

Immediately restructuring all databases whenever an outline or dimension change calls for it; that is, it disables incremental restructuring for all databases in all applications on that server.
**INDEXCACHESIZE**

Defines the initial value for the index cache size for newly created or migrated databases on Essbase Server. The specified value takes effect for all new databases that are created after Essbase is started. The index cache is a buffer in memory that holds index pages. Essbase allocates this memory at startup of the database.

The value of the index cache size can be expressed in bytes, kilobytes, megabytes, or gigabytes. Terabytes must be expressed in gigabytes.

This setting does not apply to aggregate storage databases.

**Syntax**

```
INDEXCACHESIZE n
```

Where 

- **n** is an integer value expressed in bytes (B), kilobytes (K), megabytes (M), or gigabytes (G):
  - Minimum value: 1 megabyte (1 M)
  - Maximum value:
    - 32-bit operating system: 4 gigabytes (4 G)
    - 64-bit operating system: 256 TB
  - Default value:
    - Buffered I/O: 1 megabyte (1 M)
    - Direct I/O: 10 megabytes (10 M)

If a value is given without a B, K, M, or G qualifier, it is assumed the value is in bytes.

The qualifier can be in upper or lowercase and can be entered adjacent to the value (10M) or separated by a space (10 M).

**Example**

```
INDEXCACHESIZE 100M
```

Sets the index cache size of all subsequently created databases at 100 megabytes.

**INPLACEDATAWRITE**

When Essbase runs on Oracle Exalytics In-Memory machine, enables or disables in-place data writing as an alternative to block updates requiring new disk locations.

In-place data writing means that when updates occur, the data block can be written to the same location, as long as the compressed size of the data block fits in its original location on the disk.

**Syntax**

```
INPLACEDATAWRITE [appname [dbname]] TRUE|FALSE
```
- **appname**—Optional. If provided, the setting applies only to the specified application; otherwise, the setting applies to all applications.

- **dbname**—Optional. Specifies the database in the application specified by `appname`. If you specify a value for `dbname` but do not specify a value for `appname`, your specification is ignored.

- **TRUE**—In-place data writing is enabled when Essbase runs on Exalytics In-Memory machine. This is the default.

- **FALSE**—In-place data writing is disabled.

**Description**

In-place data writing can help reduce data fragmentation and lower the need for frequent restructuring of the database. It also reduces the need for frequent index updates, resulting in improved performance.

**Notes**

This configuration setting applies only when the “ORACLEHARDWAREACCELERATION” on page 529 configuration setting is set to TRUE.

**Example**

```sql
INPLACEDATAWRITE Sample Basic FALSE
```

**See Also**

“ORACLEHARDWAREACCELERATION” on page 529

---

**JAVAMAXMEMBERSPEROUTLINE**

Sets a maximum number of member handles that can be referenced in a Java API Essbase outline.

**Syntax**

```sql
JAVAMAXMEMBERSPEROUTLINE [appname [dbname]] n
```

- **appname**—Optional. If provided, the setting applies only to the specified application; otherwise, the setting applies to all applications.

- **dbname**—Optional. Specifies the database in the application specified by `appname`. If you specify a value for `dbname` but do not specify a value for `appname`, your specification is ignored.

- **n**—A value specifying the maximum number of allowed open member handles. The maximum and default value is 4294967295 (4 G). Prior to Release 11.1.2.2.100, the default was 65536.

**Example**

```sql
JAVAMAXMEMBERSPEROUTLINE Sample Basic 131072
```
**JAVAMAXSMARTLISTSPEROUTLINE**

Sets a maximum number of smart lists (text lists) that can referenced in a Java API Essbase outline.

**Syntax**

```
JAVAMAXSMARTLISTSPEROUTLINE appname n
```

- **appname**—The application to which the setting applies.
- **dbname**—Optional. Specifies the database in the application specified by `appname`. If you specify a value for `dbname` but do not specify a value for `appname`, your specification is ignored.
- **n**—A value specifying the maximum number of allowed text lists. The minimum value is 1024. The maximum and default value is 4294967295 (4 G). Prior to Release 11.1.2.2.100, the default was 65536.

**Description**

A text list (or smart list) is an object that stores text values for a cell. For more information, see “Working With Typed Measures” in the *Oracle Essbase Database Administrator’s Guide*.

**Example**

```
JAVAMAXSMARTLISTSPEROUTLINE Sample 16384
```

**See Also**

JAVAMAXMEMBERSPEROUTLINE

**JVMMODULELOCATION**

Specifies a Java Virtual Machine (JVM) library to be used by Essbase. This parameter is useful if you have more than one version of the JVM library installed on the computer running Essbase.

**Syntax**

```
JVMMODULELOCATION pathToJVM
```

Where `pathToJVM` is a fully-qualified path and file name of a Java Virtual Machine library to be used by Essbase.

**Description**

If you do not include this command in the `essbase.cfg` file, or if you include this command with an incorrect path and file name, Essbase searches the PATH (library path on UNIX systems)
for a version of the JVM library and uses the first version that it finds. If you include this command without any parameters, Java Virtual Machine functions, including custom-defined macros and custom-defined functions in the Calculator module, are disabled in the product.

Notes
For more information about setting up the Java Virtual Machine, see the Oracle Enterprise Performance Management System Installation and Configuration Guide.

Example

```
JVMMODULELOCATION C:\Hyperion\common\JRE\Sun\1.5.0\bin\client\jvm.dll

// The following statement (with no parameters) disables JVM-dependent functions

JVMMODULELOCATION
```

The path name cannot include spaces. In `essbase.cfg`, a parameter is not followed by a semicolon. Do not enclose the path parameter in quotation marks.

**LOCKTIMEOUT**

Limits the amount of time a Smart View or other grid client user can hold an exclusive lock.

This setting does not apply to aggregate storage databases.

**Syntax**

```
LOCKTIMEOUT n
```

Where `n` is a number of seconds. The default value is 3600 seconds (60 minutes).

**Description**

This setting specifies, in seconds, the maximum amount of time a Smart View or other grid client user can hold an exclusive lock on a block. This setting applies to all applications and databases on the Essbase Server, and is meant to specify a default value for newly created or migrated applications. To override this default for any application, specify a value in Administration Services or MaxL.

**Example**

```
LOCKTIMEOUT 300
```

commits locked data and releases the exclusive lock after the lock has been held for 300 seconds (five minutes).

**LOGMESSAGELEVEL**

Sets the level of messages written to the application log.
Syntax

LOGMESSAGELEVEL ERROR | WARNING | INFO | DEBUG

Where ERROR, WARNING, INFO, and DEBUG are priority levels:

- **ERROR**—Only error messages are written to the application log.
- **WARNING**—Warning and error messages are written to the application log.
- **INFO**—Info, warning, and error messages are written to the application log. This is the default.
- **DEBUG**—Debug, info, warning, and error messages are written to the application log.

Notes

- This setting affects only the application log messages. To control the messages displayed in the application window, use “DISPLAYMESSAGELEVEL” on page 476.

  For both the application log (LOGMESSAGELEVEL) and application window (DISPLAYMESSAGELEVEL), you can set the same level for ERROR, WARNING, and INFO. DISPLAYMESSAGELEVEL does not support DEBUG.

- For more information about the application log, see the Oracle Essbase Database Administrator’s Guide.

Example

LOGMESSAGELEVEL WARNING

sets the log message level to WARNING. Only warning and error messages are written to the application log.

See Also

SETMSGLEVEL

“DISPLAYMESSAGELEVEL” on page 476

**LROONSHAREDMBR**

Specifies whether shared members have Linked Reporting Objects that are unique from those of their corresponding regular members.

This setting does not apply to aggregate storage databases.

Syntax

LROONSHAREDMBR TRUE | FALSE

- **TRUE**—LROs related to regular members are unique, and not shared by shared members. This is the default.
- **FALSE**—Shared members have the same LROs as corresponding regular members.
Description

A Linked Reporting Object (LRO) is an external file, cell note, or URL that you link to a cell in a database. Users can then retrieve the object from Smart View or other grid clients.

With an LROONSHAREDMBR setting of TRUE, Essbase makes shared member LROs unique from the LROs of regular members.

For example, assume the LROONSHAREDMBR option is FALSE. If you link an LRO to the data cell related to Diet Colas (100-20) under the parent member Colas (100), the corresponding data cell for Diet Colas (100-20) under the parent member Diet shares the same LRO.

Example

LROONSHAREDMBR FALSE

MAXERRORMBRVERIFYREPORT

Determines the maximum number of members on which Essbase should report errors during outline verification.

Syntax

MAXERRORMBRVERIFYREPORT \( n \)

where \( n \) is the number of members. The default is 500.

Description

MAXERRORMBRVERIFYREPORT limits the number of members upon which Essbase performs error reporting during outline verification. Setting a limit helps avoid performance overhead when a large number of members may cause outline verification errors.

Example

MAXERRORMBRVERIFYREPORT 25

MAXFORMULACACHESIZE

Applies to aggregate storage databases, or to block storage databases when hybrid aggregation is enabled. Specifies the maximum size of the formula cache to be made available for calculating members with formulas.

Syntax

MAXFORMULACACHESIZE \( [appname [dbname]] n \)

- \( appname \)—Optional. To set the cache size maximum for a specific application, specify the application name.
- \( dbname \)—Optional. To set the cache size maximum for a specific database, specify the database name. If \( dbname \) is specified, \( appname \) must also be specified.
n—An integer that specifies the number of kilobytes (KB) to set as the maximum cache size to be made available for calculating members with formulas. The default is 1024.

Description
If the amount of cache that Essbase sets aside for calculating members of outlines is insufficient, the following error is generated: "ERROR - 1200601 - Not enough memory for formula execution. Set MAXFORMULACACHESIZE configuration parameter to \( n \) and try again." The error recommends a value to use with the MAXFORMULACACHESIZE setting.

Error 1200601 is likely to occur in situations where one dimension’s dynamic calculations would expand beyond the current formula cache size setting.

If you see error 1200601, the following guidelines can help you determine what value to use for \( n \):
1. Identify which queried dimensions are represented by dynamic members.
2. Multiply the sizes of those dimensions to get a number of members.
3. Multiply the number of members by 8 to get the recommended \( n \) value (not more than 4G).

For example, the default formula cache size of 1024 allows 1024/8=256 members to be in the cache.

Notes
- The entire specified amount is not used unless needed.
- Oracle recommends that you use this setting only in response to error 1200601.
- Error 1200601 appears, stopping the current query, only in the case where one of the queried dimensions with dynamic members does not fit the formula cache size. Otherwise, the query runs even if the requested cache size is larger than the MAXFORMULACACHESIZE setting; however, the query is split internally into multiple calculators. The split query may run, but cause a decrease in performance Therefore, it is optimal for you to ensure that all dimensions in a query do fit within the formula cache size.

Example

```
MAXFORMULACACHESIZE 2048
```

Sets the aggregate storage formula cache size maximum to 2048 KB for every application and database.

See Also

“ASODYNAMICAGGINBSO” on page 439

**MAXLOGINS**

Sets a limit on the number of user sessions that can be connected to the Essbase Server at any one time.
Syntax

MAXLOGINS  n

Where n is any integer from 1000 to 1048575 is valid. The default value is 10000.

Description

This setting limits the maximum number of user sessions allowed to connect to the Essbase Server at any one time. This number includes multiple instances of the same user.

You may wish to adjust the value of MAXLOGINS to match computer resources, or to more closely manage concurrent ports and user sessions. A concurrent port is used for each unique combination of client machine, Essbase Server and login name. For example, the same user with five open Excel worksheets connected to the same Essbase Server use one port, but five sessions.

Notes

- Increasing the value of MAXLOGINS increases memory use approximately 6 bytes per user session.
- If the setting is less than the minimum value, 1000, the value is assumed to be 1000.

Example

MAXLOGINS 50000

increases the maximum number of simultaneous logins possible, from the default of 10000 to 50000.

See Also

"SERVERTHREADS" on page 547

MAX_REQUEST_GRID_SIZE

Specifies the maximum size of the request grid. The request grid is the number of cells requested from the target (an aggregate storage database) and sent to the data source. Limiting the size of the request grid, which can be millions of cells, ensures a reasonable response time.

If you find that you must set a small request grid size, you should look into improving the design of the application.

Syntax

MAX_REQUEST_GRID_SIZE [appname [dbname]] n

- appname—Optional. Specifies the application for which the request grid size is to be set.
  - If you specify a value for appname and do not specify a value for dbname, the setting applies to all databases in the specified application.
  - To enable the setting for a specific database, you must specify an application and database.
If you do not specify an application, you cannot specify a database, and the setting applies to all applications and databases on Essbase Server.

- `dbname`—Optional. Specifies the database, in the application specified by `appname`, for which the request grid size is to be set.
  
  If you specify a value for `dbname` but do not specify a value for `appname`, your specification is ignored, and logging diagnostic messages is enabled for all applications and databases on Essbase Server.

- `n`—Specifies the size of the request grid to be returned from the data source.
  
  The default value is 10 million (10000000) cells.

  The maximum value is limited by the unsigned int value of 4294967295.

You must restart Essbase Server to initialize any change to the configuration file.

Example

```
MAX_REQUEST_GRID_SIZE ASOSamp 5000000
```

Limits the request grid to 5 million cells for all databases associated with the ASOSamp application.

See Also

“MAX_RESPONSE_GRID_SIZE” on page 519 configuration setting

“ENABLE_DIAG_TRANSPARENT_PARTITION” on page 491 configuration setting

**MAX_RESPONSE_GRID_SIZE**

Specifies the maximum size of the response grid. The response grid is the number of cells that the target (an aggregate storage database) sends to the source.

The amount of memory required to temporarily hold the response grid in the data target is proportional to the size of the request grid (`MAX_REQUEST_GRID_SIZE`). In the case of a huge request grid with millions of cells, the amount of memory required for the response grid to be sent in one operation could pose problems (for example, the system could reach memory boundaries or fail to allocate enough memory). With the `MAX_RESPONSE_GRID_SIZE` configuration setting, Essbase splits the request grid into slices of data and sends multiple, smaller response grids to the source.

**Syntax**

```
MAX_RESPONSE_GRID_SIZE [appname [dbname]] n
```

- `appname`—Optional. Specifies the application for which the response grid size is to be set.
  
  If you specify a value for `appname` and do not specify a value for `dbname`, the setting applies to all databases in the specified application.

  To enable the setting for a specific database, you must specify an application and database.
If you do not specify an application, you cannot specify a database, and the setting applies to all applications and databases on Essbase Server.

- `dbname`—Optional. Specifies the database, in the application specified by `appname`, for which the response grid size is to be set.

  If you specify a value for `dbname` but do not specify a value for `appname`, your specification is ignored, and logging diagnostic messages is enabled for all applications and databases on Essbase Server.

- `n`—Specifies the size of the slice of the response grid to be sent to the data target.
  
  The default value is one million (1000000) cells, which requires 8 MB of memory.

  For example, if `MAX_REQUEST_GRID_SIZE` is set to one billion (1000000000) cells and `MAX_RESPONSE_GRID_SIZE` is set to one million (1000000) cells, the size of the response grid is one thousand (1000) cells.

You must restart Essbase Server to initialize any change to the configuration file.

Example

```plaintext
MAX_RESPONSE_GRID_SIZE ASOSamp 500000
```

Limits the response grid to a half-million cells (which requires 4 MB of memory) for all databases associated with the ASOSamp application.

See Also

“MAX_REQUEST_GRID_SIZE” on page 518 configuration setting

“ENABLE_DIAG_TRANSPARENT_PARTITION” on page 491 configuration setting

**MAX SIZE PER FETCH**

Specifies the maximum size of the grid after grid expansion.

**Syntax**

```plaintext
MAX_SIZE_PER_FETCH [appname [dbname]] n
```

- `appname`—Optional. Specifies the application for which to set the limit. If you specify a value for `appname` and do not specify a value for `dbname`, the setting applies to all databases in the specified application. To enable the setting for a specific database, you must specify an application and database.

- `dbname`—Optional. Specifies the database, in the application specified by `appname`, for which to set the limit. If you specify a value for `dbname` but do not specify a value for `appname`, your specification is ignored.

- `n`—The maximum number of cells in the grid after grid expansion.

**Description**

This setting specifies the maximum size of the grid after grid expansion.
If, after grid expansion, the size of the grid is greater than the maximum size specified, grid expansion will not occur for the query, which might result in a slight degradation of performance. When using this setting, GRIDEXPANSION must be set to ON.

This setting applies to block storage databases.

**Note:** For databases that are the target of a transparent partition, Oracle recommends a smaller maximum grid size to retain the advantages of grid expansion.

**Example**

```
MAX_SIZE_PER_FETCH Sample Basic 75000000
```

Limits the grid to 75 million cells after grid expansion for each query to the Basic database associated with the Sample application.

**See Also**

“GRIDEXPANSION” on page 503

## MDXLIMITFORMULARECURSION

When set to false, does not prevent the Essbase Server from going beyond 31 MDX formula execution levels.

**Syntax**

```
MDXLIMITFORMULARECURSION [appname [dbname]] TRUE | FALSE
```

- **appname**—Optional. Specifies the application for which to set or remove the limit. If you specify a value for `appname` and do not specify a value for `dbname`, the setting applies to all databases in the specified application. To enable the setting for a specific database, you must specify an application and database.

- **dbname**—Optional. Specifies the database, in the application specified by `appname`, for which to set the limit. If you specify a value for `dbname` but do not specify a value for `appname`, your specification is ignored.

- **TRUE**—Imposes a limit of 31 on the number of MDX formula execution levels. The default setting is TRUE.

- **FALSE**—Imposes no limit on the number of MDX formula execution levels.

**Description**

MDXLIMITFORMULARECURSION limits the number of execution levels of MDX calculated members or formulas. MDX calculated member or formula execution may be recursive (for example, a formula can refer to itself, or a calculated member can refer to itself). By default, Essbase limits the number of MDX formula execution levels, because formulas with excessive execution levels may lead to stack overflow errors and crash the server. However, setting MDXLIMITFORMULARECURSION to FALSE prevents Essbase from imposing the limitation.
You can use this setting when you know that a recursive execution in a formula/calculated member will eventually terminate, and you wish to have a recursion depth greater than 31.

If an MDX formula reaches 31 execution levels and MDXLIMITFORMULARECURSION is not set, or is set to TRUE, Essbase stops processing that formula and writes error messages in the application log. If a formula reaches 31 execution levels and MDXLIMITFORMULARECURSION is set to FALSE, Essbase continues processing that formula.

**Caution!** Before setting MDXLIMITFORMULARECURSION to FALSE, be sure that the MDX formulas in the outline are not infinitely recursive; for example, be sure that formulas do not depend on each other. Infinite formula recursion may crash the server.

**MEMSCALINGFACTOR**

This setting is deprecated. The 64-bit server has been expanded to accommodate larger cache sizes without the use of a scaling factor.

In previous releases, this setting enabled you to set data cache and data file cache sizes to values greater than 4GB, by indicating a scaling factor $n$.

The MEMSCALINGFACTOR setting, if present, is still recognized and applied once, upon migration to the current release. Upon the first startup of a database after migration, Essbase reads the current data cache setting, multiplies it by the scaling factor $n$ (if MEMSCALINGFACTOR is set), and saves the new data cache size. The setting is ignored thereafter, because Essbase can accommodate larger cache sizes without the use of a scaling factor.

See Also

“DATACACHESIZE” on page 465

“DATAFILECACHESIZE” on page 468

**MULTIPLEBITMAPMEMCHECK**

Enforces the size limit for the amount of memory that is used for the calculator cache when Essbase selects the multiple bitmap cache option.

This setting does not apply to aggregate storage databases.

**Syntax**

MULTIPLEBITMAPMEMCHECK TRUE | FALSE

- **TRUE**—The size limit is enforced.
- **FALSE**—The size limit is not enforced.
Description
If the setting is present and its value is TRUE, then any time the memory limit is exceeded for the calculator cache in multiple bitmap cache mode, it will switch to single bitmap mode and enforce the size limit that you selected.

If the setting is not present or has any other value than TRUE, then the limit is not strictly enforced, and your server process may grow too large.

Example
MULTIPLEBITMAPMEMCHECK TRUE

See Also
“CALCCACHE” on page 446
“PARCALCMULTIPLEBITMAPMEMOPT” on page 532

**NETBINDRETRYDELAY**
Specifies the amount of time, in milliseconds, that the application server retries on a bind failure.

Syntax
```
NETBINDRETRYDELAY n
```
Where $n$ is an integer value, expressed in milliseconds. The default value is 10 seconds. The minimum value is 0.

Example
```
NETBINDRETRYDELAY 5
```
Causes the application server network to retry on a bind failure after 5 milliseconds.

See Also
“NETDELAY” on page 523
“NETRETRYCOUNT” on page 524
“NETTCPCONNECTRETRYCOUNT” on page 525

**NETDELAY**
Specifies the network request delay time.

Syntax
```
NETDELAY n
```
Where $n$ is an integer value of 100 or above, expressed in milliseconds. The default value is 200 milliseconds.
Description
This setting defines the network request delay time in milliseconds. This is the amount of time an unsuccessful operation waits before Essbase retries the operation.

Example
NETDELAY 500

See Also
“NETBINDRETRYDELAY” on page 523
“NETRETRYCOUNT” on page 524
“NETTCPCONNECTRETRYCOUNT” on page 525

NETRETRYCOUNT
Specifies the number of attempts Essbase is allowed to make a network connection before failing and reporting an error.

Syntax
NETRETRYCOUNT \( n \)

Where \( n \) is an integer value. The default value is 600 retries. The minimum value is 300.

Example
NETRETRYCOUNT 400

See Also
“NETBINDRETRYDELAY” on page 523
“NETDELAY” on page 523
“NETTCPCONNECTRETRYCOUNT” on page 525

NETSSLHANDSHAKETIMEOUT
Specifies the maximum time that Essbase Client should wait for Essbase Agent to respond to a secure session request before timing out.

Syntax
NETSSLHANDSHAKETIMEOUT \( n \)

Where \( n \) is the number of milliseconds expressed as a positive integer. The default is 10000 milliseconds (10 seconds).
Description

Use this setting to specify the maximum number of milliseconds that Essbase clients should wait for a response to a secure session request before timing out.

Notes

- The minimum value is 100 milliseconds; values less than the minimum are ignored.
- The SSL handshake may timeout due to network congestion, or because the connection modes at either end are mismatched (for example, a client in Clear mode tries to connect to the secure port of Essbase Agent by mistake).

Example

```
NETSSLHANDSHAKETIMEOUT 20000
```

The SSL handshake fails after 20,000 milliseconds if Essbase Agent does not respond to the secure session request.

See Also

- “AGENTSECUREPORT” on page 433
- “CLIENTPREFERREDMODE” on page 462
- “ENABLECLEARMODE” on page 492
- “ENABLESECUREMODE” on page 494
- “SSLCIPHERSUITES” on page 555
- “WALLETPATH” on page 568

For information on implementing SSL, see the Oracle Enterprise Performance Management System Security Configuration Guide.

**NETTCPCONNECTRETRYCOUNT**

Specifications the number of attempts a client will make to connect to a TCP/IP network before failing and reporting an error.

Syntax

```
NETTCPCONNECTRETRYCOUNT  n
```

Where \( n \) is an integer value. The default value is 3. The minimum value is 2. The maximum value is 1000000.

Notes

Some causes of connection failures are, for example, network congestion, server inaccessibility, and network interruption.
Example

NETTCPCONNECTRETRYCOUNT 100

See Also

“NETRETRYCOUNT” on page 524

“NETDELAY” on page 523

“NETBINDRETRYDELAY” on page 523

**NO_HOSTNAME_LISTCONNECT**

Specifies whether to suppress host name lookup (and display) when listing the client computers that are logged in to Essbase.

Syntax

`NO_HOSTNAME_LISTCONNECT TRUE|FALSE`

- **TRUE**—Only IP addresses are displayed in the connections list.
- **FALSE**—(Default). Host names and IP addresses are displayed in the connections list.

Description

This setting specifies whether to exclude host names from being displayed in the connections list, in addition to IP addresses, when viewing active login sessions using the `display session` MaxL statement or Administration Services. If set to **FALSE**, Essbase displays the host names of the client computers that are logged in to Essbase.

When set to **TRUE**, Essbase displays client IP addresses without looking up their host names, which improves performance of the connection listing.

Example

`NO_HOSTNAME_LISTCONNECT TRUE`

Disables the host name lookup for connected clients.

See Also

Display Session

**NOMSGLOGGINGONDATAERRORLIMIT**

Controls whether data load or dimension build errors are written to the application log after the limit described by the value of DATAERRORLIMIT is reached.

Syntax

`NOMSGLOGGINGONDATAERRORLIMIT TRUE | FALSE`
TRUE—Prevents data load or dimension build errors from being written to the application log after the limit described by the value of DATAERRORLIMIT is reached.

FALSE—Does not prevent message logging based on DATAERRORLIMIT. This is the default.

Description

This setting controls the maximum number of error messages written to the data load error log per data load and the dimension build error log per dimension build. This setting stops any data load or dimension build error messages from being written to the application log after the DATAERRORLIMIT value has been reached.

The default value for DATAERRORLIMIT is 1000, so if you do not set DATAERRORLIMIT, only the first 1000 errors will be written to the data load error log or the dimension build error log.

Example

DATAERRORLIMIT 50000
NOMSGLOGGINGONDATAERRORLIMIT TRUE

Sets the limit on data load or dimension build error messages written to the error log at 50,000, and further prevents any error messages after the first 50,000 from being written to the application log.

See Also

“DATAERRORLIMIT” on page 466

NUMBEROFSECFILEBACKUPS

Specifies the maximum number of security backup files (essbase_timestamp.bak) that Essbase creates and maintains. When the limit is exceeded, Essbase deletes the security backup file with the oldest timestamp and creates the latest backup file.

Syntax

NUMBEROFSECFILEBACKUPS n

n—Specifies an integer between 2 and 10.

The default value is 2.

Note: You can configure the interval in which Essbase creates backup security files, and whether Essbase automatically loads a valid backup security file at startup, if the essbase.sec file is invalid.

Example

NUMBEROFSECFILEBACKUPS 5
NUMBLOCKSTOEXTEND

Determines the number of bytes by which data files in block storage databases are extended to accommodate block updates that require additional disk space.

Syntax

NUMBLOCKSTOEXTEND [appname [dbname]] n

The product of n and the currently requested block size is the number of bytes by which the data file is extended.

The default value is 2,048.

Description

When the Essbase block storage kernel updates a block, it writes to a new disk location. The block storage kernel searches free space to find a new disk location to use. If there is not enough free space to service the current request, the data file is extended.

Note: Upon first upgrading to this release, there is an increase in the amount of disk space pre-allocated for page files unless you set NUMBLOCKSTOEXTEND to 1.

Example

NUMBLOCKSTOEXTEND Sample Basic 2240

NUMERICPRECISION

Sets the number of precision digits used by Report Writer for numerical comparison.

Syntax

NUMERICPRECISION n

Where n is the number of precision digits to be considered in the numerical comparison. Acceptable values for n are -1 through 15. A value of -1 indicates a full comparison. The default value is 4.

Description

This setting defines the number of precision digits used by Report Writer for numerical comparison.
The numeric comparison function subtracts one value from the other, and compares the absolute value of the result with $10^{-n}$. If $10^{-n}$ is greater than the absolute value of the subtraction result, the numbers are equal.

**Notes**
- A value of -1 indicates a full comparison.
- For information about Report Writer, see the *Oracle Essbase Database Administrator’s Guide*.

**Example**

Compare the values 3.289999 and 3.290000 with a numeric precision of 2:

```
NUMERICPRECISION 2
```

Is 3.289999 == 3.290000 given a numeric precision of 2?

| 3.289999 - 3.290000 | = 0.000001 (the absolute value)

$10^{-2}$ = 0.01

0.01 > 0.000001, so the numbers are equal.

**See Also**

RESTRICT Report Writer Command

---

**ODBCERRORLOGOFF**

Specifies whether ODBC driver error messages are written to the Essbase application log file.

**Syntax**

```
ODBCERRORLOGOFF TRUE | FALSE
```

- TRUE—Logging of ODBC driver errors is disabled.
- FALSE—Logging of ODBC driver errors is enabled. The default value is FALSE.

**Example**

```
ODBCERRORLOGOFF TRUE
```

---

**ORACLEHARDWAREACCELERATION**

Configures Essbase Server to run on the Oracle Exalytics In-Memory machine. Essbase enhancements take advantage of Exalytics In-Memory machine CPUs, memory, and other aspects of the machine hardware that allows Essbase to deliver improved performance and scalability.
Caution! This setting must only be used when Essbase is deployed on the Exalytics In-Memory machine. ORACLEHARDWAREACCELERATION is not supported and should never be set to TRUE on deployments of Essbase on non-Exalytics In-Memory machines.

Syntax
ORACLEHARDWAREACCELERATION TRUE | FALSE

- TRUE—Essbase uses specific Oracle Exalytics In-Memory machine optimizations. Set this setting to TRUE only if Essbase is deployed on an Exalytics In-Memory machine.
- FALSE—This is the default.

Example
ORACLEHARDWAREACCELERATION TRUE

See Also
“Oracle Exalytics In-Memory Machine Configuration Settings” on page 418

OUTLINECHANGELOG
Controls whether Essbase keeps a history of outline modifications.

Syntax
OUTLINECHANGELOG TRUE | FALSE

- TRUE—Essbase logs outline changes into the file database_name.olg.
- FALSE—Essbase does not log outline changes. This is the default.

Description
If OUTLINECHANGELOG is set to TRUE, Essbase logs all outline changes into the file database_name.olg. Database administrators can review the outline revision history in the .olg file and gather enough information to roll back changes if needed.

Each database contains a separate outline change log file in the same location as the database. The file is stored in /Oracle/Middleware/user_projects/epmsystem1/diagnostics/logs/essbase/essbase/app/appname/dbname.

The data format of the outline change log is:
- Date and time of outline modification
- Name of the user who made the change
- Type of change the user made
- Details describing the type of change made
Notes

- During a restructure, Essbase holds outline change information in memory until all updates have been made to the outline change log. Turning on the outline change log might affect your restructure performance, particularly after dimension builds of several hundred or more members.
- To set the size of the outline change log, use the "OUTLINECHANGELOGFILESIZE" parameter in your essbase.cfg file.

Example

```
OUTLINECHANGELOG TRUE
```

See Also

- "OUTLINECHANGELOGFILESIZE" on page 531
- "SILENTOTLQUERY" on page 549

**OUTLINECHANGELOGFILESIZE**

Sets the maximum file size of the outline change log.

Syntax

```
OUTLINECHANGELOGFILESIZE n
```

Where `n` is the number of bytes to allocate for the change log. The default is 64,000 bytes. The minimum is 8,092 bytes. The maximum is 2 megabytes.

Description

This setting sets the maximum file size of the outline change log in bytes. When the outline change log reaches the maximum file size, Essbase copies the contents of the file to a separate backup file with the same name as the outline change log file (`database_name.olg`), but with an `.olb` extension.

Notes

- The outline change log is disabled by default. To enable it, use the "OUTLINECHANGELOG" parameter in your essbase.cfg file.
- The outline change log file is located in the database directory of the Essbase Server installation. It is named in the format `database_name.olg`.
- The default, minimum, and maximum file sizes for the backup file are the same as the file sizes specified for the outline change log file.
- Each time the outline change log file reaches its maximum file size, Essbase clears the outline change log and replaces the backup file with a backup of the current outline change log.
Example

OUTLINECHANGELOGFILESIZE 8092

See Also

“OUTLINECHANGELOG” on page 530
“SILENTOTLQUERY” on page 549

**PARCALCMULTIPLEBITMAPMEMOPT**

Optimizes memory use when using multiple bitmap mode for the calculator cache during CALCPARALLEL parallel calculation.

This setting does not apply to aggregate storage databases.

Syntax

PARCALCMULTIPLEBITMAPMEMOPT TRUE | FALSE

- **TRUE**—Memory usage is optimized when using multiple bitmap mode during CALCPARALLEL parallel calculation.
- **FALSE**—Memory usage is not optimized. This is the default.

Description

If the setting is present and its value is **TRUE**, then Essbase optimizes memory usage when using parallel calculation in calculator cache multiple bitmap mode. This setting can be used together with, or separately from, “MULTIPLEBITMAPMEMCHECK” on page 522.

Example

PARCALCMULTIPLEBITMAPMEMOPT TRUE

See Also

“CALCCACHE” on page 446
“CALCPARALLEL” on page 457
“MULTIPLEBITMAPMEMCHECK” on page 522

**PERSISTUSERATLOGIN**

When a user logs on to Essbase, specifies whether to add the user to the *essbase.sec* security file, if the user does not already exist in the file.

Syntax

PERSISTUSERATLOGIN TRUE | FALSE
• TRUE—Essbase adds the user to the security file, and tracks user information (such as the
time the user last logged into Essbase) and named connections.
• FALSE—The user is not added to the security file.

Example
PERSISTUSERATLOGIN TRUE

**PIPEBUFFERSIZE**

Sets the size of the buffer used for communication between the grid extractor and Report Writer.

**Syntax**

PIPEBUFFERSIZE \textit{n}

Where \textit{n} is an integer value from 2,048 to 65,534, expressed in bytes. The default value is 4K
(4,096 bytes).

**Description**

This setting determines the size of the buffer used for communication between the grid extractor
and Report Writer on the network.

Example

PIPEBUFFERSIZE 20000

For the application Sample, defines a 20-kilobyte buffer to store pipes.

**PORTINC**

Specifies the value of the increment in between port numbers used by the Agent process
(ESSBASE).

**Syntax**

PORTINC \textit{n}

Where \textit{n} specifies the increment between port numbers that the Agent used to try and find an
available port. The default value is 1.

**Description**

This setting specifies the increment value between ports used by the Agent when it tries to find
an available port.

You may wish to change the default for many reasons. These are two common reasons:

• The default port, 33768, is inappropriate for your site.
You may wish to install a second Agent on a single computer to facilitate testing. See SERVERPORTEND and the related configuration settings to assign the second Agent to a different port than the first. Use SERVERPORTEND along with AGENTPORT, SERVERPORTBEGIN, and PORTINC.

**Caution!** More than one Agent per computer should not be used in production systems.

**Notes**

- You must insert these settings in both the configuration file for the Essbase Server computer and the configuration file for the client computer.
- You must perform several other steps in order to enable multiple agents on one computer. See the *Oracle Essbase Database Administrator’s Guide* for instructions.

**Example**

```
AGENTPORT 1478
SERVERPORTBEGIN 32470
SERVERPORTEND 32600
PORTINC 5
```

This example would produce these results:

- AGENTPORT sets the port that the additional Agent will use at 1478.
- SERVERPORTBEGIN sets the value that the first server process will try to use for a port at 32470.
- SERVERPORTEND sets the highest port number value this installation can use.
- PORTINC controls the increment value used for each port. In this example, if the first server process was able to use port number 32470, then the next process would use 32475.

**See Also**

“AGENTPORT” on page 432
“SERVERPORTBEGIN” on page 545
“SERVERPORTEND” on page 546
“PORTUSAGELOGINTERVAL” on page 534

**PORTUSAGELOGINTERVAL**

Enables Essbase Server to log, at a specified interval, the number of ports being used.

**Syntax**

```
PORTUSAGELOGINTERVAL n
```

Where \( n \) represents the number of minutes between each check of the number of ports in use. The value of \( n \) can be any whole number from 1 - 60, with five as the recommended minimum.
and default value. Essbase ignores any portion of a non-whole number. For example, 2.5 is evaluated as 2 minutes. Statistics are written to the log immediately after each check.

Description
PORTUSAGELOGINTERVAL enables you to set an interval at which to log the number of ports being used. By analyzing the information in the log, you can monitor port utilization and identify a need for more ports before end users are unable to connect.

To enable Essbase Server to check port use statistics and write those statistics to the log:
1. Edit the server configuration file essbase.cfg to include the PORTUSAGELOGINTERVAL setting.
2. Restart Essbase Server.
3. View the Essbase Server Log file. You will see entries similar to the following output:

   
   [Mon Apr 22 00:48:50 2003]Local/ESSBASE0///Info(1056214)

Examples
PORTUSAGELOGINTERVAL 10
Essbase writes the port use statistics to the Essbase Server log every 10 minutes.

PORTUSAGELOGINTERVAL
Essbase writes the port use statistics to the Essbase Server log every five minutes (the default value).

PORTUSAGELOGINTERVAL 6.75
Essbase ignores the non-whole portion of the number and writes the port use statistics to the Essbase Server log every six minutes.

See Also
“SERVERPORTBEGIN” on page 545
“SERVERPORTEND” on page 546
“PORTINC” on page 533
“AGENTPORT” on page 432

QUERYTIMEOUT
Specifies the maximum time that Essbase should wait for a SQL query to execute before timing out.

Syntax
QUERYTIMEOUT n
Where n is an integer value specifying the wait time in milliseconds.
Description
This setting determines how long Essbase should wait for a SQL query to execute before timing out. It applies only to XOLAP-enabled cubes.

Example
QUERYTIMEOUT 10000

See Also
“CONNECTIONTIMEOUT” on page 463

QRYGOVEXECBLK
Sets the maximum number of blocks that a query can access before the query is terminated.
This setting does not apply to aggregate storage databases.

Syntax
QRYGOVEXECBLK [appname [dbname]] n

- **appname**—Optional. Applies the query block limit to the application specified. If you specify **appname**, you must also specify a value for **n**, or Essbase Server ignores QRYGOVEXECBLK. If you do not specify an application, you cannot specify a database, and the query block limit applies to all applications and databases on the server. If you specify a value for **appname** and do not specify a value for **dbname**, the query time limit applies to all databases in the specified application.

- **dbname**—Optional. Must be used with **appname** and **n**, or Essbase Server ignores QRYGOVEXECBLK. If you specify **dbname**, **appname**, and **n**, the query block limit is applied only to the specified database.

- **n**—The value of **n** specifies the number of blocks that Essbase Server allows a query to access before the query is terminated. You must specify this parameter or the server ignores QRYGOVEXECBLK. If you do not specify **appname** or **dbname**, the query block limit applies to the entire server.

Description
QRYGOVEXECBLK specifies the maximum number of blocks that a query can retrieve before Essbase Server terminates that query (a request for information sent to a database). You can apply this setting to an entire server, to all the databases in a single application, or to a single database.

When a query exceeds the block limit and is terminated, an error message is written to the application log of the application accessed for the query.

Restarting Essbase Server after adding or changing this setting activates the new setting values.

Use QRYGOVEXECBLK to prevent these types of queries:
A long-running query against a database that accesses attributes at a high level, forcing many dynamic calculations to occur.

A query that uses the zoom-in "Drill to bottom" option in a large dimension.

A query that uses the zoom-in "Drill to all levels" option in a large dimension.

Use QRYGOVEXECBLK, for example, if you have users who try to retrieve so much data in a single query that their query appears to hang for minutes at a time. A query launched against the database involving attribute dimensions, for example, may be larger than the user realizes.

Notes

- If you use an invalid value (such as a negative number, a letter, a word, or a special character) for \( n \), Essbase Server ignores QRYGOVEXECBLK.
- Query governor settings are ignored during data load and calculation. You can leave query governor settings in the configuration file whether you are performing these operations or querying against the data.

Example

QRYGOVEXECBLK Sample Basic 3

Sets three blocks as the maximum number of blocks that a query to Sample Basic can access before being terminated. A block is created for each unique combination of sparse dimension members. If a user issues a query that accesses four unique combinations of sparse dimensions, Essbase Server terminates the query and writes a message to the application log.

QRYGOVEXECBLK 5

Sets five blocks as the maximum number of blocks that a query can access before being terminated. The query time limit applies to all applications and databases on Essbase Server that correspond to the essbase.cfg file containing this setting.

See Also

“QRYGOVEXECETIME” on page 537

For more information about the application log, see the Oracle Essbase Database Administrator’s Guide.

QRYGOVEXECETIME

Sets the maximum amount of time a query can use to retrieve and deliver information before the query is terminated.

Syntax

QRYGOVEXECETIME \([appname [dbname]]\) \( n \)

- \( appname \)—Optional. Applies the query time limit to the application specified. If you specify \( appname \), you must also specify a value for \( n \), or Essbase Server ignores
QRYGOVEXECTIME. If you do not specify an application, then you cannot specify a database, and the query time limit applies to all applications and databases on Essbase Server. If you specify a value for appname and do not specify a value for dbname, the query time limit applies to all databases in the specified application.

- dbname—Optional. Must be used with appname and n, or Essbase Server ignores QRYGOVEXECTIME. If you specify dbname, appname, and n, the query time limit is applied only to the specified database.

- n—Integer specifying the number of seconds that Essbase Server allows a query to run before the query is terminated. You must specify this parameter or Essbase Server ignores QRYGOVEXECTIME. If do not specify appname or dbname, the query time limit applies to the entire server.

Description

QRYGOVEXECTIME specifies the maximum amount of time that a query can run before Essbase Server terminates the query (a request for information sent to a database). You can apply this setting to an entire server, to all the databases in a single application, or to a single database.

When a query exceeds the time limit and is terminated, an error message is written to the application log of the application accessed for the query.

Restarting Essbase Server after adding or changing this setting activates the new setting values.

Use QRYGOVEXECTIME to prevent these types of queries:

- A long-running query against a database that accesses attributes at a high level, forcing many dynamic calculations to occur.

- A query that uses the "Drill to bottom" option in a large dimension.

- A query that uses the "Drill to all levels" option in a large dimension.

Use QRYGOVEXECTIME, for example, if you have users who try to retrieve so much data in a single query that their query appears to hang for minutes at a time.

Notes

- Because the query time setting is evaluated in 10 second increments, the query may actually run nine seconds longer than specified before being terminated.

- If you use an invalid value (such as a negative number, a letter, a word, or a special character) for n, the server ignores QRYGOVEXECTIME.

- Query governor settings are ignored during data load and calculation. You can leave query governor settings in the configuration file whether you are performing these operations or querying against the data.

Example

QRYGOVEXECTIME Sample Basic 20

Sets 20 seconds as the maximum time that a query can run before being terminated. In this example the restriction applies only to the Basic database in the Sample application.
QRYGOVEXECETIME 45

Sets 45 seconds as the maximum time that a query can run before being terminated. The query time limit applies to all applications and databases on the server that correspond to the essbase.cfg file containing this setting.

See Also

“QRYGOVEXECBLK” on page 536

For more information about the application log, see the Oracle Essbase Database Administrator’s Guide.

REPLAYSECURITYOPTION

Specifies the user security settings that are used when replaying logged transactions.

Syntax

REPLAYSECURITYOPTION n

n—An integer that specifies the user security setting. Valid values are as follows:

- 1—(Default) Specifies the security settings of the user who originally performed the transaction. If that user no longer exists or that user’s username was changed, the replay operation will fail.
  
  Oracle does not recommend renaming another user with the name of the original user, as the security settings of the renamed user might not match those of the original user and the transaction might be played with the incorrect security settings.

- 2—Specifies the security settings of the administrator performing the replay operation.

- 3—Specifies the security settings of the user who originally performed the transaction. If that user no longer exists or that user’s username was changed, the security settings of the administrator performing the replay operation are used.

You must restart Essbase Server to initialize any change to the configuration file.

See Also

Alter Database MaxL statement

“TRANSACTIONLOGLOCATION” on page 563 configuration setting

“TRANSACTIONLOGDATALOADARCHIVE” on page 562 configuration setting

REPLICATIONASSUMEIDENTICALOUTLINE

Optimizes the replication of a partitioned, aggregate storage database when the aggregate storage database is the target and a block storage database is the source, and the two outlines are identical.
The setting affects only the target aggregate storage application (not the source block storage application) and does not apply to block storage replication.

REPLICATIONASSUMEIDENTICALOUTLINE can be enabled at the server, application, or database level. You can also use the alter database MaxL statement with the replication_assume_identical_outline grammar to enable replication optimization at the database level only.

**Syntax**

REPLICATIONASSUMEIDENTICALOUTLINE  
(appname  
[dbname])  
TRUE | FALSE

- **appname**—Optional. Specifies the application to be enabled for replication optimization.
  
  If you specify a value for appname and do not specify a value for dbname, the setting applies to all databases in the specified application.
  
  To enable the setting for a specific database, you must specify an application and database.
  
  If you do not specify an application, you cannot specify a database, and the setting applies to all applications and databases on Essbase Server.

- **dbname**—Optional. Specifies the database, in the application specified by appname, to be enabled for replication optimization.
  
  If you specify a value for dbname but do not specify a value for appname, your specification is ignored, and replication optimization is enabled for all applications and databases on Essbase Server.

- **TRUE | FALSE**—Specifies whether to enable or disable replication optimization.

You must restart Essbase Server to initialize changes to the configuration file.

**Example**

REPLICATIONASSUMEIDENTICALOUTLINE  
AsoSamp.Sample  
TRUE

Optimizes the replication of the ASO Samp.Sample database, when it is the target of a replicated partition and its outline is identical to the outline of the source block storage database.

**See Also**

alter database (aggregate storage) MaxL statement

**RESTRUCTURETHREADS**

Specifies whether parallel restructuring is enabled for a database and the number of threads to use.

This setting does not apply to aggregate storage databases.

**Syntax**

RESTRUCTURETHREADS  
(appname [dbname])  
n
- **appname**—Application name. Optional parameter for enabling parallel restructuring for one or all databases in an application. This parameter may be used in combination with **dbname**. If you omit **appname**, you cannot specify **dbname**, and **RESTRUCTURETHREADS** will be enabled for all applications and databases. See Example below.

- **dbname**—Database name. Optional parameter for enabling parallel restructuring for an individual database. This parameter must be used in combination with **appname**. If you specify **dbname**, you must also specify **appname**. See Examples below.

- **n**—Number of threads to use in parallel restructuring.

**Notes**
- Use the value `xxxxx` to indicate "all" for any application or database argument. For example:
  ```plaintext
  RESTRUCTURETHREADS xxxxx Basic 8
  ``
  enables parallel restructuring for any application with a Basic database.

- Settings for nonexistent applications or databases are ignored.

- If **RESTRUCTURETHREADS** is not defined, the default is one thread.

**Description**
This setting specifies whether parallel restructuring is enabled for a database and the number of threads to use. You can enable parallel restructuring for individual databases, for all databases in an application, or for all databases on a server. For more information about parallel restructuring, see the [Oracle Essbase Database Administrator's Guide](#).

**Examples**
- **RESTRUCTURETHREADS 8**
  Specifies eight threads and applies to the entire server

- **RESTRUCTURETHREADS Sample 8**
  Specifies eight threads and applies to all databases in the Sample application

- **RESTRUCTURETHREADS Sample Basic 8**
  Specifies eight threads and applies to the Basic database in the Sample application

**See Also**
"**WORKERTHREADS**" on page 569

---

**RTDEPCALCOPTIMIZE**
Sets whether the @CURRMBRRANGE calculation function behaves as runtime dependent or non runtime dependent.

**Syntax**

```plaintext
RTDEPCALCOPTIMIZE [appname [dbname]] TRUE | FALSE
```
- **appname**—Optional. If you specify an application name, the setting applies to all databases within the named application. If you do not specify an application name, the setting applies to all applications and databases on the Essbase Server.

- **dbname**—Optional. If you specify a database name and an application name, the setting applies only to the named database. If you do not also specify an application name, the database is ignored and the setting applies to all applications and databases on the Essbase Server.

- **TRUE**—This is the default. @CURRMBRRANGE behaves as a non runtime dependent formula. This, the default behavior, could result in incorrect calculation results if the @CURGEN or @CURLEV functions are used as arguments to @CURRMBRRANGE, because Essbase would fail to generate the correct dependency list to compute @CURRMBRRANGE.

- **FALSE**—@CURRMBRRANGE behaves as runtime dependent formula, but only when @CURGEN or @CURLEV are passed as an argument to @CURRMBRRANGE. Calculations involving @CURRMBRRANGE may run slowly, as computation of runtime dependent formulas requires more memory.

**Example**

```
RTDEPCALCOPTIMIZE FALSE
```

### SECFILEBACKUPINTERVAL

Specifies the maximum amount of time (in seconds) that Essbase waits before creating a backup of the `essbase.sec` file. Named, `essbase_timestamp.bak`, Essbase can create and maintain from 2 to 10 backup security files.

**Syntax**

```
SECFILEBACKUPINTERVAL n
```

**n**—Specifies the amount of time in seconds.

The default value is 300 seconds (which is five minutes). A value of 0 means that the `essbase.sec` file will not be backed up. Other than 0, the value cannot be less than 300.

**Note:** You can configure the number of backup security files that Essbase creates and maintains, and whether Essbase automatically loads a valid backup security file at startup, if the `essbase.sec` file is invalid.

**Example**

```
SECFILEBACKUPINTERVAL 600
```

**See Also**

“`NUMBEROFSECFILEBACKUPS`” on page 527

“`ENABLESWITCHTOBACKUPFILE`” on page 494
SECURITYFILECOMPACTIONPERCENT

Specifies the percentage of obsolete space in the security file (essbase.cfg) that is a factor in triggering compaction of that file.

Syntax

SECURITYFILECOMPACTIONPERCENT n

Where n is the percentage limit of obsolete space that will trigger compaction of the security file. n is an integer between 10 and 100. The recommended value is 30.

Description

Changing or deleting the following Essbase Server security entities can cause fragmentation in the security file (essbase.sec): filters, users, groups, applications, databases, substitution variables, disk volumes, passwords, and other Essbase Server objects.

Essbase compacts the security file automatically each time the Agent is stopped. You can use the SECURITYFILECOMPACTIONPERCENT configuration setting to trigger compaction of the security file when the agent is still running and no Agent activity has occurred for the period of time specified by the "timeout" Essbase Server property.

Notes

- The timeout period is a server property defined, per user, in Administration Services or MaxL. Compaction based on the SECURITYFILECOMPACTIONPERCENT configuration setting occurs only when the timeout has caused all users to be logged out.
- Once compaction is initiated through this configuration setting, if you log back in and perform a task that requires Agent activity, the task will be delayed until compaction is completed.
- You can force compaction using the COMPACT Agent command or the alter system MaxL statement.
- See the appropriate documentation for details.

Example

SECURITYFILECOMPACTIONPERCENT 30

See Also

display system security file fragmentation_percent; (MaxL)
alter system compact security file (MaxL)
COMPACT (Agent command), in the Oracle Essbase Database Administrator’s Guide
SERVERLEASEEXPIRATIONTIME

Sets the maximum amount of time that Essbase Server can own a lease before the lease is terminated.

Syntax

SERVERLEASEEXPIRATIONTIME  n

Where  n  is an integer specifying the number of seconds before a lease expires. The default value is 20.

Example

SERVERLEASEEXPIRATIONTIME  20

See Also

“AGENTLEASEEXPIRATIONTIME” on page 430
“AGENTLEASEMAXRETRYCOUNT” on page 431
“AGENTLEASERENEWALTIME” on page 431
“SERVERLEASEEXPIRATIONTIME” on page 544
“SERVERLEASEMAXRETRYCOUNT” on page 544
“SERVERLEASERENEWALTIME” on page 545

SERVERLEASEMAXRETRYCOUNT

Specifies the number of times that Essbase Server attempts to acquire or renew a lease. If the attempts are unsuccessful, the server terminates itself.

Syntax

SERVERLEASEMAXRETRYCOUNT  n

Where  n  is an integer. The default value is 5.

Example

SERVERLEASEMAXRETRYCOUNT  5

See Also

“AGENTLEASEEXPIRATIONTIME” on page 430
“AGENTLEASEMAXRETRYCOUNT” on page 431
“AGENTLEASERENEWALTIME” on page 431
“SERVERLEASEEXPIRATIONTIME” on page 544
“SERVERLEASEMAXRETRYCOUNT” on page 544
SERVERLEASERENEWALTIME
Specifies the time interval after which Essbase Server renews its lease.

Syntax

SERVERLEASERENEWALTIME  \( n \)

Where \( n \) is an integer specifying the number of seconds available to reestablish ownership after a lease expires. The default value is 10.

Example

SERVERLEASERENEWALTIME  10

See Also

"AGENTLEASEEXPIRATIONTIME" on page 430
"AGENTLEASEMAXRETRYCOUNT" on page 431
"AGENTLEASERENEWALTIME" on page 431
"SERVERLEASEEXPIRATIONTIME" on page 544
"SERVERLEASEMAXRETRYCOUNT" on page 544

SERVERPORTBEGIN
Specifies the first port number that Essbase tries to use for its first application process (ESSSVR).

Syntax

SERVERPORTBEGIN  \( n \)

Where \( n \) specifies the port number that Essbase tries to use for its first application process. This port number should not be in use by any other process. The default value is 32768.

Description

SERVERPORTBEGIN specifies the first port that Essbase tries to use for the first application process it tries to start.

You may want to change the default for many reasons. These are two common reasons:

- The default port, 1423, is inappropriate for your site.
- You intend to install a second Agent on a single computer to facilitate testing. Use SERVERPORTBEGIN and the related configuration settings to assign the second Agent to a different port than the first. Use SERVERPORTBEGIN with AGENTPORT, SERVERPORTEND, and PORTINC.
Caution! More than one Agent per computer should not be used in production systems.

Notes

- You must perform several other steps in order to enable multiple agents on one computer. See the Oracle Essbase Database Administrator’s Guide for instructions.
- SERVERPORTBEGIN and SERVERPORTEND cannot have the same value.

Example

AGENTPORT 1478
SERVERPORTBEGIN 32470
SERVERPORTEND 32600
PORTINC 5

This example would produce these results:

- AGENTPORT sets the port that the additional Agent will use at 1478.
- SERVERPORTBEGIN sets the value that the first application process will try to use for a port at 32470.
- SERVERPORTEND sets the highest port number value this installation can use.
- PORTINC controls the increment value used for each port. In this example, if the first application process was able to use port number 32470, then the next process would use 32475.

See Also

“AGENTPORT” on page 432
“SERVERPORTEND” on page 546
“PORTINC” on page 533
“PORTUSAGELOGINTERVAL” on page 534

SERVERPORTEND

Specifies the highest value that Essbase tries to use for a port when it starts an application process (ESSSVR). If the value is unavailable, the application process fails.

Syntax

SERVERPORTEND n

Where \( n \) specifies the highest value for a port number that Essbase tries to use for a application process. If the port is unavailable, the application process fails. This port number should not be in use by any other process. The default value is 33768.

Description

SERVERPORTEND specifies the highest port number that Essbase uses when trying to start an application process.
You may want to change the default for many reasons. These are two common reasons:

- The default port, 33768, is inappropriate for your site.
- You want to install a second Agent on a single computer to facilitate testing. Use SERVERPORTEND and the related configuration settings to assign the second Agent to a different port than the first. Use SERVERPORTEND along with AGENTPORT, SERVERPORTBEGIN, and PORTINC.

**Caution!** More than one Agent per computer should not be used in production systems.

**Notes**

- You must perform several other steps in order to enable multiple agents on one computer. See the *Oracle Essbase Database Administrator’s Guide* for instructions.
- SERVERPORTBEGIN and SERVERPORTEND cannot have the same value.

**Example**

AGENTPORT 1478
SERVERPORTBEGIN 32470
SERVERPORTEND 32600
PORTINC 5

This example would produce these results:

- AGENTPORT sets the port that the additional Agent will use at 1478.
- SERVERPORTBEGIN sets the value that the first application process will try to use for a port at 32470.
- SERVERPORTEND sets the highest port number value this installation can use.
- PORTINC controls the increment value used for each port. In this example, if the first server process was able to use port number 32470, then the next process would use 32475.

**See Also**

- “AGENTPORT” on page 432
- “SERVERPORTBEGIN” on page 545
- “PORTINC” on page 533
- “PORTUSAGELOGINTERVAL” on page 534

**SERVERTHREADS**

Overrides the default value of the number of threads that the application process (ESSSVR) can spawn. Application threads are used in calculations, client requires, administrative activities, etc.

When a transaction is requested, the application process (ESSSVR) assigns a thread to the transaction and releases the thread when the transaction is completed.
Syntax

SERVERTHREADS [appname] n

- **appname**—Optional. Specifies an application; the SERVERTHREADS setting applies to all databases within the named application.
  
  If you do not specify an application, the setting applies to all applications and databases on Essbase Server.

- **n**—Specifies the number of threads that the application process (ESSSVR) can spawn.
  
  - 32-bit platform: 20 to 500, inclusive
  
  - 64-bit platform: 20 to 1024, inclusive

  The default value is 20.

  If you specify a value that is:

  - Less than the minimum, Essbase interprets the value as 20
  
  - Greater than the maximum, Essbase interprets the value as 500 (32-bit platform) or 1024 (64-bit platform)

Notes

- While the actual maximum value you can set is 500 (32-bit platform) or 1024 (64-bit platform), the maximum number of threads an operating system can handle might be much lower. Before specifying a value greater than the default value, check with your system administrator, as higher values can significantly consume system resources.

- If the computer on which Essbase Server runs freezes while running multiple reports simultaneously, increase the value of SERVERTHREADS by one for each report you run.

- Each application thread may create child threads for tasks such as parallel calculation, parallel data load or export, and parallel restructuring. If the total number of running threads is too high, threads may lose efficiency in contending for server resources.

- When running a parallel calculation that includes the @XREF calculation function, the application associated with the database returns a timeout error if the number of threads specified for the CALCPARALLEL configuration setting is higher than the number of threads specified by the SERVERTHREADS configuration setting. For example, the default value of SERVERTHREADS is 20. If you set CALCPARALLEL to 25, an application timeout error is generated.

Example

SERVERTHREADS 25

Allows all applications on Essbase Server to spawn up to 25 threads.

SERVERTHREADS Sample 100

Allows the Sample application on Essbase Server to spawn up to 100 threads.
SILENTOTLQUERY

Controls whether Essbase keeps a history of outline queries in the application log file.

Syntax

SILENTOTLQUERY [ appname [ dbname ] ] TRUE | FALSE

- **appname**—Optional. If you specify an application name, the TRUE or FALSE setting applies to all databases within the named application.
- **dbname**—Optional. If you specify a database name and an application name, the TRUE or FALSE setting applies only to the named database. If you specify a database name, you must also supply an application name.
- TRUE—Essbase does not log outline queries in the application log file.
- FALSE—Essbase logs outline queries in the application log file. The default is FALSE.

Example

SILENTOTLQUERY TRUE

See Also

“OUTLINECHANGELOG” on page 530
“OUTLINECHANGELOGFILESIZE” on page 531

SPLITARCHIVEFILE

When backing up a database to an archive file, specifies whether to split the archive file into multiple files (with each file being no larger than 2 GB) or to create a single, large archive file (the size of which is limited only by disk space).

Syntax

SPLITARCHIVEFILE TRUE | FALSE

The default value is FALSE.

- TRUE—Creates multiple database archive files.
- FALSE—(Default) Creates a single database archive file.
You must restart Essbase Server to initialize any change to the configuration file.

**Description**

Splitting the archive file into smaller, multiple files is useful if you cannot use large files or the file-transfer tools that you use cannot handle large files.

The first (or main) archive file that Essbase creates uses the file name that you specify (for example, `samplebasic.arc`). When the main archive file reaches the 2 GB limit, Essbase creates another archive file. In naming the other archive files, Essbase increments the main archive file name with “_x”, where x is an integer (starting with 1). Using the `samplebasic.arc` example, if three archive files are created when backing up the Sample.Basic database, the file names would be:

```
samplebasic.arc
samplebasic_1.arc
samplebasic_2.arc
```

All archive files are created in the directory that you specified when specifying the file name and location of the main archive file.

If you use the default, single-file configuration, Oracle recommends saving archive files to a file system that supports large files. For Windows, the file system must be formatted as NTFS. For UNIX, large file support must be enabled (for example, use the ULIMIT setting to specify a specific file size based on the size of the database or set ULIMIT to unlimited). See your operating system documentation.

**Note:** When restoring a database in which the archive file is split into multiple files, Essbase looks for multiple archive files, even if, after the backup, you subsequently set SPLITARCHIVEFILE to FALSE for that database. Also, Essbase expects all of a database's archive files (main and split) to be in the same directory.

**See Also**

- Alter Database MaxL statement
- Query Database MaxL statement
- *Oracle Enterprise Performance Management System Backup and Recovery Guide*

**SQLFETCHERRORPOPUP**

Controls whether an Essbase error is generated when fetching data from a SQL database during a data load or a dimension build. The error will provide a pop-up error message in Administration Services, and will enable error handling using IFERROR in MaxL Shell or ESSCMD.

**Syntax**

```
SQLFETCHERRORPOPUP TRUE | FALSE
```
- TRUE—SQL imports generate error messages.
- FALSE—Default value. SQL imports do not generate error messages.

Example

SQLFETCHERRORPOPUP TRUE
SQLFETCHERRORPOPUP FALSE

**SSAUDIT**

Enables grid update logging, appending to existing logs after archiving.

This setting does not apply to aggregate storage databases.

**Syntax**

SSAUDIT appname [dbname [log_path]]

- **appname**—Application name.
- **dbname**—Optional. Database name.
- **log_path**—Optional. Full directory path where you want the information stored. Do not specify a log_path value unless you have also provided a value for dbname.

**Default behavior:**

- If SSAUDIT (or SSAUDITR) is not specified, grid update logging is not enabled.
- If SSAUDIT (or SSAUDITR) is issued with no arguments, Essbase activates grid update logging for all databases in all applications on the Essbase Server, and puts the log in the default directory: ARBORPATH/app/appname/dbname.

Use the value xxxx to indicate "all" for any argument.

You can issue up to ten (total) SSAUDIT and/or “SSAUDITR” on page 553 statements per application.

**Description**

SSAUDIT enables Essbase to log successfully completed grid update transactions. The resulting logs can be used as a source of input data upon recovery after archive operations or other server interruptions.

SSAUDIT creates two logs for each database:

- **dbname.atx**, which stores the update transaction records that can be used as the input source for data load
- **dbname.alg**, which stores history records from every update transaction, including user name, time stamp, and number of updated rows

**Notes**

- SSAUDIT is not available when using Free-Form reporting in Smart View.
If you have duplicate database names in different applications, do not store their error logs in the same directory. If you do, the log for one database will be replaced by the log for any subsequent database with the same name.

Essbase ensures that if you enable grid update logging, updates do not take place without getting logged. If Essbase cannot write to the update logs for any reason, Essbase fails the update transaction and issues an error message.

SSAUDIT may slow grid client data-update operations.

Example

SSAudit xxxxx xxxxx c:\sslog

enables logging for all applications and databases, storing the log in the path c:\sslog. This example assumes that you do not have duplicate database names (see Notes).

The following is an example of the contents of an .ATX log file for Sample Basic.

"New York" "Massachusetts" "Florida" "Connecticut" "New Hampshire" "East"
"Actual" "100-20" "Sales" "Jan" #Mi #Mi 200. 100. 200. 200.
"Actual" "100-20" "Sales" "Feb" #Mi #Mi 206. 100. 200. 206.
"Actual" "100-20" "Sales" "Mar" #Mi #Mi 214. 100. 200. 214.
"Actual" "100-20" "Sales" "Apr" #Mi #Mi 267. 100. 200. 267.
"Actual" "100-20" "Sales" "May" #Mi #Mi 273. 100. 200. 273.

"New York"
"Actual" "100-20" "Sales" "Jan" 8888.
"Actual" "100-20" "COGS" "Jan" 8888.
"Actual" "100-20" "Marketing" "Jan" 8888.
"Actual" "100-20" "Payroll" "Jan" 8888.
"Actual" "100-20" "Misc" "Jan" 8888.
"Actual" "100-20" "Opening Inventory" "Jan" 8888.
"Actual" "100-20" "Additions" "Jan" 8888.
"Actual" "100-20" "Ending Inventory" "Jan" 8888.
"Actual" "100-20" "Inventory" "Jan" 8888.
"Actual" "100-30" "Sales" "Jan" 8888.

"New York"
"Jan" "Feb" "Mar" "Apr" "May" "Jun" "Jul" "Aug" "Sep" "Oct" "Nov" "Dec"
"Actual" "100-20" "Sales" 8888. 9999. #Mi #Mi #Mi #Mi #Mi #Mi #Mi #Mi
"Actual" "100-20" "COGS" 8888. 9999. #Mi #Mi #Mi #Mi #Mi #Mi #Mi #Mi
"Actual" "100-20" "Marketing" 8888. 9999. #Mi #Mi #Mi #Mi #Mi #Mi #Mi #Mi
"Actual" "100-20" "Payroll" 8888. 9999. #Mi #Mi #Mi #Mi #Mi #Mi #Mi #Mi
"Actual" "100-20" "Misc" 8888. 9999. #Mi #Mi #Mi #Mi #Mi #Mi #Mi #Mi

The following is an example of the contents of an .ALG log file for Sample Basic. The .ALG information describes the updated data records that are logged in the .ATX file.

[Thu May 24 17:29:07 2012]
Create Spreadsheet Update Log
[Thu May 24 17:37:46 2012]
See Also

“SSAUDITR” on page 553, which clears the log after archive.

`alter database` begin | end archive (MaxL)

```
BEGINARCHIVE (ESSCMD)
ENDARCHIVE (ESSCMD)
```

### SSAUDITR

Enables grid update logging, clearing the logs at the end of the archiving process.

This setting does not apply to aggregate storage databases.

**Syntax**

```
SSAUDITR appname [dbname [log_path]]
```

- `appname`—Application name.
- `dbname`—Optional. Database name.
- `log_path`—Optional. Full directory path where you want the information stored. Do not specify a `log_path` value unless you have also provided a value for `dbname`.

**Default behavior:**

- If SSAUDITR (or SSAUDIT) is not specified, grid update logging is not enabled.
- If SSAUDITR (or SSAUDIT) is issued with no arguments, Essbase activates grid update logging for all databases in all applications on the Essbase Server, and puts the log in the default directory: `ARBORPATH/app/appname/dbname`.

Use the value `xxxxx` to indicate "all" for any argument.

You can issue up to ten (total) SSAUDITR and/or “SSAUDIT” on page 551 statements per application.

**Description**

SSAUDITR enables Essbase to log successfully completed grid update transactions. The resulting logs can be used as a source of input data upon recovery after archive operations or other server interruptions.

**Notes**

- SSAUDITR creates two logs for each database:
- `dbname.atx`, which stores the update transaction records that can be used as the input source for data load
- `dbname.alg`, which stores history records from every update transaction, including user name, time stamp, and number of updated rows

- Essbase ensures that if you enable grid update logging, updates do not take place without getting logged. If Essbase cannot write to the update logs for any reason, the update transaction failes and an error message is issued.
- SSAUDITR may slow grid client data-update operations.
- The update log file will not be cleared if the database is shut down during archive mode. The database is expected to remain running while in archive mode.

**Example**

SSAuditR demo

Enables logging with refresh (clear) for all databases belonging to the Demo application. The log is stored in the default directory.

**See Also**

“SSAUDIT” on page 551, which does not clear the logs after archive.

**alter database** begin | end archive (MaxL)

BEGINARCHIVE (ESSCMD)

ENDARCHIVE (ESSCMD)

### SSBULKGRIDPROCESSING

When set to ON, SSBULKGRIDPROCESSING optimizes asymmetric Grid API queries for XOLAP.

**Syntax**

SSBULKGRIDPROCESSING [appname [dbname]] ON | OFF

- `appname`—Optional. Specifies the application for which bulk grid processing is to be set.
  
  If you specify a value for `appname` and do not specify a value for `dbname`, the setting applies to all databases in the specified application.
  
  To enable the setting for a specific database, you must specify an application and database.
  
  If you do not specify an application, you cannot specify a database, and the setting applies to all applications and databases on Essbase Server.

- `dbname`—Optional. Specifies the database, in the application specified by `appname`, for which bulk grid processing is to be set.
  
  If you specify a value for `dbname` but do not specify a value for `appname`, your specification is ignored.
ON—Essbase optimizes asymmetric Grid API queries for XOLAP.

OFF—Essbase does not optimize asymmetric Grid API queries for XOLAP.

The default value is OFF.

For changes to the configuration file to take effect, you must restart Essbase Server.

Example

SSBULKGRIDPROCESSING ON

Enables bulk grid processing for grid client operations on all applications and databases on Essbase Server.

SSINVALIDTEXTDETECTION

Controls whether an Essbase error is generated when a grid client user enters invalid text data into a cell that could possibly cause the user to misinterpret the data in the grid.

Syntax

SSINVALIDTEXTDETECTION TRUE | FALSE

- TRUE—An error message is displayed citing the invalid text and location, and saying to remove the text and retry.
- FALSE—Default value. No error message is displayed. The text that was entered is ignored.

Examples

SSINVALIDTEXTDETECTION TRUE

SSINVALIDTEXTDETECTION FALSE

SSLCIPHERSUITES

Defines one or more cipher suites to use for negotiating the security settings for a network connection using the SSL network protocol.

Syntax

SSLCIPHERSUITES ciphersuite_1[ciphersuite_2,...,ciphersuite_6]

At least one cipher suite is required. A comma-delimited list of cipher suites, in order by preference, is supported. The first cipher suite in the list has the highest priority.

Description

You can change the default cipher suite.

1. SSL_RSA_WITH_RC4_128_MD5 (default)
2. SSL_RSA_WITH_RC4_128_SHA
3. SSL_RSA_WITH_3DES_EDE_CBC_MD5
4. SSL_RSA_WITH_DES_CBC_SHA
5. SSL_RSA_WITH_AES_128_CBC_SHA
6. SSL_RSA_WITH_AES_256_CBC_SHA

Note: For the highest level of security, reverse the order in which these cipher suites are listed.

Example

SSLCIPHERSUITES SSL_RSA_WITH_AES_128_CBC_SHA,SSL_RSA_WITH_DES_CBC_SHA

See Also

“AGENTSECUREPORT” on page 433
“CLIENTPREFERREDMODE” on page 462
“ENABLECLEARMODE” on page 492
“ENABLESECUREMODE” on page 494
“NETSSLHANDSHAKETIMEOUT” on page 524
“WALLETPATH” on page 568

For information on implementing SSL, see the Oracle Enterprise Performance Management System Security Configuration Guide.

**SSLOGUNKNOWN**

Controls whether Essbase logs error messages when it encounters an unknown member name during a grid operation.

Syntax

SSLOGUNKNOWN TRUE | FALSE

- TRUE—Essbase displays and logs an error message for each unknown member name that it encounters during a grid operation. The default is TRUE.
- FALSE—Essbase does not display error messages when it encounters an unknown member name nor does it log an error for each unknown member it encounters during a grid operation.

Description

SSLOGUNKNOWN controls whether Essbase logs error messages when it encounters an unknown member name during a grid operation. It enables you to get a specific list of every unknown member name, or to repress error messages of this type.
Notes
SSLOGUNKNOWN creates an entry in the application log, application_name.log, in the application directory.

Example
SSLOGUNKNOWN TRUE

Essbase generates and logs an error message each time it encounters any number of unknown member names during a grid operation.

See Also
“CLEARLOGFILE” on page 462
“TIMINGMESSAGES” on page 561

SSOPTIMIZEDGRIDPROCESSING
Specifies whether optimized grid processing, which cuts the input grid into symmetric grids to create fewer symmetric queries, is enabled for grid client operations.

Syntax
SSOPTIMIZEDGRIDPROCESSING [appname [dbname]] TRUE | FALSE

- **appname**—Optional. Specifies the application for which optimized grid processing is to be set.
  
  If you specify a value for **appname** and do not specify a value for **dbname**, the setting applies to all databases in the specified application.
  
  To enable the setting for a specific database, you must specify an application and database.
  
  If you do not specify an application, you cannot specify a database, and the setting applies to all applications and databases on Essbase Server.

- **dbname**—Optional. Specifies the database, in the application specified by **appname**, for which optimized grid processing is to be set.
  
  If you specify a value for **dbname** but do not specify a value for **appname**, your specification is ignored.

- TRUE—Enables optimized grid processing for grid client operations.

- FALSE—Disables optimized grid processing for grid client operations.

  The default value is FALSE.

For changes to the configuration file to take effect, you must restart Essbase Server.

Example
SSOPTIMIZEDGRIDPROCESSING TRUE
Enables optimized processing for grid client operations on all applications and databases on Essbase Server.

**SSPROCROWLIMIT**

Controls the maximum number of rows Essbase processes on a Smart View or other grid client request.

**Syntax**

```plaintext
SSPROCROWLIMIT n
```

Where `n` is an integer value of 16,384 or higher. The default value is 250,000.

**Description**

SSPROCROWLIMIT controls the maximum number of rows Essbase processes on a Smart View or other grid client user request. SSPROCROWLIMIT is in effect only for grid clients when the Suppress #Missing Rows option is selected. The rows are counted before suppression; that is, missing rows and rows containing zero values are included.

When users zoom in on one or more members, Essbase must process a larger grid containing selected members expanded to the zoom-in level set in the options. When the Suppress #Missing Rows option is set, Essbase returns only rows with at least one column containing a non-missing value. SSPROCROWLIMIT defines the maximum size (number of rows) of the larger grid that Essbase needs to process. This setting prevents excessive memory usage for a single grid operation.

When the Excel Suppress #Missing Rows option is not selected, the limit is 64000.

**Notes**

- SSPROCROWLIMIT applies to unprocessed rows; that is, it is the number of rows Essbase accepts before processing. Row processing eliminates missing rows. After processing, the number of rows that the client can retrieve depends on grid-client-defined limits.
- If SSPROCROWLIMIT is exceeded, Essbase issues an error message and stops processing the request.
- This setting is not used in the Smart View Free form mode.
- Oracle does not recommend using a limit higher than 500,000.

**Example**

```plaintext
SSPROCROWLIMIT 300000
```

**SUPNA**

Controls whether the Suppress #Missing Rows option in Smart View or another grid client interface suppresses the display of cells for which a user has no access (in addition to suppressing #MISSING rows).
Syntax

SUPNA ON | OFF

- ON—The Suppress #Missing Rows option suppresses the display of cells for which a user has no access.
- OFF—The Suppress #Missing Rows option does not suppress the display of cells for which a user has no access. This is the default.

Description

The Suppress #Missing Rows option in Smart View or other grid clients suppresses the display of data rows that contain only missing values. SUPNA specifies whether Essbase also suppresses the display of cells for which a user has no access.

Example

SUPNA OFF

For all databases on the server, Essbase does not suppress cells for which a user has no access. These cells appear in the grid as #NoAccess. Rows of missing data are suppressed.

TARGETASOOPT

Potentially optimizes large queries (from Smart View or other grid clients, MDX, or Report Writer) to an aggregate storage database across a transparent partition when the source outline and target outline are identical in the partition region definition area.

Syntax

TARGETASOOPT [appname] TRUE | FALSE

- appname—Optional. Application name. If you specify a value for appname, the setting applies to all databases in the specified application. If you do not specify an application, the setting applies to all applications and databases on the Essbase Server.
- FALSE—The default. Optimization is not enabled, even if queries match the required criteria (see Description).
- TRUE—Optimization is enabled for queries that match the required criteria (see Description).

When TARGETASOOPT is TRUE, Essbase completes the following steps:

1. When the partition is next validated, automatically determines if the partition region definition outlines are identical on the source and target databases
2. If the partition region definition outlines are identical, the query is sent in the compact format from the target database to the source database.

You must restart Essbase Server to initialize any change to the configuration file.
Description
TargetASOOpt enables an alternate (compact) format for sending a query (from Smart View or other grid clients, MDX, or Report Writer) to an aggregate storage source database, and hence may speed up large queries between databases that match the following criteria:

- Databases are transparently partitioned (for example, to enable write-back for aggregate storage databases)
- Source is an aggregate storage database
- Partitioned area definitions in the source and target are identical (for example in the Sample Basic database, if the partition region definition is @idesc("100"), then the outline hierarchies below Time, Market, Measures, Scenario, and 100, must be identical on the source and target databases)
- Source outline and target outline are identical

Notes
If at query time the source and target outlines have been modified after the last validation, even if the partition region definition outlines are still identical, TARGETASOOPT is disabled for the query. To enable TARGETASOOPT for the query, you must revalidate the partitions.

Example
TARGETASOOPT TRUE

See Also
“TARGETTIMESERIESOPT” on page 560

TARGETTIMESERIESOPT
Globally sets query optimization across transparent partitions for outlines that have a time dimension with Dynamic Time Series members. If this setting is specified, queries with Dynamic Time Series members will incur faster query times. Use this setting only if the time dimensions on the source and target partitions are identical. If the time dimensions on the source and target partitions are not the same, this setting may produce incorrect results. Restart Essbase to enable this setting to take effect for the Dynamic Time Series members that have been enabled at runtime.

Syntax
TARGETTIMESERIESOPT TRUE | FALSE

- TRUE—Enables query optimization across transparent partitions for outlines that have a time dimension with Dynamic Time Series members.
- FALSE—Query optimization is not enabled. This is the default.

Example
TARGETTIMESERIESOPT TRUE
TIMINGMESSAGES

Controls whether Essbase logs the duration of each grid and report query in the application log.

Syntax

TIMINGMESSAGES TRUE | FALSE

- TRUE—Essbase logs these items:
  - The duration of all grid and report queries in the application log.
  - The log also records a timestamp of the query's execution.
  - Messages about dynamic calculator cache usage for each data retrieval.

  The default setting is TRUE.

- FALSE—Essbase does not log these items:
  - The duration of all grid and report queries in the application log.
  - The log also records a timestamp of the query's execution.
  - Messages about dynamic calculator cache usage for each data retrieval.

If you have not created a .CFG file, or if you do not have this parameter specified in your .CFG file, Essbase automatically records and logs the duration of queries in the application log. You must set TIMINGMESSAGES to FALSE to disable this feature.

Description

TIMINGMESSAGES controls whether Essbase logs the duration of each grid and report query in the application log. Setting TIMINGMESSAGES to FALSE disables the logging of query durations in the application log. If the timing of queries is disabled, Essbase does not have to communicate with the operating system to get query start and finish times. As a result, query execution times may be improved in environments with many concurrent users. Disabling this parameter also decreases the size of the application log.

Example

TIMINGMESSAGES TRUE

Causes Essbase to time and log the duration of queries in the application log.

For example: [Thu Mar 19 14:55:32 1998]Local/Sample/Basic/admin/Info(1020055) Spreadsheet Extractor Elapsed Time : [0.078] seconds

TIMINGMESSAGES FALSE

disables the logging of query durations.
TRANSACTIONLOGDATALOADARCHIVE

Specifies the type of data to archive when logging transactions. By default, Essbase archives only data load and rules files for client data loads.

During transaction logging, Essbase creates archive copies of data load and rules files in the following directory:

ARBORPATH/app/appname/dbname/Replay

These files are then used during the replay of a logged transaction.

To enable transaction logging and replay, use the TRANSACTIONLOGLOCATION configuration setting.

Transaction logging and replay, used with the automated backup and restore feature, facilitates recovery of an Essbase block storage database. Transaction logging and replay does not apply to aggregate storage databases. See the Oracle Enterprise Performance Management System Backup and Recovery Guide.

Syntax

TRANSACTIONLOGDATALOADARCHIVE [appname [dbname]] [OPTION]

- **appname**—Optional. Specifies the application for which to archive the data and rules associated with logged transactions.
  
  If you specify a value for appname and do not specify a value for dbname, the setting applies to all databases in the specified application.

  To enable the setting for a specific database, you must specify an application and database.

  If you do not specify an application, you cannot specify a database. If you do not specify an application and database, the setting is global and applies to all databases on Essbase Server.

- **dbname**—Optional. Specifies the database, in the application specified by appname, for which to archive the data and rules associated with logged transactions.
  
  If you specify a value for dbname but do not specify a value for appname, your specification is ignored.

- **OPTION**—Valid values are as follows:
  
  - CLIENT: (Default) Archives data load and rules files for client data loads.
  - SERVER: Archives data load and rules files on the server and SQL-server data loads.
Caution!  Server data loads are replayed using the data load and rules files that are archived on the server in the Replay directory. Do not rename these files. Also, if the contents of the data load and rules files are changed before the replay operation, the modified data is used during replay. Therefore, the data in the recovered database will not be the same as the original data.

- SERVER_CLIENT: Archives server and client data.
- NONE: No data is archived.

If you select NONE and use client data, Essbase cannot replay the data load. In this case, to recover transactions, you must manually load the client data before you replay the remaining transactions.

If you use server or SQL data, and the data and rules files are not archived in the Replay directory (for example, you did not use the SERVER or SERVER_CLIENT option), Essbase replays the data that is currently in the data source, which may or may not be the data that was originally loaded.

You must restart Essbase Server to initialize any change to the configuration file.

Example

TRANSACTIONLOGDATALOADARCHIVE SERVER_CLIENT

Archives server and client data for all databases on Essbase Server.

See Also

“TRANSACTIONLOGLOCATION” on page 563 configuration setting

Query Database MaxL statement

Alter Database MaxL statement

TRANSACTIONLOGLOCATION

Specifies whether to enable write transaction logging, and specifies an existing directory on Essbase Server for the transaction log store.

Transaction logging and replay, used with the automated backup and restore feature, facilitates recovery of an Essbase block storage database. Transaction logging and replay does not apply to aggregate storage databases. See the Oracle Enterprise Performance Management System Backup and Recovery Guide.

Syntax

TRANSACTIONLOGLOCATION [appname [dbname]] LOGLOCATION NATIVE ENABLE | DISABLE

- appname—Optional. Specifies the application for which transaction logging and replay is to be enabled.

If you specify a value for appname and do not specify a value for dbname, the setting applies to all databases in the specified application.
To enable the setting for a specific database, you must specify an application and database. If you do not specify an application, you cannot specify a database. If you do not specify an application and database, the setting is global and applies to all databases on Essbase Server.

- `dbname`—Optional. Specifies the database, in the application specified by `appname`, for which transaction logging and replay is to be enabled.
  
  If you specify a value for `dbname` but do not specify a value for `appname`, your specification is ignored.

- `LOGLOCATION`—Specifies the directory in which the transaction log store is written.
  
  Oracle recommends specifying multiple log locations.

  **Note:** Oracle recommends using a physical disk other than the disk on which the `ARBORPATH` directory or disk volumes reside.

  On Windows, you can specify the location using Uniform Naming Convention (UNC) syntax, which is `\\ComputerName\SharedFolder\Resource`. Use UNC syntax only if `ARBORPATH` is also specified in UNC. Mixed path types are not supported.

- `NATIVE`—A reserved field. Do not change this value.

- `ENABLE` | `DISABLE`—Specifies whether to enable or disable transaction logging.

You must restart Essbase Server to initialize any change to the configuration file.

**Description**

You can use multiple `TRANSACTIONLOGLOCATION` statements to enable transaction logging at a more global level and, at the same time, disable logging at a more granular level. In the `essbase.cfg` file, the more global enabling statement must precede the more granular disabling statement for the override to take effect.

**Note:** If transaction logging is enabled for an application or database that you later rename or copy, you must enable logging for the renamed or copied application or database and you must use the same path that is specified in the `TRANSACTIONLOGLOCATION` setting.

**Example**

```
TRANSACTIONLOGLOCATION Sample C:\Hyperion\trlog NATIVE ENABLE
```

Enables transaction logging for all databases associated with the Sample application and writes the log store to the `trlog` directory.

```
TRANSACTIONLOGLOCATION Hyperion/trlog NATIVE ENABLE
TRANSACTIONLOGLOCATION Sample Hyperion/trlog NATIVE DISABLE
```

The first statement enables transaction logging for all applications and their associated databases on Essbase Server; the second statement disables transaction logging for all databases associated with a specific application (Sample).
TRANSACTIONLOGLOCATION Sample Hyperion/trlog/Sample NATIVE ENABLE
TRANSACTIONLOGLOCATION Sample Basic Hyperion/trlog/Sample NATIVE DISABLE

The first statement enables transaction logging at the application level (Sample); the second statement disables transaction logging for a specific database (Basic) in the application.

TRANSACTIONLOGLOCATION Sample Basic \machine-name\shared\loglocation NATIVE ENABLE

Enables transaction logging for Sample Basic and writes the log store to the specified shared location.

See Also

“TRANSACTIONLOGDATALOADARCHIVE” on page 562 configuration setting

Query Database MaxL statement
Alter Database MaxL statement

TRIGMAXMEMSIZE

Specifies the maximum amount of memory that Essbase can allocate to the triggers feature.

Syntax

TRIGMAXMEMSIZE [appname [dbname]] memsize

- **appname**—Optional. Sets the available memory cache for all databases in the specified application.
- **dbname**—Optional. Sets the available memory cache for the specified database. If you specify a database, you must specify the application that contains it.
- **memsize**—Available memory cache size (in bytes). Default: 4096 bytes. Minimum: 4096 bytes. Maximum: 8388608 bytes (8MB). Setting memsize to zero (0), or a negative value, disables all triggers.

Description

TRIGMAXMEMSIZE specifies the maximum amount of memory available to the Essbase triggers feature. The triggers feature lets you efficiently monitor data changes in a database. If data breaks the rules that you have specified, Essbase logs the information in a file or sends an email alert.

For more information about triggers, see the Oracle Essbase Database Administrator’s Guide. For information about MaxL triggers statements, see the MaxL statements linked in the See Also section.

Notes

You must specify the memory in bytes. If you specify a size greater than the maximum of 8388608 bytes, Essbase automatically sets the size to 8388608 bytes.
Example
TRIGMAXMEMSIZE 12288

sets the maximum memory cache for the triggers feature to 12288 bytes (12K). The setting applies to all applications and databases on the Essbase Server.

See Also
create trigger (MaxL statement)
display trigger (MaxL statement)
alter trigger (MaxL statement)
drop trigger (MaxL statement)

UNICODEAGENTLOG

Specifies whether the Essbase Server log (essbase.log) is written in UTF-8 encoding or according to the locale of the system. The system locale is defined by the optional ESSLANG variable or, if ESSLANG is not specified, by the computer operating system.

Syntax
UNICODEAGENTLOG NONUNICODE | UTF-8

- NONUNICODE—Encodes the Essbase Server log according to the locale of the system. The default is NONUNICODE.
- UTF-8—Encodes the Essbase Server log in UTF-8.

Description
By default, the Essbase Server log is encoded according to the locale of the system. Unicode-mode object names such as application and database names from different locales could be displayed in unrecognizable characters in the Essbase Server log. To avoid this problem, if you implement Unicode-mode applications, change the Essbase Server log to UTF-8 encoding. In UTF-8 encoding, a UTF-8-capable viewer or editor displays the characters accurately.

Notes
- To have the Essbase Server log written in UTF-8 encoding, backup or delete essbase.log, set UNICODEAGENTLOG to UTF-8, and restart Essbase Server. All entries to the log will be written in UTF-8 encoding. See the Example section.
- To have the Essbase Server log written in non-Unicode encoding, backup or delete essbase.log, change the UNICODEAGENTLOG setting to NONUNICODE (or remove the UNICODEAGENTLOG configuration setting), and restart Essbase Server. All entries to the log will be encoded according to the system locale.
- Any parameter value other than UTF-8 is interpreted as NONUNICODE. The case is not important.
For more information about the Essbase implementation of Unicode, see the Oracle Essbase Database Administrator’s Guide

Example
UNICODEAGENTLOG UTF-8

Causes the cleared Essbase Server log to be written in UTF-8 encoding when Essbase Server is restarted.

**UNICODEENABLE**

Enables Unicode-mode applications to be created without setting the Essbase Server to Unicode mode.

**Syntax**

UNICODEENABLE

**Description**

With this configuration setting, you can enable Essbase Server to create Unicode-mode applications and to migrate applications to Unicode mode, without needing to set the Essbase Server to Unicode mode using Administration Services, MaxL, or the API.

Example

UNICODEENABLE

**UPDATECALC**

Controls whether Intelligent Calculation is turned on or off by default.

This setting does not apply to aggregate storage databases.

**Syntax**

UPDATECALC TRUE | FALSE

- TRUE—Intelligent Calculation is turned on. Essbase calculates only updated blocks and their dependent parents.
- FALSE—Intelligent Calculation is turned off. Essbase calculates all data blocks, regardless of whether they have been updated.

**Description**

UPDATECALC specifies whether Intelligent Calculation is turned on or off by default.

If required during a calculation, you can override this default setting and turn Intelligent Calculation on and off using the `SET UPDATECALC` command in a calculation script.
Using Intelligent Calculation, Essbase calculates only updated data blocks and their dependent parents. Therefore, the calculation is very efficient.

Notes
For more information on Intelligent Calculation, see the Oracle Essbase Database Administrator's Guide

Example
UPDATECALC TRUE

In essbase.cfg, a parameter is not followed by a semicolon; in a calculation script, a parameter must be followed by a semicolon.

See Also
SET CLEARUPDATESTATUS (calculation command)
SET UPDATECALC (calculation command)

WALLETPATH
Specifies the path to the Oracle Wallet for Essbase Agent, Server, or Client for SSL communication.

Syntax
WALLETPATH path

Where path is a fully-qualified path that contains less than 1,024 characters. The default path is ARBORPATH/bin/wallet.

On Windows, you can specify the path using Uniform Naming Convention (UNC) syntax, if ARBORPATH is also specified in UNC (mixed path types are not supported). The UNC syntax is \\ComputerName\SharedFolder\Resource.

Description
To set up Oracle Wallet, you need the Oracle public key infrastructure (PKI) command line tool, orapki. You use the orapki utility to manage public key infrastructure elements such as wallets and certificate revocation lists.

Notes
For information about implementing SSL and setting up Oracle Wallet, see the Oracle Enterprise Performance Management System Security Configuration Guide.

Examples
WALLETPATH /usr/local/wallet/agent
WALLETPATH \machine-name\shared\wallet\agent
WORKERTHREADS

Increases or decreases the number of threads available within the thread pool for parallel operations.

Syntax

WORKERTHREADS [appname] value

- **appname** (optional)—Application name. If you do not specify an application, the specified number of threads applies to all applications.
- **value**—The number of threads to make available in the thread pool. The minimum value is 5. The maximum value is 2048. The default value, if the WORKERTHREADS setting is not present, is half of the SERVERTHREADS value.

Description

Historically, Essbase dynamically created threads for parallel operations such as parallel calculation, parallel data load, and parallel restructure. However, beginning in Release 11.1.2.4.000, the following parallel operations do not dynamically create threads, but instead use a set number of threads from a pre-created pool of threads:

- Parallel calculation, with CALCPARALLEL or FIXPARALLEL
- Parallel data load, for aggregate storage and block storage databases
- Parallel export, for block storage databases
- Parallel restructuring

Guidelines for Threaded Operations

Oracle recommends the following settings, depending on your system architecture.
Table 1  Guidelines for Threaded Operations

<table>
<thead>
<tr>
<th>Parameter</th>
<th>32-bit (8 cores)</th>
<th>64-bit (16 cores)</th>
<th>64-bit (32 cores)</th>
<th>64-bit (16 cores) and Two Databases</th>
<th>Oracle Exalytics In-Memory Machine, 40 core, X2-4</th>
<th>Oracle Exalytics In-Memory Machine, SPARC 128 core</th>
<th>Oracle Exalytics In-Memory Machine, 60 core, X4-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>SERVERTHREADS</td>
<td>100(^1)</td>
<td>100(^1)</td>
<td>100(^1)</td>
<td>100(^1)</td>
<td>200(^1)</td>
<td>120(^1)</td>
<td></td>
</tr>
<tr>
<td>WORKER_THREADS</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>100</td>
<td>60</td>
</tr>
<tr>
<td>AGENTTHREADS</td>
<td>30(^1)</td>
<td>30(^1)</td>
<td>30(^1)</td>
<td>30(^1)</td>
<td>30(^1)</td>
<td>30(^1)</td>
<td>30(^1)</td>
</tr>
<tr>
<td>DLTHREADSPREPARE</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2(^2)</td>
<td>2(^2)</td>
<td>2(^2)</td>
</tr>
<tr>
<td>DLTHREADSWRITE</td>
<td>2(^3)</td>
<td>2(^3)</td>
<td>2(^3)</td>
<td>2(^3)</td>
<td>2(^3)</td>
<td>2(^3)</td>
<td>2(^3)</td>
</tr>
<tr>
<td>EXPORTTHREADS(^4)</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>RESTRUCTURETHREADS</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>CALCPARALLEL maximum(^5)</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>32(^6)</td>
<td>32</td>
<td>32(^6)</td>
</tr>
<tr>
<td>FIXPARALLEL maximum(^6)</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>32(^6)</td>
<td>32</td>
<td>32(^6)</td>
</tr>
</tbody>
</table>

Sample configuration for this platform: Sample Sample Sample Sample Sample Sample Sample Sample

\(^1\) May need adjustment based on partitioning and concurrency
\(^2\) 24 on aggregate storage
\(^3\) 1 if using .txt load
\(^4\) In addition to setting EXPORTTHREADS, you must specify multiple data files in the data export
\(^5\) SET CALCPARALLEL must be set in the calculation script
\(^6\) 16 if three or more databases are running concurrent calculations
\(^7\) FIXPARALLEL must be set in the calculation script

Notes

- WORKER_THREADS is a configuration setting to manipulate the number of threads available in the thread pool. Whether this availability threshold is set explicitly in the configuration file, or left to its default value of SERVER_THREADS/2, if the effective setting is less than what is demanded by a requested parallel operation, Essbase implicitly lowers the parallelism of the requested operation so that it fits within the parameters of the thread pool.

For example, consider loading data:

The concept of a pipeline is relevant to Essbase data loads. A pipeline is a series of data processing elements in memory that may be executed serially or in parallel. An Essbase data load operation uses a pipeline consisting of 5 stages. Therefore, all data load operations need a minimum of 5 threads.

If you use DLTHREADSPREPARE or DLTHREADSWRITE, it increases the minimum number of data load threads needed. For example, if you set DLTHREADSPREPARE to 4 and DLTHREADSWRITE to 2, you need 9 threads (the minimal 5, plus the increase of 4).
If the number of threads requested for all pipelines is 9, as in the case above, but WORKERTHREADS is set to only 8, then Essbase implicitly sets DLTHREADSPREPARE and DLTHREADSWRITE to 1, and the data load runs with a total thread requirement of 5 (the minimum and default).

- Similarly, if you run a parallel calculation, a parallel export, or a parallel restructure, these operations execute with parallelism not exceeding the number of available threads.

For example:

- If WORKERTHREADS is set to 8, and you attempt CALCPARALLEL 16, the parallel calculation runs as CALCPARALLEL 8.
- If WORKERTHREADS is set to 5, and you attempt EXPORTTHREADS 12, the parallel export runs as EXPORTTHREADS 5.
- If WORKERTHREADS is set to 16, and you attempt RESTRUCTURETHREADS 32, the parallel restructure runs as RESTRUCTURETHREADS 16.

- If you run concurrent parallel operations on the same application, the total parallelism is limited by the number of threads in the thread pool. For example, if you set WORKERTHREADS to 16, and run two concurrent requests of CALCPARALLEL 16, the two calculation requests share the 16 threads. The calculations will run using up to 16 threads, but because they share the thread pool of 16, they are running at close to half the capacity that was requested.

- If you have multiple databases within an application, Oracle recommends setting WORKERTHREADS slightly higher than the parallel threads you need for one database. For example, if WORKERTHREADS is set to 16 and the number of CPUs on the system is 16, you should set the CALCPARALLEL value to less than 16.

- If databases on different servers reference each other using @XREF or @XWRITE, ensure that the source database of the cross reference has a higher number of SERVERTHREADS than of parallel calculation threads (CALCPARALLEL or FIXPARALLEL).

Example

WORKERTHREADS Sample 32

See Also

“CALCPARALLEL” on page 457
“DLTHREADSPREPARE” on page 479
“DLTHREADSWRITE” on page 481
“EXPORTTHREADS” on page 499
FIXPARALLEL ... ENDFIXPARALLEL
“RESTRUCTURETHREADS” on page 540
“SERVERTHREADS” on page 547
“Sample Configurations for Threaded Operations” on page 574
**XOLAPMAXINCLAUSESIZE**

Sets the maximum number of INLIST items allowed in SQL clauses, for XOLAP databases. Increasing this value may improve performance for large SQL queries.

Syntax

XOLAPMAXINCLAUSESIZE [appname] value

- **appname** (optional)—Application name. If you do not specify an application, the specified maximum will apply to all XOLAP-enabled cubes.
- **value**—The maximum number of INLIST items allowed. The default value, if the XOLAPMAXINCLAUSESIZE setting is not present, is 999. The maximum value is 4096.

Example

XOLAPMAXINCLAUSESIZE 1200

See Also

“XOLAPSQLIDLEPERIOD” on page 573
“XOLAPMAXNUMCONNECTION” on page 572
“XOLAPSCHEMAMVERIFICATION” on page 573

**XOLAPMAXNUMCONNECTION**

Specifies the maximum number of active connections that Essbase will maintain in the Global Connection Pool.

Syntax

XOLAPMAXNUMCONNECTION [appname] [value]

- **appname** (optional)—Application name. If you do not specify an application, the specified maximum number of connections will apply to all XOLAP-enabled cubes.
- **value**—The maximum number of active connections that Essbase will maintain in the Global Connection Pool. The default is 25 connections.

Description

The XOLAPMAXNUMCONNECTION setting specifies the maximum number of active connections that Essbase will maintain in the Global Connection Pool. The term *active connection* denotes an open connection to the RDBMS. If, during a query session, there is a need for more connections than are available in the Global Connection Pool, then they are created and deleted after the query session is finished.

Example

XOLAPMAXNUMCONNECTION my_app 16
XOLAPSCHEMAVERIFICATION
Determines whether the XOLAP schema supplied for an application is validated against the underlying RDBMS.

Syntax
XOLAPSCHEMAVERIFICATION [appname] TRUE | FALSE

- appname (optional)—Application name. If you do not specify an application, the setting (TRUE or FALSE) will apply to all XOLAP-enabled cubes.
- TRUE—SQL queries are issued to validate the relational data provided in the XML file.
- FALSE—SQL queries are not issued, and the relational data in the XML file is not validated. FALSE is the default value.

Description
The XOLAPSCHEMAVERIFICATION setting determines whether the XOLAP schema supplied for an application is validated against the underlying RDBMS. The validation occurs as SQL queries are run against the relational data in the XML file.

Example
XOLAPSCHEMAVERIFICATION my_app TRUE

See Also
“XOLAPSQLIDLEPERIOD” on page 573
“XOLAPMAXNUMCONNECTION” on page 572
“XOLAPMAXINCLAUSESIZE” on page 572

XOLAPSQLIDLEPERIOD
Specifies the maximum number of minutes a connection can remain idle before it is tested.

Syntax
XOLAPSQLIDLEPERIOD [appname] value

- appname (optional)—Application name. If you do not specify an application, the specified maximum number of minutes will apply to all XOLAP-enabled cubes.
value—The maximum number of minutes a connection can remain idle before it is automatically tested prior to being used by an application. The default is 30 minutes.

Description
The XOLAPSQLIDLEPERIOD setting specifies the maximum number of minutes a connection can remain idle before it is tested prior to being used by an application.

Example
XOLAPSQLIDLEPERIOD my_app 20

See Also
“XOLAPMAXNUMCONNECTION” on page 572
“XOLAPSCHEMAVERIFICATION” on page 573
“XOLAPMAXINCLAUSESIZE” on page 572

Sample Configurations for Threaded Operations
The following configuration samples accompany Table 1 on page 570. There is a sample for each system architecture.

32-bit (8 cores)

WORKERTHREADS 50
SERVERTHREADS 100
AGENTTHREADS 30
DLTHREADSPREAPRE 2
DLTHREADSWRITE 2
EXPORTTHREADS 8
RESTRUCTURETHREADS 8

64-bit (16 cores)

WORKERTHREADS 50
SERVERTHREADS 100
AGENTTHREADS 30
DLTHREADSPREAPRE 2
DLTHREADSWRITE 2
EXPORTTHREADS 8
RESTRUCTURETHREADS 8

64-bit (32 cores)

WORKERTHREADS 50
SERVERTHREADS 100
AGENTTHREADS 30
DLTHREADSPREAPRE 2
DLTHREADSWRITE 2
64-bit (16 cores) and Two Databases

<table>
<thead>
<tr>
<th>Worker Threads</th>
<th>Server Threads</th>
<th>Agent Threads</th>
<th>DL PreapThread</th>
<th>DL WriteThread</th>
<th>ExportThread</th>
<th>RestructureThread</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>100</td>
<td>30</td>
<td>2</td>
<td>2</td>
<td>40</td>
<td>8</td>
</tr>
</tbody>
</table>

Oracle Exalytics In-Memory Machine, 40 core, X2-4

Block storage:

<table>
<thead>
<tr>
<th>Worker Threads</th>
<th>Server Threads</th>
<th>Agent Threads</th>
<th>DL PreapThread</th>
<th>DL WriteThread</th>
<th>ExportThread</th>
<th>RestructureThread</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>100</td>
<td>30</td>
<td>2</td>
<td>2</td>
<td>40</td>
<td>20</td>
</tr>
</tbody>
</table>

Aggregate storage:

<table>
<thead>
<tr>
<th>Worker Threads</th>
<th>Server Threads</th>
<th>Agent Threads</th>
<th>DL PreapThread</th>
<th>DL WriteThread</th>
<th>ExportThread</th>
<th>RestructureThread</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>100</td>
<td>30</td>
<td>24</td>
<td>2</td>
<td>40</td>
<td>20</td>
</tr>
</tbody>
</table>

Oracle Exalytics In-Memory Machine, SPARC 128 core

Block storage:

<table>
<thead>
<tr>
<th>Worker Threads</th>
<th>Server Threads</th>
<th>Agent Threads</th>
<th>DL PreapThread</th>
<th>DL WriteThread</th>
<th>ExportThread</th>
<th>RestructureThread</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>200</td>
<td>30</td>
<td>2</td>
<td>2</td>
<td>40</td>
<td>20</td>
</tr>
</tbody>
</table>

Aggregate storage:

<table>
<thead>
<tr>
<th>Worker Threads</th>
<th>Server Threads</th>
<th>Agent Threads</th>
<th>DL PreapThread</th>
<th>DL WriteThread</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>200</td>
<td>30</td>
<td>24</td>
<td>2</td>
</tr>
</tbody>
</table>
EXPORTTHREADS 40
RESTRUCTURETHREADS 20

**Oracle Exalytics In-Memory Machine, 60 core, X4-4**

Block storage:

WORKERTHREADS 60
SERVERTHREADS 120
AGENTTHREADS 30
DLTHREADSPREAPRE 2
DLTHREADSWRITE 2
EXPORTTHREADS 40
RESTRUCTURETHREADS 20

Aggregate storage:

WORKERTHREADS 60
SERVERTHREADS 120
AGENTTHREADS 30
DLTHREADSPREAPRE 24
DLTHREADSWRITE 2
EXPORTTHREADS 40
RESTRUCTURETHREADS 20
ESSCMD Overview

ESSCMD is a command-line interface that performs operations interactively or through a batch or script file. You can execute Essbase operations at the command line, in either batch or interactive mode:

- **Interactive mode**—Enables you to interactively enter commands at the ESSCMD command line and receive responses. Interactive mode is convenient for short operations that require few commands, checking for information on the fly, and error checking; see “ESSCMD Interactive Mode” on page 584.

- **Batch-processing mode**—Enables you to automate your routine Essbase maintenance and diagnostic tasks. You can write a script or batch file and run it from the command line. Batch processing mode is convenient if you frequently use a particular series of commands, or if your task requires many commands; see “ESSCMD Batch Processing” on page 580.

ESSCMD operates independently of any other Essbase client interface, including Administration Services, Smart View or other grid clients, or custom-built application programs.

Because ESSCMD supports multiple login instances to Essbase Server, you can access multiple databases in one session. Even when you log in to multiple databases, you use only one port on your Essbase Server license.

ESSCMD Getting Started

Before you start ESSCMD, make sure that the following items are properly installed and running:

- Essbase Server
Communications protocol (TCP/IP)

Starting ESSCMD

The Essbase Server installation places the ESSCMD.EXE and ESSCMD.HLP files (ESSCMD and esscmd.hlp on UNIX platforms) in the bin directory.

➤ To start ESSCMD, enter ESSCMD at the operating system command prompt.

ESSCMD runs within the operating system command prompt.

Once you start the application, a command prompt like this one appears:

:::// [#] ->

where # is the value of the active login instance. Each subsequent, successful login increments this value by one. When you start ESSCMD, the instance number is zero (0).

Canceling ESSCMD Operations

When running ESSCMD, you can cancel an asynchronous operation, such as a calculation, export, or restructure operation, by pressing and holding the Esc key until ESSCMD responds.

Quitting ESSCMD

➤ To quit ESSCMD, enter EXIT at the prompt and press Enter.

ESSCMD disconnects from Essbase Server and returns to the operating system command prompt.

ESSCMD Syntax Guidelines

There are some differences between ESSCMD’s interactive and batch processing modes in the requirements for quotation marks and the semicolon statement terminator. Use the guidelines in this section when creating script or batch files.

Case-sensitivity varies by operating system:

• Windows is not case-sensitive. You can enter ESSCMD commands and file-names in uppercase or lowercase letters, or in any combination of the two.

• UNIX is case-sensitive. You must enter file names in the correct case or UNIX does not recognize them. However, you can enter ESSCMD command names and parameters in uppercase or lowercase.
Quotation Marks in ESSCMD

Double quotation marks (" ") enclose character parameters and responses to commands.

- In interactive ESSCMD, using double quotation marks is optional. Be sure to use them when a parameter has an embedded space; for example,
  ```
  CALC "Calc All;"
  ```
- In an ESSCMD script file, always enclose all character parameters and responses to commands in double quotation marks; for example,
  ```
  LOGIN "Local" "TomT" "Password"
  ```
- You do not have to enclose numeric parameters and responses in quotation marks.
- You cannot place quotation marks within quotation marks.

ESSCMD Semicolon Statement Terminator

The ; (semicolon) statement terminator signals the end of a command; for example,
```
SELECT "SAMPLE" "BASIC"
```

- In interactive ESSCMD, pressing the Enter key signals ESSCMD that the command is complete. The statement terminator is optional.
- In an ESSCMD script file, you should use the terminator, even though it is optional, if a command has many parameters. This is especially important in order to signal the end of the parameter list if some of the parameters are optional.
- If you omit some optional parameters and do not use a semicolon to end the list, ESSCMD looks for the remaining values in the next command in the file, leading to unpredictable results.

The SETAPPSTATE and SETDBSTATE commands are examples of commands which you should terminate with ; to prevent any confusion in processing.

Note: All syntax examples in this documentation use quotation marks and semicolon terminators.

Referencing Files

Some commands require that you precede object or file names with a numeric parameter, from 1 to 4, that tells ESSCMD where to look for the object or file. The parameter directs ESSCMD to look for files in other applications, databases, or systems.

The following table lists each value for the numeric parameter (numeric), the file location to which it applies, and the information that ESSCMD requests when you use each parameter setting. appName is the application name and dbName is the database name.
ESSCMD prompts for:

1. Local or client-based file
   - Windows: Files in the `\ARBORPATH\CLIENT\appName\dbName` directory.
   - UNIX: Files in the `$ARBORPATH/client/appName/dbName` directory.

2. Remote or server-based file
   - Windows: Files in the `\ARBORPATH\APP\appName\dbName` directory.
   - UNIX: Files in the `$ARBORPATH/app/appName/dbName` directory.

3. File
   - Fully-qualified path to the file, unless file is in the current ESSCMD directory.

4. SQL table
   - Full network and database information for the SQL table.

For example, the LOADDATA command can load a data file that resides on the client computer or the Essbase Server computer. The command requires the numeric parameter to tell ESSCMD where to look for the data file. This example causes ESSCMD to prompt for the fully-qualified path name of the file to load:

```
LOADDATA 3
```

File extensions are usually optional in both interactive and batch processing modes, except when using commands that require a numeric parameter that indicates the location of files:

- If you use file option 3 (File), you must enter the file extension in both interactive and batch processing modes.
- If the object is in the directory from which you started ESSCMD, you do not need to enter a path.

## ESSCMD Batch Processing

If you use a series of commands frequently or you must enter many commands to complete a task, consider script or batch file automation.

- You can run a script file containing ESSCMD commands from the operating system command line or from an operating system batch file. A script has a .SCR extension.
- A batch file is an operating system file that calls multiple ESSCMD scripts, and may include operating system commands. You can use a batch file to run multiple sessions of ESSCMD. On Windows systems, batch files have .BAT extensions.

**Note:** On UNIX, a batch file is a shell script. A shell script usually has the file extension .sh (Bourne or Korn shell) or .csh (C shell).

When you run a script or batch file, ESSCMD executes the commands in order until the end of the file.
Writing Script Files

Each script must be a complete ESSCMD session, with login, application and database selection, logout, and termination commands.

To create a script:

1. Enter ESSCMD commands in a text editor.
2. Save the file with the .SCR extension.

For example, the following script file, TEST.SCR, was created in Notepad:

```
LOGIN "LOCAL" "TOMT" "PASSWORD"
SELECT "SAMPLE" "BASIC"
GETDBSTATE
EXIT;
```

When run from the operating system command line, this script logs TomT into the Local server, selects the Sample application and Basic database, gets database statistics, and quits ESSCMD.

Running Script Files

Enter the following command at the operating system prompt:

```
ESSCMD scriptFileName.SCR
```

Replace scriptFileName with the name of the script file. For example, type the following if the script file is in the current directory:

```
ESSCMD TEST.SCR
```

If the script file is in another directory, include the path. For example:

```
ESSCMD C:\WORK\SCRIPTS\TEST.SCR (absolute path on Windows)
```

or

```
ESSCMD ..\SCRIPTS\TEST.SCR (relative path on Windows)
```

Handling Command Errors in a Script File

ESSCMD provides error checking and handling. You can check for errors and, if necessary, branch to an appropriate response.

After each ESSCMD command is executed, a number is stored in an internal buffer. If the command executes successfully, 0 is returned to the buffer; if the command is unsuccessful, the error number is stored in the buffer. Unsuccessful execution is called non-zero status.

ESSCMD provides the following error-handling commands:

- IFERROR checks the previously executed command for a non-zero (failure) return status. If the status is not zero, processing skips all subsequent commands and jumps to resume at a user-specified point in the file.
- The script file can branch to an error-handling routine or the end of the file.
RESETSTATUS reverts all saved status values to 0 (zero) in preparation for more status checking.

GOTO forces unconditional branching to a user-specified point in the file, whether or not an error occurred.

In this LOAD.SCR example, if a command does not execute successfully, ESSCMD branches to the end of the file to avoid completing other operations.

LOGIN "local" "User1" "password" "Sample" "Basic";
LOADDATA 2 "calcdat";
IFERROR "Error";
CALC "Calc All;";
IFERROR "Error";
RUNREPT 2 "Myreport";
IFERROR "Error";
[possible other commands]
EXIT;
:Error
EXIT;

Note: You can use the OUTPUT command to log errors.

Sample Script Files

The following script files demonstrate common batch operations. All samples are based on the Sample Basic database. The scripts for these examples are available in ARBORPATH\APP\SAMPLE\BASIC. On UNIX systems, the examples are available from /home/$ARBORPATH/app/Sample/Basic.

Importing and Calculating a Data Sample File

Suppose you need a file that:

- Logs in to Essbase Server.
- Selects an application and database.
- Prevents other users from logging on and making changes to the database.
- Imports data from a text file.
- Calculates the database.
- Exits ESSCMD.

The following script file does the job:

LOGIN "Poplar" "TomT" "Password";
SELECT "Sample" "Basic";
DISABLELOGIN;
IMPORT 2 "ACTUALS" 4 "Y" 2 "ACTUAL" "N";
CALCDEFAULT;
On Windows, this script file, sample1.scr, is available in \
ARBORPATH\APP\SAMPLE\BASIC. On UNIX, Sample.scr is in \$ARBORPATH/app/Sample/Basic.

**Updating a SQL Script, Importing, and Calculating a Data Sample File**

Suppose you need a script file that:

- Logs in to Essbase Server.
- Selects an application and database.
- Prevents other users from logging on and making changes to the database.
- Updates the outline from an SQL data source.
- Imports data from SQL.
- Calculates the database.
- Exits ESSCMD.

The following script file does the job:

```
LOGIN "Poplar" "TomT" "Password";
SELECT "Sample" "Basic";
DISABLELOGIN;
BUILD5IM 2 "PRODRUL" 4 "PRODTBL" 4 "PROD.ERR" ;
IMPORT 4 "TOMT" "PASSWORD" 2 "ACTUAL" "N";
CALCDEFAULT;
EXIT;
```

On Windows, this script file, sample2.scr, is available in \ARBORPATH\APP\SAMPLE \BASIC. On UNIX, it is in the /$ARBORPATH/app/Sample/Basic directory.

**Writing Batch Files**

You can write a batch file that runs one or more report scripts, and includes operating system commands. See your operating system instructions to learn the syntax for writing batch files.

**Handling Command Errors in Batch Files**

For the operating system batch file, you can use ESSCMD command return values to control the flow of scripts that the batch file executes.

An ESSCMD program returns an integer value upon exiting. This value represents the status of the last executed command. You can set up your batch file to test for this value, and if the test
fails, branch to a response. For information about handling errors in script files, see Handling Command Errors in a Script File.

For example, a batch file could contain three scripts: an ESSCMD batch file that loads data, a calc script, and a report script. If the load batch file fails, the calculations and reporting also fail. In this case, it would be best to stop the batch file and correct the error. If your batch file tests for the return value of the load process, and this return value indicates failure, the batch file can jump to the end of the file and stop or execute some other error-handling procedure, rather than attempting to calculate data that did not load.

The following example shows a Windows operating system batch file and the contents of one of the ESSCMD scripts it runs, LOAD.SCR. Because error-checking requirements vary, the syntax in this example may not correspond to that of your operating system. See your operating system documentation for error checking in batch files.

```bash
ESSCMD LOAD.SCR
If not %errorlevel%==goto Error
ESSCMD CALC.SCR
If not %errorlevel%==goto Error
ESSCMD REPORT.SCR
If not %errorlevel%==goto Error
Echo All operations completed successfully
EXIT
:Error
Echo There was a problem running the script
```

Sample Script: Scheduling Report Printing

Suppose you need a file that:

- Logs in to Essbase Server.
- Selects an application and database.
- Assigns reports that output to files for later printing.
- Exits ESSCMD.

The following script file does the job:

```bash
LOGIN "Poplar" "TomT" "Password";
SELECT "Sample" "Basic";
RUNREPT 2 "REP1" "REP1.OUT";
RUNREPT 2 "REP2" "REP2.OUT";
RUNREPT 2 "REP3" "REP3.OUT";
EXIT;
```

On Windows, SAMPLE3.SCR is available in \ARBORPATH\APP\SAMPLE\BASIC. On UNIX, SAMPLE3.SCR is in /$ARBORPATH/app/Sample/Basic.

ESSCMD Interactive Mode

In interactive mode, you enter commands and respond to prompts. This is useful when you are performing simple tasks that require few commands. If you are performing more complex tasks
that require many commands, consider creating a script file or batch file; see “ESSCMD Batch Processing” on page 580.

For syntax conventions when working in interactive mode, see “ESSCMD Syntax Guidelines” on page 578.

Logging On to Essbase Server

After starting ESSCMD, you must connect to Essbase Server so that you can enter commands.

➢ To log on to Essbase Server:

1. At the ESSCMD prompt, log in to Essbase Server with the LOGIN command.
2. Enter the host name for Essbase Server. When you connect from the server machine, the server name depends on your network setup. For example, the name could be LOCAL.
3. Enter your user name.
4. Enter your password.

The ESSCMD prompt appears as follows:

local:::userName[1]->

where userName is your login name.

You can enter any valid ESSCMD command (see “ESSCMD List” on page 592).

**Note:** To load an application into memory and select a database, use the SELECT command.

The ESSCMD prompt appears as follows:

local: appName:dbName:userName[1]->

where:

- appName is the name of the application.
- dbName is the name of the database to which you are connected.

Entering Commands

➢ To enter commands in interactive mode, select one method:

- Type the command and press Enter.

ESSCMD prompts you for each of the command parameters. For example, the SELECT command has two parameters, as shown in the command syntax:

```
SELECT *appName* *dbName*;
```
If you enter only SELECT and press Enter, ESSCMD prompts you for the first parameter, the application name (appName). After you enter the application name and press Enter, ESSCMD prompts you for the database name (dbName).

- Type the commands and all parameters, then press Enter.

  Using SELECT as the example, you would type:

  ```
  SELECT "Sample" "Basic";
  ```

  Whichever method you use, the interactive prompt now reflects the application and database names. For example, the following prompt tells you that the Sample application and Basic database are selected:

  ```
  local:Sample:Basic:User[1]->
  ```

  In this case, you can enter other commands without the application or database name parameters that it normally requires.

### Canceling Operations

While ESSCMD is running, you can cancel an asynchronous operation, such as a calculation, export, or restructure operation, by pressing and holding the Esc key until ESSCMD responds.

**Warning:** Do not pause or suspend your system (for example, by pressing Ctrl-S) while Essbase Server is processing a command. Pausing the system may prevent Essbase Server from correctly completing the command.

### ESSCMD Command Groups

This topics in this section list ESSCMD commands, grouped by command type.

### Using ESSCMD

Use these commands to log in and out of ESSCMD, view a list of commands, pause an ESSCMD script, and redirect command output:

- LOGIN
- LOGOUT
- LISTLOGINS
- SETLOGIN
- SLEEP
- SELECT
- EXIT
Application and Database Administration

Use these commands to perform database administration, and get information about applications and databases:

- COPYAPP
- COPYDB
- CREATEAPP
- CREATEDB
- DELETEAPP
- DELETEDB
- GETAPPPACTIVE
- GETAPPINFO
- GETAPPPSTATE
- GETDBACTIVE
- GETDBINFO
- GETDBSTATE
- GETDBSTATS
- GETVERSION
- LISTAPP
- LISTDB
- LISTFILES
- LOADAPP
- LOADDB
- RENAMEAPP
- RENAMEDB
- SETAPPPSTATE
- SETDBSTATE
- SETDBSTATEITEM
- SHUTDOWNSERVER
- UNLOADAPP
- UNLOADDB

User and Group Security

Use these commands to perform user and group administration:

- DISABLELOGIN
Security Filters and Locks
Use these commands to list, copy and rename security filters, and to view and remove database locks:

- COPYFILTER
- LISTFILTERS
- LISTLOCKS
- REMOVELOCKS
- RENAMEFILTER

Database Objects
Use these commands to list database objects and their lock statuses, copy and rename database objects, and to view and remove URLs, cell notes, or partitions linked to the database:

- LISTOBJECTS
- COPYOBJECT
- RENAMEOBJECT
- UNLOCKOBJECT
- LISTLINKEDOBJECTS
- PURGELINKEDOBJECTS
Outline and Attribute Information

Use these commands to view member information, attribute information, current attribute naming specifications for the database, and view outline paging information:

- GETMBRINFO
- GETMEMBERS
- GETATTRINFO
- GETATTRIBUTESPECS

Dimension Building

You can build multiple dimensions incrementally, with or without automatic restructuring after the dimension build is complete.

Use these commands to build one or more dimensions from data files or SQL sources:

- BUILDDIM
- INCBUILDDIM
- BEGININCBUILDDIM
- ENDINCBUILDDIM

Data Loading, Clearing, and Exporting

Use these commands to load data files or individual records, to clear all data from the database, or to export and import data to and from a text file:

- LOADDATA
- UPDATE
- UPDATEFILE
- RESETDB
- EXPORT
- PAREXPORT
- IMPORT

Calculating

Use these commands to run calc scripts, execute one or more calc strings, run or change the default calculation, and view information about calc strings associated with members:

- CALC
- CALCDEFAULT
- CALCLINE
Reporting

Use these commands to run report scripts and execute one or more report strings:

- RUNREPT
- REPORT
- REPORTLINE

Partitioning

To produce a text file of the distributed database's partition mapping tables, use the PRINTPARTITIONDEFFILE command.

To replicate all data cells, or only updated data cells, in a replicated partition, use these commands:

- GETALLREPLCELLS
- PUTALLREPLCELLS
- GETUPDATEDREPLCELLS
- PUTUPDATEDREPLCELLS

Use "GET" commands to replicate cells from source to target, when you are working from the computer hosting the target database.

Use "PUT" commands to replicate cells from source to target, when you are working from the computer hosting the source database.

Outline Synchronization

Outline synchronization commands utilize an outline change file (.CHG) to track changes made on the source outline, apply those changes to the target outline, and synchronize time stamps in the partition definition files.

Use these commands to keep the target database outline synchronized with changes made to the source database outline:

- GETPARTITIONOTLCHANGES
- APPLYOTLCHANGEFILE
Error and Log Handling

Use these commands for conditional and unconditional error branching in ESSCMD scripts, redirection of process information, specifying what kind of messages are displayed, and clearing the application log file:

- RESETSTATUS
- SETMSGLEVEL
- GOTO
- IFERROR
- OUTPUT
- DELETELOG

Currency Conversion Information

Use these commands to get information about the currency database linked to the currently selected database:

- GETCRDB
- GETCRDBINFO
- GETCRRATE
- GETCRTYPE

Location Aliases

Location aliases are names representing host-application-database-user name-password combinations.

Use these commands to manage location aliases in a distributed Essbase environment:

- CREATELOCATION
- DELETLOCATION
- LISTLOCATIONS

Substitution Variables

Substitution variables are placeholders for information that changes regularly. Use them in calculation scripts, report scripts, and Smart View or other grid clients.

Use these commands to manage substitution variables:
• CREATEVARIABLE
• DELETEDVARIABLE
• LISTVARIABLES
• UPDATEVARIABLE

Aliases

Alias tables contain a listing of member names and their alternate names, or aliases. Create alias tables using Administration Services.

Use these commands to manage and display the contents of alias tables for a database:

• LISTALIASES
• SETALIAS
• LOADALIAS
• UNLOADALIAS
• DISPLAYALIAS

Integrity, Performance

Use these commands to get and reset performance statistics, and check for data integrity:

• GETPERFSTATS
• RESETPERFSTATS
• VALIDATE

Backing Up

Use these commands to place a database in read-only mode in preparation for archiving, and to restore the database to read-write mode after archiving is complete:

• BEGINARCHIVE
• ENDARCHIVE

ESSCMD List

Consult the Contents pane for a categorical list of ESSCMD commands.

  ADDUSER       GETCRTYPE       PRINTPARTITIONDEFFILE
  APPLYOTLCHANGEFILE  GETDBACTIVE    PURGELINKEDOBJECTS
  APPLYOTLCHANGEFILEEX GETDBINFO     PURGEOTLCHANGEFILE
<table>
<thead>
<tr>
<th>Command</th>
<th>Arguments</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEGINARCHIVE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BEGININCBUILDDIM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BUILDDIM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CALC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CALDCALL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CALCLINE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COPYAPP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COPYDB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COPYFILTER</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COPYOBJECT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CREATEAPP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CREATEDB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CREATEGROUP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CREATELOCATION</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CREATEUSER</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CREATEVARIABLE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DELETEAPP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DELETEDB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DELETGROUP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DELETELOCATION</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DELETETLOG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DELETEUSER</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DELETEVARIABLE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DISABLELOGIN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DISPLAYALIAS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENABLELOGIN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENDARCHIVE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENDINCBUILDDIM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESTIMATEFULLDBSIZE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXIT</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ADDUSER

Adds a user to a group.

**Syntax**

ADDUSER groupName userName

**Parameter Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>groupName</td>
<td>Name of a group.</td>
</tr>
<tr>
<td>userName</td>
<td>Name of a user.</td>
</tr>
</tbody>
</table>

**Example**

To add TomT to MARKETING:

ADDUSER "Marketing" "TomT";

APPLYOTLCHANGEFILE

Applies the source outline changes specified in the .CHG log file to the target database's outline you selected with the SELECT command.

If the database has multiple partitions of the same type to the same target database or from the same source database, use APPLYOTLCHANGEFILEEX instead, and specify the data direction.

**Syntax**

APPLYOTLCHANGEFILE numFiles fileName
### APPLYOTLCHANGEFILEEX

Applies the source outline changes specified in the .CHG log file to the target database's outline you selected with the SELECT command.

#### Syntax

```
APPLYOTLCHANGEFILEEX numFiles fileName dataFlowDirection
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>numFiles</td>
<td>A numeric value indicating the number of .CHG log files to read.</td>
</tr>
<tr>
<td>Filename</td>
<td>The name of the .CHG log file to read. The filename must be the full path name of the desired change file on the target database. The filename must be in quotation marks (see example below). More than one file can be specified.</td>
</tr>
</tbody>
</table>
| dataFlowDirection | The half of the partition to which you are currently connected:  
  1 - Source  
  2 - Target |
Use APPLYOTLCHANGEFILEEX after calling GETPARTITIONOTLCHANGES. Specify the full path to the source database's .CHG file.

**Example**

Samppart Company, the target database, is selected. Apply outline changes from Sampeast East, the source database.

APPLYOTLCHANGEFILE "1"

"C:\Hyperion\products\Essbase\EssbaseServer\app\Sampeast\East\ess00004.chg" "1";

**See Also**

- GETPARTITIONOTLCHANGES

---

**BEGINARCHIVE**

Places a database in read-only mode for archiving.

**Syntax**

BEGINARCHIVE *App* *DB* *file*

**Parameter Description**

- **App**: Name of the application.
- **DB**: Name of the database.
- **file**: File to contain the archive.

**Notes**

Changing the server mode to Read-only allows the database administrator to use an archiving program to back up files on the server. This also prevents writing to files during backup.

The server's Read-only state persists until it is changed back to Read-write with the ENDARCHIVE command. Unless you reset the Read-only state, it persists even after termination of the current session.

The database files to back up are listed in the application\database directory specified by the filename parameter. The archived data overwrites the information in the specified file, if the file already exists. See the Oracle Essbase Database Administrator's Guide for more information about restructuring and backup files.

**Example**

BEGINARCHIVE "Sample" "Sales" "June";

**See Also**

- ENDARCHIVE
BEGININCBUILDDIM

Prepares Essbase Services for deferred-restructure dimension building commands.

Syntax

BEGININCBUILDDIM

Notes

Deferred-restructure dimension builds have also been called incremental dimension builds. This command works in conjunction with the ENDINCBUILDDIM command to group together one or more INCBUILDDIM statements.

This command locks the outline file. If the outline file is already locked, this command returns an error.

This command copies the outline file (.OTL) to a backup file name (.OTN). Subsequent INCBUILDDIM commands operate on the .OTN file. See the Oracle Essbase Database Administrator's Guide for more information about restructuring and backup files.

BEGININCBUILDDIM starts a programming block; ENDINCBUILDDIM ends the programming block.

Example

To build the dimensions specified in GENREF.RUL and LEVELMUL.RUL, discard all data, and save the new outline after the dimension builds are complete:

BEGININCBUILDDIM;
INCBUILDDIM 2 "GENREF.RUL" 2 "GENREF.TXT" 4 "ERR.OUT" 1;
INCBUILDDIM 2 "LEVELMUL.RUL" 2 "LEVELMUL.TXT" 4 "ERR.OUT" 1;
ENDINCBUILDDIM 4;

See Also

- ENDINCBUILDDIM
- INCBUILDDIM
- BUILDDIM

BUILDDIM

Dynamically builds one or more dimensions from a data file or SQL source.

Syntax

BUILDDIM location rulobjName dataLoc sourceName fileType errorLog

Parameter Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>location</td>
<td>Location of the rules file.</td>
</tr>
<tr>
<td></td>
<td>1 - Local/client.</td>
</tr>
<tr>
<td></td>
<td>2 - Remote/server.</td>
</tr>
<tr>
<td></td>
<td>3 - File. Use the file is not an Essbase artifact, or if you want to specify the full path name. Otherwise, Essbase looks in the &lt;APPNAME&gt;/&lt;DBNAME&gt; directory.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td>rulobjName</td>
<td>Name of the rules file</td>
</tr>
<tr>
<td>dataLoc</td>
<td>Location of the data file.</td>
</tr>
<tr>
<td>1</td>
<td>Local/client</td>
</tr>
<tr>
<td>2</td>
<td>Remote/server</td>
</tr>
<tr>
<td>3</td>
<td>File. Use if the file is not an Essbase artifact, or if you want to specify the full path name. Otherwise, Essbase looks in the <code>&lt;APPNAME&gt;/&lt;DBNAME&gt;</code> directory.</td>
</tr>
<tr>
<td>4</td>
<td>SQL source.</td>
</tr>
<tr>
<td>sourceName</td>
<td>Source of the data file. If <code>dataLoc</code> is 1, 2, or 3, specify the data file name. If <code>dataLoc</code> is 4, specify the SQL user name and password.</td>
</tr>
<tr>
<td>fileType</td>
<td>Data file type.</td>
</tr>
<tr>
<td>1</td>
<td>Excel</td>
</tr>
<tr>
<td>2</td>
<td>Lotus .WK1 file (No longer supported)</td>
</tr>
<tr>
<td>3</td>
<td>Lotus .WK3 file (No longer supported)</td>
</tr>
<tr>
<td>4</td>
<td>Text.</td>
</tr>
<tr>
<td>5</td>
<td>Lotus .WK4 file (No longer supported)</td>
</tr>
<tr>
<td>errorLog</td>
<td>Name of the text file to receive error messages and rejected records.</td>
</tr>
</tbody>
</table>

**Notes**

This command builds one or more dimensions from a data file or an SQL source. Many applications have large dimensions that are impractical to manually define and maintain. This command makes it possible to automate the dimension-building and updating processes. See the INCBUILEDDIM command for another way to build dimensions.

The INCBUILEDDIM command is identical to the BUILEDDIM command, except for the following:

- INCBUILEDDIM does not automatically restructure the database after modifying the dimensions. You can have several consecutive INCBUILEDDIM, commands inside a BEGININCBUILEDDIM...ENDINCBUILEDDIM block. Essbase restructures when it encounters ENDINCBUILEDDIM.

- INCBUILEDDIM lets you append to, rather than overwrite, the error log.

**Example**

To build the dimensions as defined by the rules file, PROD.RUL:

```
BUILEDDIM 1 "PROD" 1 "PRODUCTS" 4 "PRODERR";
```

To build the dimensions from an SQL table defined in the rules file, PROD.RUL:

```
BUILEDDIM 1 "PROD" 4 "TomT" "Password" "PRODERR";
```
**CALC**

Executes one or more calculation strings.

**Syntax**

CALC "calcString; [calcString;]"

**Parameter Description**

- **calcString**: A calculation string (any valid string that is accepted by a calculation script).

**Notes**

In a batch file, if you include multiple calculation strings in one CALC command, place all of the calculation string parameters in one set of quotation marks and end each command string with a semicolon statement terminator (;). All text within the quotation marks is passed to the calculator.

As an alternate to including multiple calculation strings in this command, place the strings in a calculation script, then call RUNCALC to run the script.

**Example**

To issue the CALC ALL command:

```
CALC "Calc All;"
```

To calculate the members January and Product:

```
CALC "Jan; Product;"
```

**See Also**

- [CALCLINE](#)

**CALCDEFAULT**

Calculates using the default database calculation.

**Syntax**

CALCDEFAULT

**Notes**

This command calculates the relationships defined in the outline, or executes the default calculation.

**Example**

```
CALCDEFAULT;
```

**See Also**

- [CALC](#)
- [CALCLINE](#)
- [SETDEFAULTCALC](#)
**CALCLINE**

Executes a single calculation string.

**Syntax**

```
CALCLINE calcString
```

**Parameter Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>calcString</td>
<td>A calculation string (any valid string that is accepted by a calculation script).</td>
</tr>
</tbody>
</table>

**Notes**

This command executes a single calculation string. In a batch file, place the calculation string parameter in quotation marks and end the string with a semicolon statement terminator (;). All text within the quotation marks is passed to the calculator. This command requires quotation marks.

**Example**

To issue the CALC ALL command:

```
CALCLINE "Calc All;";
```

To calculate the members January and Product:

```
CALCLINE "Jan; Product;";
```

**See Also**

- CALC

---

**COPYAPP**

Copies an application.

Also see “Reloading the Database” in the *Oracle Essbase Database Administrator’s Guide*.

**Syntax**

```
COPYAPP sourceApp destApp
```

**Parameter Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>sourceApp</td>
<td>Name of application to copy.</td>
</tr>
<tr>
<td>destApp</td>
<td>Name of new application.</td>
</tr>
</tbody>
</table>

**Example**

```
COPYAPP "FINANC95" "FINANC96";
```

---

**COPYDB**

Copies a database.
Also see “Reloading the Database” in the *Oracle Essbase Database Administrator’s Guide*.

**Syntax**

COPYDB *sourceApp* *sourceDb* *destApp* *destDb*

**Parameter Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>sourceApp</td>
<td>Name of the application for the database to copy.</td>
</tr>
<tr>
<td>sourceDb</td>
<td>Name of the database to copy.</td>
</tr>
<tr>
<td>destApp</td>
<td>Name of the application for the new database.</td>
</tr>
<tr>
<td>destDb</td>
<td>Name of the new database.</td>
</tr>
</tbody>
</table>

**Example**

COPYDB "FINANC95" "SALES95" "FINANC96" "SALES96";

**COPYFILTER**

Copies a filter.

**Syntax**

COPYFILTER *sourceApp* *sourceDb* *sourceFilter* *destApp* *destDb* *destFilter*

**Parameter Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>sourceApp</td>
<td>Name of the application that includes the filter to copy.</td>
</tr>
<tr>
<td>sourceDb</td>
<td>Name of the database that includes the filter to copy.</td>
</tr>
<tr>
<td>sourceFilter</td>
<td>Name of the filter to copy.</td>
</tr>
<tr>
<td>destApp</td>
<td>Name of the application for the new filter.</td>
</tr>
<tr>
<td>destDb</td>
<td>Name for the database for the new filter.</td>
</tr>
<tr>
<td>destFilter</td>
<td>Name of the filter copy.</td>
</tr>
</tbody>
</table>

**Example**

COPYFILTER "FINANC95" "SALES95" "FILTER95" "FINANC96" "SALES96" "FILTER96";

**COPYOBJECT**

Copies a database artifact.

**Syntax**

COPYOBJECT *objType* *sourceApp* *sourceDb* *sourceObj* *destApp* *destDb* *destObj"
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>objType</td>
<td>Type of artifact to list.</td>
</tr>
<tr>
<td></td>
<td>0 - Abort</td>
</tr>
<tr>
<td></td>
<td>1 - Outline object (not available)</td>
</tr>
<tr>
<td></td>
<td>2 - Calculation script</td>
</tr>
<tr>
<td></td>
<td>3 - Report script</td>
</tr>
<tr>
<td></td>
<td>4 - Rules file</td>
</tr>
<tr>
<td></td>
<td>5 - Alias table</td>
</tr>
<tr>
<td></td>
<td>6 - Structure file</td>
</tr>
<tr>
<td></td>
<td>7 - Backup file (not available)</td>
</tr>
<tr>
<td></td>
<td>8 - Worksheet of any type (not available)</td>
</tr>
<tr>
<td></td>
<td>9 - Text object</td>
</tr>
<tr>
<td></td>
<td>10 - Partition</td>
</tr>
<tr>
<td></td>
<td>11 - Linked Reporting Object</td>
</tr>
<tr>
<td></td>
<td>12 - Selection</td>
</tr>
<tr>
<td></td>
<td>13 - Wizard</td>
</tr>
</tbody>
</table>

sourceApp   Name of the application that includes the artifact to copy.

sourceDb    Name of the database that includes the artifact to copy.

sourceObj   Name of the artifact to copy.

destApp     Name of the application for the new artifact.

destDb      Name of the database for the new artifact.

destObj     Name of the artifact copy.

Notes

objType parameter values 6 and 7 are deprecated.

Example

COPYOBJECT "2" "FINANC95" "SALES95" "OLDOBJ" "FINANC96" "SALES96" "NEWOBJ";

**CREATEAPP**

Creates a new application.

**Syntax**

CREATEAPP *appName*

**Parameter Description**

appName    Name of the application.

**Example**

To create an application called TBC:

CREATEAPP "TBC";
CREATEDB
Creates a database.

Syntax
CREATEDB appName dbName

Parameter Description
appName  Name of the application in which to create a database.
dbName   Name of the database.

Example
To create a database called FINANCE under an application named TBC:
CREATEDB "TBC" "FINANCE";

CREATEGROUP
Creates a group.

Syntax
CREATEGROUP groupName

Parameter Description
groupName  Name of the group to create.

Notes
This command creates a new group.

Example
To create a group called MARKETING:
CREATEGROUP "MARKETING";

CREATELOCATION
Creates a new location alias.
Location aliases provide a shorthand way of managing login information for Essbase databases. Location aliases are mapped to a host name, application name, database name, user name, and password.

Syntax
CREATELOCATION alias host application database user_name password
Parameter     Description

alias         Location alias name.
host          Host name.
application   Application name.
database      Database name.
user_name     Login name.
password      Password for user_name.

Notes
- You can use location aliases only with the @XREF function.
- You must have Database Manager permission to create location aliases.

Example

CREATELOCATION "ALIAS3" "LOCAL" "SAMPLE" "BASIC" "TomT" "PASSWORD";

See Also
- DELETELOCATION
- LISTLOCATIONS

CREATEUSER

Creates a new Essbase user ID.

Syntax

CREATEUSER  userName    password

Parameter     Description

userName     Name of the user.
password      Password for the new user. If the string contains blanks, it must be enclosed in double quotation marks. Leading or trailing spaces are illegal and will be trimmed off. Do not enclose the password in single quotation marks unless you want them to be part of the password.

Example

To create a user named DANTE with the password INFERNO:

CREATEUSER "DANTE" "INFERNO";

CREATEVARIABLE

Defines a substitution variable and its corresponding string value.
Syntax
CREATEVARIABLE  variableName  serverName  [appName  [dbName]]  value

Parameter   Description
variableName  Name of the substitution variable. Must be alphanumeric and can contain a maximum of 80 characters. You can use underscores, but not spaces.
serverName    Host name of the Essbase Server.
appName       Optional. Name of the application. If omitted, empty quotes must be used in a script to take its place. ("")
dbName        Optional. Name of the database. If omitted, empty quotes must be used in a script to take its place. ("")
value         The string value for the variable. Must be alphanumeric and can contain a maximum of 255 characters. It can include a null value. Do not use the & character as the leading character.

Notes
If you specify only the Essbase Server host name, the variable applies to all applications and databases on the Essbase Server. If you specify the Essbase Server host name and the application name, the variable applies to all databases within the specified application. If you specify the Essbase Server host name, application name, and database name, the variable is for the specified database.

Before you create a new variable, check the names of existing variables with the LISTVARIABLES command. It is possible to overwrite the string value of an existing variable if you create a variable with the same name as the existing variable.

Example
The following command in an ESSCMD script creates a substitution variable on the Sample Basic database, on a host computer named Bamboo. The variable is named CurQtr and has a value of Qtr1.
CREATEVARIABLE "CurQtr" "Bamboo" "Sample" "Basic" "Qtr1";

The following ESSCMD script creates a substitution variable that applies to all applications and databases on the Essbase Server named Aspen. Application and database input is left blank because the variable is system-wide; however, the empty quotation marks are still required as placeholders.
login "Aspen" "fiona" "sunflower";
CREATEVARIABLE "CurQtr" "aspen" "" " "Qtr4";

See Also
- LISTVARIABLES
- UPDATEVARIABLE
**DELETEAPP**

Deletes an application.

**Syntax**

```plaintext
DELETEAPP appName
```

**Parameter Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>appName</td>
<td>Name of the application to delete.</td>
</tr>
</tbody>
</table>

**Notes**

Deleting an application deletes all of its associated databases and other artifacts, along with any additional files that reside in the application and database directories.

**Example**

To delete an application called TBC:

```plaintext
DELETEAPP "TBC";
```

**DELETEDB**

Deletes a database.

**Syntax**

```plaintext
DELETEDB appName dbName
```

**Parameter Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>appName</td>
<td>Name of the application containing the database to delete.</td>
</tr>
<tr>
<td>dbName</td>
<td>Name of the database.</td>
</tr>
</tbody>
</table>

**Notes**

Deleting a database deletes all of its associated artifacts, along with any additional files that reside in the database directory.

**Example**

To delete a database called BASIC from an application called TBC:

```plaintext
DELETEDB "TBC" "BASIC";
```

**DELETEGROUP**

Deletes a group.

**Syntax**

```plaintext
DELETEGROUP groupName
```

**Example**

```plaintext
DELETEGROUP "groupName"
```
### DELETEGROUP

**Parameter**
- **groupName**: Name of the group to delete.

**Notes**
This command deletes an Essbase security group. Deleting the group does not delete users that were in the group.

**Example**
To delete a group called MARKETING:
```
DELETEGROUP "MARKETING";
```

**See Also**
- DELETEUSER
- REMOVEUSER

### DELETELOCATION

Removes a location alias from the current database.

**Syntax**
```
DELETELOCATION alias
```

**Parameter**
- **alias**: Name of location alias.

**Notes**
You must have Database Manager privilege to delete location aliases.

**Example**
```
DELETELOCATION "ALIAS3";
```

**See Also**
- CREATELOCATION
- LISTLOCATIONS

### DELETELOG

Deletes accumulated entries from an application log file (`appname/log`) or the Essbase Server log file (`essbase.log`).

**Syntax**
```
DELETELOG appName
```

---

607
**Parameter**  **Description**

appName  Name of application. If you omit *appName*, Essbase clears the Essbase Server log file.

**Notes**

Each application has a log file, which records all user requests and activities in all databases in the application. The log file should be cleared regularly to prevent its becoming too large.

In addition, there is an Essbase Server log file, which records all the commands displayed in the main Essbase Server Agent window.

**Example**

To clear the log file of an application called SAMPLE:

```
DELETELOG "SAMPLE";
```

To clear the Essbase Server log file:

```
DELETELOG ""
```

---

**DELETEUSER**

Deletes an Essbase user ID.

**Syntax**

```
DELETEUSER userName
```

**Parameter**  **Description**

userName  Name of the user to delete.

**Notes**

- Deleting the user ID deletes the user from the list of users on the Essbase Server, as well as logging the user out of the active session.
- If you want to remove a user from a group without removing the user, use **REMOVEUSER** instead.
- Do not include a group name in the **DELETEUSER** command line; otherwise, the group will also be deleted.

**Example**

To delete a user named DANTE:

```
DELETEUSER "DANTE";
```

**See Also**

- **DELETEGROUP**
- **REMOVEUSER**
DELETEVARIABLE

Removes a substitution variable.

**Syntax**

DELETEVARIABLE variableName serverName [appName [dbName]]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>variableName</td>
<td>Name of substitution variable to delete.</td>
</tr>
<tr>
<td>serverName</td>
<td>Name of the server.</td>
</tr>
<tr>
<td>appName</td>
<td>Optional. Name of the application.</td>
</tr>
<tr>
<td>dbName</td>
<td>Optional. Name of the database.</td>
</tr>
</tbody>
</table>

**Notes**

If the variable was created at the server level, specify only the server name. If the variable was created at the application level, specify the server and application. If the variable was created at the database level, select the server, application, and database.

**Example**

DELETEVARIABLE "CurQtr" "Bamboo" "Sample" "Basic";

DISABLELOGIN

Prevents users from logging in to databases in an application. Administrators and application managers for the application are not affected by this setting, but other connected users are affected.

**Syntax**

DISABLELOGIN [appName]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>appName</td>
<td>Optional. Required only if no application is selected.</td>
</tr>
</tbody>
</table>

**Notes**

Issue the DISABLELOGIN command to prevent users from accessing databases in an application during maintenance. Administrators and application managers are not affected.

The DISABLELOGIN command prevents any user with a permission lower than Application Manager from making connections to the databases that require the databases to be started. This includes starting the databases or performing the `SELECT` command on the databases.

Database connections remain disabled until re-enabled by as follows:

- By the administrator, using ENABLELOGIN.
By the administrator, using application settings. In Administration Services, select the Allow Connects check box under the Security node in the Application Properties window - General tab.

By default, connections are enabled.

**Example**

DISABLELOGIN;

**See Also**

- ENABLELOGIN

---

**DISPLAYALIAS**

Lists the alias names defined in an alias table.

**Syntax**

DISPLAYALIAS aliasTableName

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>aliasTableName</td>
<td>Name of the alias table.</td>
</tr>
</tbody>
</table>

**Example**

To display the alias names defined in an alias table called DEFAULT:

DISPLAYALIAS "DEFAULT";

---

**ENABLELOGIN**

Enables connections to databases in an application.

**Syntax**

ENABLELOGIN [appName]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>appName</td>
<td>Optional. Required only if no application selected.</td>
</tr>
</tbody>
</table>

**Notes**

This command reverses the effect of DISABLELOGIN.

**Example**

ENABLELOGIN;
**ENDARCHIVE**

Restores the database to read-write mode after archiving is complete.

**Syntax**

```
ENDARCHIVE  appName  dbName
```

**Parameter Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>appName</td>
<td>Name of the application containing the archived database.</td>
</tr>
<tr>
<td>dbName</td>
<td>Name of the database.</td>
</tr>
</tbody>
</table>

**Notes**

After you call **BEGINARCHIVE**, use ENDARCHIVE to restore the database to read-write mode. Otherwise, the read-only state persists even after the termination of the current session. See the Oracle Essbase Database Administrator’s Guide for more information about restructuring and backup files.

**Example**

```
ENDARCHIVE;
```

**See Also**

- **BEGINARCHIVE**

---

**ENDINCBUILDDIM**

Ends the programming block started by BEGININCBUILDDIM and restructures the database after one or more deferred-restructure dimension-building (INCBUILDDIM) commands. Deferred restructure dimension builds have also been called incremental dimension builds.

**Syntax**

```
ENDINCBUILDDIM  preserve
```

**Parameter Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>preserve</td>
<td>Specifies whether to preserve existing data in the database. This parameter is required. Values:</td>
</tr>
<tr>
<td>1</td>
<td>Preserves all existing data blocks.</td>
</tr>
<tr>
<td>2</td>
<td>Preserves existing level 0 data.</td>
</tr>
<tr>
<td>3</td>
<td>Preserves existing input-level data.</td>
</tr>
<tr>
<td>4</td>
<td>Discards all existing data.</td>
</tr>
</tbody>
</table>

**Notes**

This command works in conjunction with the BEGININCBUILDDIM command to group together one or more INCBUILDDIM statements.

This command restructures the database according to the dimension changes that occur as a result of the INCBUILDDIM commands.
This command preserves existing data according to the preserve option.

This command unlocks the outline once restructuring is complete, and overwrites the original .OTL file with the newly modified .OTN file. See BEGININCBUILDDIM for information.

If one or more of the INCBUILDDIM commands that precede the ENDINCBUILDDIM command fails, ENDINCBUILDDIM still restructures the database.

WARNING: If you don’t issue an ENDINCBUILDDIM command after a BEGININCBUILDDIM command and one or more INCBUILDDIM commands, the changes made to the .OTN file are not copied to the database outline (.OTL) file, and the data is not restructured.

Example

To build the dimensions specified in GENREF.RUL and LEVELMUL.RUL, discard all data, and save the new outline after the dimension builds are complete:

BEGININCBUILDDIM;
    INCBUILDDIM 2 "GENREF.RUL" 2 "GENREF.TXT" 4 "ERR.OUT" 1;
    INCBUILDDIM 2 "LEVELMUL.RUL" 2 "LEVELMUL.TXT" 4 "ERR.OUT" 1;
ENDINCBUILDDIM 4;

See Also

- BEGININCBUILDDIM
- INCBUILDDIM

ESTIMATEFULLDBSIZE

Estimates the number of blocks a full calculation (CALC ALL) of the database creates, based on the number of blocks that exist before calculation. The database can have all data loaded, or a random sampling of data.

Syntax

ESTIMATEFULLDBSIZE

Notes

- Use this estimate to help you plan disk space requirements.
- Outlines that contain sparse formulas or topdown formulas are not supported.
- Select an application and database before issuing this command.

Example

Assume that you have fully loaded Sample Basic. Use this command before calculation to predict the number of blocks that would be created.

estimatefulldbsize;

Estimated count of blocks after full calculation = 335

Time elapsed to calculate this estimation = 0.02 seconds
EXIT
Terminates the current session of the ESSCMD utility.

Syntax
EXIT

Example
EXIT;

EXPORT
Writes the data values of a database to a text file.

Syntax
EXPORT exportName amount formatOption

Parameter Description
exportName Specifies the name, including the path, of the file for the exported data. If no path is specified, the file is created in the ARBORPATH\app directory.
amount Specifies the number representing the data to export.
   ● 1 - All data
   ● 2 - Only level 0 blocks
   ● 3 - Only data from blocks with input data
formatOption Specifies the format of the data.
   ● 0 (null) - Non-columnar format. This is the default.
   ● 1 - Columnar format

Notes
The EXPORT command copies data in text format as an alternative to database archiving wherein you copy the files in binary format. Text format is more easily ported to other databases, and users can easily read it. This command exports only the data, rather than the entire database. Because only data is exported, it is more complex to restore the database from an export file than from a true database archive. You must reload and recalculate the data if you use an export file to restore a database.

Some file systems do not support text files larger than 2 GB. If the exported data exceeds 2 GB, Essbase creates multiple export files, as needed. An underscore and number is appended to the file names of the additional files, starting with _1. For example, if exportName is outfile.txt and three files are created, the resulting file names are outfile.txt, outfile_1.txt, and outfile_2.txt.

The export process does not begin until all users are logged out of the database. After the export process begins, the database is in read-only mode. After the export process is finished, Essbase returns the database to read-write mode.
The EXPORT command works on both aggregate storage and block storage databases; however, aggregate storage exports work differently from block storage exports. See Oracle Essbase Database Administrator's Guide.

Example
To create an export file called E060693 that contains only level zero data in columnar format:

```
EXPORT "E060693" 2 1;
```

If the exported data in this example exceeds 4 GB, three files are created: E060693, E060693_1, and E060693_2.

See Also
- PAREXPORT
- DATAEXPORT

GETALLREPLCELLS

The GETALLREPLCELLS command replicates all data cells in the replicated partition from a source database to a target database. Use this command when you are in the data target database.

Syntax

1:

```
GETALLREPLCELLS sourceServerName sourceAppName sourceDbName
```

2:

```
GETALLREPLCELLS ALL
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>sourceServer</td>
<td>Host name of the Essbase Server data source.</td>
</tr>
<tr>
<td>sourceApp</td>
<td>Name of the data source application.</td>
</tr>
<tr>
<td>sourceDb</td>
<td>Name of the data source database.</td>
</tr>
<tr>
<td>ALL</td>
<td>Updates cells for all partitions where the selected database is a data replication target.</td>
</tr>
</tbody>
</table>

Notes

This command gets all replicated data cells from the Essbase Server data source, application, and database, and replicates them in the data target database you select with the SELECT command. This is useful when the data source and data target databases need to be resynchronized.

GETALLREPLCELLS gets cells from the data source to the data target, based on a request made from the data target; PUTALLREPLCELLS cells puts cells from the data source to the data target, based on a request made from the data source.

Example

```
GETALLREPLCELLS "Aspen" "Sample" "Basic";
```
See Also
- GETUPDATEDREPLCELLS
- PUTALLREPLCELLS

GETAPPACTIVE

Returns the name of the currently selected application.

Syntax
GETAPPACTIVE

Example
The following example shows the command and its results:
GETAPPACTIVE;
GetAppActive:

Current active application is [sample]

See Also
- GETAPPINFO
- GETAPPSTATE

GETAPPINFO

Returns host, user, and database information for the current application.

Syntax
GETAPPINFO [appName]

Parameter Description

appName  Optional. Required only if no application is selected.

Notes
This command returns the following information about the application: name, Essbase Server host name, status, elapsed time, users connected, number of databases, and a list of all databases.

Example
GETAPPINFO;

See Also
- GETAPPACTIVE
- GETAPPSTATE
**GETAPPSTATE**

Returns information on the state of the currently selected application.

**Syntax**

```
GETAPPSTATE [appName]
```

**Parameter Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>appName</td>
<td>Optional. Required only if no application is selected.</td>
</tr>
</tbody>
</table>

**Notes**

This command returns information on the state of the currently selected application, as follows:

- Loadable (Y/N)
- AutoLoad (Y/N)
- Access Level
- Allow Connects (Y/N)
- Allow Commands (Y/N)
- Allow Updates (Y/N)
- Security
- Lock Timeout
- LRO File Size Limit

**Example**

```
GETAPPSTATE;
```

**See Also**

- GETAPPACTIVE
- GETAPPINFO

**GETATTRIBUTESPECS**

Returns the current attribute specifications for the selected application and database.

**Syntax**

```
GETATTRIBUTESPECS
```

**Notes**

This command returns the current attribute specifications for the application and database, including attribute member name format, Attribute Calculation dimension member names, Boolean and date member names, and numeric range specifications.

**Example**

```
GETATTRIBUTESPECS;
```

Returns:

```
---------Attribute Specifications--------
Prefix/Suffix          : Prefix
Use Name of            : Parent
Delimiter              : '_'
Date Format            : MM-DD-YYYY
Bucketing Type         : Upper Bound inclusive
Default for TRUE       : True
Default for FALSE      : False
```
Default for Attr Calc : Attribute Calculations
Default for Sum        : Sum
Default for Count      : Count
Default for Average    : Average
Default for Min        : Min
Default for Max        : Max

The name of the attribute level 0 member 3000000, in the following dimension structure, varies depending on the attribute member name format.

**Attribute Member:**

Population
  Small
  3000000

**Sample Name Variations:**

<table>
<thead>
<tr>
<th>Settings</th>
<th>Resulting Member name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prefix/Suffix : Prefix</td>
<td>3000000</td>
</tr>
<tr>
<td>Use Name of : None</td>
<td></td>
</tr>
<tr>
<td>Delimiter : '_'</td>
<td></td>
</tr>
<tr>
<td>Prefix/Suffix : Prefix</td>
<td>Small_3000000</td>
</tr>
<tr>
<td>Use Name of : Parent</td>
<td></td>
</tr>
<tr>
<td>Delimiter : '_'</td>
<td></td>
</tr>
<tr>
<td>Prefix/Suffix : Prefix</td>
<td>Population^Small^3000000</td>
</tr>
<tr>
<td>Use Name of : All Ancestors</td>
<td></td>
</tr>
<tr>
<td>Delimiter : '^'</td>
<td></td>
</tr>
</tbody>
</table>

**GETATTRINFO**

Returns member, dimension, and name information for given attribute members:

- MbrName: Member name.
- DimName: Dimension of which the attribute is a member.
- Data Type: The attribute member type. Values: Boolean, date, numeric, text.
- Data Value: The short attribute member name, if an attribute member. This is the name shown in the Outline Editor. For example, Data Value = 20 for the attribute member named Ounces_20.

**Syntax**

GETATTRINFO mbrName
Parameter Description

mbrName Full attribute member name. Example:

   Intro Date_07-26-1996

Notes

- The output of this command is a subset of the output for the GETMBRINFO command.
- To learn the exact format of the attribute member name, you can enter GETMEMBERS
  <parent>, where <parent> is the parent of the attribute member. For example,
  GETMEMBERS "Intro Date"; returns:

  Intro Date_12-10-1996   Intro Date_10-01-1996   Intro Date_07-26-1996
  Intro Date_06-26-1996   Intro Date_04-01-1996   Intro Date_03-25-1996
  Intro Date_09-27-1995   Intro Date

Example

GETATTRINFO "Caffeinated_True";

Returns:

Member info of [caffeinated_true]
------------------------------------
MbrName      : Caffeinated_True
DimName      : Caffeinated
Attribute Type    : Boolean
Attribute Value   : True

GETCRDB

Returns the name of the currency database linked to the currently selected database.

Syntax

GETCRDB

Example

GETCRDB;

See Also

- GETCRDBINFO
- GECTCRATE
- GETCRTYPE

GETCRDBINFO

Returns information about the currency database linked to the currently selected database.

Syntax

GETCRDBINFO
GETCRRATE

Returns the currency rate for currency partitions.

**Syntax**

```
GETCRRATE
```

**Example**

```
GETCRRATE;
```

**See Also**

- GETCRDB
- GETCRDBINFO

GETCRTYPE

Returns information about the default currency type and conversion method.

**Syntax**

```
GETCRTYPE
```

**Example**

```
GETCRTYPE;
```

**See Also**

- GETDBINFO
- GETDBSTATS

GETDBACTIVE

Returns the name of the currently selected database.

**Syntax**

```
GETDBACTIVE
```

**Example**

```
GETDBACTIVE;
```

GETDBINFO

Returns information on the state of the currently selected database.
Some settings do not take effect until the database is re-started. For information on most recently entered settings, see GETDBSTATE.

Syntax
GETDBINFO [appName dbName]

Parameter Description

appName dbName  Optional. Both required if no application and database are selected.

Notes
When working with currency databases, values viewed using GETDBSTATE and GETDBINFO may differ from each other. The currency database may temporarily inherit attributes from its associated database. To have the values match, issue the appropriate SETDBSTATEITEM command.

Example
GETDBINFO;

Returns:

----- Database Information -----  
Name : Basic
Application Name : Sample
Database Type : NORMAL
Status : Loaded
Elapsed Db Time : 00:01:38:31
Users Connected : 2
Blocks Locked : 0
Dimensions : 10
Data Status : Data has been modified since last calculation.

Data File Cache Size Setting : 33554432
Current Data File Cache Size : 8388608
Data Cache Size Setting : 3144960
Current Data Cache Size : 2096064
Index Cache Size Setting : 10485760
Current Index Cache Size : 10485760
Index Page Size Setting : 1024
Current Index Page Size : 8192
Cache Memory Locking : Enabled
Database State : Read-write
Data Compression on Disk : Yes
Data Compression Type : BitMap Compression
Retrieval Buffer Size (in K) : 10
Retrieval Sort Buffer Size (in K) : 10
Isolation Level : Uncommitted Access
Pre Image Access : No
Time Out : Never
Number of blocks modified before internal commit : 3000
Number of rows to data load before internal commit : 0
Number of disk volume definitions : 0

--Currency Info--
Currency Country Dimension Member : 
Currency Time Dimension Member : Year 
Currency Category Dimension Member : Measures 
Currency Type Dimension Member : 
Currency Partition Member : 

--Request Info--

Request Type : Data Load
User Name : admin
Start Time : Mon Feb 17 11:42:59 2004
End Time : Mon Feb 17 11:43:22 2004
Request Type : Default Calculation
User Name : admin
Start Time : Mon Feb 17 12:57:45 2004
End Time : Mon Feb 17 12:57:46 2004
Request Type : Outline Update
User Name : admin

See Also

- GETDBSTATE

GETDBSTATE

Returns the most recently entered database settings for the selected database.

For settings currently in effect, see GETDBINFO.

Syntax

GETDBSTATE [appName dbName]

Parameter Description

appName dbName Optional. Both required if no application and database are selected.

Notes

When working with currency databases, values viewed using GETDBSTATE and GETDBINFO may differ from each other. The currency database may temporarily inherit attributes from its associated database. To have the values match, issue the appropriate SETDBSTATEITEM command.

Example

GETDBSTATE;

Returns:

----------Database State----------

Description:
Allow Database to Start : Yes
Start Database when Application Starts : Yes
Access Level                           : None
Data File Cache Size                   : 33554432
Data Cache Size                        : 3145728
Aggregate Missing Values               : No
Perform two pass calc when [CALC ALL;] : Yes
Create blocks on equation              : No
Currency DB Name                       : N/A
Currency Conversion Type Member        : N/A
Currency Conversion Type               : N/A
Index Cache Size                       : 1048576
Index Page Size                        : 8192
Cache Memory Locking                   : Disabled
Data Compression on Disk               : Yes
Data Compression Type                  : BitMap Compression
Retrieval Buffer Size (in K)           : 10
Retrieval Sort Buffer Size (in K)      : 10
Isolation Level                        : Uncommitted Access
Pre Image Access                       : Yes
Time Out after                         : 20 sec.
Number of blocks modified before internal commit   : 3000
Number of rows to data load before internal commit : 0
Number of disk volume definitions      : 0
I/O Access Mode (pending)               : Buffered
I/O Access Mode (in use)                : Buffered
Direct I/O Type (in use)                : N/A

See Also
● GETDBINFO

GETDBSTATS

Returns information about dimensions and data blocks for the selected database.

Syntax
GETDBSTATS

Notes
● For more information about fragmentation, see the Oracle Essbase Database Administrator's Guide section “Fragmentation and its Implications.”
● Some application and database statistics may not be accurate when parallel data load, parallel calculation, or parallel restructuring are in use. In particular, diagnostic statistics (such as average clustering ratio, cache hit ratios, and data block density statistics) should not be considered accurate in environments using parallel operations.

Example
GETDBSTATS;

Returns:

--------Statistics of sample:basic--------

<table>
<thead>
<tr>
<th>Dimension Name</th>
<th>Type</th>
<th>Declared Size</th>
<th>Actual Size</th>
</tr>
</thead>
</table>

622
Returns the default calculation script of the currently selected database.

Syntax

GETDEFAULTCALC

Notes

The default calculation script refers to either the relations defined in the database outline (CALC ALL) or to the set of calc strings defined as the default database calculation. This command returns the contents of the calculation script designated as default for the database.

Example

GETDEFAULTCALC;

Returns:

Default Calc Script--
CALC ALL;
**GETMBRCALC**

Returns the calc string associated with the selected member.

**Syntax**

GETMBRCALC  mbrName

**Parameter Description**

mbrName  Member name

**Example**

GETMBRCALC "Profit %";

Returns the following:

Outline Defined Calc Equation. [Profit % Sales;]
Last Calculated Calc Equation. [Profit % Sales;]

**GETMBRINFO**

Returns information on a specific member.

**Syntax**

GETMBRINFO  mbrName

**Parameter Description**

mbrName  Member name

**Notes**

This command returns the following information on a specific member:

- Member name.
- Member number.
- Dimension name.
- Dimension number.
- Data-storage share information.
- Level: Steps from bottom to top.
- Generation: Steps from top to bottom.
- Unary operator (+, -, *, /, %, -) for consolidation: add, subtract, multiply, divide, percentile, ignore.
- Member tag types, if any; for example, Accounts and Time Series tags, Two-Pass Calc tags.
- Name of the tagged currency database member (if any).
- Currency conversion. Values: Yes/No
- Member description.
- Parent member name.
- Child member name.
- Previous member name.
- Next member name.
- Attributed: Whether the member has attributes associated with it. Values: Yes, No, N/A (N/A for attribute members).
- Attribute Type: The attribute member type. Values: Boolean, Date, Numeric, Text.
- Attribute Value: The short attribute member name, if an attribute member. This is the name shown in the Outline Editor.

**Example**

GETMBRINFO "Ounces_20";

Returns:

Member info of [Ounces_20]
------------------------------------
MbrName        : Ounces_20
MbrNumber      : 2
DimName        : Ounces
DimNumber      : 7
Status         : Virtual Member (Non-stored)
Level          : 0
Generation     : 2
UnaryCalc      : NoRollUp
MbrTagType     : SkipNone
CrMbrName      : N/A
CurrConvert    : N/A
Description    : N/A
ParentMbrName  : Ounces
ChildMbrName   : N/A
PrevMbrName    : Ounces_32
NextMbrName    : Ounces_16
Attributed     : N/A
Attribute Type : Numeric(Double)
Attribute Value: 20
Member has relational descendants: No

**GETMEMBERS**

Returns a list of members from the currently selected database.

**Syntax**

GETMEMBERS [mbrString]

**Parameter Description**

mbrString  Optional. Dimension or member name. If specified, returns children of named dimension or member. The default is NULL, which returns a list of dimensions in the database.
**Example**

To return a list of the database dimension names:

```
GETMEMBERS ;
```

To return a list of the children of Product:

```
GETMEMBERS "Product";
```

To return a list of the children of Qtr1:

```
GETMEMBERS "Qtr1";
```

**GETPARTITIONOTLCHANGES**

Retrieves a list of outline changes made to the partitioned area in the source database, and writes these changes to the .CHG file on the target database you select with the SELECT command.

If the database has multiple partitions of the same type to the same target database or from the same source database, use `GetPartitionOtlChangesEx` instead, and specify the data direction.

**Note:** All arguments must be provided on one line.

**Syntax**

```
GETPARTITIONOTLCHANGES sourceServerName sourceAppName 
    sourceDbName sourcePartitionType getAllOtlChanges 
    [getAllDimChanges [getAllMbrChanges [getAllMbrAttribChanges 
        getChangedLevNbr getChangedGenNbr]]]

Parameter  Description
sourceServerName  Name of the data source server where the outline changes were made.
sourceAppName  Name of the data source application where the outline changes were made.
sourceDbName  Name of the data source database where the outline changes were made.
```
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| sourcePartitionType       | Name of the partition type where the outline changes were made. Can be any of the following:
|                           | 1 - Replicated                                                             |
|                           | 2 - Linked                                                                  |
|                           | 3 - Transparent                                                             |
| getAllOtlChanges          | Lists all changes to the database outline. Values: Y/N.                    |
| getAllDimChanges          | Lists all changes to the dimensions, including member names. Values: Y/N.   |
| getNewDim                 | Lists newly created dimensions. Values: Y/N.                               |
| getDeletedDim             | Lists deleted dimensions. Values: Y/N.                                     |
| getUpdatedDim             | Lists updated dimensions. Values: Y/N.                                     |
| getMovedDim               | Lists moved dimensions. Values: Y/N.                                       |
| getRenamedDim             | Lists renamed dimensions. Values: Y/N.                                     |
| getAllMbrChanges          | Lists all member changes. Values: Y/N.                                     |
| getNewMbrs                | Lists newly created members. Values: Y/N.                                  |
| getDeletedMbrs            | Lists deleted members. Values: Y/N.                                        |
| getRenamedMbrs            | Lists renamed members. Values: Y/N.                                        |
| getMovedMbrs              | Lists moved members. Values: Y/N.                                          |
| getAllMbrAttribChanges    | Lists all changes to member attributes. Values: Y/N.                      |
| getChngedMbrStatus       | Lists members that have a changed status such as data storage or Dynamic Time Series information. Values: Y/N. |
| getChngedMbrAlias         | Lists changed member aliases. Values: Y/N.                                |
| getChngedMbrCalcSym      | Lists changed member unary operators. Values: Y/N.                        |
| getChngedMbrAcctType     | Lists changed account type information for members in an Accounts dimension. Values: Y/N. |
| getChngedMbrCurrCnvInfo  | Lists changed member currency conversion information. Values: Y/N.        |
| getChngedMbrUda           | Lists changed member user-defined attributes. Values: Y/N.                |
| getChngedMbrCalcFormulas | Lists changed member calc formulas. Values: Y/N.                          |
| getChangedLevNbr          | Lists changed level numbers. Values: Y/N.                                 |
| getChangedGenNbr          | Lists changed generation numbers. Values: Y/N.                            |

**Notes**

This command retrieves a list of all outline changes made to the data source database, based on the selected parameters, and writes the changes to a .CHG log file on the selected data target.
database. Essbase creates the .CHG file, and names it with a file name representing the partition ID.

**Example**

With Optional Parameters:

```plaintext
GETPARTITIONOTLCHANGES "BAMBOO" "SAMPLE" "BASIC"
"1" "N" "Y" "Y" "Y" "N" "Y" "Y" "N" "Y" "Y" "N" "Y" "Y" "N" "Y" "Y" "Y"
"Y";
```

Without Optional Parameters:

```plaintext
GETPARTITIONOTLCHANGES "BAMBOO" "SAMPLE" "BASIC"
"1" "N" "Y" "Y" "Y" "Y";
```

**See Also**

- APPLYOTLCHANGEFILE
- GETPARTITIONOTLCHANGESEX

---

**GETPARTITIONOTLCHANGESEX**

Retrieves a list of outline changes made to the partitioned area in the source database, and writes these changes to the .CHG file on the target database you select with the SELECT command.

**Note:** All arguments must be provided on one line.

**Syntax**

```plaintext
GETPARTITIONOTLCHANGESEX sourceServerName sourceAppName
sourceDbName sourcePartitionType dataFlowDirection getAllOt1Changes
[ getAllDimChanges
  [getAllDimChanges
    getAllMbrChanges
      [getAllMbrChanges
        getAllMbrAttribChanges
          [getAllMbrAttribChanges
            getAllMbrStatus
            getAllMbrAlias
            getAllMbrCalcSym
            getAllMbrAcctType
            getAllMbrCurrCnvInfo
            getAllMbrUda
            getAllMbrCalcFormulas]
            getChangedLevNbr
            getChangedGenNbr
          ]
        ]
      ]
    ]
  ]
```  

<table>
<thead>
<tr>
<th><strong>Parameter</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>sourceServerName</td>
<td>Name of the data source server where the outline changes were made.</td>
</tr>
<tr>
<td>sourceAppName</td>
<td>Name of the data source application where the outline changes were made.</td>
</tr>
<tr>
<td>sourceDbName</td>
<td>Name of the data source database where the outline changes were made.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>sourcePartitionType</td>
<td>Name of the partition type where the outline changes were made. Can be any of the following:</td>
</tr>
<tr>
<td></td>
<td>1 - Replicated</td>
</tr>
<tr>
<td></td>
<td>2 - Linked</td>
</tr>
<tr>
<td></td>
<td>3 - Transparent</td>
</tr>
<tr>
<td>dataFlowDirection</td>
<td>The half of the partition to which you are currently connected:</td>
</tr>
<tr>
<td></td>
<td>1 - Source</td>
</tr>
<tr>
<td></td>
<td>2 - Target</td>
</tr>
<tr>
<td>getAllOtlChanges</td>
<td>Lists all changes to the database outline. Values: Y/N.</td>
</tr>
<tr>
<td>getAllDimChanges</td>
<td>Lists all changes to the dimensions, including member names. Values: Y/N.</td>
</tr>
<tr>
<td>getNewDim</td>
<td>Lists newly created dimensions. Values: Y/N.</td>
</tr>
<tr>
<td>getDeletedDim</td>
<td>Lists deleted dimensions. Values: Y/N.</td>
</tr>
<tr>
<td>getUpdatedDim</td>
<td>Lists updated dimensions. Values: Y/N.</td>
</tr>
<tr>
<td>getMovedDim</td>
<td>Lists moved dimensions. Values: Y/N.</td>
</tr>
<tr>
<td>getRenamedDim</td>
<td>Lists renamed dimensions. Values: Y/N.</td>
</tr>
<tr>
<td>getAllMbrChanges</td>
<td>Lists all member changes. Values: Y/N.</td>
</tr>
<tr>
<td>getNewMbrs</td>
<td>Lists newly created members. Values: Y/N.</td>
</tr>
<tr>
<td>getDeletedMbrs</td>
<td>Lists deleted members. Values: Y/N.</td>
</tr>
<tr>
<td>getRenamedMbrs</td>
<td>Lists renamed members. Values: Y/N.</td>
</tr>
<tr>
<td>getMovedMbrs</td>
<td>Lists moved members. Values: Y/N.</td>
</tr>
<tr>
<td>getAllMbrAttribChanges</td>
<td>Lists all changes to member attributes. Values: Y/N.</td>
</tr>
<tr>
<td>getChngedMbrStatus</td>
<td>Lists members that have a changed status such as data storage or Dynamic Time Series information. Values: Y/N.</td>
</tr>
<tr>
<td>getChngedMbrAlias</td>
<td>Lists changed member aliases. Values: Y/N.</td>
</tr>
<tr>
<td>getChngedMbrCalcSym</td>
<td>Lists changed member unary operators. Values: Y/N.</td>
</tr>
<tr>
<td>getChngedMbrAcctType</td>
<td>Lists changed account type information for members in an Accounts dimension. Values: Y/N.</td>
</tr>
<tr>
<td>getChngedMbrCurrCnvInfo</td>
<td>Lists changed member currency conversion information. Values: Y/N.</td>
</tr>
<tr>
<td>getChngedMbrUda</td>
<td>Lists changed member user-defined attributes. Values: Y/N.</td>
</tr>
<tr>
<td>getChngedMbrCalcFormulas</td>
<td>Lists changed member calc formulas. Values: Y/N.</td>
</tr>
<tr>
<td>getChangedLevNbr</td>
<td>Lists changed level numbers. Values: Y/N.</td>
</tr>
<tr>
<td>getChangedGenNbr</td>
<td>Lists changed generation numbers. Values: Y/N.</td>
</tr>
</tbody>
</table>
**Notes**

This command retrieves a list of all outline changes made to the data source database, based on the selected parameters, and writes the changes to a .CHG log file on the selected data target database. Essbase creates the .CHG file, and names it with a file name representing the partition ID.

**Example**

With Optional Parameters:

```
GETPARTITIONOTLCHANGESEX "BAMBOO" "SAMPLE" "BASIC"
"1" "1" "N" "Y" "Y" "Y" "Y" "N" "Y" "Y" "Y" "N" "Y" "Y" "Y" "Y" "N" "Y" "Y" "Y" "Y" "Y" "Y" "Y" "Y" "Y" "Y" "Y" "Y" "Y";
```

Without Optional Parameters:

```
GETPARTITIONOTLCHANGESEX "BAMBOO" "SAMPLE" "BASIC"
"1" "1" "N" "Y" "Y" "Y" "Y" "Y";
```

**See Also**

- APPLYOTLCHANGEFILE

---

**GETPERFSTATS**

Returns performance statistics tables.

**Syntax**

```
GETPERFSTATS
```

**Notes**

This command returns short, medium, and long performance statistics for the thread, database, and application. The statistics appear as tables in the ESSCMD window. To gather performance statistics, you must first enable statistics gathering using RESETPERFSTATS. You also use RESETPERFSTATS to return to zero the statistical persistence (length) and scope (granularity). Collecting and analyzing performance statistics can help you understand whether the databases are in good running condition or could use modifications to improve performance.

For full description of the performance statistics output, see “Performance Statistics in MaxL” on page 685. ESSCMD usage is deprecated.

**See Also**

- RESETPERFSTATS

---

**GETUPDATEDREPLCELLS**

Replicates all changed data cells in the replicated partition from a data source database to the selected data target database. Use this command when you are in the target database.
Syntax

1:

GETUPDATEDREPLCELLS sourceServerName sourceAppName sourceDbName

2:

GETUPDATEDREPLCELLS ALL

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>sourceServerName</td>
<td>Name of the data source server from which cells are replicated.</td>
</tr>
<tr>
<td>sourceAppName</td>
<td>Name of the data source application from which cells are replicated.</td>
</tr>
<tr>
<td>sourceDbName</td>
<td>Name of the data source database from which cells are replicated.</td>
</tr>
<tr>
<td>ALL</td>
<td>Updates cells for all partitions where the selected database is a data replication target.</td>
</tr>
</tbody>
</table>

Notes

This command gets all changed replicated data cells from the data source server, application, and database, and replicates them in the data target database you select with the SELECT command.

Essbase determines what updates are performed, based on an internal time stamp which is read at the block level. Whenever data in the block changes, the time stamp is reset to the current time. If data is changed that is not defined in the replication area, but is part of the data block, the time stamp is still refreshed. Therefore, it is possible to update data in the replication area, even though the replication data has not changed.

When a block is removed by such actions as RESETDB and you request an update of the replication cells, Essbase performs an internal search that identifies blocks without time stamps. Essbase then gets all cells from the replication area, instead of only changed cells, which may cause a time delay.

GETUPDATEDREPLCELLS gets cells from the data source server to the data target server, based on a request made from the data target server; PUTUPDATEDREPLCELLS puts cells from the data source server to the data target server, based on a request made from the data source server.

Example

GETUPDATEDREPLCELLS "Aspen" "Sample" "Basic";

See Also

- PUTUPDATEDREPLCELLS
- GETALLREPLCELLS

GETUSERINFO

Returns information about a specified user or group.
Syntax
GETUSERINFO userName

Parameter Description
userName Name of the user or group.

Notes
This command returns the following information about a specified user or group:
User/Group name, Logged in (Y/N), Access Level, Last successful login, failed login attempts
since then, Login ID.

Example
GETUSERINFO "TomT";

GETVERSION

Returns the version number and patch number information on the current Essbase Server
software installation.

Syntax
GETVERSION

Example
GETVERSION;

GOTO

Skips all commands until it encounters the associated label.

Syntax
GOTO "Label"; <SKIPPED COMMANDS> :Label ; <COMMANDS OR EOF>

Parameter Description
"Label" A string of characters; not case-sensitive.
:Label Target location, preceded by a colon (:) and associated with "Label". Processing skips to this label.

Notes
This command provides unconditional branching. This means that branching occurs regardless
of the success or failure of previous commands.

Commands that follow :Label can implement error handling or stop processing. Processing
skips all subsequent commands and moves to the associated label, where it resumes. Processing
ignores even the EXIT command if it precedes :Label.

If EOF occurs before :Label is found, processing terminates.
Example

BUILDIM 2 "NEWGENS.RUL" 2 "NEWGENS.TXT" 4 "REJREC.ERR";
  GOTO "NEWTARGET";          /* Forced branch */
  LOADDATA 2 "JANACT.TXT";    /* Skip LOADDATA */
  :NEWTARGET;                 /* Move here */
  EXIT;                      /* and exit */

IFERROR

Checks the status returned by a command and either continues processing or branches to the associated label in response to the status.

Syntax

IFERROR "Label"; <SKIPPED COMMANDS> :Label ; <COMMANDS OR EOF>

Parameter Description

"Label"   String of characters terminated by a whitespace; not case-sensitive.

:Label    Target location, preceded by a colon (:), and associated with "Label". Processing skips to this label.

Notes

This command provides the functionality of error checking and conditional branching on errors.

If the previously executed command returned a nonzero status, processing skips all subsequent commands and moves to the associated label, where it resumes. Commands that follow :Label can implement error handling or stop processing.

Processing ignores even the EXIT command if it precedes :Label. If EOF occurs before :Label is found, processing terminates.

Example

LOGIN "IRIS" "SYS" "PASSWORD";
  SELECT "DANI" "TEST";
  BUILDIM 2 "NEWGENS.RUL" 2 "NEWGENS.TXT" 4 "REJREC.ERR";
  IFERROR "DIMBUILDFAILED";  /* If BUILDIM fails */
  LOADDATA 2 "JANACT.TXT";    /* Skip LOADDATA */
  :DIMBUILDFAILED;            /* Move here */
  EXIT;                      /* and exit */

IMPORT

Loads data values from an external source into the currently selected database.

Syntax

IMPORT numeric dataFile fileType y/n ruleLoc rulobjName y/n [ErrorFile]

For an SQL data source, the syntax is as follows:

IMPORT 4 SQLUserName SQLUserPassword Ruleloc rulobjName y/n [ErrorFile]
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>numeric</td>
<td>Location of the <em>dataFile</em> file. Values: 1 - Local/client data file. 2 - Remote/server data file. 3 - File. 4 - SQL source.</td>
</tr>
<tr>
<td>dataFile</td>
<td>Name of data source file.</td>
</tr>
<tr>
<td>fileType</td>
<td>File type of <em>dataFile</em>. Values: 1 - Excel file 2 - Lotus 2 file (No longer supported) 3 - Lotus 3 file (No longer supported) 4 - Text file (No longer supported) 5 - Lotus 4 file (No longer supported)</td>
</tr>
<tr>
<td>y/n</td>
<td>Whether to use rules when importing <em>dataFile</em>.</td>
</tr>
<tr>
<td>ruleLoc</td>
<td>Location of the <em>rulobjName</em> file. Values: 1 - Local/client rule object file 2 - Remote/server rule object file 3 - File. Use option 3 if the file is not an Essbase object, or if you want to specify the full path name. Otherwise, Essbase looks in the &lt;APPNAME&gt;/&lt;DBNAME&gt; directory.</td>
</tr>
<tr>
<td>rulobjName</td>
<td>Name of the rules file.</td>
</tr>
<tr>
<td>y/n</td>
<td>Whether to abort on error.</td>
</tr>
<tr>
<td>SQLUserName</td>
<td>User name that connects to the SQL database.</td>
</tr>
<tr>
<td>SQLUserPassword</td>
<td>User password for the SQL database.</td>
</tr>
<tr>
<td>ErrorFile</td>
<td>The name of the error file. This is required only if you choose not to abort on error.</td>
</tr>
</tbody>
</table>

**Notes**
- Use the LOADDATA or UPDATEFILE commands to load data without a rules file.
- Use the BUILDDIM command to build one or more dimensions in an outline.

**Example**

**Example 1**

```plaintext
IMPORT 2 "ACTUALS" 4 "Y" 2 "ACTUALS" "Y";
```

**Example 2**

The following UNIX example imports from an SQL data source, and specifies an error file.

```plaintext
import 4 "tbc" "password" 2 "sales" "N" /app1/imperror;
```

The following Windows example does the same as the above.

```plaintext
import 4 "tbc" "password" 2 "sales" "N" "c:\valscrt.ERR";
```
INCBUILDDIM

Build one or more dimensions from a data file, without restructuring the database. This command is designed to be used when building an outline from multiple data sources. You can save time by deferring restructure. Deferred-restructure dimension building is also called incremental dimension building.

Syntax

INCBUILDDIM location rulobjName dataLoc sourceName fileType errorLog appendLog

Parameter Description

location Location of the rules file. Values:
1 - Local/client-based rules file
2 - Remote/server rules file
3 - File. Use option 3 if the file is not an Essbase object, or if you want to specify the full path name. Otherwise, Essbase looks in the <APPNAME>/<DBNAME> directory.

rulobjName Name of the rules file.

dataLoc Location of the data file. Values:
1 - Local/client data file
2 - Remote/server data file
3 - File. Use option 3 if the file is not an Essbase object, or if you want to specify the full path name. Otherwise, Essbase looks in the <APPNAME>/<DBNAME> directory.
4 - SQL source

sourceName Source of the data file. Values:

1 - Excel file
2 - Lotus .WK1 file (No longer supported)
3 - Lotus .WK3 file (No longer supported)
4 - Text file
5 - Lotus .WK4 file (No longer supported).

This parameter is not required if you are using an SQL source.

fileType Data file type. Values:
1 - Excel file
2 - Lotus .WK1 file (No longer supported)
3 - Lotus .WK3 file (No longer supported)
4 - Text file
5 - Lotus .WK4 file (No longer supported).

errorLog Name of text file to receive error messages and rejected records. Each INCBUILDDIM command in a BEGININCBUILDDIM...ENDINCBUILDDIM block can specify a different error log.
Parameter | Description
--- | ---
appendLog | Specifies whether to append to the error log file or overwrite it. Values:
1 - Append
2 - Overwrite
verify | Parameter specifying whether to verify the outline resulting from the deferred-restructure dimension build. Values:
Y - Yes, verify the outline. This is the default.
N - No, do not verify the outline.

Notes
Use a INCDIMBUILD command for each data source and rules file to be included in the dimension build. Use a BEGININCBUILDDIM command at the beginning of a group of INCDIMBUILD commands. Use an ENDINCGULDDIM command at the end of the group of INCBUILDDIM commands.

The INCBUILDDIM command changes dimensions in the .OTN file according to the specified rules file and data file. See BEGININCBUILDDIM for information on the .OTN file.

Each rules file can build one or more dimensions. If a rules files builds multiple dimensions and an error occurs in a record for any dimension, Essbase rejects the entire record. As a result, other dimensions represented in that record might not build correctly. Consider designing dimension builds with multiple rules files using INCBUILDDIM.

An example of this problem relates to the Add as Child build method. Break the rules file into multiple rules files if both of the following circumstances apply:
- The rules and data files specify more than one Add as Child member per record.
- One of the members being added already exists in the outline as a child of any other parent.

Consider, for example, adding Mbr1 and Mbr2 as children of Par1 and Par2:

Par1 | Par2
--- | ---
Mbr1 | Mbr2

If Mbr1 already exists in the outline as the child of some other parent than Par1, you need to break the rules file into two separate builds. Otherwise, when Essbase sees that the member already exists in the outline, it rejects the entire record.

By default, each step of a deferred-restructure dimension build must produce a valid outline. You can use the verify N parameter to create an interim outline that is not valid and then update the outline in a subsequent INCBUILDDIM command to ensure the outline is valid. To verify the outline in a subsequent INCBUILDDIM command, remove the verify parameter or specify a Y. Make sure that the last INCBUILDDIM command verifies the outline.

INCBUILDDIM is identical to BUILDDIM, except for the following:
- INCBUILDDIM does not automatically restructure the database after modifying the dimensions. You can have several consecutive INCBUILDDIM commands inside a BEGININCBUILDDIM...ENDINCBUILDDIM block. Essbase restructures when it encounters ENDINCBUILDDIM.
INCBUILDDIM enables you to append to, rather than overwrite, the error log.

BUILD DIM does not enable you to bypass outline verification.

Example

Example 1

The following command builds the dimensions specified in `GENREF.RUL` and `LEVELMUL.RUL`, discards all data, and saves the new outline after the dimension builds are complete:

```
BEGININCBUILDDIM;
    INCBUILDDIM 2 "GENREF.RUL" 2 "GENREF.TXT" 4 "ERR.OUT" 1 "N";
    INCBUILDDIM 2 "LEVELMUL.RUL" 2 "LEVELMUL.TXT" 4 "ERR.OUT" 1 "Y";
ENDINCBUILDDIM 4;
```

Note that you can use the same rules file with multiple data files, providing the data files conform to the formatting and rules saved in the rules file. For example:

```
BEGININCBUILDDIM
    INCBUILDDIM 2 "GENREF.RUL" 2 "GENREF1.TXT" 4 "ERR.OUT" 2 "N";
    INCBUILDDIM 2 "GENREF.RUL" 2 "GENREF2.TXT" 4 "ERR.OUT" 1 "N";
    INCBUILDDIM 2 "GENREF.RUL" 2 "GENREF3.TXT" 4 "ERR.OUT" 1 "Y";
ENDINCBUILDDIM 4;
```

Example 2

The following Windows example imports dimensions from a server based text file, using a server based rules file, and specifies an error file.

```
INCBUILDDIM 2 "Genref.rul" 2 "Genref.txt" 4 "c:\valscrt.ERR" 2;
```

See Also

- BUILDDIM
- BEGININCBUILDDIM
- ENDINCBUILDDIM

LISTALIASES

Returns a list of alias tables that are defined for the currently selected database.

Syntax

```
LISTALIASES
```

Example

```
LISTALIASES;
```

LISTAPP

Returns a list of applications that are defined on the Essbase Server.
Syntax
LISTAPP

Example
LISTAPP;

LISTDB

Returns a list of databases defined on the currently selected application.

Syntax
LISTDB

Example
LISTDB;

LISTFILES

Helps track disk space used by Essbase databases by supplying accurate index and data file information.

Syntax
LISTFILES fileType appName dbName

Parameter Description

fileType Type of file for which to display information. Values:
1. Index files.
2. Data files.
3. Index and data files. This is the default.

appName Name of the application for which information is requested. Required only if no application is selected.

dbName Name of the database for which information is requested. Required only if no database is selected.

Notes

The LISTFILES command provides index and data file names, counts, sizes, and totals, and indicates whether each file is presently opened by Essbase. The file size information provided by LISTFILES is accurate, whereas the information provided by the Windows operating system for index and data files on NTFS volumes may not be accurate.

Example
LISTFILES;

Returns:
----- Index File Information -----

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LISTFILTERS

Lists the filters in a database.

Syntax

LISTFILTERS appName dbName

Parameter Description

appName  Name of the application containing the filters.

dbName  Name of the database containing the filters.

Example

LISTFILTERS "FINANC95" "SALES95";

LISTGROUPS

Returns a list of user groups that are defined on the Essbase Server.

Syntax

LISTGROUPS
LISTGROUPUSERS

Returns a list of users that belong to a specified group.

Syntax

LISTGROUPUSERS groupName

Parameter Description

groupName Name of the group for which to return a list of users.

Example

To return a list of all users that belong to the group called MARKETING:

LISTGROUPUSERS "MARKETING";

LISTLINKDOBJECTS

Lists information about the objects linked to the active database for a given user name or modification date.

Syntax

LISTLINKDOBJECTS userName modDate

Parameter Description

userName The name of a user. If specified, Essbase returns a list of all objects last modified by the given user.

modDate A modification date. If specified, Essbase returns a list of all objects modified on or before the given date.

Notes

This command lists information about linked objects, including the object type, name, and description, based on criteria you specify. If you specify both a user name and modification date, objects matching both criteria are listed. If you specify no user name or date, a list of all linked objects in the database appears.

You must select a database before using LISTLINKDOBJECTS.

For more information on linked objects, see the Oracle Essbase Database Administrator’s Guide.

Example

To list all objects last modified by user Diana on or before July 7, 1997:

LISTLINKDOBJECTS "Diana" "07/07/1997";
LISTLOCATIONS
Displays all location aliases defined on the current database.

Syntax
LISTLOCATIONS

Notes
This command displays the location alias parameters as defined and created with the CREATELOCATION command. You must have at least Database Manager permission to list location aliases.

Example
LISTLOCATIONS;

Returns:
<table>
<thead>
<tr>
<th>Location Alias</th>
<th>Server</th>
<th>Application</th>
<th>Database</th>
<th>Username</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alias4</td>
<td>Aspen</td>
<td>Sample</td>
<td>Interntl</td>
<td>admin</td>
</tr>
<tr>
<td>Alias3</td>
<td>Aspen</td>
<td>Demo</td>
<td>Basic</td>
<td>user1</td>
</tr>
<tr>
<td>Alias2</td>
<td>Aspen</td>
<td>Samppart</td>
<td>Company</td>
<td>partitionuser</td>
</tr>
<tr>
<td>Alias1</td>
<td>Aspen</td>
<td>Sample</td>
<td>Basic</td>
<td>Admin</td>
</tr>
</tbody>
</table>

See Also
- CREATELOCATION
- DELETELOCATION

LISTLOCKS
Returns a list of all users who have locks on blocks for the currently selected database.

Syntax
LISTLOCKS [appName dbName]

Parameter Description
appName dbName Optional. Both parameters required if no application and database are selected.

Example
LISTLOCKS;

LISTLOGINS
Returns the list of login instances in a session.

Syntax
LISTLOGINS
**Example**

The following interactive example uses LISTLOGINS to get information needed for a subsequent SETLOGIN command. Commands typed by the user are shown in bold.

```
localhost:::system[1]-->listlogins
ListLogins:

There are 2 Active Login Sessions.
  Login Session 1 -- localhost  system
  Login Session 2 -- localhost  EWhite
```

```
localhost:::system[1]-->setlogin 2
SetLogin:

Switch to Login Session 2 -- localhost  EWhite
```

**LISTOBJECTS**

Returns a list of objects.

**Syntax**

```
LISTOBJECTS number appName dbName
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>number</td>
<td>Type of object to list. Values:</td>
</tr>
<tr>
<td></td>
<td>0 - Abort</td>
</tr>
<tr>
<td></td>
<td>1 - Outline object</td>
</tr>
<tr>
<td></td>
<td>2 - Calculation script</td>
</tr>
<tr>
<td></td>
<td>3 - Report script</td>
</tr>
<tr>
<td></td>
<td>4 - Rules object</td>
</tr>
<tr>
<td></td>
<td>5 - Alias table</td>
</tr>
<tr>
<td></td>
<td>6 - Structure file</td>
</tr>
<tr>
<td></td>
<td>7 - Backup file</td>
</tr>
<tr>
<td></td>
<td>8 - Worksheet of any type</td>
</tr>
<tr>
<td></td>
<td>9 - Text object</td>
</tr>
<tr>
<td></td>
<td>10 - Partition</td>
</tr>
<tr>
<td></td>
<td>11 - Linked Reporting Object (stored)</td>
</tr>
<tr>
<td></td>
<td>12 - Selection</td>
</tr>
<tr>
<td></td>
<td>13 - Wizard</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>appName</th>
<th>Name of the application containing the objects.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>dbName</th>
<th>Name of the database containing the objects.</th>
</tr>
</thead>
</table>

**Notes**

- The list of objects returned by the LISTOBJECTS command includes object names and the status of object locks.
- Two values for the `objType` parameter, 6 and 7, are retained only for backward compatibility with Release 2.0.
• Option 11, Linked Reporting Object, lists only stored LROs; that is, files with the .LRO extension. It does not list URLs, cell notes, or linked partitions. Use the LISTLINKEDOBJECTS command to list these objects.

**Example**

To return a list of outline objects associated with the BASIC database:

```plaintext
LISTOBJECTS 1 "SAMPLE" "BASIC";
```

**LISTUSERS**

Returns a list of the users that are defined on the Essbase Server.

**Syntax**

```plaintext
LISTUSERS
```

**Example**

```plaintext
LISTUSERS;
```

**LISTVARIABLES**

Lists all existing substitution variables and their corresponding values for a specified Essbase Server, application, or database.

**Syntax**

```plaintext
LISTVARIABLES serverName [appName [dbName]]
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>serverName</td>
<td>Name of the Essbase Server host computer on which the variable is defined.</td>
</tr>
<tr>
<td>appName</td>
<td>Optional. Name of the application for which the variable is defined.</td>
</tr>
<tr>
<td>dbName</td>
<td>Optional. Name of the database for which the variable is defined.</td>
</tr>
</tbody>
</table>

**Example**

```plaintext
LISTVARIABLES "Bamboo" "Sample" "Basic";
```

**LOADALIAS**

Loads an alias table to the currently selected database.

**Note:** See the *Oracle Essbase Database Administrator’s Guide* for more information about alias tables in a database.
**Syntax**

LOADALIAS aliasName fileName

**Parameter Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>aliasName</td>
<td>Name of the alias table to load.</td>
</tr>
<tr>
<td>fileName</td>
<td>Name of the data source file that loads into the table. The source file must be located on the on the Essbase Server computer, not a client computer. Specify the file name in either of the following ways:</td>
</tr>
<tr>
<td></td>
<td>- Full path to source file on the Essbase Server computer; for example, C:\Hyperion\products\Essbase\EssbaseServer\app\Sample\Basic \seasonal.txt</td>
</tr>
<tr>
<td></td>
<td>- Relative path to the app\db directory on the Essbase Server computer; for example, sample\basic\seasonal.txt</td>
</tr>
</tbody>
</table>

The data in the file must be formatted correctly. See the Oracle Essbase Database Administrator's Guide for details.

**Example**

Assume that seasonal.txt is a file with the following contents:

```plaintext
$ALT_NAME
"400-10"        Guava
"400-20"        Tangerine
"400-30"        Mango
$END
```

To load the contents of the seasonal.txt data source file into the alias table called special_flavors, use the following command:

```
LOADALIAS "special_flavors" "C:\Hyperion\products\Essbase\EssbaseServer\app\Sample\Basic \seasonal.txt";
```

**LOADAPP**

Loads an application and its respective databases into memory.

**Syntax**

LOADAPP appName

**Parameter Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>appName</td>
<td>Name of the application to load.</td>
</tr>
</tbody>
</table>

**Notes**

This command loads an application and databases into memory. In order for users to access information in databases, the application or individual database must be loaded into memory.

**Example**

To load an application called Sample into memory:
LOADAPP "Sample";

**LOADDATA**

Loads data without a rules file.

**Syntax**

LOADDATA numeric fileName

**Parameter Description**

<table>
<thead>
<tr>
<th>numeric</th>
<th>Location of the data file. Values:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Local/client-based rules file (file).</td>
</tr>
<tr>
<td>2</td>
<td>Remote/server data file.</td>
</tr>
<tr>
<td>3</td>
<td>File. Use option 3 if the file is not an Essbase object, or if you want to specify the full path name. Otherwise, Essbase looks in the &lt;APPNAME&gt;/&lt;DBNAME&gt; directory.</td>
</tr>
</tbody>
</table>

**Note:** Essbase Servers installed on Windows computers can accept a spreadsheet file (.xls) using option 3; Essbase Servers installed on UNIX computers cannot accept spreadsheet files.

| fileName | Name of the file to load. |

**Example**

LOADDATA 2 "calcdat";

**LOADDB**

Loads a database into memory.

**Syntax**

LOADDB appName dbName

**Parameter Description**

<table>
<thead>
<tr>
<th>appName</th>
<th>Name of the application in which the database resides.</th>
</tr>
</thead>
<tbody>
<tr>
<td>dbName</td>
<td>Name of the database to load.</td>
</tr>
</tbody>
</table>

**Notes**

This command loads a database into memory. A database must be loaded into memory in order for users to access its information.

**Example**

To load a database called BASIC from an application called SAMPLE:

LOADDB "SAMPLE" "BASIC";
**LOGIN**

Connects the current ESSCMD session to Essbase Server.

**Syntax**

```
LOGIN hostNode userName password [appName dbName]
```

**Parameter Description**

- **hostNode**  
  Host name of the Essbase Server computer.

- **userName**  
  User ID defined on the Essbase Server.

- **password**  
  User's password.

- **appName**  
  Optional. Name of the application to load.

- **dbName**  
  Optional. Name of the database to load.

**Notes**

- The Essbase Server must already be running before a login can occur.
- If you want to use the optional `appName` and `dbName` parameters, you must use both.
- With the optional parameters, this command is the equivalent of logging in and issuing a `SELECT appName` and `dbName` command.

**Example**

To log in a user named TomT who is using ESSCMD from the Essbase Server computer:

```
LOGIN *LOCAL* "TOMT" "PASSWORD";
```

To log in a user named TomT to a remote Essbase Server on a host named BEECH:

```
LOGIN *BEECH* "TOMT" "PASSWORD";
```

**LOGOUT**

Logs the current ESSCMD user off from the Essbase Server.

**Syntax**

```
LOGOUT
```

**Notes**

This command logs the current ESSCMD user off from the Essbase Server, but does not exit the ESSCMD session.

**Example**

```
LOGOUT;
```
**LOGOUTALLUSERS**
Logs off all users from the Essbase Server.

**Syntax**
LOGOUTALLUSERS  Y\|N

**Parameter Description**
Y\|N  Sets whether users are logged out.

**Notes**
This command logs out all users except for the user issuing the command.

**Example**
LOGOUTALLUSERS  "Y";

**See Also**
● LOGOUTUSER

**LOGOUTUSER**
Logs a specified user off the Essbase Server.

**Syntax**
LOGOUTUSER  userNumber

**Parameter Description**
userNumber  Login ID number associated with a user. Issue LOGOUTUSER with no parameter to display a list of users and user numbers.

**Notes**
● This command is available in interactive mode only.
● To find the user number, issue this command without a parameter. ESSCMD displays a list of logged-in users with numbers representing their login order. You can select the user to log off.

**Example**
To log the user whose user number is 1 off the Essbase Server:
LOGOUTUSER  1;

**See Also**
● LOGOUTALLUSERS
OUTPUT

Directs process information output from the ESSCMD session to a text file.

Syntax

```
OUTPUT outputType [outputName] / [errorName]
```

Parameter Description

- **outputType**: Number representing output operation. Values:
  - 1 - Outputs all process information.
  - 2 - Outputs only errors.
  - 3 - Stops output of process information.
  - 4 - Stops output of errors.

- **outputName**: Required for `outputType` 1 only. Name of file to receive output. Not used with other values for `outputType`.

- **errorName**: Required for `outputType` 2 only. Name of file to receive errors. Not used with other values for `outputType`.

Notes

This command directs Essbase to send messages from the ESSCMD session to the specified file instead of to the screen.

Example

To write statistics tables returned from the `GETPERFSTATS` command to a text file called "stats":

```
OUTPUT 1 "stats";
GETPERFSTATS;
OUTPUT 3 "stats";
```

Result: Essbase writes performance statistics to the file "stats" instead of to the screen.

To write errors during the session to a file called CMDERR:

```
OUTPUT 2 "CMDERR";
```

To write statistics to the output file STATINFO:

```
OUTPUT 1 "STATINFO";
```

To write only the information that the calculation ran, and not all messages:

```
OUTPUT 1 "CALCDEFAULT";
```

PAREXPORT

Starts the parallel data-export process.

The export process does not begin until all users are logged out of the database. After the export process begins, the database is in read-only mode. Users can read the data but they cannot change
After the export process is finished, Essbase returns the database to read-write mode and users can make changes to the data.

Syntax

PAREXPORT [-threads n] [-in input_filename] | [output_filename] amount formatOption

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-threads n</td>
<td>Overrides the default number of export threads set in the EXPORTTHREADS setting in the essbase.cfg file. The maximum value is 8. If n is greater than 8, Essbase assumes the value to be 8.</td>
</tr>
</tbody>
</table>
| -in input_filename | Specifies the full path name of an input file that contains a list of export file names. The number of files listed in the input file must match the number of export threads. Parallel export gracefully errors out if there is a mismatch.  
  - If the data for any export thread exceeds 2 GB, Essbase creates additional files, none of which exceed 2 GB. See Note for details.  
  - If -in is not specified, the next value is assumed to be the value of the output_filename parameter.  
  - If the listed files in the input file do not include a path, the files are created in the ARBORPATH\app directory. |
| output_filename  | Specifies the path and root for the file names created to contain the export data. For each thread, a number is appended to the specified output_filename. For example, if outfile_filename is outfile and two threads are specified, the resulting file names are outfile1 and outfile2. If the data for a thread exceeds 2 GB, that export data is divided into multiple files with a second number appended to the file names. See Note for details. If no path is specified, the file is created in the ARBORPATH\app directory. |
| amount           | Specifies the number representing the data to export.  
  - 1 - All data  
  - 2 - Only level 0 blocks  
  - 3 - Only data from blocks with input data |
| formatOption     | Specifies the format of the data.  
  - 0 (null) - Non-columnar format. This is the default.  
  - 1 - Columnar format |

Notes

- With this command, users can override the default number of export threads specified in the EXPORTTHREADS setting, and they can provide a list of export file names. During the export process, multiple threads can retrieve data and write to their corresponding export files concurrently.

- Parallel export creates multiple export files based on the number of export threads specified. The database is divided as evenly as possible among the number of parallel export threads.

- If the data for an export thread exceeds 2 GB, that data is separated into multiple files. Each file is less than 2 GB. The first file name retains the original name; Essbase appends _1, _2, and so on, as needed, to the additional files.
The PARAEXPORT command works on both aggregate storage and block storage databases, however aggregate storage exports work differently from block storage exports. See the *Oracle Essbase Database Administrator’s Guide* for more information.

**Example**

```
PAREXPORT -threads 4 -in e:\data\input.txt 1 1;
```

Note that `e:\data\input.txt` is a text file that contains four file names on separate lines; that is,

- `e:\data\export1.txt`
- `e:\data\export2.txt`
- `d:\data\export3.txt`
- `d:\data\export4.txt`

In this example, all data in the database is divided among four export threads to create four export files. The data is exported in columnar format.

If the data intended for a file is greater than 2 but less than 4 GB, Essbase creates two files. For example, for the data apportioned to `e:\data\export2.txt`, Essbase would create `e:\data\export2.txt` and `e:\data\export2_1.txt`.

**See Also**

- EXPORT
- “EXPORTTHREADS” on page 499

---

**PRINTPARTITIONDEFFILE**

Produces a text file of the partition-mapping tables of the distributed database.

**Syntax**

```
PRINTPARTITIONDEFFILE location [ddbFileName] textFileName
```

**Parameter** | **Description**
--- | ---
location | Possible values:
1- Local/client file with a .DDB file extension that is stored in the directory pointed to by ARBORPATH. The `ddbFileName` is automatically retrieved.
2- Remote/server .DDB file. The `ddbFileName` is automatically retrieved.
3- Local/client file not stored in the ARBORPATH, or without a .DDB file extension. The `ddbFileName` is required when using this option.

`ddbFileName` | The name of the partition mapping definition .DDB file from which to read information. This is usually the name of the database; for example, `BASIC.DDB`.

If location is 1 or 2, `ddbFileName` is not required. If location is 3, the full path, file name, and file extension of the file is required.

`textFileName` | The full path, file name, and file extension of the text output file to create.
Notes
This command produces a text file of the partition-mapping tables of the distributed database. The file contains the following information for each partition:

- Total number of partitions
- Partition host, application, database, and user
- Time the partition was last modified
- Partition definition
- Connection information
- Partition shape definition
- Partition type information
- Database map information
- Slice map information
- Region identification
- Outline change direction

Example
PRINTPARTITIONDEFFILE "2" "basic.txt";

PURGELINKEDOBJECTS

Deletes objects linked to the active database for a given user name or modification date.

Syntax
PURGELINKEDOBJECTS userName modDate

Parameter Description

userName  The name of a user. If userName is specified, Essbase deletes all objects last modified by the given user.

modDate   A modification date. If modDate is specified, Essbase deletes all objects modified on or before the given date.

Notes
This command deletes linked objects based on criteria you specify. A list of the objects matching your criteria appears as they are being deleted. If you specify both a user name and modification date, objects matching both criteria are deleted. If you specify no user name or date, all linked objects in the database are deleted.

You must select a database before using PURGELINKEDOBJECTS. You must also have design privilege for the database to delete any objects.

For more information on linked objects, see the Oracle Essbase Database Administrator's Guide.
Example
To delete all objects last modified by user Diana on or before July 7, 2002:

PURGELINKEDOBJECTS "Diana" "07/07/2002";

**PURGEOTLCHANGEFILE**
Deleted outline changes that already have been applied from the .CHG log file.

**Syntax**

PURGEOTLCHANGEFILE serverName appName dbName partitionType direction

**Parameter** | **Description**
--- | ---
serverName | Name of the computer hosting the Essbase Server from which to delete .CHG information.
appName | Name of the application from which to delete .CHG information.
dbName | Name of the database from which to delete .CHG information.
partitionType | Name of the partition type to which the deletions are applied:
   - 1 - Replicated.
   - 2 - Linked.
   - 3 - Transparent.
direction | Values:
   - Source - The selected database is used as a data source for the replicated, transparent, or linked partition.
   - Target - The selected database is used as a data target for the replicated, transparent, or linked partition.

Example

PURGEOTLCHANGEFILE "BAMBOO" "Sample" "Basic" "1" "Source";

**PUTALLREPLCELLS**
Replicates all data cells in a replicated partition from the data source database you selected with the SELECT command, to a specified data target database. Use this command when you are in the data source database.

**Syntax**

1:

PUTALLREPLCELLS targetServerName targetAppName targetDbName

2:

PUTALLREPLCELLS ALL
### PUTALLREPLCELLS

This command puts all replicated data cells from the selected data source and replicates them to the data target database. This is useful when the data in the source and target databases are out of sync and need to be resynchronized.

PUTALLREPLCELLS puts cells from the data source server to the data target server, based on a request made from the data source; GETALLREPLCELLS gets cells from the data source to the data target, based on a request made from the data target.

#### Syntax

1:

```
PUTALLREPLCELLS targetServerName targetAppName targetDbName
```

2:

```
PUTALLREPLCELLS ALL
```

#### Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>targetServerName</td>
<td>Host name of the computer where the data target resides.</td>
</tr>
<tr>
<td>targetAppName</td>
<td>Name of the data target application to which cells are replicated.</td>
</tr>
<tr>
<td>targetDbName</td>
<td>Name of the data target database to which cells are replicated.</td>
</tr>
<tr>
<td>ALL</td>
<td>Updates all cells in partitions where the selected database is a data replication source.</td>
</tr>
</tbody>
</table>

#### PUTUPDATEDREPLCELLS

This command replicates all changed data cells in the replicated partition from the data source database you selected with the SELECT command, to the specified data target database. Use this command when you are in the data source database.

#### Syntax

1:

```
PUTUPDATEDREPLCELLS targetServerName targetAppName targetDbName
```

2:

```
PUTUPDATEDREPLCELLS ALL
```

#### Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>targetServerName</td>
<td>Host name of the computer where the data target resides.</td>
</tr>
<tr>
<td>targetAppName</td>
<td>Name of the data target application to which changed cells are replicated.</td>
</tr>
<tr>
<td>targetDbName</td>
<td>Name of the data target database to which changed cells are replicated.</td>
</tr>
<tr>
<td>ALL</td>
<td>Updates all changed cells in all partitions where the selected database is a data replication source.</td>
</tr>
</tbody>
</table>
**Notes**

The PUTUPDATEDREPLCELLS command takes all changed replicated data cells from the selected data source, and replicates them in the data target database.

Essbase determines what updates are performed based on an internal time stamp which is read at the block level. Whenever data in the block changes, Essbase updates the time stamp to the current time. If data is changed that is not defined in the replication area, but is part of the data block, the time stamp is still reset. Therefore, it is possible to update data in the replication area, even though the replicated data has not changed.

When a block is removed by such actions as RESETDB, and you request an update of the replication cells, Essbase performs an internal search that identifies blocks without time stamps. Essbase then gets all cells from the replication area, instead of only changed cells. This may take some time, depending on the size of the block.

PUTUPDATEDREPLCELLS puts cells from the data source server to the data target server, based on a request made from the data source; GETUPDATEDREPLCELLS gets cells from the data source to the data target, based on a request made from the data target.

**Example**

PUTUPDATEDREPLCELLS "Aspen" "Sample" "Basic";

**See Also**

- GETUPDATEDREPLCELLS
- PUTALLREPLCELLS

---

**REMOVELOCKS**

Removes any locks that a specified user has acquired through a grid operation.

**Syntax**

REMOVELOCKS userNumber

**Parameter Description**

userNumber  Login ID of the user for whom you are removing locks.

**Notes**

This command removes locks acquired through a grid operation. Removing locks is sometimes required for maintenance-related activities. Removing a user’s lock forces a logout of that user’s session. To display the list of users who have locks, use LISTLOCKS.

**Example**

To remove all locks that are held by user number 1 on the currently selected database:

REMOVELOCKS 1;
**REMOVEUSER**

Removes a user from a group.

Groups are used to classify users with identical security requirements.

**Syntax**

\[
\text{REMOVEUSER} \quad \text{groupName} \quad \text{userName}
\]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>groupName</td>
<td>Name of group from which to remove user.</td>
</tr>
<tr>
<td>userName</td>
<td>Name of the user to remove.</td>
</tr>
</tbody>
</table>

**Notes**

If you want to completely delete a user from Essbase, use the `DELETEUSER` command. Deleting the user ID deletes the user from the list of users on the Essbase Server, as well as logging the user out of the active session.

**Example**

To remove the user DANTE from the group called INTERNTL:

\[
\text{REMOVEUSER} \quad \text{"INTERNTL"} \quad \text{"DANTE"};
\]

**See Also**

- `DELETEGROUP`
- `DELETEUSER`

**RENAMEAPP**

Renames an application.

**Syntax**

\[
\text{RENAMEAPP} \quad \text{sourceApp} \quad \text{newAppName}
\]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>sourceApp</td>
<td>Name of existing application.</td>
</tr>
<tr>
<td>newAppName</td>
<td>New name for application.</td>
</tr>
</tbody>
</table>

**Example**

\[
\text{RENAMEAPP} \quad \text{"FINANC95"} \quad \text{"ANNFIN95"};
\]

**RENAMEDB**

Renames a database.
Syntax

RENAMEDB sourceApp sourceDb newDbName

Parameter   Description
sourceApp   Name of the application that contains the database to be renamed.
sourceDb    Name of the database to be renamed.
newDbName   New name for the database.

Example
RENAMEDB "FINANC95" "SALES95" "95SALES";

RENAMEFILTER

Renames a filter.

Syntax

RENAMEFILTER sourceApp sourceDb sourceFltr newFltrName

Parameter   Description
sourceApp   Name of the application that includes the filter.
sourceDb    Name of the database that includes the filter.
sourceFltr  Name of the existing filter.
newFltrName New name for filter.

Example
RENAMEFILTER "FINANC95" "SALES95" "FILTER95" "95FILT";

RENAMEOBJECT

Renames an existing object.

Syntax

RENAMEOBJECT objType sourceApp sourceDb sourceObj newObjName
### RENAMEOBJECT

Renames an object.

#### Syntax

```
RENAMEOBJECT  objType sourceApp sourceDb sourceObj newObjName
```

#### Parameter Description

- **objType**: Type of object to rename. Values:
  - 0 - Abort
  - 1 - Outline object, not available
  - 2 - Calculation script
  - 3 - Report script
  - 4 - Rules object
  - 5 - Alias table
  - 6 - Structure file
  - 7 - Backup file, not available
  - 8 - Worksheet of any type, not available
  - 9 - Text object
  - 10 - Partition
  - 11 - Selection
  - 12 - Wizard

- **sourceApp**: Name of the application that includes the object.
- **sourceDb**: Name of the database that includes the object.
- **sourceObj**: Name of the existing object.
- **newObjName**: New name for the object.

#### Notes

Two values for the `objType` parameter, 6 and 7, are retained only for backward compatibility with Release 2.0.

#### Example

```
RENAMEOBJECT 2 "FINANC95" "SALES95" "OLDOBJ" "ARCHIVE";
```

### RENAMEUSER

Renames a user.

#### Syntax

```
RENAMEUSER  userName newUserName
```

#### Parameter Description

- **userName**: Name of the existing user.
- **newUserName**: New name for the user.

#### Notes

To rename a user, you must have at least Create/Delete User permission.

#### Example

```
RENAMEUSER "NEWUSER" "D_ROSETTI";
```
**REPORT**

Executes one or more report strings.

**Syntax**

REPORT reportString

**Parameter      Description**

reportString  One or more report strings.

**Notes**

When working with ESSCMD in interactive mode, use this command to enter one or more strings from a report script. Interactive ESSCMD prompts for a string each time you press the Enter key. When finished, end with a blank string.

When using the REPORT command in ESSCMD scripts, end each line with a backslash.

**Example**

**Example of interactive use:** To create a report based on all descendants of Qtr1, including the Qtr1 member, and all children of Market, including the Market member, enter the text shown in this color. In this example, ESSCMD prompts are in black. Instructions to press the Enter key are in this color.

```
local:sample:basic:admin(1)->REPORT
Report:

Enter blank string to end report
Enter string > <IDESCENDANTS Qtr1 (Press Enter)
Enter string > <ICHIILDREN Market (Press Enter)
Enter string > ! (Press Enter)
Enter string > (Press Enter)
```

**Example of use in an ESSCMD script:** To include commands in an ESSCMD script to generate the same report, end each line with a backslash.

```
IDESCENDANTS Qtr1\
ICCHILDREN Market\
!\
\`
```

**See Also**

- REPORTLINE

**REPORTLINE**

Executes a single report string.

**Syntax**

REPORTLINE reportString
**Parameter** | **Description**
--- | ---
reportString | Report string.

**Example**

To create a report based on all descendants of Year:

```
REPORTLINE "<DESCENDANTS YEAR ! ";
```

**See Also**

- REPORT

### RESETDB

Clears all the data and LROs from the currently selected database.

**Syntax**

```
RESETDB
```

**Example**

```
RESETDB;
```

### RESETOTLCHANGETIME

Changes the time on the Essbase you selected with the SELECT command, to match the time on another Essbase Server.

**Syntax**

```
RESETOTLCHANGETIME fromPartition toPartition
```

**Parameter** | **Description**
--- | ---
serverName | Name of the Essbase Server from which the time change is applied.
apName | Name of the application from which the time change is applied.
dbName | Name of the database from which the time change is applied.
partitionType | The name of the type of partition from which the time change is applied. Values:
- 1 - Replicated
- 2 - Linked
- 3 - Transparent
direction | Values:
- Source - The selected database is used as a data source for the replicated, transparent, or linked partition.
- Target - The selected database is used as a data target for the replicated, transparent, or linked partition.
servername | Name of the Essbase Server to get the time change.
**Parameter** | **Description**
--- | ---
appName | Name of the application to get the time change.
dbName | Name of the database to get the time change.
particleType | The name of the type of partition the time change is applied to. Values:
1 - Replicated
2 - Transparent
3 - Linked
direction | Values:
- Source - The selected database is used as a data source for the replicated, transparent, or linked partition.
- Target - The selected database is used as a data target for the replicated, transparent, or linked partition.

**Notes**
The `RESETOTLCHANGETIME` command synchronizes the internal time stamps between two Essbase databases that share a partition. This time stamp is used when performing `GETPARTITIONOTLCHANGES` and `APPLYOTLCHANGEFILE` operations to synchronize the outlines. That is, to propagate changes (made during a dimension build, for example) from the outline in one database sharing a partition to the other.

Partitioned databases contain a time stamp indicating when the outline was last modified. Essbase uses the time stamp when it performs `GETPARTITIONOTLCHANGES` and `APPLYOTLCHANGEFILE` operations to synchronize the outlines. When you use `GETPARTITIONOTLCHANGES`, the time is stamped in one of the databases. When you use `APPLYOTLCHANGEFILE`, Essbase reads that time stamp and writes it to the partition definition file (`AppName.db`) of the other database. The direction in which changes are propagated (data source to data target, or data target to data source) is set in the partition definition.

It is not necessary to use the `RESETOTLCHANGETIME` command when performing `GETPARTITIONOTLCHANGES` and `APPLYOTLCHANGEFILE` operations, or as part of regular maintenance. Instead, use it as needed, to reset the time stamp on a partitioned database. For example, if two databases that share a partition reside on different server computers, and a power outage affects the time stamp on one of the databases, you can use `RESETOTLCHANGETIME` to re-synchronize the time stamps.

For more information, see the *Oracle Essbase Database Administrator’s Guide*.

**Example**
```
RESETOTLCHANGETIME "BAMBOO" "SAMPLE" "BASIC" "1"
 "SOURCE" "ASPEN" "SAMPLE" "BASIC" "1" "TARGET";
```

**See Also**
- `GETPARTITIONOTLCHANGES`
- `APPLYOTLCHANGEFILE`
RESERPTSFSTATS

Resets statistics gathering for a specified persistence and scope. Each of the statistics tables available using the GETPERFSTATS ESSCMD command has a pre-defined persistence and scope. When you issue RESERPTSFSTATS without parameters, statistics-gathering is reset for all of the tables.

Collecting and analyzing performance statistics can assist you in determining whether databases are in good running condition, or could use modifications to improve performance.

Depending on your database and production needs, you create a statistical measurement profile by resetting the appropriate levels of persistence (length of events to measure) and scope (granularity of the entity to measure).

Syntax

RESERPTSFSTATS persistence scope

Parameter Description

persistence  [default=long]
  - disable
    Turn off performance-statistics gathering.
  - enable
    Turn on performance-statistics gathering. You might do this when you want to tune the system, change hardware configuration, or monitor I/O. The measurement begins for current processes as soon as you enable it. Any subsequent queries for statistics return measurements spanning from the time of enablement to the time of the query.
  - medium
    Reset tables that measure medium-length events:
    - kernel I/O Statistics table
    - Cache Endtrans Statistics table
    - Database Synchronous I/O table
    - Database Asynchronous I/O table
  - long (default)
    Reset tables that measure events over the course of the entire session. Long measurements rarely need to be reset. Example: kernel Cache Statistics table.

scope  [default=all]
  - db
    Reset per-database statistics tables.
  - server
    Reset per-application statistics tables.
  - all (default)
    Reset all statistics tables: for threads, databases, and applications.

Notes

This command resets to zero any previously collected statistics of a persistence shorter than or equal to the reset persistence. For example, entering RESERPTSFSTATS LONG resets both long and medium statistics tables back to zero.
Example
RESETPERFSTATS ENABLE;
RESETPERFSTATS MEDIUM SERVER;

See Also
- GETPERFSTATS

**RESETSTATUS**

Resets all saved status values to 0 (zero).

**Syntax**

```
RESETSTATUS
```

**Notes**

RESETSTATUS is used in ESSCMD error handling.

This command resets:
- All saved status values, including that of the previous command.
- The returned status values, as tested in IFERROR.

**Example**

```
RESETSTATUS;
```

**RUNCALC**

Runs a calculation script.

**Syntax**

```
RUNCALC numeric calcScript
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>numeric</td>
<td>Location of the calculation script data file. Values:</td>
</tr>
<tr>
<td></td>
<td>1 - Local/client-based calculation script.</td>
</tr>
<tr>
<td></td>
<td>2 - Remote/server calculation script.</td>
</tr>
<tr>
<td></td>
<td>3 - File. Use option 3 if the file is not an Essbase object, or if you want to specify the full path name. Otherwise, Essbase looks in the <code>&lt;APPNAME&gt;/&lt;DBNAME&gt;</code> directory.</td>
</tr>
<tr>
<td>calcScript</td>
<td>Name of the calculation script to run.</td>
</tr>
</tbody>
</table>

**Notes**

The `numeric` parameter indicates the location of the file named by the `calcScript` parameter.

**Example**

To execute a calculation script object named FAM100 on the Essbase Server:
RUNCALC 2 "FAM100";

**RUNREPT**

Runs a report script.

**Syntax**

```
RUNREPT numeric reptScript outputFile
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>numeric</td>
<td>Location of the report script file. Values:</td>
</tr>
<tr>
<td></td>
<td>1 - Local/client-based report script.</td>
</tr>
<tr>
<td></td>
<td>2 - Remote/server report script.</td>
</tr>
<tr>
<td></td>
<td>3 - File is not an Essbase object; enter a fully qualified path to the file. Use option 3 if you want to specify the full path name. Otherwise, Essbase looks in the <code>&lt;APPNAME&gt;/&lt;DBNAME&gt;</code> directory.</td>
</tr>
<tr>
<td>reptScript</td>
<td>Name of the report script to run.</td>
</tr>
<tr>
<td>outputFile</td>
<td>Target file name for report output.</td>
</tr>
</tbody>
</table>

**Notes**

The value you enter for the `numeric` parameter tells Essbase where the file named `reptScript` resides. Use the OUTPUT command to suppress the onscreen display of the script.

**Example**

To execute a report script called P&L on the Essbase Server:

```
RUNREPT 2 "P&L" "P&L.out";
```

**SELECT**

Selects the application and database on which to focus subsequent commands.

**Syntax**

```
SELECT appName dbName
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>appName</td>
<td>Name of the application containing the desired database.</td>
</tr>
<tr>
<td>dbName</td>
<td>Name of database within the selected application.</td>
</tr>
</tbody>
</table>

**Example**

To select the database called BASIC in the application called SAMPLE:

```
SELECT "SAMPLE" "BASIC";
```
**SETALIAS**

This command sets an alias table as the primary table for reporting and any additional alias requests.

**Syntax**

```
SETALIAS aliasName
```

**Parameter Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>aliasName</td>
<td>Name to set for the alias table.</td>
</tr>
</tbody>
</table>

**Example**

```
SETALIAS "Long Names";
```

---

**SETAPPSTATE**

Defines application settings.

**Syntax**

```
SETAPPSTATE ["appName"] "desc" Y/N Y/N accessLevel Y/N Y/N Y/N lockTimeout MaxLROFileSize;
```

**Parameter Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>appName</td>
<td>Name of the application. Do not include appName if the active application is selected.</td>
</tr>
<tr>
<td>desc</td>
<td>Text string describing the application.</td>
</tr>
<tr>
<td>Y/N</td>
<td>Sets whether the application is loadable.</td>
</tr>
<tr>
<td>accessLevel</td>
<td>Default access level. Values:</td>
</tr>
<tr>
<td></td>
<td>0 - None.</td>
</tr>
<tr>
<td></td>
<td>1 - Read.</td>
</tr>
<tr>
<td></td>
<td>2 - Write.</td>
</tr>
<tr>
<td></td>
<td>3 - Calculate.</td>
</tr>
<tr>
<td></td>
<td>4 - Application Manager or Database Manager</td>
</tr>
<tr>
<td>Y/N</td>
<td>Sets whether connections can be made.</td>
</tr>
<tr>
<td>Y/N</td>
<td>Sets whether commands can be issued.</td>
</tr>
<tr>
<td>Y/N</td>
<td>Sets whether updates can occur.</td>
</tr>
<tr>
<td>Y/N</td>
<td>Sets whether security is enabled.</td>
</tr>
<tr>
<td>lockTimeout</td>
<td>Maximum number of seconds that locks can be placed on blocks by Smart View or other grid client users.</td>
</tr>
<tr>
<td>MaxLROFileSize</td>
<td>Maximum size, in kilobytes, for a Linked Reporting Objects (LRO) file.</td>
</tr>
</tbody>
</table>
Notes

- Using the semicolon statement terminator (;) is optional in ESSCMD batch files. However, it is good practice to use the terminator with this command to signal the end of the parameter list. This is especially important if you omit some of the parameters and take their default values. If not all parameters are present, and the ; is omitted, ESSCMD looks for the remaining values in the next statement in the batch file, leading to unpredictable results.

- As with many other ESSCMD commands, if you issue only the SETAPPSTATE keyword in interactive mode, ESSCMD prompts you for the other values.

Example

SETAPPSTATE "sample" "The application is ready"
   "Y" "Y" 0 "Y" "Y" "Y" "Y" "3600";

SETDBSTATE

Defines database settings. For more options, see SETDBSTATEITEM.

Syntax

SETDBSTATE ["appName"] ["dbName"] "desc" Y/N Y/N accessLevel
dataCacheSize Y/N Y/N Y/N currDb ccType 0/1 indexCacheSize
IndexPageSize Y/N;

Parameter | Description
--- | ---
appName | Name of the application. Do not include if the application is already selected.
dbName | Name of the database; required if appName is specified.
desc | Text string describing the database.
Y/N | Sets whether the database is loadable.
Y/N | Sets autoload on or off.
accessLevel | Default access level. Values:
   0 - None.
   1 - Read.
   2 - Write.
   3 - Calculate.
   4 - Database Manager.
dataCacheSize | Maximum amount of memory allocated for data cache. Default: 3145728 bytes.
Y/N | Sets whether to aggregate missing values.
Y/N | Sets whether to perform a Two-Pass calc.
Y/N | Sets whether to create blocks on equations.
currDb | Links a currency database.
Parameter | Description
--- | ---
ccType | Specifies the default currency type member.
0/1 | Sets the conversion method. Values:
0 - Division.
1 - Multiplication.

indexCacheSize | Maximum amount of memory allocated for index cache. Default: 1048576 bytes.

indexPageSize | Maximum amount allocated for index page. Index page size is now fixed at 8192 bytes regardless of this setting.

Y/N | Enable (Y) or disable (N) data compression on disk.

Notes
- Using the semicolon statement terminator (;) is optional in ESSCMD scripts. However, it is good practice to use it to signal the end of the SETDBSTATE parameter list. This is especially important if you omit some of the parameters, accepting their default values. If not all parameters are present, and the ; is omitted, ESSCMD looks for the remaining values in the next line, leading to unpredictable results.
- If you issue only the SETDBSTATE keyword in interactive mode, ESSCMD prompts you for the other values.
- Load the required database before you run the SETDBSTATE command, then stop and restart the database for this command to take effect.

Example
The following example assumes that the application and database are already selected. Settings that you want to skip need to be represented using empty quotation marks as placeholders.

```
SETDBSTATE "Data has been updated" "Y" "Y" 4 "3000000" "N" "Y" "N" "" "" 0 "1049000" "8192" "Y";
```

See Also
- SETDBSTATEITEM

**SETDBSTATEITEM**

Defines database settings by number, providing more options than SETDBSTATE.

It is most efficient to load the required database before you run the SETDBSTATE command, then stop and restart the database for the command to take effect.

Note: When changing sizes, valid size-entry units in ESSCMD are bytes (b), kilobytes (k), megabytes (m), gigabytes (g), or terabytes (t). Example: 8192b, 8k, 1m, ng, nt. If no size unit is given, the default unit is bytes (b).
Syntax

SETDBSTATEITEM [optionNumber] [ "appName"] [ "dbName"] [ "values"]

Parameter Description

optionNumber An integer between 0 and 27, inclusive. This number corresponds to the options listed below. Enter 99 to be prompted for all options (in interactive mode).

appName Name of the application. Omit if the application is already selected using the SELECT command.

dbName Name of the database; required if appName is specified.

values Acceptable value or values; these vary from option to option. See Values for Values Parameter

Notes

- Using the semicolon statement terminator (;) is optional in ESSCMD scripts.; however, it is good practice to use it to signal the end of the parameter list. This is especially important if you omit some of the parameters, accepting their default values. If not all parameters are present, and the ; is omitted, ESSCMD looks for the remaining values in the next line, leading to unpredictable results.

- Items 14 and 15 (Data Compression and Data Compression Type) are effective as soon as Essbase writes blocks to disk. This command has no effect on blocks already on disk until the next time Essbase writes them.

- Items 18, 19, and 20 (Isolation level, Pre-Image Access, and Time Out) are effective the next time there are no active transactions in the database.

- Items 5, 12, 21, and 22 (Data Cache Size, Index Cache Size, Blocks Modified Before Internal Commits, and Rows to Data Load Before Internal Commit) are effective when the database is stopped and re-started.

- Item 13, Index Page Size, is no longer changeable. Input for this setting is ignored.

Values for Values Parameter

- 0. Abort—Returns you to the ESSCMD command line. Use only in interactive mode.

- 1. Description—Text string describing the database.

- 2. Allow Database to Start?—Sets whether the database is loadable. Values: Y/N.

- 3. Start Database with Application?—Sets autoload on or off. Values: Y/N.

- 4. Access Level—Values:
  - 0 - None.
  - 1 - Read.
  - 2 - Write.
  - 3 - Calculate.
  - 4 - Database Manager.

- 5. Data Cache Size—The maximum size of a buffer in memory that holds data blocks for the current operation. Default and minimum: 3145728B (3 megabytes).
6. **Aggregate Missing Values?**—Sets whether to aggregate missing values. Values: Y/N.

7. **Two Pass Calc When [CALC ALL]?**—Sets whether or not to perform a second calculation on formulas tagged as "Two Pass" as part of the default calculation. Values: Y/N.

8. **Create Blocks on Equation?**—Sets whether to create blocks on equations. Values: Y/N.

9. **Currency Database Name**—Links a currency database that you specify.

10. **Currency Conversion Type Member**—Specifies the default currency conversion type member.

11. **Currency Conversion Type**—Sets the conversion method. Values:
   - 0 - Division.
   - 1 - Multiplication.

12. **Index Cache Size**—Maximum size of a memory buffer that holds index pages for the current operation. Default: 1048576 bytes (1 megabyte).

13. **Index Page Size**—This setting is no longer changeable.

14. **Data Compression on Disk?**—Enables (Y) or disables (N) data compression on disk.

15. **Data Compression Type**—Values:
   - 1 - Run-Length Encoding.
   - 2 - Bitmap (the default).

16. **Retrieval Buffer Size**—Specifies the size of the internal sorting buffer that holds extracted row data cells before they are evaluated by the RESTRICT or TOP/BOTTOM Report Writer command. Default: 10K (on 32-bit platforms), and 20K (on 64-bit platforms).

17. **Retrieval Sort Buffer Size**—Specifies the size of the internal data sorting buffer. Default: 10K (on 32-bit platforms), and 20K (on 64-bit platforms).

18. **Isolation Level**—Choose committed or uncommitted access to your database.
   Committed access provides better data integrity. Uncommitted access provides consistency with Release 4. See the Oracle Essbase Database Administrator’s Guide for information about isolation levels. Values:
   - 1 - Committed access
   - 2 - Uncommitted access (the default)

Depending on which type of access you specify, ESSCMD prompts you for other parameters (or you can supply the values on the command line).

If you choose 1 (committed access), ESSCMD prompts for:
   - Pre-image access (see item 19).
   - Time Out (see item 20).

If you choose 2 (uncommitted access), ESSCMD prompts for:
   - Number of blocks modified before internal commit (Default: 3000).
   - A value of 0 means no implicit commit; Essbase commits blocks at the end of the transaction.
○ Number of rows to data load before internal commit. (Default: 0, no implicit commit; Essbase commits blocks at the end of the transaction).

● 19. Pre Image Access?—Valid for Committed access only. Provides users Read-only access to data blocks that are locked for the duration of another transaction. Users see the last committed data values for those data blocks. If you choose N (No), your transaction waits for the blocks to become available, or Essbase issues a time-out error. Values: Y/N. Default: N (No).

● 20. Time Out—The length of time, in seconds, to wait to acquire a lock on data blocks that are locked by another transaction. Acceptable values are:
  ○ -1 - Indefinite wait.
  ○ 0 - Immediate access, or no wait.
  ○ n - A number of seconds that you specify.


● 22. Number of rows to data load before internal commit—Default: 0. See item 18.

● 23. Add Disk Volume Definitions—Use if you want to allocate storage across multiple volumes, or restrict space used on a volume. For information on disk volumes, see the *Oracle Essbase Database Administrator’s Guide*.

ESSCMD prompts you for the following values, unless you supply them on the command line:

○ The number of new disk volumes you want to add. Then, for each volume,

○ Volume name or drive letter (required), or a drive location specified using Uniform Naming Convention (UNC) syntax, which is `\\ComputerName\SharedFolder \Resource`.

  Use UNC syntax only if ARBORPATH is also specified in UNC. Mixed path types are not supported.

○ Volume size (maximum space to use on that volume). Default: Unlimited (0). Minimum: 8 megabytes. You can specify this value in bytes (B), kilobytes (K), megabytes (M, the default), or gigabytes (G).

○ File types to be stored on this volume:
  ○ 1 - Index files only.
  ○ 2 - Data files only.
  ○ 3 - Index and data files (the default).

○ File size: the maximum size that each index or data file can attain before Essbase creates a new file. Default: 2G. Minimum: 8 megabytes. You can specify this value in bytes (B), kilobytes (K), megabytes (M, the default), or gigabytes (G).

● 24. Modify Disk Volume Information—Change the disk volume settings on an allocated volume. This command prompts you for the number assigned to the disk volume you want to change and then prompts you for each value for the chosen disk volume. See item 23. Use `GETDBSTATE` to see a list of the currently defined disk volumes, and the number assigned to each volume.
25. **Delete Disk Volume Definition**—Stop Essbase from storing additional files on an allocated volume. This command prompts you for: **Volume Definition** \( n \), where \( n \) is the number corresponding to the disk volume definition you want to remove.

For example, suppose you defined three volumes: first, C; then, E; then, D. Essbase considers D the third volume - definition number 3.

**Note:** If you delete an application or database, Essbase does not remove the directory containing the application or database on a disk volume. The computer’s operating system still shows the folder and file labels on the disk. However, you can reuse the same name of the application or database that you had removed on the disk volume.

26. **Cache Memory Locking**—Enable or disable Cache Memory Locking. When enabled, this setting locks the memory used for the index cache, data file cache, and data cache into physical memory, improving database performance.

Values: Y/N Default: No

27. **Data File Cache Size**—

Specify the size, in bytes, for the Data File Cache. Minimum: 8388608 bytes. Default: 33554432 bytes. Recommended: Combined size of all ESS*.PAG files if possible; as large as possible otherwise.

99. **All Items**—Prompts for each option in turn. Use only in interactive mode.

**Example**

The following example enables Committed access and Pre-image access, and specifies indefinite wait time:

SETDBSTATEITEM 18 "JTEMP" "JTEMPDB" "1" "Y" "1";

The following example allocates up to 4 GB on Volume E, sets a maximum file size of 1 GB, and specifies that data files should be stored only on E:

SETDBSTATEITEM 23 "SAMPLE" "BASIC" "1" "E" "4G" "2" "1G"

The following examples set the data cache value to 45000000 bytes. In the first example, the SELECT command was used to select the application and database. In the second example, the application and database are specified in the SETDBSTATEITEM command line instead.

**Example 1 (SETDBSTATEITEM)**

LOGIN "machinename" "admin" "password";
SELECT "Sample" "Basic";
SETDBSTATEITEM 5 45000000;
LOGOUT;
EXIT;

**Example 2 (SETDBSTATEITEM)**

LOGIN "machinename" "admin" "password";
SETDBSTATEITEM 5 sample basic 45000000;
LOGOUT;
EXIT;
SETDEFAULTCALC

Sets a calculation string as the default database calculation.

Syntax

SETDEFAULTCALC calcString

Parameter Description

calcString  Calculation string to set.

Notes

- Place the default database calculation within quotation marks.
- Calculation strings require a terminating semicolon.

Example

SETDEFAULTCALC "CALC ALL;";

See Also

- SETDEFAULTCALCFILE

SETDEFAULTCALCFILE

Sets a calculation object as the default database calculation.

Syntax

SETDEFAULTCALCFILE calcobjName

Parameter Description

calcobjName  Calculation object to set. Give full path name if this object is not in the CLIENT directory.

Example

SETDEFAULT "actbud";

See Also

- SETDEFAULTCALC

SETLOGIN

Sets the active login to a particular instance.
Syntax

SETLOGIN sesNo

Parameter Description

sesNo Login instance session number. Values:

- prev - Previous number
- next - Next session number
- sessionNo - Integer representing session

Notes

This command sets the active login to the instance represented by previous, next, or a session number. To get session numbers, use the LISTLOGINS command.

Example

To set the ESSCMD session to login the previous login instance:

SETLOGIN PREV;

To set the ESSCMD session to login the next login instance:

SETLOGIN NEXT

To set the ESSCMD session to login instance number 2:

SETLOGIN 2

The following interactive example uses LISTLOGINS to get information needed for a subsequent SETLOGIN command. Commands typed by the user are shown in bold.

localhost:::system[1]->listlogins

ListLogins:

There are 2 Active Login Sessions.
  Login Session 1 -- localhost system
  Login Session 2 -- localhost EWhite

localhost:::system[1]->setlogin 2

SetLogin:

Switch to Login Session 2 -- localhost EWhite

See Also

- LISTLOGINS

SETMSGSLEVEL

Defines the level of messages seen in the interactive ESSCMD shell.
Syntax

SETMSGLEVEL level

Parameter Description

level  
Level setting for messages. Values:
1 - Make no changes
2 - Display all information messages
3 - Display only warning messages
4 - Display only error messages
5 - Display no messages

Notes

The SETMSGLEVEL command defines the level of messages seen in the interactive ESSCMD shell. To set the level of messages seen in an ESSCMD output file, use the OUTPUT command.

Example

SETMSGLEVEL 3;

See Also

● OUTPUT
● “AGENTLOGMESSAGELEVEL” on page 432
● “Set Message Level” on page 898

SETPASSWORD

Assigns a new password to an existing user.

Syntax

SETPASSWORD userName newPassword

Parameter Description

userName  
Name of the existing user.

newPassword  
New password for the user.

Example

SETPASSWORD "D_ROSETTI" "INFERNO";

SHUTDOWNSERVER

Shuts down the Essbase Server from the terminal running the current ESSCMD session. You must have Administrator permission to use this command.

Syntax

SHUTDOWNSERVER servername username password
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>servername</td>
<td>Host name associated with the Essbase Server you want to shut down.</td>
</tr>
<tr>
<td>username</td>
<td>Your user name.</td>
</tr>
<tr>
<td>password</td>
<td>Your password.</td>
</tr>
</tbody>
</table>

**Notes**

If you do not specify the parameters on SHUTDOWNSERVER, ESSCMD prompts you for them.

**Example**

To shut down the Essbase Server named Poplar:

```
SHUTDOWNSERVER "poplar" "mildred" "password";
```

To have Essbase prompt you for your user name and password:

```
SHUTDOWNSERVER "Poplar";
```

## SLEEP

Pauses an ESSCMD script.

**Syntax**

```
SLEEP "seconds"
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>seconds</td>
<td>Number of seconds for the batch file execution to sleep.</td>
</tr>
</tbody>
</table>

**Notes**

Pauses an ESSCMD script. Pausing an ESSCMD script allows other commands to finish execution and cleanup.

**Example**

```
SLEEP "10";
```

## UNLOADALIAS

Deletes the specified alias table.

**Syntax**

```
UNLOADALIAS aliasName
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>aliasName</td>
<td>Name of the alias table to unload.</td>
</tr>
</tbody>
</table>
Example

Assume that `flavors` is an alias table mapping the following flavor names to the numerically-named children of `Product`:

- "400-10"        Guava
- "400-20"        Tangerine
- "400-30"        Mango

These flavors are discontinued. To delete the alias table called `flavors`, first select the application and database, and then enter the following:

```
UNLOADALIAS "flavors";
```

See Also

- `LISTALIASES`
- `DISPLAYALIAS`
- `SETALIAS`

**UNLOADAPP**

Unloads an application from memory.

**Syntax**

```
UNLOADAPP appName
```

**Parameter Description**

- `appName` Name of the application to unload.

**Notes**

All databases within the application are unloaded.

**Example**

```
UNLOADAPP "SAMPLE";
```

**UNLOADDB**

Unloads a database from memory.

**Syntax**

```
UNLOADDB appName dbName
```

**Parameter Description**

- `appName` Name of the application in which the database resides.
- `dbName` Name of the database to unload.
Example
UNLOADDB "SAMPLE" "BASIC";

UNLOCKOBJECT

Unlocks an object that is locked by another user or process.

Syntax
UNLOCKOBJECT objType sourceApp sourceDb sourceObj

Parameter Description

objType Type of object to list. Values:
1 - Outline object.
2 - Calculation script.
3 - Report script.
4 - Rules object.
5 - Alias table (not available).
6 - Structure file (not available).
7 - Backup file (not available).
8 - Worksheet of any type (not available).
9 - Text object.
10 - Partition.
11 - Linked Reporting Object (stored).
12 - Selection.
13 - Wizard.
14 - EQD.

sourceApp Name of the application that includes object.

sourceDb Name of the database that includes object.

sourceObj Name of the existing object to unlock.

Notes
- Values 5 through 8 for the objType parameter represent objects that cannot be locked.
- Two values for the objType parameter, 6 and 7, are retained only for backward compatibility with Release 2.0.
- Option 11, Linked Reporting Object, unlocks stored LROs only; that is, files with the .LRO extension. It does not unlock URLs, cell notes, or linked partitions.

Example
UNLOCKOBJECT 1 "FINANC95" "SALES95" "ARCHIVE";

UPDATE

Loads a single data record into the selected database.
Syntax
UPDATE dataString

Parameter Description
dataString  A single data record.

Example
UPDATE "Jan Sales '100-10' Florida Actual 220";

See Also
- UPDATEFILE

UPDATEBAKFILE

Compares the security backup file, essbase_timestamp.bak, to the security file, essbase.sec, at any time, and if needed, triggers an update. The backup file is updated only if a difference exists between the security file, essbase.sec, and the security backup file, essbase_timestamp.bak.

Syntax
UPDATEBAKFILE

Example
UPDATEBAKFILE

UPDATEFILE

Loads data, unlocks blocks, and verifies a data file.

Syntax
UPDATEFILE location fileName update

Parameter Description

location  Location of the data file. Values:
1 - Local/client-based rules file
2 - Remote/server data object
3 - File. Use option 3 if you want to specify the full path name. Otherwise, the file is assumed to be in the <appname>/<DBNAME> directory.

fileName  Name of the file to load.

update   Update action. Values:
1 - Load data
2 - Unlock data blocks
3 - Verify data
**UPDATEVARIABLE**

Updates the variable value that corresponds to the specified substitution variable.

**Syntax**

```
UPDATEVARIABLE variableName [serverName [appName [dbName]]] value
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>variableName</td>
<td>The name of the existing substitution variable.</td>
</tr>
<tr>
<td>serverName</td>
<td>Optional. Host name of the Essbase Server to which the variable is applied.</td>
</tr>
<tr>
<td>appName</td>
<td>Optional. Name of the application to which the variable is applied. If appName is not used, in a script, empty quotes must be used to take its place. (&quot;&quot;&quot;)</td>
</tr>
<tr>
<td>dbName</td>
<td>Optional. Name of the database to which the variable is applied. If dbName is not used, in a script, empty quotes must be used to take its place. (&quot;&quot;&quot;)</td>
</tr>
<tr>
<td>value</td>
<td>The new string value that corresponds to the substitution variable. The name must be alphanumeric, and can be a maximum of 255 characters. You can have a null value, but do not use a leading &amp; character in the value.</td>
</tr>
</tbody>
</table>

**Example**

The following command in an ESSCMD script updates a substitution variable named CurQtr to have a value of Qtr2.

```
UPDATEVARIABLE "CurQtr" "Bamboo" "Sample" "Basic" "Qtr2";
```

The following ESSCMD script updates a substitution variable named CurQtr to have a value of Qtr3. Application and database input is left blank because the variable is system-wide; however, the empty quotation marks are still required as placeholders.

```
login "Aspen" "fiona" "sunflower";
UPDATEVARIABLE "CurQtr" "aspen" "" "" "Qtr3";
```

Another script that updates an Essbase Server substitution variable:

```
OUTPUT 1 "subvar_serv.log";
LOGIN "localhost" "system" "password";
UPDATEVARIABLE "GlobalVar" "" "" "Myserver";
exit;
```

Script that updates an application substitution variable:

```
OUTPUT 1 "subvar_app.log";
LOGIN "localhost" "system" "password";
```
UPDATEVARIABLE "AppVar" "localhost" "Sample" "" "MyApp";
exit;

Script that updates a database substitution variable:

OUTPUT 1 "subvar_db.log";
LOGIN "localhost" "system" "password";
UPDATEVARIABLE "DBVar" "localhost" "Sample" "Basic" "MyDB";
exit;

See Also

- LISTVARIABLES
- UPDATEVARIABLE

VALIDATE

Checks the database for data and structural integrity. You must select a database before issuing this command.

VALIDATE checks the following information:

- Verifies data integrity in each block. Reading from top to bottom, it checks blocks, sections, block type, and block length. The command checks for validity in floating-point numbers. This command writes information about bad blocks to the log file.

- Automatically compares every index key in the index page with the index key in the corresponding data block and checks other header information in the block. If it encounters a mismatch, VALIDATE displays an error message and continues processing until it checks the entire database.

- Compares the data block key in the index page with the data block key in the corresponding data block. Keys out of order indicate corruption.

- Verifies the structural integrity of the index free space information in the index.

- Verifies the structural integrity of the LRO catalog.

If this command finds integrity errors, it writes validation process error messages to a text-format log file. The default location for the specified file is in the application\database directory. For example: ESSBASE\APP\app\db\VALIDATE.LST.

Syntax

VALIDATE errorlogFile

Parameter Description

errorlogFile Name and optional path of destination file for error messages. If no path is specified, the specified list file is stored in the current application\database directory.

Notes

- You can also use the VALIDATE command to clear an internal file, database_name.OCL, when it grows too large. database_name.OCL is a file used for
incremental restructuring. VALIDATE causes Essbase to restructure any blocks whose restructure was deferred, and clears the file.

- Before issuing the VALIDATE command, we recommend placing the database in read-only mode, using the ESSCMD BEGINARCHIVE or the MaxL statement `alter database DBS-NAME begin archive to file FILE-NAME;`

Example

```
VALIDATE VALERROR.TXT;
```

**VALIDATEPARTITIONDEFFILE**

Validates shared partition definitions.

**Syntax**

```
VALIDATEPARTITIONDEFFILE
```

**Notes**

This command validates the specified partition definition identified in the partition mapping definition `.DDB` file. During validation, Essbase checks the `.DDB` file to ensure that:

- The area definition is valid (contains no syntax errors).
- The specified data source members are valid members and map to valid members in the data target.
- All connection information is correct (host names, database names, application names, user names, and password information).
- For linked partitions, the specified default user name and password are correct.
- For replicated and transparent partitions:
  - A replication target does not overlap with replication target.
  - A replication target does not overlap with transparent target.
  - A transparent target does not overlap with transparent target.
  - A replication source does not overlap with transparent target.
  - The cell count for the partition is the same on the data source and the data target.

You must issue the VALIDATEPARTITIONDEFFILE command for both the data source and the data target `.DDB` files. You need to log in to each database and issue the command separately for each portion of the partition definition.

For more information, see the *Oracle Essbase Database Administrator's Guide*.

**Example**

```
VALIDATEPARTITIONDEFFILE
```
Overview of MaxL and MDX

MaxL is the multi-dimensional database access language for Essbase. MaxL is a practical, expressive interface for administering and querying the Essbase system. With the MaxL language, you use statements to make requests. MaxL statements usually begin with a verb, and read like English sentences.

MaxL has two functional domains:

- **MaxL DDL** is the data-definition language for Essbase.
  Data definition means structural control of a database system. This includes operations like creation, deletion, and updating of users, applications, databases, and database objects. Therefore, statements in MaxL DDL include verbs like CREATE, ALTER, DROP, GRANT, and DISPLAY.

- **MDX** is the data-manipulation language for Essbase.
Data manipulation means access to the actual data within a database system. MDX provides the ability to perform advanced data extraction and querying by means of statements that typically include the verb SELECT. The equivalent conceptual tool would be Report Writer.

How to Read MaxL Railroad Diagrams

The MaxL grammar is illustrated using a railroad syntax notation. The railroad diagrams illustrate all the valid (grammatically correct) statements that can be parsed by MaxL.

- “Anatomy of MaxL Statements” on page 682
- “Railroad Diagram Symbols” on page 682
- “Sample Railroad Diagram” on page 683

Anatomy of MaxL Statements

- A keyword (see , represented in plain, lower-case font, is a unit of MaxL grammar. Keywords must be entered literally and in the correct order in MaxL statements. See the examples of keywords in the following diagram excerpt:

```
grant <APP-SYSTEM-ROLE> on application APP-NAME to USERNAME
```

- A terminal, represented in upper-case without brackets, is replaced by values in the appropriate format as defined in the Terminals table. In the above diagram, APP-NAME and USER-NAME are examples of terminals. Each would need to be replaced with a valid name; for example, sample or user1.

  Keywords cannot be used as terminals, unless enclosed in single quotation marks. For example, to delete a user named user, the statement `drop user user;` would return an error, but `drop user 'user';` would work.

- A non-terminal, represented in upper-case with angle brackets <>, is defined in an additional diagram, usually below the main diagram.

Keywords and variables on the main line are required; optional grammar is recessed. A vertical stack of words represents alternatives. Bold words indicate defaults when no word is chosen.

Railroad Diagram Symbols

The following table describes the meaning of symbols used in railroad diagrams.
Symbol | Definition
---|---
[ ] | Statement begins here.
[ ] | Statement continues on next line.
[ ] | Statement is continued from previous line.
[ ] | Statement ends here.
`alt_1` | Alternatives: optionally select one keyword. Boldface indicates default if no selection is made.
`alt_1
alt_2` | Alternatives: selection of one keyword is required.
`alt_1
alt_2
alt_3` | A comma-separated list of any length is permitted.
`TERMINAL-NAME` | Word is not further defined. Replace with value of format shown in the Terminals table.
`<NON-TERMINAL>` | Word used in statement is further defined.
`<NON-TERMINAL> ::=` | Non-terminal used in statements is defined here.

**Sample Railroad Diagram**

The following diagram illustrates a variant grammar that parses the following English sentence:

"The quick brown fox jumps over the lazy dog."
Valid sentences parsable by this grammar:

- The fox jumps over the dog. Bold letters indicate a default value when no option is entered; therefore, entry of this statement would be interpreted as *The brown fox jumps over the dog*.
- The quick brown fox jumps over the dog.
- The red fox jumps over the lazy cat.
- The quick brown fox jumps onto the tired elephant.

**MaxL Data Definition Language (DDL)**

MaxL DDL is the database definition language for Essbase. MaxL DDL is a practical, expressive interface for administering Essbase. With the MaxL DDL language, you use statements to make requests. MaxL DDL statements begin with a verb and read like English sentences.

In order for Essbase Server to receive MaxL DDL statements, you must pass the statements to Essbase Server. To pass statements, you use either MaxL Shell (`essmsh`), MaxL Script Editor in the Administration Services Console, or the MaxL Perl Module.

Oracle recommends that you proceed in the following order:

1. Start Essbase Server.
2. Invoke MaxL Shell or MaxL Script Editor and log in to Essbase Server.
3. Create statements for data access and system administration.
4. Learn about syntax, numbers, permissions, and names in the MaxL language (see “MaxL Definitions” on page 834).
5. Learn about using Perl to issue MaxL statements.

**Note:** For information about MaxL Script Editor, see the Oracle Essbase Administration Services Online Help.
MaxL Statements

The MaxL data-definition language has its own grammar that you use to create statements. In this document, the syntax for the MaxL DDL is illustrated using railroad diagrams.

The MaxL grammar is case-insensitive. Semicolon statement-terminators are required when using the MaxL Shell. However, do not use semicolons at the end of statements passed using Perl functions.

Key words of the MaxL grammar are represented in this document in lower-case. Terminals, represented in upper-case, are to be replaced by the appropriate names, numbers, privileges, or strings. For more information about components of MaxL statements, see “MaxL Definitions” on page 834.

Topics covered in this section:

- “Performance Statistics in MaxL” on page 685
- “Listed By Verbs” on page 691
- “Object” on page 698
- “MaxL Statement Reference” on page 700

Performance Statistics in MaxL

Query database returns medium and long performance statistics for the database and application. The statistics appear as tables in the MaxL output. To gather performance statistics, you must first enable statistics gathering using alter database <dbs-name> set performance statistics enabled. You also use alter database to return to zero the statistical persistence (length) and scope (granularity).

Collecting and analyzing performance statistics can help you understand whether the databases are in good running condition or could use modifications to improve performance.

Topics related to performance statistics:

- “The Essbase Performance Statistics Tables” on page 685
- “MaxL Script Example” on page 690

The Essbase Performance Statistics Tables

The Essbase system gathers a variety of statistics regarding the performance of the system and the connected applications. The output of query database can vary depending on what the system has just done, how long statistics have been gathered and the persistence of the gathered statistics. The tables give information on a typical set of statistics. It can be very helpful to compare two sets of statistics gathered at similar points in the server’s operation, such as after two comparable updates or after two restructure operations. Statistics should be gathered at intervals and compared to each other to identify differences. Compare the statistics gathered before and after any changes to the system and if the system performance changes.
Note: Depending on the calculations you choose to perform, if any, some tables may or may not be displayed in your output log.

Performance statistics for which tables are available:

- “Kernel Input/Output Statistics” on page 686
- “Kernel Cache Statistics” on page 686
- “Cache End-Transaction Statistics” on page 687
- “Database Synchronous Input/Output Statistics” on page 687
- “Database Asynchronous Input/Output Statistics” on page 688
- “Dynamic Calc Cache Statistics” on page 689

Kernel Input/Output Statistics

The Kernel I/O Statistics table summarizes input/output for the entire application. There is one kernel I/O table per application.

Persistence/Scope of this table: med/server

<table>
<thead>
<tr>
<th>Kernel I/O</th>
<th>Read (OS reads from disk)</th>
<th>Write (OS writes to disk)</th>
</tr>
</thead>
<tbody>
<tr>
<td># Index</td>
<td>I/O Number of reads that occurred through the index cache.</td>
<td>Number of writes that occurred through the index cache.</td>
</tr>
<tr>
<td># Data I/O</td>
<td>Number of reads that occurred through the data cache.</td>
<td>Number of writes that occurred through the data cache.</td>
</tr>
<tr>
<td># Fground I/O</td>
<td>Number of data reads that occurred in the foreground (while a process waited for data to be read).</td>
<td>Number of data writes that occurred in the foreground (while a process waited for data to be written).</td>
</tr>
<tr>
<td># Index bytes</td>
<td>Number of bytes read from .IND files.</td>
<td>Number of bytes written to .IND files.</td>
</tr>
<tr>
<td># Data bytes</td>
<td>Number of bytes read from .PAG files.</td>
<td>Number of bytes written to .PAG files.</td>
</tr>
<tr>
<td>Av byte/dat I/O</td>
<td>Average byte size of data reads. A high number is preferable.</td>
<td>Average byte size of data writes. A high number is preferable.</td>
</tr>
</tbody>
</table>

Kernel Cache Statistics

The Kernel Cache Statistics table assists in sizing database caches. Make caches only as large as necessary for optimum performance. Note that cache sizes are listed in order of importance: index, data file, data.

- The index cache is a buffer in memory that holds index pages.
- The data file cache is a physical data cache layer designed to hold compressed data blocks.
- The data cache is a buffer in memory that holds data pages.

The Kernel Cache Statistics table assists you in determining how to size Essbase caches. The Essbase kernel uses these caches to manage memory. As a rule, data that is useful to processes
should be kept in memory rather than on a disk. Replacements occur when something needed for a process is moved from disk to cache and something in the cache is thrown away to make room for it.

Use this table to help you decide how to size your caches. Make the caches as small as possible; however, if replacements for a cache are greater than 0, the cache may be too small. Appropriate sizing of the Index cache is the most important for optimal performance; appropriate sizing of the Data cache is the least important.

Persistence/Scope of this table: **long/db**

<table>
<thead>
<tr>
<th>Kernel Cache Statistic</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td># Blocks</td>
<td>Number of blocks actually in the Index cache, Data file cache, and Data cache. The block size multiplied by the number of blocks equals the amount of cache memory being used. Compare this figure to the block estimation you initially used to size your database (see the Oracle Essbase Database Administrator's Guide).</td>
</tr>
<tr>
<td># Replacements</td>
<td>Number of replacements per cache. Replacements occur when data moves from disk to cache and something in the cache is deleted to make room. If the number of replacements is low or zero, the cache might be set too large.</td>
</tr>
<tr>
<td># Dirty repl</td>
<td>Number of dirty replacements per cache. A dirty replacement is one that requires a write to the disk before cache memory can be reused by a process. The data needed for the process is “dirty” because it was modified in memory but not saved to the disk. Dirty replacements are inefficient and expensive. They indicate that a cache might be too small.</td>
</tr>
<tr>
<td>Log blk xfer in</td>
<td>Number of logical blocks transferred to the Data file cache and Data cache (this measurement is not applicable for the Index cache.) If you are changing cache sizes, it may be instructive to study this statistic and note changes in data traffic.</td>
</tr>
</tbody>
</table>

**Cache End-Transaction Statistics**

The **Cache End-Transaction Statistics** table measures DBWriter efficiency. DBWriter is an asynchronous (or no-wait) Essbase thread, which searches the cache finding information that needs to be written to a disk.

The Cache End-Transaction Statistics table shows the cleanup state at the end of a transaction. These statistics are designed to measure DBWriter efficiency. DBWriter is an asynchronous (or no-wait) thread, which searches the cache and finds information that needs to be written to a disk. Because the DBWriter only operates during idle times, measuring the DBWriter activity can give an idea of the amount of idle time. This number should be high, indicating that the DBWriter had enough idle time to support the database effectively. Keep these statistics available for diagnostic purposes, in case you need to call technical support.

Persistence/Scope of this table: **med/db**

**Database Synchronous Input/Output Statistics**

The **Database Synchronous I/O** table tracks synchronous input/output. Synchronous means that the thread or program waits for the I/O to finish before proceeding. The Tave (us) column shows the bandwidth (bytes/Ttotal).
Persistence/Scope of this table: **med/db**

<table>
<thead>
<tr>
<th><strong>Database Sync I/O</strong></th>
<th><strong>Count</strong></th>
<th><strong>Bytes</strong></th>
<th><strong>Total (ms)</strong></th>
<th><strong>Tave (ms)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Index Read</td>
<td>Number of times the OS went to the disk to read a .IND file.</td>
<td>Number of bytes the OS read from .IND files.</td>
<td>Total amount of time the OS took to complete index reads.</td>
<td>Average amount of time the OS took to complete one index read. This equals Total (ms)/Count.</td>
</tr>
<tr>
<td>Index Write</td>
<td>Number of times the OS wrote information to a .IND file.</td>
<td>Number of bytes the OS wrote to .IND files.</td>
<td>Total amount of time the OS took to complete index writes.</td>
<td>Average amount of time the OS took to complete one index write. This equals Total (ms)/Count.</td>
</tr>
<tr>
<td>Data Read</td>
<td>Number of times the OS went to the disk to read to a .PAG file.</td>
<td>Number of bytes the OS read from .PAG files.</td>
<td>Total amount of time the OS took to complete data reads.</td>
<td>Average amount of time the OS took to complete one data read. This equals Total (ms)/Count.</td>
</tr>
<tr>
<td>Data Write</td>
<td>Number of times the OS wrote information to a .PAG file.</td>
<td>Number of bytes the OS wrote to .PAG files.</td>
<td>Total amount of time the OS took to complete data writes.</td>
<td>Average amount of time the OS took to complete one data write. This equals Total (ms)/Count.</td>
</tr>
</tbody>
</table>

**Note:** Bandwidth = bytes/Ttotal. Average bandwidth = bytes/Tave.

**Database Asynchronous Input/Output Statistics**

The Database Asynchronous I/O table tracks asynchronous input/output. Asynchronous means no-wait: the I/O happens at an unknown time, while the program does other things. The effective bandwidth for the application is determined by bytes/Twait.

Persistence/Scope of this table: **med/db**
### Database Asynch I/O

<table>
<thead>
<tr>
<th>Category</th>
<th>Count Description</th>
<th>Bytes Description</th>
<th>Time Elapsed</th>
<th>Average Time</th>
<th>Wait Time</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Index Read</strong></td>
<td>An occurrence of the OS reading index information from a .IND file on the disk.</td>
<td>Number of times the OS went to the disk to read a .IND file.</td>
<td>Number of bytes the OS read from .IND files.</td>
<td>Time elapsed between request for an index read, and verification of its completion.</td>
<td>Average time elapsed between requests for index reads, and verification of their completion.</td>
</tr>
<tr>
<td><strong>Index Write</strong></td>
<td>An occurrence of the OS writing index information to a .IND file.</td>
<td>Number of times the OS wrote information to a .IND file.</td>
<td>Number of bytes the OS wrote to .IND files.</td>
<td>Time elapsed between request for an index write, and verification of its completion.</td>
<td>Average time elapsed between requests for index writes and verification of their completion.</td>
</tr>
<tr>
<td><strong>Data Read</strong></td>
<td>An occurrence of the OS reading information from a .PAG file on the disk.</td>
<td>Number of times the OS went to the disk to read to a .PAG file.</td>
<td>Number of bytes the OS read from .PAG files.</td>
<td>Time elapsed between request for a data read, and verification of its completion.</td>
<td>Average time elapsed between requests for data reads, and verification of their completion.</td>
</tr>
<tr>
<td><strong>Data Write</strong></td>
<td>An occurrence of the OS writing data to a .PAG file.</td>
<td>Number of times the OS wrote information to a .PAG file.</td>
<td>Number of bytes the OS wrote to .PAG files.</td>
<td>Time elapsed between request for a data write, and verification of its completion.</td>
<td>Average time elapsed between requests for data writes and verification of their completion.</td>
</tr>
</tbody>
</table>

**Note:** (1) Because asynchronous I/O is ideally no-wait, and happens at an unknown time, you cannot determine how long reads and writes actually took to complete. (2) You cannot determine the bandwidth (bytes per microsecond). Effective bandwidth, as seen by the application, is determined by bytes/Twait.

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**Dynamic Calc Cache Statistics**

The **Dynamic Calc Cache table** shows where blocks that are expanded to contain calculated members (BigBlks) are calculated: in dynamic calculator cache (DCC), or in regular memory (nonDCC). By viewing the total number of big blocks allocated versus the maximum number of big blocks held simultaneously, and by analyzing block wait statistics, you can determine the efficiency of your dynamic calc cache configuration settings. For more information, refer to the “DYNCALCCACHEMAXSIZE” on page 487 setting in the essbase.cfg documentation.
<table>
<thead>
<tr>
<th>Dynamic Calc Cache Statistic</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BigBlks Allocated</td>
<td>The number of big block allocations that have been requested, so far, irrespective of where the system got the memory (DC cache or regular). For three queries Q1, Q2, and Q3 executed, requiring 25, 35, and 10 big blocks, respectively, BigBlks Allocated would be 70. This does not mean that Q1 needed all 25 blocks at the same time. It may have used some blocks for a while, then released some of them, and so on, until the query finished and released all remaining blocks (returned to DC cache or regular memory).</td>
</tr>
<tr>
<td>Max BigBlks Held</td>
<td>The maximum number of big blocks simultaneously held, so far. For each query Qi executed so far, there will be a number Ni, which gives the maximum number of big blocks that the query needed to have at the same time (includes both DCC and regular memory blocks). MaxBigBlksHeld under the Total column is the maximum over all values of Ni. The values under the DCC and non-DCC columns are similar except that they restrict themselves to the maximum blocks held in the respective portions of memory.</td>
</tr>
<tr>
<td>DCC Blks Waited</td>
<td>The number of dynamic calculator blocks that the system had to wait for.</td>
</tr>
<tr>
<td>DCC Blks Timeout</td>
<td>The number of times that the &quot;DYNCALCCACHEBLKTIMEOUT&quot; on page 484 configuration setting was exceeded.</td>
</tr>
<tr>
<td>DCC Max ThdQLen</td>
<td>If the configuration setting, &quot;DYNCALCCACHEWAITFORBLK&quot; on page 489 is TRUE, it is possible for queries (really, the threads executing them) to sit in a queue, waiting for DC cache memory to be freed by other threads currently using the memory. DCC MaxThdQLen tells how long this queue ever got (maximum number of threads simultaneously waiting), giving a sense of how critical the dynamic calculator cache became as a resource.</td>
</tr>
</tbody>
</table>

MaxL Script Example

The following MaxL script creates an output file of performance statistics tables.

```maxl
/* to execute: 
essmsh scriptname username password */
login $1 $2;
spool on to 'c:\mxlouts\pstatsouts.txt';
alter database sample.basic set performance statistics enabled;
execute calculation
   'SET MSG ERROR;
   CALC ALL;'
on Sample.basic;
alter database sample.basic set performance statistics mode to medium persistence server scope;
query database sample.basic get performance statistics kernel_io table;
alter database sample.basic set performance statistics mode to long persistence database scope;
query database sample.basic get performance statistics kernel_cache table;
alter database sample.basic set performance statistics mode to medium persistence database scope;
query database sample.basic get performance statistics end_transaction table;
query database sample.basic get performance statistics database_synch table;
query database sample.basic get performance statistics database_asynch table;
spool off;
logout;
```
Listed By Verbs

alter
create
deploy
display
drop
execute
export
grant
import
query
refresh

Alter
application
database
drillthrough
filter
group
object
partition
session
system					
tablespace
trigger
user

Create
application
calculation
database
drillthrough
filter
user
variable

**Drop**
application
calculation
database
drillthrough
filter
function
group
location alias
lock
macro
object
partition
trigger
trigger spool
user

**Execute**
aggregate process
aggregate selection
aggregate build
allocation
calculation
custom calculation (aggregate storage)

**Export**
data
LRO
outline
security_file
Grant
Grant

Import
data
dimensions
lro

Query
database
database backup archive file
application (for aggregate storage)
application (for block storage)

Refresh
custom definitions
outline
replicated partition

Listed by Objects
aggregate_build
aggregate_process
aggregate_selection
application
archive_file
calculation
custom definitions
data
database
dimensions
disk volume
drillthrough
filter
function
group
location alias
lock
lro
macro
object
outline
partition
privilege
security_file
session
system		tables pace
trigger
trigger spool
user
variable

**Aggregate Build**
execute aggregate build

**Aggregate Process**
execute aggregate process

**Aggregate Selection**
execute aggregate selection

**Allocation**
execute allocation

**Application**
alter
create
display
drop

query (for aggregate storage only)

**Archive_file**
query

**Calculation**
create
display
drop
execute
execute custom (aggregate storage)

**Custom Definitions**
create function
create macro
display function
display macro
drop function
drop macro
refresh custom definitions

**Data**
export
import

**Database**
alter
create
display
drop
query

**Dimensions**
import

**Disk Volume**
alter database (to add, drop, and set)
display disk volume

**Drillthrough**
alter
create
display
drop

**Filter**
alter filter
create filter
display filter
display filter row
drop filter

**Function**
create
display
drop
refresh

**Group**
alter
alter user (to add or remove group members)
create
display


**Location Alias**
create
display
drop

**Lock**
display
drop

**LRO**
export
import

**Macro**
create
display
drop
refresh

**Object**
alter
display
drop

**Outline**
create
refresh
see also “Dimensions” on page 697

**Partition**
alter
create
display
drop
refresh replicated
refresh outline for outline synchronization

**Privilege**
display
grant

**Security File**
Export Security File

**Session**
alter
display
alter system to stop a session

**System**
alter
display

**Tablespace**
alter
display

**Trigger**
alter
create or replace
display
drop
**Trigger Spool**
display
drop

**User**
alter
create
display
drop
grant to assign permissions

**Variable**
display variable
To add, drop, or set substitution variables:
alter application
alter database
alter system

**MaxL Statement Reference**
Consult the Contents pane for an alphabetical list of MaxL statements, or see “Listed By Verbs” on page 691.

**Alter Application**
Click here for aggregate storage version
Change application-wide settings.
Permission required: Application Manager.
Use *alter application* to change the following application-wide settings:

<table>
<thead>
<tr>
<th><strong>Keyword</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>set lock_timeout</td>
<td>Change the maximum time interval that locks on data blocks can be held by Smart View (or other grid clients') users. When a client data-block lock is held for more than the time out interval, Essbase removes the lock and the transaction is rolled back. The default interval is 60 minutes. This setting affects all databases in the application.</td>
</tr>
<tr>
<td>set max_lro_file_size</td>
<td>Specify a maximum file size for Linked Reporting Objects (LRO) attachments. There is no default. There is no minimum or maximum value, excepting limitations imposed by your system resources.</td>
</tr>
<tr>
<td>set minimum permission</td>
<td>Grant all users a minimum level of permission to all databases in the application. Users with higher permissions than this minimum are not affected.</td>
</tr>
<tr>
<td>Keyword</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>set variable</td>
<td>Assign a string value to an existing substitution-variable name. If the variable does not exist, first create it using <code>add variable</code>. Substitution variables may be referenced by calculations in the application.</td>
</tr>
<tr>
<td>set cache_size</td>
<td>Set the maximum size to which the application cache may grow. The application cache grows dynamically until it reaches this limit. The application cache is used for hybrid aggregation in block storage databases, and can help you manage memory usage for retrievals. This setting takes effect after you restart the application. To check the currently set limit, use the following MaxL statement: <code>query application APP-NAME get cache_size;</code></td>
</tr>
<tr>
<td>set type</td>
<td>Migrate an application to Unicode mode. Migration to Unicode mode cannot be reversed.</td>
</tr>
<tr>
<td>set [lease_manager]</td>
<td>Set the message level for application-related messages written to the Essbase application log files or Lease Manager log files.</td>
</tr>
<tr>
<td>message_level</td>
<td></td>
</tr>
<tr>
<td>load database</td>
<td>Start (by loading into memory) an idle database. The statement will fail if you do not have at least read privilege for the database.</td>
</tr>
<tr>
<td>unload database</td>
<td>Stop (by unloading from memory) an active database. The statement will fail if you do not have at least read privilege for the database.</td>
</tr>
<tr>
<td>enable startup</td>
<td>Permit all users to load (start) the application. This only applies to users who have at least read privilege for the application. Startup is enabled by default.</td>
</tr>
<tr>
<td>disable startup</td>
<td>Prevent all users from loading (starting) the application. Startup is enabled by default.</td>
</tr>
<tr>
<td>enable autostartup</td>
<td>Start the application automatically when Essbase Server starts. By default, autostartup is disabled.</td>
</tr>
<tr>
<td>disable autostartup</td>
<td>Do not start the application automatically when Essbase Server starts. By default, autostartup is disabled.</td>
</tr>
<tr>
<td>enable commands</td>
<td>Allow all users with sufficient permissions to make requests to databases in the application. Use to reverse the effect of <code>disable commands</code>. The disable commands setting remains in effect only for the duration of your session. By default, commands are enabled.</td>
</tr>
<tr>
<td>disable commands</td>
<td>Prevent all requests to databases in the application, including non-data-specific requests, such as viewing database information or changing database settings. All users are affected, including other administrators. Administrators are affected by this setting as a safety mechanism to prevent accidental updates to databases during maintenance operations. This setting remains in effect only for the duration of your session. The setting takes effect immediately, and affects users who are currently logged in, as well as users who log in later during your session.</td>
</tr>
</tbody>
</table>

**Caution!** If performing maintenance operations that require disabling commands, you must make those maintenance operations within the same session and the same script as the one in which commands were disabled.

By default, commands are enabled.

| enable updates     | Allow all users with sufficient permissions to make requests to databases in the application. Use to reverse the effect of `disable updates`. Disabling updates remains in effect only for the duration of your session. By default, updates are enabled. |

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<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>disable updates</td>
<td>Prevent all users from making requests to databases in the application. Use before performing update and maintenance operations. The disable updates setting remains in effect only for the duration of your session.</td>
</tr>
<tr>
<td></td>
<td><strong>Caution!</strong> If performing maintenance operations that require updates to be disabled, you must make those maintenance operations within the same session and the same script as the one in which updates were disabled. By default, updates are enabled.</td>
</tr>
<tr>
<td>enable connects</td>
<td>Allow all users with sufficient permissions to make connections to databases in the application. Use to reverse the effect of disable connects. By default, connections are enabled.</td>
</tr>
<tr>
<td>disable connects</td>
<td>Prevent any user with a permission lower than Application Managers from making connections to the databases that require the databases to be started. This includes starting the databases or performing the ESSCMD SELECT command on the databases. Database connections remain disabled for all databases in the application, until the application setting is re-enabled by the administrator. By default, connections are enabled.</td>
</tr>
<tr>
<td>enable security</td>
<td>When security is disabled, Essbase ignores all security settings in the application and treats all users as Application Managers. By default, security is enabled.</td>
</tr>
<tr>
<td>disable security</td>
<td>When security is disabled, Essbase ignores all security settings in the application and treats all users as Application Managers. By default, security is enabled.</td>
</tr>
<tr>
<td>comment</td>
<td>Enter an application description (optional). The description can contain up to 80 characters.</td>
</tr>
<tr>
<td>clear logfile</td>
<td>Delete the application log located in the application directory. A new log is created for entries recording subsequent application activity.</td>
</tr>
<tr>
<td>add variable</td>
<td>Create an application-level substitution variable by name, and optionally assign a string value for the variable to represent. You can assign or change the value later using set variable. A substitution variable acts as a global placeholder for information that changes regularly. Substitution variables may be referenced by calculations and report scripts. If substitution variables with the same name exist at server, application, and database levels, the order of precedence for the variables is as follows: a database level substitution variable supersedes an application level variable, which supersedes a server level variable.</td>
</tr>
<tr>
<td>drop variable</td>
<td>Remove a substitution variable and its corresponding value from the application.</td>
</tr>
<tr>
<td>rename to</td>
<td>Rename the application. When you rename an application, the application and the application directory (ARBORPATH\App\application_name) are renamed.</td>
</tr>
</tbody>
</table>
| reregister     | Re-establish this Essbase application as a Shared Services application. This statement reregisters the application with Shared Services, in the event that you have:  
|                | ● deleted the application from Shared Services but kept using it in Essbase.  
|                | ● changed the Essbase Administration Server location, name, or port number.  
|                | ● changed the Essbase Server name or port number.  
<p>|                | To issue this statement, you must be an Administrator or Application Manager.                                                              |</p>
<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all reregister</td>
<td>Re-establish this and all other Essbase applications as Shared Services applications. This statement reregisters the applications with Shared Services, in the event that you have:</td>
</tr>
<tr>
<td></td>
<td>● deleted the application from Shared Services but kept using it in Essbase.</td>
</tr>
<tr>
<td></td>
<td>● changed the Essbase Administration Server location, name, or port number.</td>
</tr>
<tr>
<td></td>
<td>● changed the Essbase Server name or port number.</td>
</tr>
<tr>
<td></td>
<td>To issue this statement, you must be an Administrator or Application Manager on all applications; for any applications for which you do not have sufficient permissions, the re-registration will be skipped with a warning.</td>
</tr>
</tbody>
</table>

**Example**

```plaintext
alter application Sample set minimum permission read;

Grants all users read access to all databases in the Sample application. Users can retrieve data values and run report scripts.

alter application Sample disable commands;

Prevents all users from making requests to the application scope. Use this statement before performing application-wide update and maintenance operations.

alter application Acme set variable Current_month July;

Assigns the string value July to the substitution variable "Current_month." "Current_month" may be referenced by calculations in the Acme application.
```

**Alter Database**

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Select a subset of `alter database`:

- Alter Database enable | disable
- Alter Database Set
- Alter Database (Misc)
- Alter Database (disk volumes)

**Alter Database enable | disable**

[Click here for aggregate storage version](#)

Change database-wide settings.

Permission required: create_application.
Use **alter database** to change the following database-wide settings:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>enable two_pass_calc</strong></td>
<td>Recalculate (after a default calculation) database outline members tagged as Two Pass, so they will be recalculated after other database members have been consolidated. This setting is enabled by default. Members that usually require a two-pass calculation are those members of the Accounts dimension that are calculated by a formula rather than by hierarchical consolidation. These members are typically ratios, such as &quot;Profit % Sales&quot; (profit percentage of sales), which has a member formula. This setting is ignored during a calculation script; it is used only during a default calculation. To use two-pass calculation in a non-default calculation, use the CALC TWOPASS command in the calculation script.</td>
</tr>
<tr>
<td><strong>disable two_pass_calc</strong></td>
<td>Do not recalculate database outline members tagged as Two Pass after a default calculation. Two-pass calculation is enabled by default.</td>
</tr>
<tr>
<td><strong>enable aggregate_missing</strong></td>
<td>Consolidate #MISSING values along with the regular database consolidation. If you never load data at parent levels, aggregating #MISSING values can improve calculation performance, depending on the ratio between upper level blocks and input blocks in the database. If this setting is enabled and you load values directly at the parent level, these parent-level values will be replaced by the results of the consolidation, even if the results are #MISSING values. The aggregate missing setting is disabled by default.</td>
</tr>
<tr>
<td><strong>disable aggregate_missing</strong></td>
<td>Do not consolidate #MISSING values. This is the default. Data that is loaded at parent levels is not overwritten by #MISSING values of children below it. However, if any of the child data values are not #MISSING, these values are consolidated and overwrite the parent values.</td>
</tr>
<tr>
<td><strong>enable startup</strong></td>
<td>Enable users to start the database directly or as a result of requests requiring the database to be started. Startup is enabled by default.</td>
</tr>
<tr>
<td><strong>disable startup</strong></td>
<td>Prevent all users from starting the database directly or as a result of requests that would start the database. Startup is enabled by default.</td>
</tr>
<tr>
<td><strong>enable autostartup</strong></td>
<td>Automatically start the database when the application to which it belongs starts. Autostartup is enabled by default. This setting is applicable only when startup is enabled.</td>
</tr>
<tr>
<td><strong>disable autostartup</strong></td>
<td>Prevent automatic starting of the database when the application to which it belongs starts. Autostartup is enabled by default.</td>
</tr>
<tr>
<td><strong>enable compression</strong></td>
<td>Enable data compression. By default, Bitmap compression is enabled. To switch to a different compression type, use <strong>alter database set compression</strong>.</td>
</tr>
</tbody>
</table>
### Keywords and Descriptions

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>disable compression</td>
<td>Disable data compression. By default, Bitmap compression is enabled.</td>
</tr>
<tr>
<td>enable create_blocks</td>
<td>Allow Essbase to create a data block when you assign a non-constant value to a member combination for which a data block does not already exist. Block creation on equation is disabled by default, because it can result in a very large database. When you assign a constant to a member on a sparse dimension, you do not need to enable Create Blocks on Equation, because Essbase would create a data block anyway. For example, &quot;West = 5; &quot; would result in the creation of data blocks, with or without the Create Blocks on Equation setting enabled. You do need to check this option if you want blocks created when you assign anything other than a constant to a member on a sparse dimension for which a data block does not already exist. For example, if no data exists for Actuals, a member of a sparse Scenario dimension, then you need to enable Create Blocks on Equation in order to perform the following allocation: 2002Forecast = Actuals * 1.05; .</td>
</tr>
<tr>
<td>disable create_blocks</td>
<td>Turn off the Create Blocks on Equation setting. The setting is disabled by default.</td>
</tr>
<tr>
<td>enable committed_mode</td>
<td>Set the database isolation level to committed access, meaning that only one transaction at a time can update data blocks. Essbase holds read/write locks on all data blocks until the transaction and the commit operations are performed. If pre-image access is enabled, users (or transactions) can still have read-only access to data at its last commit point. For more information, see the enable pre_image_access setting. The default isolation-level mode is Uncommitted. In uncommitted mode, Essbase allows transactions to hold read/write locks on a block-by-block basis. Essbase releases a block after it is updated, but does not commit blocks until the transaction is completed, or until a specified number of blocks or rows (a &quot;synchronization point&quot;) has been reached. You can set this limit using the implicit_commit settings.</td>
</tr>
<tr>
<td>disable committed_mode</td>
<td>Turn off the Committed Mode setting, reverting to the default isolation level of Uncommitted for the database.</td>
</tr>
</tbody>
</table>

**Note:** Smart View and other grid clients' data-update operations are always in committed mode.

Enable pre-image access: Allow users (or other transactions) read-only access to data at its last commit point, when the database is in committed mode (meaning that data blocks may be locked for the duration of a concurrent transaction). Pre-image access is enabled by default when the database is in committed mode. See also the enable committed_mode setting.

Disable pre-image access: Disable pre-image access, disallowing read-only access to locked blocks of data at their last commit point (this setting is only applicable while the database is in committed mode). Pre-image access is enabled by default when the database is in committed mode.
<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable cache_pinning</td>
<td>Enable cache memory locking, which locks the memory used for the index cache, data file cache, and data cache into physical memory, giving the Essbase Server kernel priority use of system RAM. Cache memory locking improves performance for a database because the system memory manager does not need to swap the memory used by the caches when swapping the memory used by the Essbase Server. The setting takes effect after you restart the database. By default, cache memory locking is disabled. To use cache memory locking, you must be using direct I/O (buffered I/O is the default). For more information, see the Oracle Essbase Technical Reference documentation for the DIRECTIO setting for essbase.cfg.</td>
</tr>
<tr>
<td>disable cache_pinning</td>
<td>Disable cache memory locking, reverting to the default.</td>
</tr>
</tbody>
</table>

**Example**

```sql
alter database Sample.Basic enable cache_pinning;

   Locks database cache pages in physical memory so that the operating system will not page them out while the database is still using them.
```

```sql
alter database Sample.Basic disable two_pass_calc;

   Prevents recalculation (after a default calculation) of members tagged as Two Pass.
```

**Alter Database Set**

[Click here for aggregate storage version](#)

Change database-wide settings.

Permission required: create_application.
Use `alter database set` to change the following database-wide settings:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>retrieve_buffer_size</td>
<td>Change the database retrieval buffer size. This buffer holds extracted row data cells before they are evaluated by the RESTRICT or TOP/BOTTOM Report Writer commands. The default size is 10 KB (on 32-bit platforms), and 20 KB (on 64-bit platforms). The minimum size is 2 KB. Increasing the size may improve retrieval performance.</td>
</tr>
<tr>
<td>retrieve_sort_buffer_size</td>
<td>Change the database retrieval sort buffer size. This buffer holds data until it is sorted. The Report Writer and Essbase Query Designer use the retrieval sort buffer. The default size is 10 KB (on 32-bit platforms), and 20 KB (on 64-bit platforms). The minimum size is 2 KB. Increasing the size may improve retrieval performance.</td>
</tr>
<tr>
<td>data_cache_size</td>
<td>Change the data cache size. The data cache is a buffer in memory that holds uncompressed data blocks. Essbase Server allocates memory to the data cache during data load, calculation, and retrieval operations as needed. The default and minimum size is 3072 KB.</td>
</tr>
<tr>
<td>Keyword</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>data_file_cache_size</td>
<td>Change the data file cache size. The data file cache is a buffer in memory that holds compressed data files (.PAG files). Essbase Server allocates memory to the data file cache during data load, calculation, and retrieval operations as needed. The data file cache is not used when buffered I/O is used; you must use direct I/O to use the data file cache. The default size is 32 MB.</td>
</tr>
<tr>
<td>index_cache_size</td>
<td>Change the index cache size. The index cache is a buffer in memory that holds index pages. When a data block is requested, Essbase looks at the index pages in the index cache to find its location on disk.</td>
</tr>
<tr>
<td></td>
<td>- Minimum value: 1 MB (1,048,576 bytes)</td>
</tr>
<tr>
<td></td>
<td>- Maximum value:</td>
</tr>
<tr>
<td></td>
<td>- 32-bit operating system: 4 GB</td>
</tr>
<tr>
<td></td>
<td>- 64-bit operating system: 256 TB</td>
</tr>
<tr>
<td></td>
<td>- Default value:</td>
</tr>
<tr>
<td></td>
<td>- Buffered I/O: 1 MB (1,048,576 bytes)</td>
</tr>
<tr>
<td></td>
<td>- Direct I/O: 10 MB</td>
</tr>
<tr>
<td></td>
<td>Buffered I/O is the default for this release.</td>
</tr>
<tr>
<td>currency_database</td>
<td>Link the database with a currency database. A currency database enables you to convert currency values in a database from one currency into another currency.</td>
</tr>
<tr>
<td>currency_member</td>
<td>Specify the member to use as a default value in currency conversions. You can specify any valid member of the dimension defined as &quot;Currency Type&quot; in the currency database.</td>
</tr>
<tr>
<td>currency_conversion</td>
<td>Specify whether during currency conversion, the calculation method multiplies the currency database exchange rates with the main database values, or that the currency database exchange rates are divided by the main database values.</td>
</tr>
<tr>
<td>minimum_permission</td>
<td>Set a level of permission that all users or groups can have to the database. Users or groups with higher granted permissions than the minimum permission are not affected.</td>
</tr>
<tr>
<td>compression_rle</td>
<td>Set the database to use run-length encoding (RLE) compression. Essbase compresses repetitive, consecutive values, including zeros and #MISSING values. The default compression type is bitmap.</td>
</tr>
<tr>
<td></td>
<td>When a compressed data block is brought into the data cache, Essbase expands the block to its full size, regardless of the scheme that was used to compress it.</td>
</tr>
<tr>
<td>compression_bitmap</td>
<td>Set the database to use bitmap compression, the default. Essbase stores only non-missing values and uses a bitmapping scheme.</td>
</tr>
<tr>
<td></td>
<td>When a compressed data block is brought into the data cache, Essbase expands the block to its full size, regardless of the scheme that was used to compress it.</td>
</tr>
<tr>
<td>Keyword</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>compression zlib</td>
<td>Set the database to use ZLIB compression. When a compressed data block is brought into the data cache, Essbase expands the block to its full size, regardless of the scheme that was used to compress it. If your database allows or requires &quot;Aggregate Missing Values&quot; setting set to YES, then you may want to consider using ZLIB as the compression scheme. ZLIB particularly works well on such databases compared to other compression schemes. However, changing the aggregate missing values setting may have an impact on calculation results - see the Oracle Essbase Database Administrator’s Guide. Consider using ZLIB only if you have already determined that the setting should be YES for other reasons.</td>
</tr>
<tr>
<td>lock_timeout</td>
<td>Change the interval to wait for blocks to be unlocked when the database is in committed mode. If a transaction request is made that cannot be granted in the allotted time, the transaction is rolled back until a lock can be granted. <strong>Note:</strong> Smart View and other grid clients' data-update operations are always in committed mode.</td>
</tr>
<tr>
<td>implicit_commit after &lt;number&gt; blocks</td>
<td>When uncommitted access is enabled, set the frequency at which Essbase commits data blocks (after the specified number of blocks has been reached). The default frequency, if unspecified, is 3000, and may adjust dynamically during a calculation. If Essbase Server runs on Oracle Exalytics In-Memory machine, then for calculations and data load requests, the commit happens at the end of the request, and the default frequency of 3000 (or any other value specified by &lt;number&gt;) is ignored.</td>
</tr>
<tr>
<td>io_access_mode</td>
<td>Change the input/output setting you wish to use for the database. The change takes effect the next time the database is started. Buffered I/O uses the file system's buffer cache, and is the default. Direct I/O bypasses the file system's buffer cache, and is able to perform asynchronous, overlapped I/Os, providing faster response time and more potential to optimize cache sizes for databases. If you set a database to use direct I/O, Essbase will attempt to use direct I/O each time the database is started. If direct I/O is not available on your platform at the time the database is started, Essbase will use buffered I/O, which is the default.</td>
</tr>
<tr>
<td>variable</td>
<td>Change the value of an existing substitution variable on the database. The value must not exceed 256 bytes. It may contain any character except a leading ampersand (&amp;).</td>
</tr>
<tr>
<td>default calculation</td>
<td>Change the default calculation (which, by default, is CALC ALL;) to the stored calculation script you specify, or to an anonymous (unstored) calculation string.</td>
</tr>
<tr>
<td>active alias_table</td>
<td>Set an alias table as the primary table for reporting and any additional alias requests. Only one alias table can be used at a time. This setting is user-specific; it only sets the active alias table for the user issuing the statement.</td>
</tr>
<tr>
<td>performance statistics enabled</td>
<td>Turn on performance-statistics gathering. You might do this when you want to tune the system, change hardware configuration, or monitor I/O. The measurement begins for current processes as soon as you enable it. Any subsequent queries for statistics return measurements spanning from the time of enablement to the time of the query. Performance statistics can be retrieved using query database.</td>
</tr>
<tr>
<td>Keyword</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
</tr>
</tbody>
</table>
| performance statistics disabled | Turn off performance-statistics gathering. This halts the collection of statistics; it does not prevent anyone from retrieving old statistics using `query database`.
| performance statistics mode to `<PST-SPEC>` | Reset performance statistics gathering for a specified persistence and scope. Each of the statistics tables available using `query database` has a pre-defined persistence and scope. When you use `set performance statistics mode`, you select the persistence and scope to reset, and the collecting of measurements starts over for the applicable tables.  

\[
<\text{PST-SPEC}> ::=  
\text{default} \quad \text{medium} \quad \text{long} \quad \text{persistence} \quad \text{all} \quad \text{scope} \quad \text{database} \quad \text{server} 
\]  

| note | Create an informational note about the database that Smart View or other grid client users can see from the login dialog box. For example, ‘Calc in progress: do not update.’ Database notes can be up to 64 kilobytes long. |

**Example**

```
alter database Sample.Basic set lock_timeout after 120;
```

Changes the number of seconds to wait for blocks to be unlocked. If a transaction request is made which cannot be granted in 120 seconds, the transaction is rolled back until a lock can be granted.

**Alter Database (Misc)**

Click here for aggregate storage version

Change database-wide settings.

Permission required: `create_application`. 
Use `alter database` to change the following database-wide settings:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>reset</td>
<td>Clear all data and linked-reporting objects from the database, but preserve the outline.</td>
</tr>
<tr>
<td>reset all</td>
<td>Clear all data, Linked Reporting Objects, and the outline.</td>
</tr>
<tr>
<td>reset data</td>
<td>Same as using <code>reset</code>.</td>
</tr>
<tr>
<td>Keyword</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>validate data to local logfile...</td>
<td>Create a local log file with all index combinations for which blocks contain invalid block headers.</td>
</tr>
<tr>
<td></td>
<td>Before using this MaxL statement, be sure that the server is not performing other operations, such as calculations or data loads; otherwise, an exception error may occur.</td>
</tr>
<tr>
<td></td>
<td>The recommended procedure is:</td>
</tr>
<tr>
<td></td>
<td>1. Disable all logins.</td>
</tr>
<tr>
<td></td>
<td>2. Forcibly log off all users.</td>
</tr>
<tr>
<td></td>
<td>3. Run the MaxL statement to get invalid block header information.</td>
</tr>
<tr>
<td></td>
<td>4. Repair invalid block headers, if applicable.</td>
</tr>
<tr>
<td></td>
<td>For example,</td>
</tr>
<tr>
<td></td>
<td>alter application sample disable connects;</td>
</tr>
<tr>
<td></td>
<td>alter system logout session on database sample.sample.basic;</td>
</tr>
<tr>
<td></td>
<td>alter database sample.basic validate data to local logfile 'invalid_blocks';</td>
</tr>
<tr>
<td></td>
<td>alter database sample.basic repair invalid_block_headers;</td>
</tr>
<tr>
<td>validate using...</td>
<td>Check the database for data and structural integrity. A file is created containing error messages if there are problems. The default error file is VALIDATE.LST in the application or database directory. For example:</td>
</tr>
<tr>
<td></td>
<td>Hyperion/products/Essbase/EssbaseServer/app/sample/basic/VALIDATE.LST.</td>
</tr>
<tr>
<td></td>
<td>The validate utility verifies the following:</td>
</tr>
<tr>
<td></td>
<td>● That blocks, sections, block type, block length, and floating-point numbers are valid.</td>
</tr>
<tr>
<td></td>
<td>● That the index contains an entry for every data block.</td>
</tr>
<tr>
<td></td>
<td>● That keys in the index page are matched with keys in the corresponding data blocks. Keys out of order indicate corruption.</td>
</tr>
<tr>
<td></td>
<td>● Structural integrity of index freespace information.</td>
</tr>
<tr>
<td></td>
<td>● Structural integrity of the LRO catalog.</td>
</tr>
<tr>
<td>repair invalid_block_headers</td>
<td>Delete all blocks that have invalid headers. Before using this statement, see validate data to local logfile.</td>
</tr>
<tr>
<td>recover freespace</td>
<td>Explicitly recover database freespace in the event of a crash or abnormal shutdown. Freespace recovery only occurs if you explicitly request it.</td>
</tr>
<tr>
<td>force restructure</td>
<td>Explicitly restructure the database to eliminate or reduce fragmentation. By default, this statement is run in serial. To enable parallel restructuring, see &quot;RESTRUCTURETHREADS&quot; on page 540.</td>
</tr>
</tbody>
</table>
Keyword | Description
--- | ---
load alias_table | Load an alias table from a file to the current database. The feeder file (FILE-NAME) must follow these rules:
- Must be correctly formatted.
- Must be located on the Essbase Server computer, not on a client computer.
- FILE-NAME must include the full path.

Sample contents of a feeder file for loading an alias table:

```
$ALT_NAME
"400-10"        Guava
"400-20"        Tangerine
"400-30"        Mango
$END
```

unload alias_table | Delete the specified alias table.

add variable | Create a database-level substitution variable by name, and optionally assign a string value for the variable to represent. You can assign or change the value later using `set variable`. A substitution variable acts as a global placeholder for information that changes regularly. Substitution variables may be referenced by calculations and report scripts.

If substitution variables with the same name exist at server, application, and database levels, the order of precedence for the variables is as follows: a database level substitution variable supersedes an application level variable, which supersedes a server level variable.

drop variable | Remove a substitution variable and its corresponding value from the database.

delete lro | Delete Linked Reporting Objects linked to the active database for a given user name or modification date.

unlock all objects | Unlock all objects on the database that are in use by a user or process.

begin archive to file | Prepare the database for backup by an archiving program, and prevent writing to the files during backup.

This statement requires the database to be started.

Begin archive achieves the following outcomes:
- Commits any modified data to disk.
- Switches the database to read-only mode. The read-only state persists, even after the application is restarted, until it is changed back to read-write using `end archive`.
- Reopens the database files in shared, read-only mode.
- Creates a file containing a list of files that need to be backed up. Unless a different path is specified, the file is stored in the database directory.

Begin archive and `end archive` do not perform the backup; they simply protect the database during the backup process.

end archive | Return the database to read-write mode after backing up the database files.

This statement requires the database to be started.

End archive achieves the following outcomes:
- Returns the database to read-write mode.
- Re-opens database files in exclusive, read-write mode.
<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>archive to file</td>
<td>Write a copy of the database files to a specified archive file that resides on the Essbase Server computer. Provide the full pathname to an existing directory and the name of the archive file. If only the archive file name is provided, Essbase writes the archive file to ARBORPATH/app. Oracle recommends writing the archive file to a different disk than the one where ARBORPATH is located and recommends that you name the file with a .arc extension. By default, Essbase creates a single, large archive file. The size of the archive file corresponds to the size of the database you back up and is limited only by disk space. If, however, in your environment you cannot use large files or the file-transfer tools that you use cannot handle large files, you can configure Essbase to split the archive file into multiple files, with each file no larger than 2 GB. In the essbase.cfg file, set the “SPLITARCHIVEFILE” on page 549 configuration setting to TRUE. Note: If you use the single-file configuration, Oracle recommends saving archive files to a file system that supports large files. For Windows, the file system must be formatted as NTFS. For UNIX, large file support must be enabled (for example, use the ULIMIT setting to specify a specific file size based on the size of the database or set ULIMIT to unlimited). See your operating system documentation. If you are backing up a database to an existing archive file, you must use the force archive to file grammar to overwrite the file. Caution! When using the force option, be sure that you no longer need the contents of the existing archive file.</td>
</tr>
<tr>
<td>force archive to file</td>
<td>Overwrite the contents of an existing archive file. Caution! When using the force option, be sure that you no longer need the contents of the existing archive file.</td>
</tr>
<tr>
<td>restore from file</td>
<td>Restore a database with the contents of the specified archive file. If you have configured Essbase to split the archive file into multiple files (&quot;SPLITARCHIVEFILE” on page 549), you only need to specify the file name of the main archive file that you want to restore (for example, samplebasic.arc). All archive files must reside in the same directory as the main archive file. Typically, you restore a database to the application and database from which the backup was taken and, therefore, the names of the backed up and restored database and its associated application are the same. If, however, the names of the backed up database and application are not the same as the application and database to which you are restoring data, you must use the force restore from file grammar.</td>
</tr>
</tbody>
</table>
Keyword | Description
--- | ---
restore from file...replace disk volume VOL-REPL | Restore a database with the contents of the specified archive file and replace the specified disk volumes.

Valid values for the VOL-REPL argument are a comma-separated list of volumes to replace:
- 'VOL1' with 'VOL2'
- 'VOL3' with 'VOL4'
- 'VOL5' with 'VOL6'

The number of disk volumes used and the space required for the restored database must be the same as for the database before it was backed up. Only the name of disk volumes can be different.

force restore from file... | Use the contents of the specified archive file to restore to a database that has different names than the archived database or its associated application. For example, you can use the archive file for Sample.Basic to restore to Sample.New (the database name is different), MyCompany.Basic (the application name is different), or MyCompany.New (both names are different).

replay transactions | Replays the database transactions that were logged after the last replay request was originally executed or after the last restored backup's time (whichever occurred later).

Transactions that are executed and logged after the restore operation are not replayed, unless you replay those transactions using their sequence IDs. After restoring a database, Oracle recommends that you finish replaying the transactions that were logged after the backup and before the restore and that are needed to fully recover the database; then you can continue executing new transactions.

replay transactions after LOG-TIME | Replays the transactions that were logged after the specified time. Enclose the TIME value in quotation marks; for example: '11_20_2007:12:20:00'

replay transactions using sequence_id_range ID-RANGE | Replays the transactions specified by a comma-separated list of sequence ID ranges. A range can consist of:
- A single transaction: \( n \) to \( n \); for example, 1 to 1
- Multiple transactions: \( x \) to \( y \); for example, 20 to 100

Each logged transaction is assigned a sequence ID, indicating the order in which the transaction was performed. To ensure the integrity of the restored data after a replay, Essbase enforces the replay of transactions in the same order in which they were originally performed. The order of sequence IDs are tracked across multiple replay commands.

**Note:** You can skip replaying a transaction if you are absolutely sure that the transaction results are not required to recover the database.

rename to | Rename the database. When you rename a database, the database directory is also renamed.

comment | Create a description of the database. The maximum number of characters is 80. This description is available to database administrators. To annotate the database for Smart View or other grid client users, use `set note`.

**Example**

```
alter database Sample.Basic archive to file /Hyperion/samplebasic.arc;
```
Backs up Sample.Basic database files to the specified archive file (samplebasic.arc) on Essbase Server.

```
alter database Sample.Basic force archive to file /Hyperion/samplebasic.arc;
```

In backing up the Sample.Basic database files, overwrites the existing archive file (samplebasic.arc).

```
alter database Sample.Basic restore from file /Hyperion/samplebasic.arc;
```

Restores the Sample.Basic database using the samplebasic.arc archive file.

```
alter database MyCompany.New force restore from file /Hyperion/samplebasic.arc;
```

Uses the archive file for the Sample.Basic database (samplebasic.arc) to restore the MyCompany.New database.

```
alter database Sample.Basic restore from file /Hyperion/samplebasic.arc replace disk volume 'C' with 'F', 'D' with 'G', 'E' with 'H';
```

Restores the Sample.Basic database using the samplebasic.arc archive file and replaces the specified disk volumes.

```
alter database Sample.Basic replay transactions using sequence_id_range 1 to 10,20 to 100;
```

Replays the transactions in the Sample.Basic database with sequence IDs 1 through 10 and 20 through 100.

```
alter database Sample.Basic replay transactions after '11_20_2007:12:20:00';
```

Replays all transactions that were logged after the specified time.

**See Also**

- Alter Database enable | disable
- Alter Database Set
- Alter Database (disk volumes)

**Alter Database (disk volumes)**

Add, delete, or modify a database disk volume. Disk volumes apply only to block storage databases.

Permission required: create_application.

**Syntax**

```
```
Use `alter database` to change the following database disk volume settings:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>add disk volume</td>
<td>Add a disk volume definition if you want to allocate storage across multiple volumes, or restrict space used on a volume. After adding a disk volume definition, use <code>set disk volume</code> to place restrictions on files stored on the disk volume.</td>
</tr>
<tr>
<td>drop disk volume</td>
<td>Remove a disk volume definition. If no disk volume is defined, data and index files are stored in the database directory (for example, <code>$ARBORPATH/app/sample/basic</code>).</td>
</tr>
<tr>
<td>set disk volume</td>
<td>Specify what types of files should be stored on the disk volume. You can allocate storage for index files, data files, or both. You can specify the maximum file size and partition size allowed on the disk volume.</td>
</tr>
</tbody>
</table>

**Notes**

Add a disk volume definition if you want to allocate storage across multiple volumes, or restrict space used on a volume. You can allocate storage for index files, data files, or both.

Files are written to the disk volume in the following directory structure:

```
.../app/app_name/db_name
```

For new files, disk volume settings become effective after the database is restarted. Previously existing files and volumes are not affected.

If no disk volume is defined, data and index files are stored in the database directory (for example, `$ARBORPATH/app/sample/basic`).

`File_size` is the maximum size an index or data file may attain. Default = 2G; minimum = 8192K (8M).

`Partition_size` is the maximum amount of disk space allocated to the volume. Default = unlimited.

**Example**

```
alter database Sample.Basic set disk volume c file_type index;
```

Changes the storage settings for Sample.Basic so that the alternate disk volume specified as the C: drive stores only index files.

**Alter Drillthrough**

Edit drill-through URL definitions used to link to content hosted on Oracle ERP and EPM applications.

**Syntax**

```
alter drillthrough URL-NAME from xml_file FILE-NAME

on { MEMBER-EXPRESSION, MEMBER-EXPRESSION } allow_merge
```

Use `alter drillthrough` to edit a URL definition in the following ways:
Keyword | Description
---|---
alter drillthrough | Edit drill-through URL metadata.

The number of drill-through URLs per database is limited to 255.

from xml_file | Indicate the path to the local URL XML file that defines the link information.

The URL XML is created by the ERP or EPM application that deployed the Essbase database. The XML contains the drill-through URL display name as well as a URL enabling the hyperlink from a cell to a Web interface to occur. For a sample URL XML file, see Create Drillthrough.

on {<member-expression>,...} | Define the list of drillable regions, using the same Essbase member-set calculation language that is used to define security filters. The list of drillable regions must be enclosed in {brackets}.

The number of drillable regions in a drill-through URL is limited to 256. The number of characters per drillable region is limited to 65536.

allow_merge | Optional: Merge the drillable-region definition instead of replacing it on update.

Example

\`\`alter drillthrough sample.basic.myURL from xml_file "C:/drillthrough/data/myfile.xml" on ('@Ichildren("Qtr1")', '@Ichildren("Qtr2")') allow_merge;\`

See Also

- create drillthrough
- display drillthrough
- drop drillthrough

### Alter Filter

Add filter rows to a database security filter. Filters control security for database objects. Use grant to assign filters to users and groups.

Minimum permission required: Database Manager.

**Syntax**

```plaintext
alter filter FILTER-NAME add no_access on MEMBER-EXPRESSION
```

Use alter filter in the following ways to edit a filter:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>alter filter ...add no_access on &lt;member-expression&gt;</td>
<td>Block access to a specified member combination.</td>
</tr>
<tr>
<td>Keyword</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>alter filter ... add read on &lt;member-expression&gt;</td>
<td>Provide read-only access to a specified member combination.</td>
</tr>
<tr>
<td>alter filter ... add write on &lt;member-expression&gt;</td>
<td>Provide write access to a specified member combination.</td>
</tr>
<tr>
<td>alter filter ... add meta_read on &lt;member-expression&gt;</td>
<td>Restrict access to siblings and ancestors of the member expression. In case of a filtering conflict, the MetaRead filtering overrides the other filter permissions. For more information about metadata filtering, see &quot;Metadata Filtering&quot; on page 1005.</td>
</tr>
</tbody>
</table>

**Notes**

- Filters created using MaxL must be valid. For information about filter syntax, see the *Oracle Essbase Database Administrator’s Guide*.
- MEMBER-EXPRESSION must be enclosed in single quotation marks. It can be a comma-separated list.

**Example**

```sql
alter filter sample.basic.filt7 add read on '@Descendants("East")';
```

Adds a row to a Sample.Basic filter named filt7, giving read-only access to the data for the eastern states.

```sql
alter filter sample.basic.filt8 add read on '@Descendants("East")', add write on '@Descendants("West")';
```

Adds two rows to a Sample.Basic filter named filt8.

### Alter Group

Rename a group or change the comment that describes the group.

Permission required: create_user.

**Syntax**

```
alter group GROUP-NAME rename to GROUP-NAME
    comment COMMENT-STRING
    set sss_mode
    revoke filter FILTER-NAME
```

Use **alter group** to change the following settings. See also **alter user**.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>rename to</td>
<td>Rename the group.</td>
</tr>
</tbody>
</table>
### Keywords and Description

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>comment</td>
<td>Create a description of the group.</td>
</tr>
<tr>
<td>set sss_mode</td>
<td>Migrate the group to EPM System security mode. This might be useful if the group migration failed using alter system. For more information on user management and security, see the Oracle Essbase Database Administrator’s Guide. Minimum permission required: Administrator.</td>
</tr>
<tr>
<td>revoke filter</td>
<td>Remove a filter assignment to this group. Privilege required: Application manager.</td>
</tr>
<tr>
<td>all set sss_mode</td>
<td>Same as set sss_mode, but for all groups.</td>
</tr>
</tbody>
</table>

**Note:** This statement does not remove filter assignments granted to individual users. To remove filter assignments to users, use Alter User.

### Notes
See Notes for Alter User.

### Example
```sql
alter group NewGroup rename to Recruit;
alter group Recruit comment 'This group is for the newly hired';
alter group MyGroup set sss_mode;
```

### Alter Object
Rename, unlock, or copy a database-related artifact.

#### Syntax
```sql
alter object OBJ-NAME of type <OBJ-TYPE> rename to OBJ-NAME-SINGLE
unlock
force
copy to OBJ-NAME
```

Use alter object to edit artifacts in the following ways:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>rename to</td>
<td>Rename the artifact. Not applicable for partition files, worksheets, or outlines.</td>
</tr>
<tr>
<td>unlock</td>
<td>Unlock an artifact that is locked by another user or process. Not applicable for alias tables and worksheets. Unlocking an artifact of type lro is applicable for stored linked-reporting objects only; that is, files with the .LRO extension.</td>
</tr>
<tr>
<td>copy to</td>
<td>Make a copy of a server artifact. Not applicable for partition files, worksheets, or outlines. If an artifact of the new name already exists, it is replaced.</td>
</tr>
</tbody>
</table>

**Note:** To unlock all database artifacts, use alter database DBS-NAME unlock all objects;
<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>force copy</td>
<td>Make a copy of a server artifact. Not applicable for partition files, worksheets, or outlines. If an artifact of the new name already exists, it is replaced. If an administrator issues the statement with the force keyword, locked artifacts are unlocked, copied, and re-locked.</td>
</tr>
</tbody>
</table>

Notes

- Specified artifacts must be persisted in the database directory.
- To copy artifacts that are not persisted in the database directory, use the EXPORT ESSCMD command.
- Attempting to rename or copy an artifact of type “partition_file” returns an error.

Example

```plaintext
alter object sample.basic.genref of type rules_file rename to 'level';

Renames a rules file in the Sample.Basic directory, named genref.rul, to level.rul.
```

```plaintext
alter object sample.basic.Calcdat of type text rename to 'c_data';

Renames a text file in the Sample.Basic directory, named calcdat.txt, to c_data.txt.
```

```plaintext
alter object samppart.company.company of type partition_file unlock;

Unlocks the partition definition file for the Samppart Company database.
```

**Alter Partition**

Fix invalid or dangling partition references. Change the authorized user who can connect to both databases. Change the name of an application, database, or host (in the event that something was renamed).

**Syntax**

```
alter
  partition DBS-NAME
to
from
at HOST-NAME
```

```
set
  connect as USER-NAME identified by PASSWORD
  hostname as HOST-NAME instead of HOST-NAME direction
  application as APP-NAME instead of APP-NAME direction
  database as DBS-STRING instead of DBS-STRING
```

Use `alter partition` to edit partitions in the following ways:
### Keyword Description

- **set connect** Change the user authorized to access the partitioned databases.

- **set hostname** Edit the partition definition to include the correct computer name that hosts the partition source database, target database, or both.

- **set application as** Edit the partition definition to include a corrected application name. This is useful if one application name was changed; if both application names changed, the partition definition cannot be corrected and you must re-create it.

- **set database as** Edit the partition definition to include a corrected database name. This is useful if one database name was changed; if both database names changed, the partition definition cannot be corrected and you must re-create it.

- **direction single** See Example 2 (Alter Partition), Example 4 (Alter Partition), , and Example 5 (Alter Partition).

- **direction all** See Example 3 (Alter Partition).

### Notes

- The first DBS-NAME is the local database, and the second DBS-NAME is the remote database.

- Directing a partition to the remote site means the current database is the source. Creating a partition from the remote site means the current database is the target.

- To change the authorized partition user, you must change the user for both partitioned databases, as shown in Example 1 (Alter Partition).

- If a partitioned host, application, or database is renamed, the rename does not propagate to the partition definition, so you must use alter partition to change the name in the partition definition. As shown in Examples 2 through 5, you must give the old name and the new name. If both names were changed, the partition definition is not recoverable, and must be re-created.

### Example

**Example 1 (Alter Partition)**

The following example changes the user authorized to access the partitioned databases.

```sql
/* To change authorized partition user on target, log in to source & then use: */
alter transparent partition app1.source to app2.target
   set connect as newuser identified by newpasswd;

/* To change authorized partition user on source, log in to target & then use: */
alter transparent partition app2.target from app1.source
   set connect as newuser identified by newpasswd;
```

**Example 2 (Alter Partition)**

In the following example, alter partition is used to fix a partition definition that became invalid when a host name (oldHost) changed and affected only one half of the partition definition (app2.target):
alter transparent partition app1.source to app2.target at oldHOST
   set hostname as newHOST instead of oldHOST direction single;

where direction single indicates that only the target host name needs to be changed.

Example 3 (Alter Partition)

In the following example, alter partition is used to fix a partition definition that became invalid when a host-name change affected both the source and the target, because both applications were on the same host:
alter transparent partition app1.source to app1.target at newHOST
   set hostname as newHOST instead of oldHOST direction all;

where direction all indicates that the host-name change needs to be made on both the target and source halves of the partition definition.

Example 4 (Alter Partition)

In the following example, alter partition is used to fix a partition definition that became invalid when the source application name (oldAppName) changed to newAppName, and affected only one half of the partition definition:
alter transparent partition newAppName.source to app2.target
   set application as newAppName instead of oldAppName direction single;

where direction single indicates that only one half of the partition definition needs to be corrected.

Note: The old application name can be discovered by issuing the display partition statement prior to correcting the partition definition.

Example 5 (Alter Partition)

In the following example, alter partition is used to fix a partition definition that became invalid when the source application name (oldAppName) changed to newAppName, and affected both halves of the partition definition because both partitioned databases were on the same application:
alter transparent partition newAppName.source to newAppName.target
   set application as newAppName instead of oldAppName direction all;

where direction single indicates both halves of the partition definition need to be corrected.

Alter Session

Set MDX display options.
Use `alter session` to change the following MDX output settings:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>default</td>
<td>Revert to the default MDX display settings in the MaxL Shell. The default settings are: alias ON, metadata_only OFF, cell_status OFF.</td>
</tr>
<tr>
<td>alias on/ff</td>
<td>Set whether to use aliases instead of member names.</td>
</tr>
<tr>
<td>metadata_only on/ff</td>
<td>Set whether to show only the metadata, with no data.</td>
</tr>
<tr>
<td>cell_status on/ff</td>
<td>Set whether to display cell status. Cell status is additional information returned with each cell value in MDX query outputs.</td>
</tr>
</tbody>
</table>

**Note:** Every cell consists of one member from each dimension. Up to four cell-status types may be returned with the output:

- DC: Dynamic Calc. If any of the members defining the cell is Dynamic Calc, this status is on.
- RO: Read Only. If the cell cannot be written to (for example, by lock-and-send), this status is on. Security filters in the database might cause cells to be read-only. Dynamic Calc cells are automatically read-only.
- CM: Calculated Member. If any of the members defining the cell is a calculated member, this status is on.
- LO: Linked Object. If the cell has any associated Linked Reporting Objects, this status is on.
<table>
<thead>
<tr>
<th><strong>Keyword</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>numerical_display fixed_decimal scientific_notation default</td>
<td>Set whether MaxL returns data values in MDX query output as fixed decimals, scientific notation, or default format (values are returned in a reasonable combination of decimals or scientific notation).</td>
</tr>
<tr>
<td>precision &lt;precision-digits&gt;</td>
<td>Set the number (0-15) of decimal places to include for the data values in MDX query output.</td>
</tr>
<tr>
<td>formatted_value on</td>
<td>off</td>
</tr>
<tr>
<td>get_missing_cells on</td>
<td>off</td>
</tr>
<tr>
<td>get_meaningless_cells on</td>
<td>off</td>
</tr>
</tbody>
</table>

The following example query gets sales for all products, but the aggregation is specified by the slicer context only for Ounces_12.

```sql
SELECT {Sales, Cogs} ON COLUMNS,
   {Product.Levels(0).Members} ON ROWS
FROM Sample.Basic
WHERE (Ounces_12);
```

A value of #Meaningless is displayed for any members not associated with the attribute Ounces_12.

---

**Alter System**

[Click here for aggregate storage version](#)

Change the state of the Essbase Server. Start and stop applications, delete application log files, manipulate system-wide variables, manage password and login activity, disconnect users, end processes, back up the security file, and shut down the server.

Permission required: Administrator.
Use `alter system` to change the following system-wide settings:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>load application</td>
<td>Start an application, or start all applications on the Essbase Server.</td>
</tr>
<tr>
<td>unload application</td>
<td>Stop an application, or stop all applications on the Essbase Server.</td>
</tr>
<tr>
<td>Keyword</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| set session_idle_limit | Set the interval of time permitted for a session to be inactive before Essbase Server logs off the user. The minimum limit that you can set is five minutes (or 300 seconds). When the session idle limit is set to `none`, all users can stay logged on until the Essbase Server is shut down.  
The default user idle logout time is 60 minutes. When a user initiates a calculation in the background, after 60 minutes the user is considered idle and is logged out, but the calculation continues in the background.  
Because the user may mistakenly assume that the calculation stopped because he or she was logged out, you can do one of the following to correct the user experience:  
  - Run the calculation in the foreground  
  - Increase the session idle limit in to a time that exceeds the duration of the calculation, or to `none` |
| set session_idle_poll | Set the time interval for inactivity checking and security-backup refreshing. The time interval specified in the session idle poll gives Essbase instructions:  
  - Tells it how often to check whether user sessions have passed the allowed inactivity interval indicated by `session_idle_limit` in the `alter system` statement.  
  - Tells it how often to refresh the security backup file. If `session_idle_poll` is set to zero, the security backup file is still refreshed every five minutes. |
| set invalid_login_limit | Set the number of unsuccessful login attempts allowed by any user before the system disables it. When you change this setting, the counter resets to 0. When the invalid login limit is set to `none`, there is no limit. By default, there is no limit. |
| set inactive_user_days | Set the number of days a user account may remain inactive before being disabled by the system. The counter resets when the user logs in, is edited, or is activated by an administrator. When the inactive days limit is set to `none`, user accounts remain enabled even if they are not used. By default, there is no limit. |
| set password_reset_days | Set the number of days users may retain passwords. After the allotted number of days, users are prompted at login to change their passwords. The counter resets for a user when the user changes the password, is edited, or is activated by an administrator. When the password reset days limit is set to `none`, there is no built-in limit for password retention. By default, there is no limit. |
| set variable | Change the value of an existing substitution variable on the system. The value must not exceed 256 bytes. It may contain any character except a leading ampersand (`&`). |
Keyword | Description
--- | ---
set sss_mode | Migrate Essbase Server and any existing users and groups to EPM System security mode. After you have converted to EPM System security mode, you cannot revert to native security mode. Essbase native security mode is no longer supported.

Minimum permission required: Administrator.

Password Enforcement Grammar:

- **enforce username_as_password**—Create passwords that are the same as user names for users being migrated to EPM System.

  **Note:** The passwords are created in lowercase letters, even if the user name includes uppercase letters. For example, if a user name KSmith is migrated with this option, the password is ksmith.

- **enforce auto_password**—Automatically generate new passwords for users being migrated to Shared Services. To see the generated passwords, use display user all in shared_services_native with auto_password;

  Optionally save the generated passwords to a nondefault file location. If specifying a file name that already exists, use the force keyword to overwrite the file.

  If file name and location are not specified, the passwords are saved by default to $ARBORPATH\bin\MigratedUsersPassword.txt.

- **enforce password <PASSWORD>**—Generate the specified password for users being migrated to Shared Services.

**set eas_loc** | Set or change the Essbase Administration Server location that will be registered with Shared Services upon application creation or migration.

**set server_port** | Expand a port range specified in essbase.cfg. Each Essbase application uses two ports from this range. If no more ports are available, an error message is displayed.

  **Note:** You can expand port ranges only so that the beginning port range is less than SERVERPORTBEGIN and the ending port range is greater than SERVERPORTEND.

**set [lease_manager] message_level** | Set the message level for system-related messages written to the Essbase Server log files or Lease Manager log files.

**clear logfile** | Clear accumulated entries from the Essbase Server log located in the Essbase directory. New log entries are created to record subsequent activity.

**delete export_directory** | Delete directories created for linked reporting objects exported from a database to a directory created in $ARBORPATH\app. Use this grammar after the exported LROs are migrated into a database using import lro, and the directories containing the exported LRO information are not needed.

  **Note:** This process works only for directories created in $ARBORPATH\app using the DBS-EXPORT-DIR option of the export lro statement. It does not work for directories created elsewhere using the FULL-EXPORT-DIR option of the export lro statement.

To view a list of names of exported linked-reporting-objects directories in $ARBORPATH\app, use display system export_directory.
<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>add variable</strong></td>
<td>Create a system-level substitution variable by name, and optionally assign a string value for the variable to represent. You can assign or change the value later using <code>set variable</code>. A substitution variable acts as a global placeholder for information that changes regularly. Substitution variables may be referenced by calculations and report scripts. If substitution variables with the same name exist at server, application, and database levels, the order of precedence for the variables is as follows: a database-level substitution variable supersedes an application-level variable, which supersedes a server-level variable.</td>
</tr>
<tr>
<td><strong>drop variable</strong></td>
<td>Remove a substitution variable and its corresponding value from the system.</td>
</tr>
<tr>
<td><strong>logout session all</strong></td>
<td>Terminate all user sessions currently running on the Essbase Server.</td>
</tr>
<tr>
<td><strong>logout session...force</strong></td>
<td>Terminate a session (or sessions) even if it is currently processing a request. The request is allowed to proceed to a safe point, and then the transaction is rolled back.</td>
</tr>
<tr>
<td><strong>logout session</strong></td>
<td>Terminate a session by its unique session ID number. To see the session ID number, use <code>display session</code>.</td>
</tr>
<tr>
<td><strong>logout session by user</strong></td>
<td>Terminate all current sessions by a particular user, either across the entire Essbase Server, or limited to a specific application or database.</td>
</tr>
<tr>
<td><strong>logout session by user on application</strong></td>
<td>Terminate all current sessions by a particular user across a specific application.</td>
</tr>
<tr>
<td><strong>logout session by user on database</strong></td>
<td>Terminate all current sessions by a particular user across a specific database.</td>
</tr>
<tr>
<td><strong>logout session on application</strong></td>
<td>Terminate all current user sessions across a specific application.</td>
</tr>
<tr>
<td><strong>logout session on database</strong></td>
<td>Terminate all current user sessions across a specific database.</td>
</tr>
<tr>
<td><strong>shutdown</strong></td>
<td>Shut down the Essbase Server.</td>
</tr>
<tr>
<td><strong>kill request all</strong></td>
<td>Terminate all current requests on the Essbase Server.</td>
</tr>
<tr>
<td><strong>kill request &lt;session-id&gt;</strong></td>
<td>Terminate the current request indicated by the session ID. You can obtain session IDs using <code>display session</code>.</td>
</tr>
<tr>
<td><strong>kill request by user</strong></td>
<td>Terminate all current requests by the specified user on the Essbase Server.</td>
</tr>
<tr>
<td><strong>kill request on application</strong></td>
<td>Terminate all current requests on the specified application.</td>
</tr>
<tr>
<td><strong>kill request on database</strong></td>
<td>Terminate all current requests on the specified database.</td>
</tr>
</tbody>
</table>

**Note:** To terminate your own active request in MaxL Shell, press the ESC key.
Keyword | Description
--- | ---
sync security_backup | Check whether the security backup file is the same as the security file, and if not, synchronize the security backup file with the current state of Essbase security. The effect is to refresh the backup file with any additions, changes, or deletions related to applications, databases, users, groups, filters, permissions, substitution variables, locked objects, and system settings.

If `sync security_backup` is not issued directly as described above, the security backup file is checked/refreshed automatically at the same frequency with which session inactivity is checked globally. The default inactivity check interval is five minutes. To change the interval, use `set session_idle_poll`, or see the Oracle Essbase Administration Services Online Help.

enable unicode | Set the Essbase Server to allow the creation of Unicode-mode applications and the migration of non-Unicode-mode applications to Unicode-mode applications.

disable unicode | Prevent the Essbase Server from allowing the creation of Unicode-mode applications or the migration of non-Unicode-mode applications to Unicode-mode applications.

compact security file | Defragment the security file. Fragmentation can gradually develop when objects such as users, groups, applications or databases are removed or changed. Please note that this operation slows down agent activity until the operation is completed, which could take a few minutes.

rename global registration name | Change the name of the global application and application project in Shared Services.

reconcile | When Essbase is started using a security backup file (essbase_timestamp.bak) instead of `essbase.sec`, reconcile the security file to match the state of Essbase on an external disk. This grammar displays discrepancies in application and database information between the security file and the external disk:

- If an application folder is on the disk but not in the security file, display a message indicating the discrepancy. (Essbase checks for the presence of a `appname/appname.app` file in the `ARBORPATH/app` directory.)

    The `force` option does not apply in this scenario.

- If an application file is in the security file but not on the disk, display a message indicating the discrepancy.

    The `force` option removes the application from the security file.

- If an application database folder is on the disk but not in the security file, display a message indicating the discrepancy. (Essbase checks for the presence of a `dbname/dbname.otl` file in the `ARBORPATH/app/appname` directory.)

    The `force` option does not apply in this scenario.

- If an application database file is in the security file but not on the disk, display a message indicating the discrepancy.

    The `force` option removes the database from the security file.

Notes

SESSION SPECIFICATION

A session is a single user connection to Essbase Server. The session can be identified by keywords and names indicating context, or by a unique session ID number.
A request is a query sent to Essbase Server by a user or by another process; for example, starting an application or restructuring a database outline. Only one request at a time can be processed in each session.

If a session is processing a request at the time that an administrator attempts to terminate the session, the administrator must either terminate the request first, or use the force keyword available with `alter system` to terminate the session and the current request.

```
<SESSION SPEC> ::= all  | SESSION-ID
                     | by user USER-NAME
                     | on application APP-NAME
                     | on database DBS-NAME
```

**PASSWORD ENFORCEMENT SPECIFICATION**

```
<ENFORCE-PWD-SPEC> ::=

    enforce
        username_as_password
        auto_password
        save password to server file FILE-NAME
        password PASSWORD
        force
```

**Example**

```
alter system unload application Sample;

    Stops the Sample application, if it is currently running.

alter system logout session by user Fiona;

    Disconnects Fiona from any applications or databases to which she is connected.
```

**Note:** To log out a user, log out the sessions owned by that user.

```
alter system set password_reset_days 10;

    Specifies that all users will be prompted after 10 days to change their passwords. The day count for any user is reset when the user changes the password or is edited or reactivated by an administrator.

alter system set sss_mode enforce password "password";

    Migrates the Essbase Server to EPM System security mode, specifying the initial password for all users.
```
Alter Tablespace (Aggregate Storage)

Change details about a tablespace. To see a list of tablespaces, use `display tablespace`. You cannot change the location or size of the metadata and log tablespaces.

Tablespaces are applicable only to aggregate storage databases.

Permission required: Application Manager.

**Syntax**

```
alter tablespace TABLSP_NAME
```

Use `alter tablespace` to edit tablespaces in the following ways:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>add file_location</td>
<td>Add a new file location to the tablespace.</td>
</tr>
<tr>
<td>alter file_location</td>
<td>Change the maximum file-size or disk-size value for the specified file location.</td>
</tr>
<tr>
<td>set max_file_size</td>
<td>Specify a value for the maximum size that a data file may attain before Essbase creates a new file.</td>
</tr>
<tr>
<td>set max_disk_size</td>
<td>Specify the value for the maximum amount of disk space to be allocated to the file location.</td>
</tr>
</tbody>
</table>

**Note:** FILE-NAME is case sensitive in this statement.

Specify a value for the maximum size that the aggregate storage kernel can handle is 134217727 MB. This is also the default value. If operating system limits take effect before this value is reached, the kernel creates a new file. If you enter a value that is larger than 134217727 MB, the kernel ignores the setting and caps file size at 134217727 MB.

The minimum value is 8MB (8388608b), and any values you enter are rounded up to the next 8MB interval.

**Note:** Some operating system platforms may enforce a maximum file size limit.

The largest possible value that the aggregate storage kernel can handle is 4294967295 MB. This is also the default value. If operating system limits take effect before this value is reached, the kernel attempts to use another file location in the tablespace. If you enter a value that is larger than 4294967295 MB, the kernel ignores the setting and caps disk size at 4294967295 MB.

The minimum value is 8MB (8388608b), and any values you enter are rounded up to the next 8MB interval.
### Keyword Description

- **drop file_location**
  Delete the specified file location from the tablespace. When a file location is deleted, all files in the file location are deleted, as well as the subdirectory containing the files. You cannot delete a file location if it contains data. You cannot delete the tablespace itself.

**Note:** FILE-NAME is case sensitive in this statement.

### Notes

- This statement requires the application to be started.
- On Windows, you can specify tablespace file locations using Uniform Naming Convention (UNC) syntax, which is `\ComputerName\SharedFolder\Resource`. Including the escape characters required by MaxL Shell, the UNC file name specification would look like the following:
  
  `'\\ComputerName\SharedFolder\Resource'`

### Example

**alter tablespace ASOsamp.'default' add file_location 'C:\mytablespace' set max_file_size 50mb;**

Adds another file location for the `default` tablespace. Now the tablespace `default` is in `C:\mytablespace` in addition to the original location, `C:\Hyperion\products\Essbase\EssbaseServer\app`.

**alter tablespace ASOsamp.'default' alter file_location 'C:\Hyperion\products\Essbase\EssbaseServer\' set max_file_size 50mb;**

Changes the maximum file size allowed in the specified location of the default tablespace.

**Note** that the file_location string is case sensitive.

**alter tablespace ASOsamp.'default' alter file_location '\\ComputerName\SharedFolder\Resource' set max_file_size 50mb;**

Changes the maximum file size allowed in the specified location of the default tablespace.

The file_location string is specified using UNC.

### Alter Trigger

Enable or disable a trigger created to track state changes over a selected cube area.

For more information about the Essbase triggers feature, see the *Oracle Essbase Database Administrator’s Guide*.

### Syntax

- **alter trigger**

  ```plaintext
  TRIGGER-NAME [ enable ] [ disable ] on database DBS-NAME disable
  ```

Use **alter trigger** to edit triggers in the following ways:
**Keyword**  
**Description**

**enable**  
Essbase monitors the trigger during data load, calculation or lock and send. Essbase performs the trigger action when the specified condition is met on the specified cube area.

**disable**  
Essbase does not monitor the trigger.

**on database <DBS-NAME> disable**  
Essbase disables all triggers currently enabled in the database. A restart of the application or the database following the disable restores the triggers to the same state as before the disable was issued (all the triggers disabled using `alter trigger on database DBS-NAME disable` are re-enabled).

**Example**

```plaintext
alter trigger Sample.Basic.WatchCosts disable;
alter trigger on database sample.basic disable;
```

**Alter User**

Add or remove a user to or from a group. Rename a user. Change the comment that describes a user. Enable or disable a user account. Change a user's password, or specify whether it should expire. Control user application access to application domains.

Permission required: `create_user`.

When Essbase runs in EPM System security mode, the Essbase `create_user` permission becomes obsolete. You must be an Essbase administrator to manage users, and you must additionally be a Shared Services administrator to manage users from Shared Services.
Use `alter user` to change user information in the following ways:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>add [to group]</td>
<td>Add the user to a group.</td>
</tr>
<tr>
<td>add application_access_type</td>
<td>Add an application access type. An application access type controls which domains a user can access based on the named user license. To view a list of the user’s allowed application access types, use <code>display user</code>. MaxL can be used only to add or remove Essbase access.</td>
</tr>
</tbody>
</table>

Note: This MaxL grammar is deprecated. In EPM System security mode, this action automatically causes a user/group synchronization between Essbase and Shared Services. Oracle recommends using Shared Services to manage users and groups instead of MaxL.
<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
</table>
| remove [from group] | Remove the user from a group.  

**Note:** This MaxL grammar is deprecated. In EPM System security mode, this action automatically causes a user/group synchronization between Essbase and Shared Services. Oracle recommends using Shared Services to manage users and groups instead of MaxL.  

**Note:** If you deprovision a group in Shared Services that was provisioned to Essbase, users in the group remain in the Essbase security file after performing a single group synchronization. To deprovision a group and its users, perform a full system refresh. |
| remove application_access_type | Remove an application access type. MaxL can be used only to add or remove Essbase access. |
| rename to | Rename the user. |
| enable | Reactivate the user if the user's permission to log in has been terminated. |
| disable | Disable the user's permission to log in to Essbase. |
| set password | Change the user's password. |
| set password_reset_days INTEGER days | Specify the number of days before a password expires. This setting has meaning only if the system-level password_reset_days value (shown in the password_reset_days field of display system) is not zero or "none". The value of this setting must be between 1 and 65535. The latest effective date for user-level password expiration is Jan 19, 2038. |
| set password_reset_days none | Remove any user-level password expiration setting created by alter user set password_reset_days INTEGER, and revert the password reset days value back to the system-level value (shown in the password_reset_days field of display system). |
| set password_reset_days immediate | Force the user to change password at the next login. |
| set password_reset_days exact | Undo the 'immediate' setting above. If the administrator chooses 'immediate' and then attempts to revert to allowing a set number of days, the setting will not work, because 'immediate' takes precedence. Using 'exact' is the only way to reverse 'immediate.' |
| set type external | Specify that this user must log in to Essbase using Shared Services. For the user to log in successfully, the "AUTHENTICATIONMODULE" on page 444 parameter must be set to CSS in the essbase.cfg file, and the user name must match a valid user name in the external authentication repository. |
Keyword | Description
---|---
set sss_mode | Migrate the user to EPM System security mode. This action might be useful if the user migration failed using `alter system`.

Minimum permission required: Administrator.

Password Enforcement Grammar:

- **enforce username_as_password**—Create passwords that are the same as user names for users being migrated to Shared Services.

  **Note:** The passwords are created as lowercase, even if the user name contains uppercase letters. For example, if a user name KSmith is migrated with this option, the password will be Ksmith.

- **enforce auto_password**—Automatically generate passwords for the users being migrated to Shared Services. To see the generated passwords, use `display user all in shared_services_native with auto_password`;

  Optionally save the generated passwords to a nondefault file location. If specifying a file name that exists, use the `force` keyword to overwrite the file.

  If file name and location are not specified, passwords are saved by default to `$ARBORPATH\bin\MigratedUsersPassword.txt`.

- **enforce password <PASSWORD>**—Generate the specified password for users being migrated to Shared Services.

For more information on user management and security, see the *Oracle Essbase Database Administrator's Guide*.

**comment** | Create a description of the user.

**reset** | Remove obstructions to logging in for the specified user account.

- The user account is re-enabled if it was disabled.
- Any requirement to change password immediately is removed.
- If the password has expired, the expiration is cleared.
- The count of unsuccessful user logins is reset to 0.

**revoke filter** | Remove a filter assignment to this user. Privilege required: Application manager.

**Note:** This statement does not remove filter assignments gained by membership to groups. To remove filter assignments to groups, use `Alter Group`.

**all set sss_mode** | Same as `set sss_mode`, but for all users.
Notes

PASSWORD ENFORCEMENT SPECIFICATION

<ENFORCE-PWD-SPEC> ::=

  enforce  username AS password
  auto_password  save_password_to_server_file FILE-NAME
  force
  password PASSWORD

Example

alter user Fiona add to group Newhires;

  Assigns Fiona to a group called Newhires.

alter user Fiona enable;

  Enables user Fiona to log in again.

alter user Fiona set password_reset_days immediate;

  Requires Fiona to change password at the next login.

alter user 'Autumn Smith' set type external;

  Specifies that Autumn Smith is externally authenticated in a supported authentication repository (LDAP, Microsoft Active Directory, or Windows NT LAN Manager).

alter user ASmith rename to 'Autumn Smith';
alter user 'Autumn Smith' set type external;

  Renames native Essbase user Asmith to Autumn Smith, because that is the name stored in the authentication repository. Specifies that Autumn Smith is externally authenticated in a supported authentication repository.

alter user Fiona remove application_access_type Essbase;

  Removes Essbase application access from user Fiona. If user Fiona has permission to access Oracle Hyperion Planning, that permission remains intact.

Create Application

Click here for aggregate storage version

Create or re-create an application, either from scratch or as a copy of another application on the same system. See APP-NAME for information on the maximum length of and special characters that are allowed in an application name. Application names are not case-sensitive.

Permission required: Essbase create_application role and Shared Services Project Manager role.

To copy an application, Manager permission on the source application is also required.
Use `create application` to create an application in the following ways:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>create application</td>
<td>Create a new application. Application names are not case-sensitive.</td>
</tr>
<tr>
<td>create or replace application</td>
<td>Create an application, or replace an existing application of the same name. Application names are not case-sensitive.</td>
</tr>
<tr>
<td>...type nonunicode_mode</td>
<td>Create a Non Unicode-mode application. This is also the default if these keywords are omitted.</td>
</tr>
<tr>
<td>...type unicode_mode</td>
<td>Create a Unicode-mode application.</td>
</tr>
<tr>
<td>create application as</td>
<td>Create an application as a copy of another application. Application names are not case-sensitive.</td>
</tr>
<tr>
<td>comment</td>
<td>Create an application description (optional). The description can contain up to 80 characters.</td>
</tr>
</tbody>
</table>

**Example**

```sql
create application Sample comment 'This is a test application.';
```

Creates a new application called Sample with an associated comment.

```sql
create application Newsamp as Sample;
```

Creates an application called Newsamp which is a copy of the application Sample.

```sql
create or replace application Sample;
```

Creates an application called Sample. If an application named Sample already exists, it is overwritten.

**Create Calculation**

Create, replace, or copy a stored calculation.

Permissions required:

- Database Manager to create database-level calculations.
- Application Manager to create application-level calculations.
Syntax

create calculation [or replace] calculation CALC-NAME [CALC-STRING] as CALC-NAME

Use `create calculation` to create a calculation in the following ways:

**Keyword** | **Description**
--- | ---
create calculation | Create a calculation script, the body of which is specified by “CALC-STRING” on page 842.
create or replace calculation | Create a calculation script, the body of which is specified by “CALC-STRING” on page 842. If a calculation script of that name already exists, it is replaced.
create calculation as | Create a calculation as a copy of another stored calculation.

**Notes**

- When creating database-level calculations, this statement requires the database to be started.
- A stored calculation can be associated with an application/database, or with an application only. To create an application-level calculation, use two tokens for CALC-NAME. To create a database-level calculation, use three tokens. See “CALC-NAME” on page 840 for more details.
- Calculations created using MaxL must be valid. For information about calculation syntax, see the *Oracle Essbase Database Administrator’s Guide*.

**Example**

```plaintext
create or replace calculation sample.basic.Accts
'SET UPDATECALC ON;
CALC DIM(Accounts);'
;

Creates a calculation named Accts that is associated with sample.basic.
```

```plaintext
create calculation sample.basic.Accts2 as app.db.Accts

Creates a calculation named Accts2 on sample.basic that is a copy of another database’s calculation named Accts.
```

**Create Database**

*Click here for aggregate storage version*

Create or re-create a regular or currency database. Optionally create the database as a copy of another database on the same system. See `DBS-NAME` for information on the maximum length of and special characters that are allowed in a database name. Database names are not case-sensitive.

Permission required: Application Manager. To copy a database, Manager permission on the source database is additionally required.
Syntax

```plaintext
create database DBS-NAME
or replace database DBS-NAME
using non_unique_members
as DBS-NAME
comment COMMENT-STRING
```

Use `create database` to create a database in the following ways:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>create database</td>
<td>Create a new database. Database names are not case-sensitive.</td>
</tr>
<tr>
<td>create or replace database</td>
<td>Create a database, or replace an existing database of the same name. Database names are not case-sensitive.</td>
</tr>
<tr>
<td>create database using non_unique_members</td>
<td>Create a database that supports the use of duplicate member names. Once you have created a database with a duplicate member outline, you cannot convert it back to a unique member outline. For more information about duplicate member names, see the Oracle Essbase Database Administrator's Guide chapter titled &quot;Creating and Working With Duplicate Member Outlines.&quot;</td>
</tr>
<tr>
<td>create database as</td>
<td>Create a database as a copy of another database. Database names are not case-sensitive.</td>
</tr>
<tr>
<td>create currency database</td>
<td>Create or replace a database for currency conversion. Linking a currency database to a main database enables you to convert currency values in a database from one currency into another currency.</td>
</tr>
<tr>
<td>comment</td>
<td>Create a database description (optional). The description can contain up to 80 characters.</td>
</tr>
</tbody>
</table>

**Example**

```plaintext
create or replace database Sample.Basic comment 'This is a test.';
```

Creates a database called Basic within the Sample application. If a database named Basic within the Sample application already exists, it is overwritten.

```plaintext
create database Sample.New as Sample.Basic;
```

Creates a database called New within the Sample application that is a copy of the database Basic within the Sample application.

```plaintext
create currency database Sample.Interntl;
```

Creates a currency database called Interntl within the Sample application.

**Create Drillthrough**

Create a drill-through URL within the active database outline.

For each drillable region of an Essbase database, you can enable drill-through access by means of a URL to Web content hosted on Oracle ERP and EPM applications.
Syntax

```plaintext
create drillthrough URL-NAME from xml_file FILE-NAME
don {MEMBER-EXPRESSION,...} level0 only
```

Use `create drillthrough` to create a drill-through URL definition in the following ways:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>create drillthrough</td>
<td>Create a drill-through URL as metadata.</td>
</tr>
<tr>
<td>from xml_file</td>
<td>Indicate the path to the local URL XML file that defines the link information.</td>
</tr>
<tr>
<td>on</td>
<td>Define the list of drillable regions, using the same Essbase member-set calculation language that is used to define security filters. The list of drillable regions must be enclosed in [brackets]. The number of drillable regions in a drill-through URL is limited to 256. The number of characters per drillable region is limited to 65536.</td>
</tr>
</tbody>
</table>

```plaintext
Example
create drillthrough sample.basic.myURL from xml_file "C:/drillthrough/data/myfile1.xml" on ('@Ichildren("Qtr1")', '@Ichildren("Qtr2")') level0 only;
```

See Also

- alter drillthrough
- display drillthrough
- drop drillthrough
Create Filter

Create or re-create a database security filter, either from scratch or as a copy of another filter on the same system. Filters control security for database objects. Use grant to assign filters to users and groups.

Minimum permission required: Database Manager.

**Syntax**

```
create filter FILTER-NAME
or replace filter FILTER-NAME
as FILTER-NAME
no_access on MEMBER-EXPRESSION
  read, write, meta_read
, definition_only
```

**Use** create filter to create a filter in the following ways:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>create filter</td>
<td>Create a security filter to restrict or permit access to specified database cells.</td>
</tr>
<tr>
<td>create or replace filter</td>
<td>Create a security filter or replace an existing security filter of the same name.</td>
</tr>
<tr>
<td>create filter ... no_access on &lt;member-expression&gt;</td>
<td>Create a filter blocking access to a specified member combination.</td>
</tr>
<tr>
<td>create filter ... read on &lt;member-expression&gt;</td>
<td>Create a filter providing read-only access to a specified member combination.</td>
</tr>
<tr>
<td>create filter ... write on &lt;member-expression&gt;</td>
<td>Create a filter providing write access to a specified member combination.</td>
</tr>
<tr>
<td>create filter ... meta_read on &lt;member-expression&gt;</td>
<td>Create a filter restricting access to siblings and ancestors of the member expression. In case of a filtering conflict, the MetaRead filtering overrides the other filter permissions. For more information about metadata filtering, see “Metadata Filtering” on page 1005.</td>
</tr>
</tbody>
</table>

**Notes**

- Filters created using MaxL must be valid. For information about filter syntax, see the Oracle Essbase Database Administrator’s Guide.
MEMBER-EXPRESSION must be enclosed in single quotation marks. It can be a comma-separated list.

**Example**

```plaintext
create filter sample.basic.filt1 read on 'Jan, sales', no_access on '@CHILDREN(Qtr2)';
```

Creates a filter to restrict privileges to Sample.Basic as follows: gives read-only access to the intersection of Jan and sales (sales data for January only); blocks access to children of Qtr2 (April, May, and June).

```plaintext
create or replace filter sample.basic.filt1 read on 'Sales, @ATTRIBUTE(Bottle)';
```

Creates a filter (or changes an existing filter) to restrict privileges to Sample.Basic as follows: gives read-only access to sales data for products packaged in a bottle (product base dimension members associated with the Bottle attribute member).

**Create Function**

Create or re-create your own registered Essbase calculation function, using a Java method.

Minimum permission required:

- Application Manager to create a local (application-level) function.
- Administrator to create a global (system-level) function.

Process to follow:

1. Develop the functions in Java classes.
2. Use `create function` to register them in the Essbase calculator framework.
3. You can now use the functions in the same way that you use the standard Essbase calculation functions.

**Syntax**

```plaintext
create function FUNC-NAME as JAVACLASS.METHOD
```

**Keyword**

- **create function as** Register with Essbase a custom-defined function developed in Java, either as a global function usable by the entire Essbase Server, or as a local function available to an application. To register a global (server-wide) function, use one token for "FUNC-NAME" on page 852. To register a local (application-wide) function, use two tokens for "FUNC-NAME" on page 852.
<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
<th>Note:</th>
</tr>
</thead>
<tbody>
<tr>
<td>create or replace function as</td>
<td>Register with Essbase a global or local custom-defined function. If a function with that name already exists in the custom-defined function and macro catalog, it is replaced.</td>
<td>If you do not specify a calculation specification string, you cannot specify a comment either.</td>
</tr>
<tr>
<td>spec</td>
<td>Enter, for the custom-defined function, an optional Essbase calculator-syntax specification string, such as in the following example: @COVARIANCE (expList1, expList2). Use a specification string if you wish the function to be returned by the output string of the EssListCalcFunctions API function.</td>
<td>Note: No built-in Essbase calculator functions have the Runtime property.</td>
</tr>
<tr>
<td>with property runtime</td>
<td>Designate the custom-defined function as a runtime function. Normally, Essbase pre-executes functions whose arguments are available at compilation time. The Runtime property prevents that optimization, executing functions that have constant values as operands (or no operands at all) for every block in the function range. If the built-in @CALCMODE(CELL) function is used, a custom-defined function declared as Runtime can execute on every cell in the range.</td>
<td>The Runtime property should be applied only in special circumstances, as it can seriously affect performance. The runtime property might be desirable for any custom-defined function whose return value depends on something besides its arguments; for example, the current date, or values in a rapidly changing relational table. If you created a runtime function @RANDOM() that returns a new random number each time it executes, then a member formula such as &quot;Mem1 = @RANDOM();&quot; would return different values for each block. At compilation time, the Runtime property prevents the pre-execution of functions that are applied to constants.</td>
</tr>
<tr>
<td>comment</td>
<td>Create a description of the function (optional). You cannot create a comment without also using spec to create a calculator-syntax specification string. The optional calculator-syntax specification string and the comment are used as the output string of the EssListCalcFunctions API function.</td>
<td></td>
</tr>
</tbody>
</table>

**Notes**

- To create a global or system-level function, use a single name for FUNC-NAME. For example, '@COVARIANCE'.
- To create a local or application-level function, use MaxL's double naming convention for FUNC-NAME. For example, Sample.'@COVARIANCE'. The second token must be enclosed in single quotation marks because it contains a special character.

**Example**

```plaintext
CREATE FUNCTION '@COVARIANCE' 
AS 'com.hyperion.essbase.calculator.Statistics.covariance' 
SPEC '@COVARIANCE (expList1, expList2)' 
COMMENT 'computes covariance of two sequences given as expression lists';
```

**Create Group**

Create or re-create a group, either from scratch or as a copy of another group.
**Note:** This entire MaxL statement is deprecated. Oracle recommends using Oracle Hyperion Shared Services Console, Java API, or Oracle Hyperion Enterprise Performance Management System Lifecycle Management for this task, instead of using MaxL or C API.

**Syntax**

```plaintext
create group GROUP-NAME
or replace group GROUP-NAME
as GROUP-NAME

comment COMMENT-STRING

(type external)
```

Use `create group` to create a group in the following ways:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>create group</td>
<td>Create a security group to assign users to, so that they can share identical minimum permissions assigned at the group level.</td>
</tr>
<tr>
<td>create or replace</td>
<td>Create a security group. If a group of that name already exists, it is replaced.</td>
</tr>
<tr>
<td>create group as</td>
<td>Create a group as a copy of an existing group.</td>
</tr>
<tr>
<td>comment</td>
<td>Create a description of the security group.</td>
</tr>
<tr>
<td>type external</td>
<td>For use in EPM System security mode only. Create and provision in Essbase a group that already exists in Shared Services.</td>
</tr>
</tbody>
</table>

**Example**

```plaintext
create group Level_1 as Newhires comment 'Copy of Newhires';
```

Creates a group called Level_1 that is a copy of the existing group Newhires.

**Create Location Alias**

Create on the database a location alias identifying a host name, database, user name, and password. Location aliases provide a shorthand way of referencing login information for other Essbase databases.

Minimum permission required: Database Manager.

**Syntax**

```plaintext
create location alias LOC ALIAS SINGLE from DBS NAME
or replace location alias LOC ALIAS SINGLE from DBS NAME

LOCAL ALIAS NAME

to DBS NAME at HOST NAME as USER NAME identified by PASSWORD
```

Use `create location alias` to create a location alias in the following ways:
create location alias

Create a location alias, identifying a remote host name, database, user name, and password. The location alias can be used by the @XREF function as an abbreviated login to a remote database.

create or replace location alias

Create a location alias, replacing any existing location alias of the same name on the same database.

...from <dbs-name>

Specify the name of the current database (the database on which the location alias is being created).

...to <dbs-name>

Specify the name of the remote database to log in to.

...at <host-name>

Specify the remote host name on which the remote database resides.

...as <user-name> identified by <password>

Specify a user name and password with which to log in to the remote database.

Notes

- This statement requires the database to be started.
- Location aliases created using MaxL must be valid. For information about location aliases, see the Oracle Essbase Database Administrator's Guide.
- Location aliases are used by the @XREF function for cross-database calculations.

Example

```
create location alias EasternDB from Sample.Basic to East.Sales at Easthost as Fiona identified by sunflower;
```

Creates a location alias called EasternDB on Sample.Basic that represents the following login information:

- server = Easthost
- application = East
- database = Sales
- user name = Fiona
- password = sunflower

Create Macro

Create or re-create your own Essbase calculation macro as your chosen combination of existing calculation functions or macros. This statement registers the new macro with the Essbase custom-defined function and macro catalog.

Minimum permission required:

- Application Manager to create a local (application-level) macro.
- Administrator to create a global (system-level) macro.
Use `create macro` to create a macro in the following ways:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>create macro as</td>
<td>Create and register with Essbase a custom-defined macro as your chosen combination of existing calculation functions or macros. Register the macro either as a global macro usable by the entire Essbase Server, or as a local macro available to an application. To register a global (server-wide) macro, use one token for “MACRO-NAME” on page 859. To register a local (application-wide) function, use two tokens for “MACRO-NAME” on page 859.</td>
</tr>
<tr>
<td>create macro...</td>
<td>Enter for the macro an optional signature defining the syntax rules for macro arguments. A macro signature describes the style in which arguments (or input parameters) to the macro may be passed. One example of a macro signature is (SINGLE, SINGLE, GROUP), meaning that the macro must be passed two comma-separated arguments followed by a list of arguments. For more information, see “Custom-Defined Macro Input Parameters” on page 326.</td>
</tr>
<tr>
<td>create or replace macro</td>
<td>Register with Essbase a global or local custom-defined macro. If a macro with that name already exists in the custom-defined function and macro catalog, it is replaced.</td>
</tr>
<tr>
<td>spec</td>
<td>Enter for the macro an optional calculator-syntax specification string, as in the following example: <code>@MYMACRO (mbrName, rangeList)</code>. Use a specification string if you wish the macro to be returned by the output string of the EssListCalcFunctions API function. <strong>Note:</strong> If you do not specify a calculation specification string, you cannot specify a comment either.</td>
</tr>
<tr>
<td>comment</td>
<td>Create a description of the macro (optional). You cannot create a comment without also using <code>spec</code> to create a calculator-syntax specification string. The optional calculator-syntax specification string and the comment are used as the output string of the EssListCalcFunctions API function.</td>
</tr>
</tbody>
</table>

**Notes**

- To create a global (system-level) macro, use a single name for MACRO-NAME. For example, `@COVARIANCE`.
- To create a local (application-level) macro, use MaxL’s double naming convention for MACRO-NAME. For example, `Sample.'@COVARIANCE'`. 
Example

create macro Sample.'@COVARIANCE'(single, single) as '@COUNT(SKIPMISSING, @RANGE(@@S))'
spec '@COVARIANCE (expList1, expList2)' comment 'Computes covariance of two sequences
given as expression lists';

Create Partition

Create or validate a partition definition between two databases.

Permission required: Database Manager at both sites.

Select the type of partition to create:

- transparent
- replicated
- linked

Partitions created using MaxL must be valid. To validate a partition, use the validate only clause. For information about partition definitions, see the Oracle Essbase Database Administrator’s Guide.

Create Linked Partition

Create or validate a linked partition definition between two databases. A linked partition enables users to navigate from one data value in one database, to a subset of another database. The two databases may contain very different outlines.

For example, if a Smart View user clicks a database cell that contains a link to another database, a new grid opens displaying the dimensions in the second database. The user can then drill down into the linked database’s dimensions.
Use **create linked partition** to create a partition in the following ways:

**Keyword** | **Description**
--- | ---
create linked partition | Create a linked partition. A linked partition connects two different databases with a data cell. The databases can contain largely different dimensions, and still be connected by a small, mapped data region.

With linked partitions, the grid that a user first views is connected to the target, and the grid that opens when the user drills across is connected to the source.

create or replace ...partition | Create a partition definition, or replace an existing partition definition.

area... | Define the partition areas to share with the other database. Optionally nickname the area using an area-alias.

to <dbs-name> | Create a partition definition between the current database source and the second database (the target).

from <dbs-name> | Create a partition definition between the current database target and the second database (the source).

at <host-name> | Specify the remote computer name, if you are creating a partition definition between the current database and one residing on a remote Essbase Server host.
as <user-name> identified by <password>

Provide the name and password of a default partition user who can connect to both databases. Essbase uses the login information to synchronize database outlines.

using <user-name> identified by <password> for creation

Create the partition using a different user than the one being set as the default partition user. This can be useful when you want to specify a read-only user account as the default partition user.

mapped...

Define the member-name mapping for shared sections of both databases, if member names for sections that map are different in the two databases.

outline...

Specify the direction in which outline synchronization should proceed, if necessary. The default direction is the same as the data-refresh direction.

default login as

Specify a default user name and password with which to provide generic access to the linked-partition data source. When accessing a linked partition, Essbase attempts to use the end user’s login information to connect to the source database. If the user does not have access to the source database, Essbase looks for the linked-partition default user name and password.

comment

Create a comment to describe the source half of the partition definition.

remote comment

Create a comment to describe the target half of the partition definition.

validate only

Validate the existing partition definition described by this statement, without actually creating it.

Notes

- Multiple area specifications are allowed, provided they are separated by whitespace. Multiple mappings are allowed, provided they are separated by whitespace. All area aliases used in a mapping should be associated with the target, and the direction of the mapped clause should go from source to target.
- The first DBS-NAME is the local database, and the second DBS-NAME is the remote database.
- Creating a partition to the remote site means the current database is the source. Creating a partition from the remote site means the current database is the target.
- If you are creating a partition and specifying a host name that includes a port number, see “Specifying Port Numbers in Partition Host Names” on page 1002 for more information.
- If you are using host name aliases, see “Using Host Name Aliases When Partitioning” on page 1003.
- Aggregate storage databases can be the source, the target, or the source and target of a linked partition. Outline synchronization (refresh outline statement) is not currently enabled for partitions that involve aggregate storage databases.
- To create a partition as an externally authenticated user, when using MaxL Script Editor, you must enter a login statement before the create partition statement. The login statement must include the full external user name with provider, as well as the host name. For example,
Example

create or replace linked partition sampeast.east
    area '@DESCENDANTS("Eastern Region"), @DESCENDANTS(Qtr1)'
    to samppart.company at localhost
    as partitionuser identified by 'password'
    area '@DESCENDANTS(East) @DESCENDANTS(Qtr1)'
    area "Region 9020" "FLD Other"
    default login as appdesigner identified by 'password';

Create Replicated Partition

Create or validate a replicated partition definition between two databases. A replicated partition
copies a portion of the source (or master) database to be stored in a target database. Users can
access the target database as if it were the source. The administrator must periodically refresh
the target data from the source data.

Syntax

use create replicated partition

Use create replicated partition to create a partition in the following ways:
<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>create replicated</td>
<td>Create a replicated partition. A replicated partition is a copy of a portion of the data source that is stored in the data target.</td>
</tr>
<tr>
<td>partition</td>
<td></td>
</tr>
<tr>
<td>create or replace</td>
<td>Create a partition definition, or replace an existing partition definition.</td>
</tr>
<tr>
<td>... partition</td>
<td></td>
</tr>
<tr>
<td>area...</td>
<td>Define the partition areas to share with the other database. Optionally nickname the area using an area-alias.</td>
</tr>
<tr>
<td>to &lt;dbs-name&gt;</td>
<td>Create a partition definition between the current database source and the second database (the target).</td>
</tr>
<tr>
<td>from &lt;dbs-name&gt;</td>
<td>Create a partition definition between the current database target and the second database (the source).</td>
</tr>
<tr>
<td>at &lt;host-name&gt;</td>
<td>Specify the remote computer name, if you are creating a partition definition between the current database and one residing on a remote Essbase Server host.</td>
</tr>
<tr>
<td>as &lt;user-name&gt; identified by &lt;password&gt;</td>
<td>Provide the name and password of a default partition user who can connect to both databases. Essbase uses the login information to:</td>
</tr>
<tr>
<td></td>
<td>● Transfer data between the source and the target for replicated and transparent partitions. Database security filters can be applied to prevent end users from seeing privileged data.</td>
</tr>
<tr>
<td></td>
<td>● Synchronize database outlines for all partition types.</td>
</tr>
<tr>
<td>using &lt;user-name&gt;</td>
<td>Create the partition using a different user than the one being set as the default partition user. This can be useful when you want to specify a read-only user account as the default partition user.</td>
</tr>
<tr>
<td>identified by &lt;password&gt;</td>
<td></td>
</tr>
<tr>
<td>for creation</td>
<td></td>
</tr>
<tr>
<td>mapped...</td>
<td>Define the member-name mapping for shared sections of both databases, if member names for sections that map are different in the two databases.</td>
</tr>
<tr>
<td>outline...</td>
<td>Specify the direction in which outline synchronization should proceed, if necessary. The default direction is the same as the data-refresh direction.</td>
</tr>
<tr>
<td>update...</td>
<td>Allow or disallow the updating of data in a replicated-type partition target. If you do not specify update allow, by default, the replicated partition cannot be updated.</td>
</tr>
<tr>
<td>comment</td>
<td>Create a comment to describe the source half of the partition definition.</td>
</tr>
<tr>
<td>remote comment</td>
<td>Create a comment to describe the target half of the partition definition.</td>
</tr>
<tr>
<td>validate only</td>
<td>Validate the existing partition definition described by this statement, without actually creating it.</td>
</tr>
</tbody>
</table>

**Notes**

- Multiple area specifications are allowed, provided they are separated by whitespace. Multiple mappings are allowed, provided they are separated by whitespace. All area aliases used in a mapping should be associated with the target, and the direction of the mapped clause should go from source to target.
- The first DBS-NAME is the local database, and the second DBS-NAME is the remote database.
Creating a partition to the remote site means the current database is the source. Creating a partition from the remote site means the current database is the target.

- If you are creating a partition and specifying a host name that includes a port number, see “Specifying Port Numbers in Partition Host Names” on page 1002 for more information.
- If you are using host name aliases, see “Using Host Name Aliases When Partitioning” on page 1003.
- Aggregate storage databases can be the target, but not the source, of a replicated partition.
- To create a partition as an externally authenticated user, when using MaxL Script Editor, you must enter a login statement before the create partition statement. The login statement must include the full external user name with provider, as well as the host name.

For example,

```
login 'admin@Native Directory' 'password' on 'FQN';
create partition....;
```

**Example**

```
create or replace replicated partition source.source
area 'DimensionA' sourceAreaA
area 'DimensionB' sourceAreaB
to target.target at localhost
as admin identified by 'password'
area 'ParentMemberA' targetAreaA
area 'ParentMemberB' targetAreaB
mapped targetAreaA (ChildA) to (Child_a)
mapped targetAreaB (ChildB) to (Child_b)
;
```

Creates a partition from database Source to database Target where the partitioned areas between them are DimensionA and DimensionB on the source, corresponding to ParentMemberA and ParentMemberB (respectively) on the target. Differences in member names between the two partitioned areas are resolved during the partition creation, using the mapped clauses. Area aliases are used after each area specification, so that members can be mapped specifically for each area.

```
create or replace replicated partition sampeast.east
area '@IDESCENDANTS("Eastern Region"), @IDESCENDANTS(Qtr1)'
to samppart.company at localhost
as partitionuser identified by 'password'
area '@IDESCENDANTS(East) @IDESCENDANTS(Qtr1)'
update disallow;
```

Creates a replicated partition from an area in the source database, sampeast.east, to an area in the target database, samppart.company.

```
create or replace replicated partition sampeast.east
area '@IDESCENDANTS("Eastern Region"), @IDESCENDANTS(Qtr1)'
to samppart.company at localhost
as admin identified by 'password'
area '@IDESCENDANTS(East) @IDESCENDANTS(Qtr1)'
mapped foo (Year) to (Yr)
update allow validate only;
```
Validates the syntax of a replicated partition you might want to create. To create the partition after checking validity, simply remove the validate only phrase. For an explanation of foo as used above, see the definition for “AREA-ALIAS” on page 839.

Create Transparent Partition

Create or validate a transparent partition definition between two databases. A transparent partition allows users to manipulate data that is stored in a target database as if it were part of the source database. The remote data is retrieved from the data source each time that users at the data target request it.

Syntax

```
create transparent partition DBS-NAME<area-spec> to DBS-NAME
  or replace
  at HOST-NAME as USER-NAME identified by PASSWORD
  using USER-NAME identified by PASSWORD for creation <area-spec>
  mapped globally (MEMBER-NAME , ) to (MEMBER-NAME , )
  outline direct
  reverse
  comment COMMENT-STRING
  remote comment COMMENT-STRING
  validate only
```

Use create transparent partition to create a partition in the following ways:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>create transparent partition</td>
<td>Create a transparent partition. A transparent partition enables users to access data from the data source as though it were stored in the data target. The data is, however, stored at the data source, which can be in another application, in another database, or on another Essbase Server.</td>
</tr>
<tr>
<td>create or replace ...partition</td>
<td>Create a partition definition, or replace an existing partition definition.</td>
</tr>
<tr>
<td>area...</td>
<td>Define the partition areas to share with the other database. Optionally nickname the area using an area-alias.</td>
</tr>
<tr>
<td>Keyword</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>to &lt;dbs-name&gt;</td>
<td>Create a partition definition between the current database source and the second database (the target).</td>
</tr>
<tr>
<td>from &lt;dbs-name&gt;</td>
<td>Create a partition definition between the current database target and the second database (the source).</td>
</tr>
<tr>
<td>at &lt;host-name&gt;</td>
<td>Specify the remote computer name, if you are creating a partition definition between the current database and one residing on a remote Essbase Server host.</td>
</tr>
</tbody>
</table>
| as <user-name> identified by <password> | Provide the name and password of a default partition user who can connect to both databases. Essbase uses the login information to:  
  - Transfer data between the source and the target for replicated and transparent partitions. Database security filters can be applied to prevent end users from seeing privileged data.  
  - Synchronize database outlines for all partition types. |
| using <user-name> identified by <password> for creation | Create the partition using a different user than the one being set as the default partition user. This can be useful when you want to specify a read-only user account as the default partition user. |
| mapped...                     | Define the member-name mapping for shared sections of both databases, if member names for sections that map are different in the two databases.                                                                  |
| outline...                    | Specify the direction in which outline synchronization should proceed, if necessary. The default direction is the same as the data-refresh direction.                                                              |
| comment                       | Create a comment to describe the source half of the partition definition.                                                                                                                                     |
| remote comment                | Create a comment to describe the target half of the partition definition.                                                                                                                                     |
| validate only                 | Validate the existing partition definition described by this statement, without actually creating it.                                                                                                        |

**Notes**

- Multiple area specifications are allowed, provided they are separated by whitespace. Multiple mappings are allowed, provided they are separated by whitespace. All area aliases used in a mapping should be associated with the target, and the direction of the mapped clause should go from source to target.
- The first DBS-NAME is the local database, and the second DBS-NAME is the remote database.
- Creating a partition to the remote site means the current database is the source. Creating a partition from the remote site means the current database is the target.
- If you are creating a partition and specifying a host name that includes a port number, see “Specifying Port Numbers in Partition Host Names” on page 1002 for more information.
- If you are using host name aliases, see “Using Host Name Aliases When Partitioning” on page 1003.
- Aggregate storage databases can be the source, the target, or the source and target of a transparent partition. Outline synchronization (refresh outline statement) is not currently enabled for partitions that involve aggregate storage databases.
To create a partition as an externally authenticated user, when using MaxL Script Editor, you must enter a `login` statement before the `create partition` statement. The login statement must include the full external user name with provider, as well as the host name.

For example,

```
login 'admin@Native Directory' 'password' on 'FQN';
create partition....;
```

**Example**

```
create or replace transparent partition sampeast.east
  area '@CHILDREN("Eastern Region"), @CHILDREN(Qtr1)' sourceArea
to samppart.company at localhost
as partitionuser identified by 'password'
  area '@CHILDREN(East) @CHILDREN(Qtr1)' targetArea;
```

Creates a transparent partition between the source, sampeast.east, and the target, samppart.company. The partition is defined only for the areas specified by the area aliases `sourceArea` and `targetArea`.

```
create or replace transparent partition source.source
  area 'DimensionA' sourceAreaA
  area 'DimensionB' sourceAreaB
  to target.target at localhost
as admin identified by 'password'
  area 'ParentMemberA' targetAreaA
  area 'ParentMemberB' targetAreaB
  mapped targetAreaA (ChildA) to (Child_a)
  mapped targetAreaB (ChildB) to (Child_b)
;
```

Creates a partition from database Source to database Target where the partitioned areas between them are DimensionA and DimensionB on the source, corresponding to ParentMemberA and ParentMemberB (respectively) on the target. Differences in member names between the two partitioned areas are resolved during the partition creation, using the `mapped` clauses. Area aliases are used after each area specification, so that members can be mapped specifically for each area.

**Create Trigger**

Create or replace a trigger to track state changes over a selected cube area.

Select the type of trigger to create:

- on-update
- after-update

**Create After-Update Trigger**

Create or replace a trigger to track state changes over a selected cube area.

Triggers help you track whether designated constraints are violated during updates (events) in the area, and allow you to specify resultant actions to execute if violations are detected.
Minimum permission required: Database Manager.

Create an after-update trigger if you want the trigger to be activated after the entire data update operation is completed. This is the only type of trigger supported in aggregate storage mode. When after-update triggers are used, the trigger fires when an update operation on level-0 data cells is complete, and the update operation as a whole has met any condition specified for the cube area.

For more information about the Essbase triggers feature, see the Oracle Essbase Database Administrator's Guide.

Note: You cannot create or replace a trigger during a calculation, or a data load (including a lock and send).

Note: If a calculation assigns the same value to a given cell as was already present before the calculation, then triggers for that cell will not activate. In other words, if cell values are not changed, blocks are not marked as dirty, and triggers for those blocks are not activated, even if the trigger condition was otherwise met.

Syntax

Use create after update trigger to create a trigger in the following ways:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>create after update trigger</td>
<td>Create a new after-update trigger.</td>
</tr>
<tr>
<td>create or replace after update</td>
<td>Create an after-update trigger, or replace an existing trigger of the same</td>
</tr>
<tr>
<td>trigger</td>
<td>name.</td>
</tr>
<tr>
<td>where &lt;cube area&gt;</td>
<td>Define the area of the database to be tracked. Use a valid, symmetric MDX</td>
</tr>
<tr>
<td></td>
<td>slice specification.</td>
</tr>
<tr>
<td>when &lt;condition&gt;</td>
<td>Define the condition to be tested for using the keyword WHEN followed by a</td>
</tr>
<tr>
<td></td>
<td>valid MDX conditional expression.</td>
</tr>
<tr>
<td>then &lt;action&gt;</td>
<td>Define the action to be taken if the WHEN condition is met. See examples in</td>
</tr>
<tr>
<td></td>
<td>“Examples of Triggers” on page 1006.</td>
</tr>
<tr>
<td>end</td>
<td>The END keyword must terminate every create trigger statement.</td>
</tr>
</tbody>
</table>

Example

create or replace after update trigger Sample.Basic.EastColas
where (Jan, Sales, Actual, [100], East)
when Jan > 20 then spool EastColas_Fail end;
Logs a message in the \$ARBORPATH\app\Sample\Basic\trig\EastColas_Fail file.

**Create On-Update Trigger**

Create or replace an on-update trigger to track state changes over a selected cube area.

Triggers help you track whether designated constraints are violated during updates (events) in the area, and allow you to specify resultant actions to execute if violations are detected.

Minimum permission required: Database Manager.

An *on-update* trigger is the default type of trigger, even if no type is specified. During a data update process, any cell update that meets a condition specified for the cube area will immediately activate the trigger. On-update triggers are not supported in aggregate storage databases. If you are using an aggregate storage database, you can create *after-update triggers*.

**Note:** If a calculation assigns the same value to a given cell as was already present before the calculation, then triggers for that cell will not activate. In other words, if cell values are not changed, blocks are not marked as dirty, and triggers for those blocks are not activated, even if the trigger condition was otherwise met.

For more information about the Essbase triggers feature, see the *Oracle Essbase Database Administrator’s Guide*.

**Note:** You cannot create or replace a trigger during a calculation, or a data load (including a lock and send).

**Syntax**

Use `create on update trigger` to create a trigger in the following ways:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>create</code></td>
<td>Create a new on-update trigger. The <code>on update</code> keywords are optional; an on-update trigger is created by default.</td>
</tr>
<tr>
<td><code>create or replace</code></td>
<td>Create an on-update trigger, or replace an existing trigger of the same name.</td>
</tr>
</tbody>
</table>

**Example Syntax**

```
create or replace on update trigger TRIGGER-NAME
```

Use `create on update trigger` to create a trigger in the following ways:
### Description

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>log_value OFF</td>
<td>Optional. Log no data values to the trigger spool file. This is the default.</td>
</tr>
<tr>
<td>log_value ON</td>
<td>Optional. Log new and old data values to the trigger spool file.</td>
</tr>
<tr>
<td>where &lt;cube area&gt;</td>
<td>Define the area of the database to be tracked. Use a valid, symmetric MDX slicer specification.</td>
</tr>
<tr>
<td>when &lt;condition&gt;</td>
<td>Define the condition to be tested for using the keyword WHEN followed by a valid MDX conditional expression.</td>
</tr>
<tr>
<td>then &lt;action&gt;</td>
<td>Define the action to be taken if the WHEN condition is met. See examples in “Examples of Triggers” on page 1006.</td>
</tr>
<tr>
<td>else &lt;action&gt;</td>
<td>Optional. Define an action to be taken if the WHEN condition is not met. See examples in “Examples of Triggers” on page 1006.</td>
</tr>
<tr>
<td>end</td>
<td>The END keyword must terminate every create trigger statement.</td>
</tr>
</tbody>
</table>

### Example

```maxl
create or replace on update trigger Sample.Basic.EastColas
  where (Jan, Sales, Actual, [100], East)
  when Jan > 20 then spool EastColas_Fail end;
```

Logs a message in the `$ARBORPATH\app\Sample\Basic\trig\EastColas_Fail` file.

### Create User

Create or re-create a user, either from scratch or as a copy of another user. Users can be created to log in using Essbase security. Optionally, create the Essbase-authenticated user as a member of a group.

**Note:** This entire MaxL statement is deprecated. Oracle recommends using Shared Services Console, Java API, or Lifecycle Management for this task, instead of using MaxL or C API.
Use `create user` to create a user in the following ways:

**Keyword** | **Description**
---|---
create user | Create a new Essbase user.
create or replace user | Create a new Essbase user. If a user of that name already exists, it is replaced.
create user as | Create a user as a copy of an existing user. The new user has an identical security profile to the user that was copied.
member of group | Create a user and assign membership to a security group.
preserve_groups | When replacing a user, preserve the original user’s group associations.
comment | Create an optional comment to describe the user.
type external | Create a user that must log in using the EPM System security platform. For the user to log in successfully, the “AUTHENTICATIONMODULE” on page 444 parameter must be set to CSS in the `essbase.cfg` file, and the name must match a valid user name in the external authentication repository.

**Example**

```plaintext
create user Fiona identified by sunflower;

Creates a user called Fiona with the password sunflower.
```

```plaintext
create user Guest identified by 'password' member of group Visitors;

Creates a user called Guest with the password password, and adds Guest to the group called Visitors. Quotation marks are required because `password` is a MaxL keyword.
```

```plaintext
create or replace user Guest identified by 'password' as RecycleMe;
```
Creates a user called Guest as a copy of an existing user called RecycleMe. If Guest already exists, it is overwritten.

```sql
create or replace user 'Autumn Smith' type external;
```

Creates a user called Autumn Smith who is externally authenticated in a corporate authentication repository supported by the EPM System security platform.

**Deploy**

Deploy a cube to the Essbase Server.

This MaxL Shell statement replicates the behavior of the Essbase Studio Cube Deployment Wizard.

For detailed information about cube deployment using Essbase Studio, see the *Oracle Essbase Studio User’s Guide*. 
Use **deploy** to deploy a cube in the following ways:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deploy [all] from model ...</td>
<td>Load dimensions and members to an Essbase outline, and then populate the Essbase database with data.</td>
</tr>
<tr>
<td>Deploy outline from model ...</td>
<td>Load only dimensions and members (without data) to an Essbase outline.</td>
</tr>
<tr>
<td>Deploy data from model ...</td>
<td>Populate Essbase database outline with data. Loading data establishes actual values for the cells defined by the structural outline of the database.</td>
</tr>
</tbody>
</table>
| Deploy outline_in_background from model ...       | Deploy an XOLAP cube in the background, while keeping the current Essbase application active and available for queries. This option is valid only for models that are enabled for XOLAP. With this option, the Essbase cube downtime is reduced. For example, in Smart View, users may continue performing analysis on the cube during most of the cube redeployment process while the outline build is occurring in the background. When the redeployment is finished, if the user tries to perform a retrieve (or any other operation), an error message is displayed asking the user to log in again. When the deploy operation finishes building the outline, the existing application is stopped and removed, and the newly deployed application is renamed to the previously used application. The option to deploy in the background is valid only when taking the following actions:  
  - Redeploying XOLAP cubes  
  - Building an outline only  

This option is not valid when taking the following actions:  
  - Performing an initial XOLAP cube deployment  
  - Redeploying non-XOLAP cubes  
  - Loading data |
<p>| ...in cube schema                                  | Deploy the model from a cube schema in Essbase Studio.                                         |
| ...delete_members...                               | Remove all dimensions and members in an existing Essbase outline. When you delete members, Essbase Studio removes all members from the existing Essbase database outline and then uses the dimensions and members in the Essbase model to recreate the outline. Deploy operations can take longer when the <strong>delete_members</strong> keywords are used. Oracle recommends using this option only if you have a specific reason to do so. Use the <strong>delete_members</strong> keywords if, for example, you know that some members have been removed from the underlying hierarchies used to create an existing Essbase model. |
| ...delete database...                              | Delete all members and data in the Essbase database before performing a member load, or a member and data load. This action clears the Essbase database outline before the outline build occurs, significantly reducing the amount of time required for the load. Do not use the <strong>delete database</strong> keywords if you are using the <strong>deploy data from model</strong> keywords. |</p>
<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
</table>
| incremental_load              | Update specific dimensions or members in the Essbase outline. You can perform incremental loads when loading members only, or when loading members and data. This keyword does not apply when only loading data.  
  Note: You can now perform incremental outline builds on XOLAP cubes.                                                                                                                                                                                                                                                                                                                                                       |
<p>| rule_file_only                | Specify the changes Essbase should make to data and members from a data source while loading them into the Essbase database. The data source is not changed. Rules files are saved to the app directory of your Essbase installation.                                                                                                                                                                                                                                       |
| to application...database     | The application and database name of the cube to deploy.                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| incremental_load [update all] | Update all hierarchies in the model. Any new members are added. When this phrase is used, all hierarchies are automatically selected for update.                                                                                                                                                                                                                                                                                                                                                     |
| modify using update for       | Update specified hierarchies. Any new members are added to the specified hierarchies; existing members are retained and updated. Use this option to add new members without changing the hierarchy’s structure, or to add shared members. During incremental update, an existing hierarchy is updated without removing the existing members.                                                                                                                                         |
| rebuild for                   | Rebuild specified hierarchies. Clears all the members of the specified hierarchies and adds back all members, including shared members. If necessary, restructures the hierarchy. This phrase is particularly useful if you have removed members from a hierarchy. Then the members that still exist, plus any new ones, are added back into the hierarchy and, if necessary, the hierarchy is restructured.                                                                                                             |
| preserve...all                | Restructure the database during member load and preserve all existing data that applies to the changed outline when restructuring occurs.                                                                                                                                                                                                                                                                                                   |
| preserve...input              | Restructure the database during member build and preserve only those blocks containing data that is loaded. Many applications contain data that is entered at parent levels. Using the preserve input keywords prevents deletion of any blocks that are created by data load, whether they are non-level zero or level zero (leaf node) blocks.                                                                                                          |
| preserve...level0             | Restructure the database during member build and preserve data only for level zero members. This is the optimal restructure option if you change the source database and need to recalculate the data, and if all data required for the calculation is in level zero members. Using this keyword deletes all upper-level blocks before restructuring. This reduces the disk space required for restructuring and improves calculation time when the database is recalculated. The upper-level blocks are recreated when you calculate the database. |
| preserve...no                 | Clear all data from the database.                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| add                           | Add the values in the data source to the existing values in the cube.                                                                                                                                                                                                                                                                                                                                                                                                                           |
| subtract                      | Subtract the values in the data source from the existing values in the cube.                                                                                                                                                                                                                                                                                                                                                                                                                     |
| overwrite values              | Replace the values in the cube with the values in the data source.                                                                                                                                                                                                                                                                                                                                                                                                                           |</p>
<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>odbc_dsn</td>
<td>Provide a ODBC DSN name. If you choose to deploy using an ODBN DSN name in order to take advantage of your own custom ODBC DSN parameter settings, follow these guidelines:</td>
</tr>
<tr>
<td></td>
<td>• Set up your ODBC DSN before beginning deployment, on the server machine where Essbase is installed.</td>
</tr>
<tr>
<td></td>
<td>• The ODBC DSN must have the same user name and password as the data source connection being used in this deployment.</td>
</tr>
<tr>
<td></td>
<td>To use an Oracle OCI connect identifier, use the following syntax after odbc_dsn keyword:</td>
</tr>
<tr>
<td></td>
<td>host:port/Oracle_service_name</td>
</tr>
<tr>
<td></td>
<td>Following is an example OCI connect identifier where the host server name is “myserver,” the port number is 1521, and the Oracle Service Name is “orcl.us.oracle.com”:</td>
</tr>
<tr>
<td></td>
<td>myserver:1521/orcl.us.oracle.com</td>
</tr>
<tr>
<td>use streaming build</td>
<td>Deploy in streaming mode. In streaming mode, Essbase Studio Server queries the external data source directly (rather than querying the external data source using an ODBC connection).</td>
</tr>
<tr>
<td></td>
<td>These keywords are valid when the Essbase model being deployed contains single or multiple relational data sources.</td>
</tr>
<tr>
<td>STUDIO-LOGIN-SPEC</td>
<td>Provide the name and password of the Essbase Studio user, and provide the Essbase Studio Server host name (see “HOST-NAME” on page 854).</td>
</tr>
<tr>
<td>ESS-LOGIN-SPEC</td>
<td>Provide the name and password of an Essbase user who can create databases, and the name of the Essbase Server machine to which you want to deploy.</td>
</tr>
<tr>
<td>...using connection ...</td>
<td>Provide the name of a valid Essbase connection created in Essbase Studio.</td>
</tr>
<tr>
<td>...keep all</td>
<td>INTEGER errors...</td>
</tr>
<tr>
<td>...on error ignore</td>
<td>abort dataload ...</td>
</tr>
<tr>
<td></td>
<td>Choose either to ignore any errors during the data load process, or cancel the data load if there is an error.</td>
</tr>
<tr>
<td>...on error append</td>
<td>write</td>
</tr>
<tr>
<td></td>
<td>If there is a deployment error, either add errors to an existing error file, or create a new one.</td>
</tr>
<tr>
<td>...FILE-NAME</td>
<td>to default...</td>
</tr>
<tr>
<td></td>
<td>Specify an error file-name and path, or accept the default error file location at HYPERION_HOME/EssbaseStudio/server/essjapihome/data and the default file name of the following format:</td>
</tr>
<tr>
<td></td>
<td>app_name.db_name_timestamp.err</td>
</tr>
</tbody>
</table>

**Example**

deploy all from model 'cs1Model' in cube schema '\CubeSchemas\cs1' login $1 identified by $2 on host 'poplar-pc1' to application 'cs2' database 'cs2' add values using connection 'Connection1' keep 200 errors on error ignore dataload write to default;  

deploy outline from model 'MaxLModel3' with option incremental_load modify using rebuild for 'Time' preserve all data login 'admin' identified by 'password' on host 'localhost' to application 'mxldemo2' database 'maxldemo' using connection 'Connection1';

767
deploy outline from model 'StreamSchModel' in cube schema '\StreamSch' login $1 identified by $2 on host 'SCL20382.hyperion.com' to application 'stream' database 'test' use streaming build using connection 'Connection1' keep 200 errors on error ignore dataload write to default;

deploy outline_in_background from model 'MaxLModel3' with option incremental_load modify using rebuild for 'Time' preserve all data login 'admin' identified by 'password' on host 'localhost' to application 'mxldemo2' database 'maxldemo' using connection 'Connection1';

**Display Application**

View information about current application-wide settings.

**Syntax**

```plaintext
display application
```

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Display all applications on the system.</td>
</tr>
<tr>
<td>&lt;app-name&gt;</td>
<td>Display the named application.</td>
</tr>
<tr>
<td>&lt;app-name&gt; message_level</td>
<td>Display the message-level settings for the named application.</td>
</tr>
</tbody>
</table>

Sample output:

```
+-------------------+-------------------+
| component          | message_level     |
| Sample             | info              |
| lease_manager      | error             |
```

**Output Columns**

<table>
<thead>
<tr>
<th>Column</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>application</td>
<td>String. Name of the application.</td>
</tr>
<tr>
<td>comment</td>
<td>String. Optional description of the application.</td>
</tr>
<tr>
<td>startup</td>
<td>TRUE or FALSE. Whether all users who have at least read permission can start the application.</td>
</tr>
<tr>
<td>autostartup</td>
<td>TRUE or FALSE. Whether the application starts when Essbase Server starts.</td>
</tr>
<tr>
<td>minimum permission</td>
<td>String. Minimum level of permission all users can have to databases in the application.</td>
</tr>
<tr>
<td>connects</td>
<td>TRUE or FALSE. Whether any user with a permission lower than Application Manager can make connections to the databases in this application which would require the databases to be started.</td>
</tr>
<tr>
<td>Column</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>commands</td>
<td>TRUE or FALSE. Whether users with sufficient permissions can make read requests (or higher) to databases in the application.</td>
</tr>
<tr>
<td>updates</td>
<td>TRUE or FALSE. Whether users with sufficient permissions can make write requests (or higher) to databases in the application.</td>
</tr>
<tr>
<td>security</td>
<td>TRUE or FALSE. If FALSE, the Essbase security settings are disabled for the application, and all users are treated as Application Managers.</td>
</tr>
<tr>
<td>lock_timeout</td>
<td>Number. Maximum time interval (in seconds) that locks on data blocks can be held by clients.</td>
</tr>
<tr>
<td>max_lro_file_size</td>
<td>Number. If 0, there is no limit on the size of LRO attachments. All other sizes are displayed in kilobytes.</td>
</tr>
<tr>
<td>application_type</td>
<td>The type of encoding for the application.</td>
</tr>
<tr>
<td></td>
<td>0 Unspecified encoding type. The application was created using a pre-Release 7.0 version of Essbase.</td>
</tr>
<tr>
<td></td>
<td>1 This value is not in use.</td>
</tr>
<tr>
<td></td>
<td>2 Non-Unicode-mode application</td>
</tr>
<tr>
<td></td>
<td>3 Unicode-mode application</td>
</tr>
<tr>
<td>application_locale</td>
<td>The language of the character set in use by the application.</td>
</tr>
<tr>
<td>server</td>
<td>The name of the computer hosting the Essbase Server.</td>
</tr>
<tr>
<td>application_status</td>
<td>0 Not Loaded</td>
</tr>
<tr>
<td></td>
<td>1 Loading</td>
</tr>
<tr>
<td></td>
<td>2 Loaded</td>
</tr>
<tr>
<td></td>
<td>3 Unloading</td>
</tr>
<tr>
<td>elapsed_time</td>
<td>How long the application has been loaded.</td>
</tr>
<tr>
<td>users_connected</td>
<td>The number of users currently connected to the application.</td>
</tr>
<tr>
<td>storage_type</td>
<td>The data storage type of the application.</td>
</tr>
<tr>
<td></td>
<td>0 Default data storage (same as 1)</td>
</tr>
<tr>
<td></td>
<td>1 Block storage (multidimensional)</td>
</tr>
<tr>
<td></td>
<td>4 Aggregate storage</td>
</tr>
<tr>
<td>number_of_databases</td>
<td>The number of databases in the application namespace.</td>
</tr>
</tbody>
</table>

**Example**

display application;

Displays information about all applications on the system.

display application Sample;

Displays information about the Sample application.

**Display Calculation**

View a list of stored calculations on the system.
**Syntax**

```
- display calculation
  - all
  - CALC-NAME
  - on application APP-NAME
  - on database DBS-NAME
```

Use `display calculation` to display calculations in the following ways:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Display all stored calculations on the system.</td>
</tr>
<tr>
<td>&lt;calc-name&gt;</td>
<td>Display the named calculation.</td>
</tr>
<tr>
<td>on application</td>
<td>Display all calculations on the specified application.</td>
</tr>
<tr>
<td>on database</td>
<td>Display all calculations on the specified database.</td>
</tr>
</tbody>
</table>

**Example**

display calculation;

---

**Display Database**

View information about current database-wide state and settings.

**Syntax**

```
- display database
  - all
  - DBS-NAME
  - request_history
  - on application APP-NAME
```

Use `display database` to display database information in the following ways:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Display information for all databases on the system.</td>
</tr>
<tr>
<td>&lt;dbs-name&gt;</td>
<td>Display information about the specified database.</td>
</tr>
<tr>
<td>on application</td>
<td>Display information about all databases on the specified application.</td>
</tr>
<tr>
<td>request_history</td>
<td>Display information about recent requests for the database. Information about the last three requests is returned.</td>
</tr>
</tbody>
</table>

**Output Columns**

<table>
<thead>
<tr>
<th>Column</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>application</td>
<td>Name of the application</td>
</tr>
<tr>
<td>Column</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>database</td>
<td>Name of the database</td>
</tr>
<tr>
<td>comment</td>
<td>Text of the database comment, if present</td>
</tr>
<tr>
<td>startup</td>
<td>Whether the database is set to start when a user attempts retrievals against it</td>
</tr>
<tr>
<td>autostartup</td>
<td>Whether the database is set to start when the application starts</td>
</tr>
<tr>
<td>minimum permission</td>
<td>Minimum permission setting for the database. Not applicable in EPM System security mode</td>
</tr>
<tr>
<td>aggregate_missing</td>
<td>Whether Essbase aggregates missing values during database calculations</td>
</tr>
<tr>
<td>two_pass_calc</td>
<td>Whether Two-Pass calculation is enabled</td>
</tr>
<tr>
<td>create_blocks</td>
<td>Whether create blocks on equations is enabled</td>
</tr>
<tr>
<td>data_cache_size</td>
<td>The size setting of the data cache for holding uncompressed data blocks</td>
</tr>
<tr>
<td>file_cache_size</td>
<td>The size setting of the file cache</td>
</tr>
<tr>
<td>index_cache_size</td>
<td>The size setting of the index cache, a buffer in memory that holds index pages</td>
</tr>
<tr>
<td>index_page_size</td>
<td>The size setting for the index page, a subdivision of an index file that contains index entries that point to data blocks. This setting is not changeable</td>
</tr>
<tr>
<td>cache_pinning</td>
<td>Whether cache memory locking is enabled</td>
</tr>
</tbody>
</table>
| compression            | Compression type. Field values are numeric, and translate as follows: \n\n|                        | 1     Run-length encoding  
|                        | 2     Bitmap  
|                        | 3     ZLIB  |
| retrieve_buffer_size   | The size of the retrieval buffer, used to process and optimize retrievals from grid clients                                                                                                                   |
| retrieve_sort_buffer_size | The size of the retrieval sort buffer, used to hold data to be sorted during retrievals                                                                                                                     |
| io_access_mode         | The current I/O access mode                                                                                                                                                                                 |
| pending_io_access_mode | Values are numeric, and translate as follows: \n\n|                        | 0     Invalid / Error  
|                        | 1     Buffered  
<p>|                        | 2     Direct  |
| no_wait                | Whether Essbase is set to wait to acquire a lock on data blocks that are locked by another transaction                                                                                                      |
| committed_mode         | Whether Essbase is set to enable transactions to hold read/write locks on all data blocks involved with a transaction until the transaction completes and commits                                                                 |
| pre_image_access       | Whether Essbase is set to allow users read-only access to data blocks that are locked for the duration of another concurrent transaction                                                                 |
| lock_timeout           | The maximum number of minutes that data blocks can be locked by users                                                                                                                                       |</p>
<table>
<thead>
<tr>
<th>Column</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>commit_blocks</td>
<td>The number of data blocks updated before Essbase performs a commit (The default is 3000)</td>
</tr>
<tr>
<td>commit_rows</td>
<td>The number of rows of a data file processed during a data load before Essbase performs a commit (The default is 0)</td>
</tr>
<tr>
<td>currency_database</td>
<td>Name of a linked currency database, if one exists</td>
</tr>
<tr>
<td>currency_member</td>
<td>The member to use as a default value in currency conversions</td>
</tr>
<tr>
<td>currency_conversion</td>
<td>The method of currency conversion.</td>
</tr>
<tr>
<td></td>
<td>Values are numeric, and translate as follows:</td>
</tr>
<tr>
<td></td>
<td>1 division</td>
</tr>
<tr>
<td></td>
<td>2 multiplication</td>
</tr>
<tr>
<td>note</td>
<td>Annotation accessible from the login dialog box</td>
</tr>
<tr>
<td>db_type</td>
<td>Database type. Values are numeric, and translate as follows:</td>
</tr>
<tr>
<td></td>
<td>0 Normal</td>
</tr>
<tr>
<td></td>
<td>1 Currency</td>
</tr>
<tr>
<td>read_only_mode</td>
<td>Values are numeric, and translate as follows:</td>
</tr>
<tr>
<td></td>
<td>0 Not read only</td>
</tr>
<tr>
<td></td>
<td>1 Read only</td>
</tr>
<tr>
<td>db_status</td>
<td>Running status of the database. Values are numeric, and translate as follows:</td>
</tr>
<tr>
<td></td>
<td>0 Not Loaded</td>
</tr>
<tr>
<td></td>
<td>1 Loading</td>
</tr>
<tr>
<td></td>
<td>2 Loaded</td>
</tr>
<tr>
<td></td>
<td>3 Unloading</td>
</tr>
<tr>
<td>elapsed_time</td>
<td>How long the database has been running, in hours:minutes:seconds</td>
</tr>
<tr>
<td>users_connected</td>
<td>Number of connected users</td>
</tr>
<tr>
<td>blocks_locked</td>
<td>How many data blocks are locked</td>
</tr>
<tr>
<td>number_dimensions</td>
<td>Number of dimensions</td>
</tr>
<tr>
<td>number_disk_volume</td>
<td>Number of disk volumes</td>
</tr>
<tr>
<td>data_status</td>
<td>Values are numeric, and translate as follows:</td>
</tr>
<tr>
<td></td>
<td>0 No Data</td>
</tr>
<tr>
<td></td>
<td>1 Data Loaded without Calculation</td>
</tr>
<tr>
<td></td>
<td>2 Data is Calculated</td>
</tr>
<tr>
<td>current_data_cache</td>
<td>Current size of the data cache</td>
</tr>
<tr>
<td>current_file_cache</td>
<td>Current size of the file cache</td>
</tr>
<tr>
<td>current_index_cache</td>
<td>Current size of the index cache</td>
</tr>
<tr>
<td>current_index_page</td>
<td>Current size of the index page</td>
</tr>
<tr>
<td>Column</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>currency_country_dim</td>
<td>For currency databases, the country dimension</td>
</tr>
<tr>
<td>currency_time_dim</td>
<td>For currency databases, the time dimension</td>
</tr>
<tr>
<td>currency_category_dim</td>
<td>For currency databases, the accounts dimension where currency categories are defined</td>
</tr>
<tr>
<td>currency_type_dim</td>
<td>For currency databases, the currency type dimension, which contains members that identify various currency scenarios</td>
</tr>
<tr>
<td>request_type_n /</td>
<td>If you use the request_history keyword, information about the last three requests is returned under columns request_type_n, request_user_n, request_start_n, and request_end_n, where n is 1, 2, and 3. The request_user fields return the names of the users who made the requests. The request_start and request_end fields return the date and time of the requests. request_type field values are numeric, and translate as follows:</td>
</tr>
<tr>
<td>request_user_n /</td>
<td></td>
</tr>
<tr>
<td>request_start_n /</td>
<td></td>
</tr>
<tr>
<td>request_end_n</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>Data Load</td>
</tr>
<tr>
<td>1</td>
<td>Calculation</td>
</tr>
<tr>
<td>2</td>
<td>Outline Update</td>
</tr>
<tr>
<td></td>
<td>Unknown</td>
</tr>
</tbody>
</table>

**Example**

display database;

Displays information about all databases on the system.
display database Sample.Basic;

Displays information about the Sample.Basic database.

**Display Disk Volume**

View a list of currently defined disk volume definitions.

**Syntax**

```plaintext
display disk volume

all
UNIQUE-VOL-NAME
on database DBS-NAME
```

Use `display disk volume` to display disk volume information in the following ways:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Display all disk-volume definitions on the system.</td>
</tr>
<tr>
<td>&lt;unique-vol-name&gt;</td>
<td>Display a disk-volume definition by name.</td>
</tr>
<tr>
<td>on database</td>
<td>Display all disk-volume definitions associated with the specified database.</td>
</tr>
</tbody>
</table>
Notes
To manage disk volumes, use alter database (containing add, drop, and set disk volume).

Output Columns
The values returned for the file type field are numeric, and translate as follows:

<table>
<thead>
<tr>
<th>Column</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Index</td>
</tr>
<tr>
<td>2</td>
<td>Data</td>
</tr>
<tr>
<td>3</td>
<td>Index and Data</td>
</tr>
</tbody>
</table>

Example
display disk volume;

Displays all (if any) disk volumes defined on the system.
display disk volume sample.basic.'vol3/hyperion/Essbase';
or
display disk volume sample.basic.C;

Displays information about a particular disk volume definition on Sample.Basic.

Display Drillthrough
View drill-through URL definitions used to link to content hosted on Oracle ERP and EPM applications.

Syntax

```
display drillthrough [DBS-NAME URL-NAME] [to FILE-NAME-PREFIX] [to FILE-NAME]
```

Use display drillthrough to display URL information in the following ways:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;dbs-name&gt;</td>
<td>Display all drill-through URL definitions on the database. The number of drill-through URLs per database is limited to 255.</td>
</tr>
<tr>
<td>&lt;dbs-name&gt; to &lt;file-name-prefix&gt;</td>
<td>Display all drill-through URL definitions on the database, writing the URL XML content to file names prefixed with the string given as input for FILE-NAME-PREFIX.</td>
</tr>
<tr>
<td>Keyword</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>&lt;url-name&gt;</td>
<td>Display the specified drill-through URL definition.</td>
</tr>
<tr>
<td></td>
<td>The number of drillable regions in a drill-through URL is limited to 256. The number of characters per drillable region is limited to 65536.</td>
</tr>
<tr>
<td>&lt;url-name&gt; to &lt;file-name&gt;</td>
<td>Display the specified drill-through URL definition, writing the URL XML content to the specified file name.</td>
</tr>
</tbody>
</table>

**Example**

display drillthrough sample.basic;

    Displays all drill-through URL definitions on Sample.Basic.

display drillthrough sample.basic to "urlxmls";

    Displays all drill-through URL definitions on Sample.Basic, writing the URL XML content to file names prefixed with urlxmls.

display drillthrough sample.basic."Drill through To EPMI";

    Displays the drill-through URL definition named Drill through To EPMI.

display drillthrough sample.basic."Drill through To EPMI" to "c:/temp/drillthrough.xml";

    Displays the drill-through URL definition named Drill through To EPMI, writing the URL XML content to the file drillthrough.xml.

**See Also**

- alter drillthrough
- create drillthrough
- drop drillthrough

### Display Filter

View a specific filter or a list of all filters on the system.

**Syntax**

```
display filter
```

- `all`  
- `FILTER-NAME`  
- `on database DBS-NAME`

Use `display filter` to display filters in the following ways. Use `display filter row` to display the contents of filters.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Display all filters on the system.</td>
</tr>
<tr>
<td>&lt;filter-name&gt;</td>
<td>Display a filter by name.</td>
</tr>
</tbody>
</table>
Keyword | Description
--- | ---
on database | Display all filters associated with the specified database.

**Example**
display filter;

Displays the names of all filters on the system.

### Display Filter Row

View the filter rows which define database access within a specific filter or all filters.

**Syntax**

```plaintext
display filter row

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Display all filters (and their contents) defined on the system.</td>
</tr>
<tr>
<td>&lt;filter-name&gt;</td>
<td>Display a filter and its contents by name.</td>
</tr>
<tr>
<td>on database</td>
<td>Display all filters (and their contents) associated with the specified database.</td>
</tr>
</tbody>
</table>

**Example**
display filter row sample.basic.filt2;

Displays the row-by-row definition of a filter named filt2 which is associated with Sample.Basic.

### Display Function

View a list of custom-defined functions available globally or to an application. If MaxL shows no application name next to a function in the display output, then that function is global (system-wide). This statement also returns the validation status of an application’s local custom-defined function or functions.

Minimum permission required: Read.
Syntax

Use display function to display custom-defined functions in the following ways:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Display all custom-defined functions, including those registered on the application level (local) or on the system level (global).</td>
</tr>
<tr>
<td>on system</td>
<td>Display all custom-defined functions registered on the system (global). Does not include locally defined functions.</td>
</tr>
<tr>
<td>on application APP-NAME</td>
<td>Display all custom-defined functions registered with the specified application (local). Does not include globally defined functions.</td>
</tr>
<tr>
<td>&lt;func-name&gt;</td>
<td>Display a custom-defined function by name.</td>
</tr>
</tbody>
</table>

Output Columns

The columns returned for this statement are described as follows:

<table>
<thead>
<tr>
<th>Column</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>application</td>
<td>Application name(s).</td>
</tr>
<tr>
<td>function</td>
<td>Registered custom-defined function name(s), as defined by “FUNC-NAME” on page 852 in the create function statement.</td>
</tr>
<tr>
<td>class</td>
<td>The java class before the method, as defined by “JAVACLASS.METHOD” on page 857 in the create function statement.</td>
</tr>
<tr>
<td>method</td>
<td>The java method (at the end of the class), as defined by “JAVACLASS.METHOD” on page 857 in the create function statement.</td>
</tr>
<tr>
<td>spec</td>
<td>Optional Essbase calculator-syntax specification string, as defined by ”CALC-SPEC-STRING” on page 841 in the create function statement.</td>
</tr>
<tr>
<td>comment</td>
<td>String as defined by “COMMENT-STRING” on page 843 in the create function statement.</td>
</tr>
<tr>
<td>runtime</td>
<td>Values: TRUE or FALSE. Whether or not the custom-defined function was created with the runtime property.</td>
</tr>
<tr>
<td>Column</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>state</td>
<td>The current state of the registered custom-defined function.</td>
</tr>
</tbody>
</table>

Values:
- 0 = **UNKNOWN**. It is unknown whether the function is valid Java and is loaded into any application process.
- 1 = **NOT_LOADED**. The function is not loaded into any application process. You may have to refresh or restart the application in order to use this function. Or, the function may not be developed validly in Java.
- 2 = **LOADED**. The function is valid Java, and is loaded into at least one application process.
- 3 = **OVERRIDDEN**. The local (application) function is overridden by a global (system-wide) function of the same name.

**Example**

display function on application sample;

Displays all custom-defined functions associated with the application Sample.

**Display Group**

View a specific group or a list of all groups on the system. To view group membership information, use **display user**.

**Syntax**

```bash
display group
```

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Display all security groups on the system.</td>
</tr>
</tbody>
</table>

**Note:** This MaxL grammar is deprecated. Oracle recommends using Shared Services Console, Java API, or Lifecycle Management to get a list of all groups.

```bash
all failed_sss_migration
GROUP-NAME
```

Use **display group** to display groups in the following ways:

**Display Location Alias**

View a specific location alias or a list of all location aliases defined on the system.
Syntax

You can display location aliases in the following ways using `display location alias`.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Display all location aliases defined on the system.</td>
</tr>
<tr>
<td>&lt;location-alias-name&gt;</td>
<td>Display a location alias by name.</td>
</tr>
<tr>
<td>on application</td>
<td>Display all location aliases defined for the specified application.</td>
</tr>
<tr>
<td>on database</td>
<td>Display all location aliases defined for the specified database.</td>
</tr>
</tbody>
</table>

**Example**

display location alias all;

Displays a list of location aliases defined on the system.

**Display Lock**

View information about locks currently held by users or processes on data blocks.

**Note:** Data locks do not apply to aggregate storage applications.

Syntax

You can display locks in the following ways using `display lock`.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Display all locks on the specified scope. If all is omitted, this is the default.</td>
</tr>
<tr>
<td>on system</td>
<td>Display all locks on the system.</td>
</tr>
<tr>
<td>on application</td>
<td>Display all locks associated with the specified application.</td>
</tr>
<tr>
<td>on database</td>
<td>Display all locks associated with the specified database.</td>
</tr>
</tbody>
</table>
Display Macro

View a list of custom-defined macros available globally or to an application. If MaxL shows no application name next to a macro in the display output, then that macro is global (system-wide).

Minimum permission required: Read.

Syntax

```plaintext
display macro
  all
  on system
  on application APP-NAME
  MACRO-NAME
```

You can display custom-defined macros in the following ways using `display macro`.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Display all custom-defined macros, including those registered on the application level (local) or on the system level (global).</td>
</tr>
<tr>
<td>on system</td>
<td>Display all custom-defined macros registered on the system (global). Does not include locally defined macros.</td>
</tr>
<tr>
<td>on application</td>
<td>Display all custom-defined macros registered with the specified application (local). Does not include globally defined macros.</td>
</tr>
<tr>
<td><code>&lt;macro-name&gt;</code></td>
<td>Display a custom-defined macro by name.</td>
</tr>
</tbody>
</table>

Output Columns

The columns returned for this statement are described as follows:

<table>
<thead>
<tr>
<th>Column</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>application</td>
<td>Application name(s).</td>
</tr>
<tr>
<td>macro</td>
<td>Macro name(s), as defined by “MACRO-NAME” on page 859 in the create macro statement.</td>
</tr>
<tr>
<td>signature</td>
<td>Macro signature, as defined by the custom-defined macro input parameters in the create macro statement.</td>
</tr>
<tr>
<td>expansion</td>
<td>Macro expansion, as defined by “MACRO-EXPANSION” on page 858 in the create macro statement.</td>
</tr>
<tr>
<td>spec</td>
<td>Optional Essbase calculator-syntax specification string, as defined by “CALC-SPEC-STRING” on page 841 in the create macro statement.</td>
</tr>
<tr>
<td>comment</td>
<td>String as defined by “COMMENT-STRING” on page 843 in the create macro statement.</td>
</tr>
<tr>
<td>Column</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>state</td>
<td>The current state of the registered custom-defined macro.</td>
</tr>
<tr>
<td></td>
<td>Values:</td>
</tr>
<tr>
<td></td>
<td>● 0 = UNKNOWN. It is unknown whether the macro is loaded into any application process.</td>
</tr>
<tr>
<td></td>
<td>● 1 = NOT_LOADED. The macro is not loaded into any application process. You may have to refresh or restart the application in order to use this macro.</td>
</tr>
<tr>
<td></td>
<td>● 2 = LOADED. The macro is loaded into at least one application process.</td>
</tr>
<tr>
<td></td>
<td>● 3 = OVERRIDDEN. The local (application) macro is overridden by a global (system-wide) macro of the same name.</td>
</tr>
</tbody>
</table>

**Example**

display macro on application sample;

Displays all custom-defined macros associated with the application Sample.

**Display Object**

View a list of database-related file objects stored in database directories.

**Syntax**

```plaintext
display [locked] object

object

   all
   of type <OBJ-TYPE>

   on system
      on application <APP-NAME>
      on database <DBS-NAME>

   OBJNAME of type <OBJ-TYPE>

   <OBJ-TYPE> ::= 
      outline
      calc_script
      report_file
      rules_file
      test
      partition_file
      lo
      selection
      wizard
      eqd
      outline_paging_file
      worksheet
      alias_table
```

You can display objects in the following ways using **display object**.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Display all stored objects on the specified scope.</td>
</tr>
</tbody>
</table>
Keyword | Description
---|---
locked | Display only locked objects on the specified scope.
of type... | Display only the objects of type specified by OBJ-TYPE : =.
OBJ-NAME of OBJ-TYPE | Display a specific object by name and type.
on system | Display all stored objects on the system.
on application | Display all objects associated with the specified application.
on database | Display all objects associated with the specified database.

**Example**

```
MAXL> display object sample.basic.Calcdat of type text;
```

<table>
<thead>
<tr>
<th>applicati database</th>
<th>object_na</th>
<th>object_ty</th>
<th>locked</th>
<th>locked_by</th>
<th>locked_time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample</td>
<td>Basic</td>
<td>Calcdat</td>
<td>9</td>
<td>FALSE</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Display Partition**

View information about a specific partitioned database or all partitioned databases on the system. Only displays partition information for applications which are currently started.

**Syntax**

```
display partition

<table>
<thead>
<tr>
<th>all</th>
</tr>
</thead>
<tbody>
<tr>
<td>advanced</td>
</tr>
<tr>
<td>on database DBS-NAME</td>
</tr>
</tbody>
</table>
```

You can display partition information in the following ways using `display partition`.

**Keyword | Description**
---|---
all | Display all partitions defined on the system.
on database | Display all partitions associated with the specified database.
advanced | Display full information including areas and member mappings for local and remote pieces of partitions.

**Notes**

If a partition definition is invalid, the same partition may be displayed twice, one time for each half. Each half will show the connection information of the other half.

**Example**

```
display partition all;
```

Displays information about all partitioned databases defined on the system.
Display Privilege

View a list of privileges, calculations, or filters held by users or groups.

Syntax

display privilege [user USER-NAME | group GROUP-NAME | all]

You can display security permissions in the following ways using display privilege.

Keyword Description

user... Display security permissions for all users, or for a specified user.
group... Display security permissions for all groups, or for a specified group.

Output Columns

The values returned for the type field are numeric, and translate as follows:

Column Description

1 “System-Level System Privileges” on page 876
2 “System-Level System Roles” on page 876
3 Execute calculation
4 Filter

Example

display privilege user Fiona;

Displays the privileges user Fiona has on each database object, including any calculations or filters granted to Fiona.

display privilege group;

Displays privileges held by all groups on the system to all applications and databases on the system.

Display Session

View active login sessions on the current server, application, or database, including:

- The user that owns each session
- A session ID for each session
• How long the sessions have been active
• Information about outstanding requests (description, time started, name of computer originating the request, and status).

**Syntax**

```
display session [all | <session-id> | by user USER-NAME | by user on application APP-NAME | by user on database DBS-NAME | on application APP-NAME | on database DBS-NAME]
```

You can display login and request information in the following ways using `display session`.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Display information about all current user sessions and active requests.</td>
</tr>
<tr>
<td>&lt;session-id&gt;</td>
<td>Display information about a particular user session, indicated by the numeric session ID.</td>
</tr>
<tr>
<td>by user</td>
<td>Display information about all current sessions by a particular user.</td>
</tr>
<tr>
<td>by user on application</td>
<td>Display information about all current sessions by a particular user on the specified application.</td>
</tr>
<tr>
<td>by user on database</td>
<td>Display information about all current sessions by a particular user on the specified database.</td>
</tr>
<tr>
<td>on application</td>
<td>Display information about all current sessions on the specified application.</td>
</tr>
<tr>
<td>on database</td>
<td>Display information about all current sessions on the specified database.</td>
</tr>
</tbody>
</table>

**Notes**

This statement can display either IP addresses or host names. See “NO_HOSTNAME_LISTCONNECT” on page 526.

**Example**

```
display session;
display session on database sample/basic;
```

**Display System**

View information about current system-wide settings.
You can display server-wide information in the following ways using `display system`.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>display system</td>
<td>Display current connections and system-wide settings.</td>
</tr>
<tr>
<td></td>
<td><code>configuration</code> field values are numeric, and translate as follows:</td>
</tr>
<tr>
<td></td>
<td>1 Non-Unicode mode</td>
</tr>
<tr>
<td></td>
<td>2 Unicode mode</td>
</tr>
<tr>
<td>display system version</td>
<td>Display the server software version number.</td>
</tr>
<tr>
<td>display system ports in use</td>
<td>Display information about ports currently in use on the system.</td>
</tr>
<tr>
<td>display system ports overview</td>
<td>Display the number of ports that are available and in use on the system.</td>
</tr>
<tr>
<td>Keyword</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>display system</td>
<td>Display names of directories created for linked-reporting objects exported from a database to a directory created in $ARBORPATH\app.</td>
</tr>
<tr>
<td>export_directory</td>
<td>If you used export lro and gave a full path to a directory for export files, those directories are not listed. Only export directories created in the $ARBORPATH\App directory using the following export lro method are listed:</td>
</tr>
<tr>
<td></td>
<td>export database DBS-NAME lro to &lt;server or local&gt; directory DBS-EXPORT-DIR;</td>
</tr>
<tr>
<td></td>
<td>where DBS-EXPORT-DIR is a suffix (for example, dir1) for the name of a directory created by MaxL in $ARBORPATH\App. MaxL creates the directory with a prefix of appname-dbsname-. For example, display system export_directory would list the following directories existing under $ARBORPATH\App: sample-basic-dir1 sample-basic-dir2 but it would not list export directories created elsewhere by providing a full directory path when using the export lro statement, such as c:\MyExports\MyExportDir</td>
</tr>
<tr>
<td>display system security</td>
<td>Display the percentage of security file fragmentation. 0% means the security file is not fragmented, and higher percentages indicate the degree of fragmentation.</td>
</tr>
<tr>
<td>file_fragmentation_percent</td>
<td>Fragmentation can gradually develop when objects such as users, groups, applications or databases are removed or changed. To prevent fragmentation, the security file is compacted each time the Agent shuts down.</td>
</tr>
<tr>
<td></td>
<td>You can also defragment the security file without stopping the Agent. For more information, see</td>
</tr>
<tr>
<td></td>
<td>• The essbase.cfg setting “SECURITYFILECOMPACTIONPERCENT” on page 543.</td>
</tr>
<tr>
<td></td>
<td>• The MaxL statement alter system compact security file;</td>
</tr>
<tr>
<td></td>
<td>• The Agent command COMPACT (for documentation of Agent commands, see the Oracle Essbase Database Administrator's Guide).</td>
</tr>
<tr>
<td>display system</td>
<td>Display information about the license settings implemented on the system.</td>
</tr>
<tr>
<td>license_info</td>
<td></td>
</tr>
<tr>
<td>display system security</td>
<td>The type of security in use: native or Shared Services mode.</td>
</tr>
<tr>
<td>mode</td>
<td>security_mode field values are numeric, and translate as follows:</td>
</tr>
<tr>
<td></td>
<td>1 Native Essbase security</td>
</tr>
<tr>
<td></td>
<td>2 Shared Services security</td>
</tr>
<tr>
<td>display system</td>
<td>Display values set using the essbase.cfg file, but display only values that apply to Essbase Agent.</td>
</tr>
<tr>
<td>configuration agent</td>
<td>Permission required: Administrator.</td>
</tr>
<tr>
<td>display system</td>
<td>Display values set using the essbase.cfg file, but display only values that apply to the network layer.</td>
</tr>
<tr>
<td>configuration network</td>
<td>Permission required: Administrator.</td>
</tr>
<tr>
<td>display system</td>
<td>Display values set using the essbase.cfg file, but display only values that apply to lease manager.</td>
</tr>
<tr>
<td>configuration lease_manager</td>
<td>Permission required: Administrator.</td>
</tr>
</tbody>
</table>
display system configuration errors

Display all lines in the `essbase.cfg` file that are errors: an error is any line entry that is not a comment and results in nothing being set.

Permission required: Administrator.

display system configuration on database DBS-NAME

Display values set using the `essbase.cfg` file, but display only values that apply to the named database.

Permission required: Administrator.

message_level

Display the values that are set for the system message level.

Sample output:

```
component      message_level
+-------------------+-------------------+
  system            info
  lease_manager     error
```

Example

display system;

Displays current password and session management settings.

display system configuration agent;

Displays current `essbase.cfg` settings that apply to the Essbase Agent.

Sample Outputs for Display System Configuration

```
MAXL> set column_width 40;

MAXL> display system configuration agent;

KEYWORDS                SETTINGS
+--------------------------------------------------------------------------+
AUTHENTICATIONMODULE     CSS
JVMMODULELOCATION         E:\Hyperion\common\JRE-64\Sun\1.5.0\bin
MAXLOGINS                50000
PORTUSAGELOGINTERVAL     600

OK/INFO - 1241044 - Records returned: [4].

MAXL> display system configuration network;

KEYWORDS                SETTINGS
+--------------------------------------------------------------------------+
AGENTPORT                1423
NETDELAY                 1500
NETRETRYCOUNT            2000
SERVERPORTBEGIN          32768
SERVERPORTEND            33768

OK/INFO - 1241044 - Records returned: [5].
```
MAXL> display system configuration on database democfg.basic;

KEYWORDS                                SETTINGS
+---------------------------------------+---------------------------------------
CALCCACHE                               TRUE
CALCCACHEDEFAULT                        1250000
CALCCACHEHIGH                           1750000
CALCCACHELOW                            40000
CALCLOCKBLOCKDEFAULT                    1000
CALCLOCKBLOCKHIGH                       5000
CALCLOCKBLOCKLOW                        500
CALCNOTICEDEFAULT                       20
CALCNOTICEHIGH                          50
CALCNOTICELOW                           5
DATAERRORLIMIT                          50000
DLSINGLETHREADPERSTAGE                  FALSE
DLTHREADSPREPARE                        4
DLTHREADSWRITE                          4
DYNCALCCACHEMAXSIZE                     DB[41943040], SV[41943040]
JVMODULELOCATION                        E:\Hyperion\common\JRE-64\Sun\1.5.0\bin
LOGMESSAGELEVEL                         INFO
NOMSGLOGGINGONDATAERRORLIMIT            TRUE
NUMERICPRECISION                        1
SSLOGUNKNOWN                            FALSE
SSPROCROWLIMIT                          250000

OK/INFO - 1241044 - Records returned: [21].

Display Trigger

View details about a trigger created to track state changes over a selected cube area. For more information about the Essbase triggers feature, see the Oracle Essbase Database Administrator's Guide.

Note: The application containing the trigger must be started in order to use display trigger.

Syntax

```
display trigger
```

```
<table>
<thead>
<tr>
<th>Column</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>application</td>
<td>The name of the application that contains the database.</td>
</tr>
<tr>
<td>Column</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>database</td>
<td>The name of the database that contains the trigger. Essbase lists only databases that contain triggers.</td>
</tr>
<tr>
<td>name</td>
<td>The name of the trigger.</td>
</tr>
<tr>
<td>definition</td>
<td>The MaxL trigger statement (for example, create or replace trigger)</td>
</tr>
<tr>
<td>enabled</td>
<td>Whether Essbase is set to monitor the trigger. Values: TRUE or FALSE. To change the value, use alter trigger.</td>
</tr>
</tbody>
</table>

**Example**

display trigger on database Sample.Basic;

This example displays the output columns:

<table>
<thead>
<tr>
<th>application</th>
<th>database</th>
<th>name</th>
<th>definition</th>
<th>enabled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample</td>
<td>Basic</td>
<td>WatchCosts</td>
<td>create or replace trigger</td>
<td>TRUE</td>
</tr>
</tbody>
</table>

**Display Trigger Spool**

View the log file created by a trigger. Triggers track state changes over a selected cube area. For more information about the Essbase triggers feature, see Defining Triggers.

**Syntax**

display trigger_spool  
  ➔ all ➔
  ➔ on application APP-NAME ➔
  ➔ on database DBS-NAME ➔
  ➔ SPOOL-NAME ➔

**Display User**

View a specific user or a list of all users defined on the system. View account and group membership information.

**Syntax**

display user  
  ➔ all ➔
  ➔ USER-NAME ➔

You can display user information in the following ways using display user.
<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Display information about all users on the system.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> This MaxL grammar is deprecated. Oracle recommends using Shared Services Console, Java API, or Lifecycle Management to get a list of all users.</td>
</tr>
</tbody>
</table>

| all failed_sss_migration  | Display users that did not successfully migrate to Shared Services when `alter system set sss_mode` or `alter group GROUP-NAME set sss_mode` was issued. The following situations are common reasons for users to fail migration: |
|                          | • The user account is disabled.                                                                                                                                                                             |
|                          | • The user name is the same as a group name in Shared Services.                                                                                                                                             |
|                          | • A user is externally authenticated but the authentication provider is not running.                                                                                                                      |

If any users failed migration, you can retry the migration using `alter user all set sss_mode`.

For more information about user migration considerations, see “Migrating Essbase from Native Security to EPM System Security” in the *Oracle Essbase Database Administrator’s Guide*.

Sample output for this statement:

```
user
+---------------
ksmith
user1
user2
```

<table>
<thead>
<tr>
<th>all shared_services_native with auto_password</th>
<th>Display the user names and passwords of Shared Services users that were migrated to Shared Services with the option to have their passwords generated automatically.</th>
</tr>
</thead>
</table>

Sample output for this statement:

```
user            password
+--------------+--------------+
server1        BgjK1lfNo
server2        BgjK1lfNo
```

**Note:** If the administrator designated a specific password for the migrated users, the password is not displayed.

<table>
<thead>
<tr>
<th>all migr_modified_access</th>
<th>Display user database permissions that changed during migration to Shared Services.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In Shared Services, if an Essbase application contains multiple databases, the databases must have the same user security access levels. During migration to Shared Services, if a user has different access levels for two databases in the same application, the user is given the more restrictive access level for both databases.</td>
</tr>
</tbody>
</table>

The output columns for this statement are:

<table>
<thead>
<tr>
<th>Output Column</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>user</td>
<td>The user name.</td>
</tr>
<tr>
<td>application</td>
<td>Applications to which the user has access.</td>
</tr>
<tr>
<td>database</td>
<td>Databases to which the user has access.</td>
</tr>
</tbody>
</table>
### Keyword Description

<table>
<thead>
<tr>
<th>Output Column</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>pre_Shared_Services_migration_access</td>
<td>The user's access for a specific database before migration to Shared Services.</td>
</tr>
<tr>
<td>current_access</td>
<td>The user's access level after migration to Shared Services. Includes access acquired through groups and any other means.</td>
</tr>
<tr>
<td>filter</td>
<td>Filters assigned to the user.</td>
</tr>
</tbody>
</table>

The values returned for the `pre_Shared_Services_migration_access` and `current_access` fields are based on hexadecimal values but are displayed as decimal values, as follows:

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No access</td>
</tr>
<tr>
<td>255</td>
<td>Full database access</td>
</tr>
<tr>
<td>272</td>
<td>Filter</td>
</tr>
<tr>
<td>273</td>
<td>Read</td>
</tr>
<tr>
<td>275</td>
<td>Write</td>
</tr>
<tr>
<td>279</td>
<td>Calc</td>
</tr>
<tr>
<td>280</td>
<td>Metaread</td>
</tr>
<tr>
<td>311</td>
<td>Database Manager</td>
</tr>
<tr>
<td>375</td>
<td>Create database</td>
</tr>
<tr>
<td>887</td>
<td>Application Manager</td>
</tr>
<tr>
<td>1911</td>
<td>Create application</td>
</tr>
<tr>
<td>4095</td>
<td>Full application and database access</td>
</tr>
<tr>
<td>65535</td>
<td>Administrator</td>
</tr>
</tbody>
</table>

Most roles are inclusive of other roles, but some additional combinations are possible. For example:

- Read + Filter would be 273 + 272, or 545
- Write + Filter would be 275 + 272, or 547

**<user-name>**
Display information about the specified user.

**in group all**
Display membership information for all groups on the system.

**in group <group-name>**
Display membership information for the specified group.

**application_access_type**
Display the licensed application access type for a user.

If a user is created in Planning, it automatically has an application access type of Planning; if a user is created in Essbase, it automatically has an application access type of Essbase.

**application_access_type** field values are numeric, and translate as follows:

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No access</td>
</tr>
<tr>
<td>1</td>
<td>Essbase access</td>
</tr>
<tr>
<td>2</td>
<td>Planning access</td>
</tr>
<tr>
<td>3</td>
<td>Essbase and Planning access (requires 2 licenses)</td>
</tr>
</tbody>
</table>

The application access type can be modified in Essbase using **Alter User**, or the Planning application access type can be modified through Oracle Hyperion Planning.
### Output Columns

<table>
<thead>
<tr>
<th>Column</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>user</td>
<td>String. Name of the user.</td>
</tr>
<tr>
<td>description</td>
<td>String. Optional description of the user.</td>
</tr>
<tr>
<td>logged in</td>
<td>Values: TRUE or FALSE.</td>
</tr>
<tr>
<td>password_reset_days</td>
<td>Integer. The number of days before the password expires, or 0 if no expiration is set.</td>
</tr>
<tr>
<td>enabled</td>
<td>Values: TRUE if the user account is active, or FALSE if the account has been disabled by an administrator.</td>
</tr>
<tr>
<td>change_password</td>
<td>Values: TRUE if the user must change the password at the next login; FALSE otherwise.</td>
</tr>
</tbody>
</table>
| type           | Values:  
| 0   | User is set up using native Essbase security.  
| 1   | No longer used.  
| 3   | User is externally authenticated using Shared Services.  |
| protocol       | If the user is externally authenticated using Shared Services, this field contains the value CSS. This field is blank if the type field is 0 (the user is not externally authenticated). |
| conn param     | This field is blank.                                                        |
| application_access_type | Values:  
| 0   | No access  
| 1   | Essbase access  
| 2   | Planning access  
| 3   | Essbase and Planning access (requires 2 licenses)  |

#### Example

```plaintext
display user;

Displays all users on the system and shows whether they are logged in, whether their accounts are enabled, and whether their passwords are set to expire.

display user in group;

Displays the membership information of all groups on the system.

display user in group big_group;

Displays the membership information for a group called big_group.
```

#### Display Variable

View a list of substitution variables defined on the system.
### Syntax

```plaintext
display variable
```

You can display substitution variables in the following ways using `display variable`.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Display all substitution variables defined on the Essbase Server, including those associated with applications and databases.</td>
</tr>
<tr>
<td><code>&lt;variable-name&gt;</code></td>
<td>Display a substitution variable by name.</td>
</tr>
<tr>
<td>on application</td>
<td>Display only substitution variables defined on the specified application.</td>
</tr>
<tr>
<td>on database</td>
<td>Display only substitution variables defined on the specified database.</td>
</tr>
<tr>
<td>on system</td>
<td>Display only the substitution variables associated with the Essbase Server.</td>
</tr>
</tbody>
</table>

#### Notes

To manage substitution variables, use `alter database` (containing add, drop, and set variable).

### Example

```plaintext
display variable;
```

Displays a list of all substitution variables on the Essbase Server.

### Drop Application

Delete an empty application from the system. To remove an application with databases, use `cascade`. To remove an application that has locked objects in a constituent database, you can use `force`.

Minimum permission required: Application Manager.
Syntax

```
| drop application APP-NAME | cascade | force |
```

You can delete applications in the following ways using `drop application`.

**Keyword** | **Description**
---|---
cascade | Delete an application along with its constituent databases.
force | Delete an application that may have locked objects in a constituent database.

## Drop Calculation

Delete a stored calculation from a database.

Minimum permission required: Database Manager.

**Syntax**

```
| drop calculation CALC-NAME |
```

You can delete calculations using `drop calculation`.

**Keyword** | **Description**
---|---
drop calculation <calc-name> | Delete the specified calculation.

**Example**

```
drop calculation Sample.basic.calcname;
```

Deletes a calculation from Sample.basic.

## Drop Database

Delete a database from the system. If the database has outstanding locks, clear them first, or use `force` to drop with locks.

Minimum permission required: Database Manager.

**Syntax**

```
| drop database DBS-NAME | force |
```

You can delete databases using `drop database`. 
<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Force</td>
<td>Delete a database that may have locked objects.</td>
</tr>
</tbody>
</table>

**Example**

drop database Sample.Basic force;

    Deletes the database Sample.Basic, even if client users have outstanding locks on Sample.Basic.

---

### Drop Drillthrough

Delete a drill-through URL definition used to link to content hosted on Oracle ERP and EPM applications.

**Syntax**

```sql
drop drillthrough URL-NAME
```

**Example**

drop drillthrough sample.basic.myURL;

**See Also**

- alter drillthrough
- create drillthrough
- display drillthrough

---

### Drop Filter

Delete a security filter from the database.

Minimum permission required: Database Manager.

**Syntax**

```sql
drop filter FILTER-NAME
```

You can delete filters using **drop filter**.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>drop filter &lt;filter-name&gt;</td>
<td>Delete a filter by name.</td>
</tr>
</tbody>
</table>

**Example**

drop filter sample.basic.filter1;

    Deletes the filter called filter1 from the sample.basic database.
**Drop Function**

Delete a custom-defined function from the system or from an application.

Minimum permission required:
- Application Manager to drop a local (application-level) function.
- Administrator to drop a global (system-level) function.

**Syntax**

```plaintext
Drop Function Function NAME
```

You can delete custom-defined functions using `drop function`.

**Keyword** | **Description**
--- | ---
`drop function <func-name>` | Delete a custom-defined function by name.

**Notes**

If you drop a custom-defined function after having associated it with an application (using `refresh custom definitions`), you may have to stop and restart the application for the drop to take effect.

**Example**

```plaintext
drop function sample.'@COVARIANCE';
```

Deletes the function called `@COVARIANCE` from the Sample application.

**Drop Group**

Delete a user group from the system. Users belonging to the group are not deleted.

**Note:** This MaxL statement is deprecated, except when using the `from security_file` grammar. Oracle recommends using Shared Services Console, Java API, or Lifecycle Management to remove groups, instead of using MaxL or C API.

**Syntax**

```plaintext
Drop Group GROUP NAME
```

You can delete security groups using `drop group`.

**Keyword** | **Description**
--- | ---
`drop group <group-name>` | Delete a security group by name. Members of the group are not deleted, but their membership to the group becomes obsolete.

`from security_file` | In EPM System security mode, use this syntax to remove the user from the Essbase security file, without de-provisioning the user from Shared Services. Calculation and filter associations also are removed.
Example
drop group big_group;

Deletes the group called big_group from the system.

**Drop Location Alias**

Delete from the database a location alias identifying a host name, application, database, user name, and password.

Minimum permission required: Database Manager.

**Syntax**

```plaintext
drop location alias LOCATION-ALIAS-NAME
```

You can delete location aliases using **drop location alias**.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>drop location alias &lt;location-alias-name&gt;</td>
<td>Delete a location-alias definition.</td>
</tr>
</tbody>
</table>

**Example**

drop location alias Main.Sales.EasternDB;

Drops the location alias called EasternDB in the Main.Sales database.

**Drop Lock**

Remove locks acquired through a grid client operation.

**Note:** Data locks do not apply to aggregate storage applications.

**Syntax**

```plaintext
drop lock on system all
```

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>drop lock on system all</td>
<td>Drops all locks by all users, for all databases on the system.</td>
</tr>
<tr>
<td>drop lock all</td>
<td>Same as &quot;drop lock on system all&quot;</td>
</tr>
<tr>
<td>drop lock on system</td>
<td>Same as &quot;drop lock on system all&quot;</td>
</tr>
</tbody>
</table>
**Drop Lock**
Same as "drop lock on system all"

**drop lock on application APP-NAME**
Drops all locks on the application, for all users.

**drop lock on application APP-NAME held by USER-NAME**
Drops locks on the application which are held by a specific user.

**drop lock on database DBS-NAME**
Drops all locks on the database, for all users.

**drop lock on database DBS-NAME held by USER-NAME**
Drops locks on the database which are held by a specific user.

**drop lock held by USER-NAME**
Drops all locks held by a specific user, on any application or database.

**Drop Macro**
Delete a custom-defined macro from the system or from an application.

Minimum permission required:
- Application Manager to drop a local (application-level) macro.
- Administrator to drop a global (system-level) macro.

**Syntax**
```
drop macro MACRO-NAME
```

You can delete custom-defined macros using `drop macro`.

**Drop Object**
Remove database-related file objects stored in database directories.

If you drop a custom-defined macro after having associated it with an application (using `refresh custom definitions`), you may have to stop and restart the application for the drop to take effect.

**Example**
```
drop macro sample. '@COVARIANCE';
```

Deletes the macro called @COVARIANCE from the Sample application.
Syntax

```
drop object OBJ-NAME of type <OBJ-TYPE> force
```

```
OBJ-TYPE ::=
calc_script
  report_file
  rules_file
  text
  tfo
  selection
  wizard
  eqd
  outline_paging_file
  worksheet
  alias_table
```

**Keyword Description**

- **force**  
  If the object is locked by a user or process, unlock it and delete it.

**Notes**

To drop a partition, use **drop partition**.

---

**Drop Partition**

Delete from the system a partition definition between two databases. Database Manager permission for each database is required.

**Syntax**

```
drop [transparent] [replicated] [linked] partition DBS-NAME from DBS-NAME
```

```
at HOST-NAME force
```

You can delete partition definitions in the following ways using **drop partition**.

**Keyword Description**

- **drop...partition...from**  
  Remove a transparent, replicated, or linked partition definition between the current target database and a source database.

- **drop...partition...to**  
  Remove a transparent, replicated, or linked partition definition between the current source database and a target database.

- **at <host-name>**  
  Optionally specify the host computer name, if removing a partition definition associated with a remote server. The host name can be an IP address; for example, ‘127.0.0.1’.
**Keyword** | **Description**
---|---
force | Specify that the source half of a partition definition should be dropped regardless of whether the target half is missing or invalid. For more information, see “Forcing Deletion of Partitions” on page 1004.

**Notes**

If the `create partition` statement used was of the format:

```sql
create partition SOURCE to TARGET;
```

Then the only permutations of the `drop partition` statement that will have effect are:

```sql
drop partition SOURCE to TARGET;
drop partition TARGET from SOURCE;
```

**Example**

```sql
create or replace replicated partition sampeast.east area '@DESCENDANTS("Eastern Region"), @DESCENDANTS(Qtr1)' to samppart.company at localhost;

drop replicated partition Samppart.Company from Sampeast.East;
```

**Drop Trigger**

Remove a trigger created to track state changes over a selected cube area. For more information about the Essbase triggers feature, see the *Oracle Essbase Database Administrator's Guide*.

**Syntax**

```sql
drop trigger TRIGGER-NAME
```

**Example**

```sql
drop trigger Sample.Basic.WatchCosts;
```

**Drop Trigger Spool**

Delete the log file created by a trigger. Triggers track state changes over a selected cube area. For more information about the Essbase triggers feature, see Defining Triggers.

**Syntax**

```sql
drop trigger_spool SPOOL-NAME
```

**Drop User**

Delete a user account from the system.
Note: This MaxL statement is deprecated, except when using the from security_file grammar. Oracle recommends using Oracle Hyperion Shared Services Console, Java API, or Oracle Hyperion Enterprise Performance Management System Lifecycle Management to remove users instead of using MaxL or C API.

Syntax

\[
\text{drop user}\ \text{USER-NAME} \quad \text{from security_file}
\]

You can delete users using \text{drop user}.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>drop user \text{&lt;username&gt;}</td>
<td>Delete an Essbase user account by user name.</td>
</tr>
<tr>
<td>from security_file</td>
<td>In EPM System security mode, use this syntax to remove the user from the Essbase security file, without de-provisioning the user from Shared Services. Calculation and filter associations also are removed.</td>
</tr>
</tbody>
</table>

Example

\text{drop user Fiona;}

Deletes the user Fiona from the system.

Execute Calculation

Click here for aggregate storage version

Execute a stored calculation, the stored default calculation (determined by alter database), or an anonymous (non-stored) calculation string.

Minimum permissions required:

- For stored calculations (CALC-NAME): Granted access to the calculation.
- For anonymous calculations (CALC-STRING) and the default calculation: Execute

Syntax

\[
\text{execute calculation} \quad \text{CALC-NAME} \quad \text{on database}\ \text{DBS-STRING} \quad \text{with runimesubvars}\ \text{RTSV-LIST} \\
\text{CALC-STRING} \quad \text{on}\ \text{DBS-NAME} \\
\text{default}
\]

You can run calculations in the following ways using execute calculation.
execute calculation <calc-name>

Run the specified stored calculation script.

<calc-name> on database

Run the specified stored calculation script against the specified database.

<calc-string> on <dbs-name>

Run an anonymous calculation, whose body is contained in <calc-string>, against the specified database.

default on <dbs-name>

Run the default calculation against the specified database.

<calc-name> with runtimesubvars <rtsv-list>

Run the specified stored calculation script with the runtime substitution variables specified in 
RTSV-LIST, which is a string of runtime substitution variables specified as key/value pairs. The 
string must be enclosed with single quotation marks, and the key/value pairs must be separated by 
a semicolon, including a semicolon after the last runtime substitution variable in the string and before 
the terminal single quotation mark. In this example of a runtime substitution variable string, the 
name and value of four runtime substitution variables are specified (for example, the value of the 
runtime substitution variable named “a” is 100):

'a=100;b=@CHILDREN("100");c="Actual"->"Final";d="New York";'

**Note:** The names of all runtime substitution variables used in a calculation script must be declared 
in the SET RUNTIMESUBVARS calculation command; optionally, default values can be 
specified in SET RUNTIMESUBVARS. If you include a runtime substitution variable in 
RTSV-LIST that has not been declared in SET RUNTIMESUBVARS, Essbase ignores the 
undeclared runtime substitution variable (no warnings or exceptions are generated). 
Runtime substitution variables that are used in a calculation script can be logged in the 
application log file, using the ENABLERTSVLOGGING configuration setting. See “Logging 
Runtime Substitution Variables” in the Oracle Essbase Database Administrator’s Guide.

If a default value for a runtime substitution variable is specified in SET RUNTIMESUBVARS 
and a runtime substitution variable with the same name is included in RTSV-LIST, the 
value specified in RTSV-LIST overwrites the default value in SET RUNTIMESUBVARS.

**Notes**

- A stored calculation can be associated with a specific database in an application (database 
  level), or with an application only (application level). To execute a calculation stored at the 
  application level, you must specify which database in the application to calculate using the 
on database STRING grammar.

- A calculation script can reference runtime substitution variables using the with runtimesubvars grammar.

**Example**

execute calculation Sample.Basic.Calc1;

Calculates the Sample.Basic database using the stored calculation script file named Calc1, 
which is associated with the database.

execute calculation Sample.Calc2 on database Basic;
Calculates the Sample.Basic database using the stored calculation script file named Calc2, which is associated with the Sample application.

```
execute calculation 'SET MSG ERROR;  
CALC ALL;'  
on Sample.basic;
```

Calculates the Sample.Basic database using an anonymous (unstored) calculation string.

```
execute calculation Sample.Basic.Calc3 with runtimesubvars 'a=100;b=50;';
```

Calculates the Sample.Basic database using the stored calculation script file named Calc3, which is associated with the database, and the specified runtime substitution variables, in which the value of the runtime substitution variable named “a” is 100 and the value of “b” is 50.

**See Also**

- `SET RUNTIMESUBVARS`
- `ENABLERTSVLOGGING`

### Execute Aggregate Process (Aggregate Storage)

Perform an aggregation, optionally specifying the maximum disk space for the resulting files, and optionally basing the view selection on user querying patterns.

This statement is only applicable to aggregate storage databases.

This statement enables you to build aggregate views with a minimum of settings. If greater control is needed, you can combine the following statements:

- `ExecuteAggregateSelection`
- `ExecuteAggregateBuild`

This statement causes Essbase to:

1. Select 0 or more aggregate views based on the stopping value and/or on querying patterns, if given.
2. Build the views that were selected.

For more information about aggregate views, see the *Oracle Essbase Database Administrator’s Guide* and the *Oracle Essbase Administration Services Online Help*.

**Syntax**

```
execute aggregate process on database DBS-NAME

stopping when total_size exceeds STOPPING-VAL based on query_data

enable alternate_rollups

disable
```
You can aggregate an aggregate storage database in the following ways using `execute aggregate` process.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>stopping when total_size exceeds</td>
<td>Aggregate whichever views Essbase selects, with the exception that the maximum growth of the aggregated database must not exceed the given ratio.</td>
</tr>
<tr>
<td>based on query_data</td>
<td>Aggregate whichever views Essbase selects, based on collected user querying patterns. This option is only available if query tracking is turned on, using <code>alter database with the enable query_tracking grammar</code>.</td>
</tr>
<tr>
<td>enable</td>
<td>disable alternate_rollups</td>
</tr>
</tbody>
</table>

**Notes**
- View selection (step 1) can be performed independently of aggregation by using `execute aggregate selection`. Aggregation (step 2) can be performed without built-in view selection by using `execute aggregate build`.
- For small databases, the performance of building aggregate views in Essbase 9.3.1 and later versions may be slower than Essbase versions earlier than 9.3.1. However, Essbase 9.3.1 should perform better for databases larger than a few hundred million cells, especially on computers with more than two processors and where the CALCPARALLEL configuration setting has been chosen appropriately.

**Example**

```plaintext
execute aggregate process on database ASOsamp.Sample stopping when total_size exceeds 1.3;
```

Selects and builds an aggregation of the ASOsamp.Sample database that permits the database to grow by no more than 30% as a result of the aggregation.

```plaintext
execute aggregate process on database ASOsamp.Sample based on query_data;
```

Selects and builds an aggregation of the ASOsamp.Sample database, where the views that Essbase selects for aggregation are based on the most frequently queried areas of the database.

**See Also**
- `Execute Aggregate Build`
- `Execute Aggregate Selection`

**Execute Aggregate Build**

Performs an aggregation based on the views selected by the `execute aggregate selection` statement. The views to build must either be identified by their view IDs, obtained previously using `execute aggregate selection`, or by a view selection saved in an aggregation script.

For more information about aggregate views, see the Oracle Essbase Database Administrator’s Guide and the Oracle Essbase Administration Services Online Help.
You can materialize aggregations in the following ways using `execute aggregate build`.

### Syntax

```plaintext
execute aggregate build on database DBS-NAME
   using views VIEW-ID VIEW-SIZE with outline_id OUTLINE-ID,
   view_file VIEW-FILE-NAME
```

### Keyword Description

- **using views...** Builds an aggregation based on a previously selected view (or views) and the associated outline ID.
- **using view_file...** Builds an aggregation based on a saved view selection stored in an aggregation script. Omit the `.csc` file extension from the view file name when you issue the `execute aggregate build` statement.

### Notes

- Although it is possible to pass arbitrary view-id and view-size arguments, this practice is not supported.
- Passing view-size arguments other than those returned by the `execute aggregate selection` command may cause unpredictable results.
- For small databases, the performance of building aggregate views in Essbase 9.3.1 and later versions may be slower than Essbase versions earlier than 9.3.1. However, Essbase 9.3.1 should perform better for databases larger than a few hundred million cells, especially on computers with more than two processors and where the CALCPARALLEL configuration setting has been chosen appropriately.

### Example

```plaintext
execute aggregate build on database Sample.Basic using views 711 0.00375 with outline_ID 4142187876;

Builds an aggregation of the Sample.Basic database. The build is based on the view of an aggregate storage outline (identified as 4142187876) having the view ID 711, and a view size of 0.00375.
```

```plaintext
execute aggregate build on database Sample.Basic using view_file myView;

Builds an aggregation of the Sample.Basic database based on the view saved in the aggregation script `myView.csc`.
```

### See Also

- Execute Aggregate Process (Aggregate Storage)
- Execute Aggregate Selection
**Execute Aggregate Selection**

Select views of an aggregate storage database based on various selection criteria, and return the results in the form of a table or aggregation script. Next, use the tabular information or aggregation script to build an aggregation (materialize a view) using **execute aggregate build**.

**Note:** View selection and aggregation can be performed by Essbase in a single step by using **execute aggregate process**. However, the use of the two separate statements **execute aggregate selection** and **execute aggregate build** enables you more control of the selection criteria.

For more information about aggregate views, see the *Oracle Essbase Database Administrator’s Guide* and the *Oracle Essbase Administration Services Online Help*.

**Syntax**

```
execute aggregate selection on database DBS-NAME

using views VIEW-ID with outline_id OUTLINE-ID

selecting INTEGER views stopping when total_size exceeds STOPPING-VAL

based on query_data dump force_dump to view_file VIEW-FILE-NAME

enable alternate_rollups disable
```

You can select views in the following ways using **execute aggregate selection**.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>using views...with outline_ID</td>
<td>Selects views based on pre-selected view IDs. The view IDs are obtained from previous executions of the statement.</td>
</tr>
<tr>
<td>using views...with outline_ID...force display</td>
<td>Selects views based on pre-selected view IDs, including the pre-selected views IDs themselves.</td>
</tr>
<tr>
<td>using views...with outline_ID...suppress display</td>
<td>Selects views based on pre-selected view IDs, skipping the pre-selected views IDs themselves. This is the default behavior even if the <strong>suppress</strong> keyword is omitted.</td>
</tr>
</tbody>
</table>
Keyword | Description
--- | ---
selecting <INTEGER> views | Selects the number of views based on whether the number of views specified in <INTEGER> is greater than or equal to, or less than, the recommended number of default views that are returned by the `execute aggregate selection` statement. By default, Essbase determines the recommended number of default views.

Assume that <RECNUM> represents the recommended number of default views:

- If the value of <INTEGER> is greater than or equal to the value of <RECNUM>, the selected number of views equals <RECNUM>.
  
  For example, if <INTEGER> equals 20 and <RECNUM> equals 15, the number of selected number of views equals 15.

- If the value of <INTEGER> is less than the value of <RECNUM>, the number of views that are selected equals <INTEGER>.
  
  If you want the number of views that are selected to equal the value of <INTEGER>, use the `stopping when total_size exceeds <STOPPING-VAL>` grammar to change the number of recommended default views that are returned by the `execute aggregate selection` statement. Define the <STOPPING-VAL> factor large enough so that the number of default views that are returned by `execute aggregate selection` is greater than the value of <INTEGER>.
  
  For example, if <INTEGER> equals 20 and <RECNUM> equals 50, the number of selected number of views equals 20.

**Note:** This parameter does not create views.

stopping when total_size exceeds <STOPPING-VAL> based on query_data | Selects views, specifying a storage stopping value in terms of a factor times the size of the unaggregated input (level 0) values. For example, a stopping value of 1.5 means that the view selection should permit the database to grow by no more than 50% as a result of the aggregation.

Query tracking records information about every query executed on the database, so that it can be used as a basis for view selection. Query-based view selection helps to improve query performance when the distribution of user queries is skewed.

For every level combination, the cost of retrieving cells is recorded. The recording continues until the application is shut down or until the recording is explicitly turned off using `alter database <dbs-name> disable query_tracking`. In both cases, all the query cost data is discarded, and the recording stops (and will not continue when the application starts again).

All query cost data becomes invalid when additional views are built.

dump to view_file | Saves the view selection to an aggregation script. If the specified script name already exists, an error is returned. To overwrite an existing script, use the `force_dump` keyword.

The aggregation script contains information derived during the aggregate view selection. You can materialize the aggregation at a different time by running the aggregation script. For example:

```
execute aggregate build on database <dbs-name> using view_file <view-file-name>
```

force_dump to view_file | Saves the view selection to an aggregation script. If the specified script name already exists, the `force_dump` keyword causes it to be overwritten.

enable|disable alternate_rollups | If enabled, secondary hierarchies (with default level usage) are considered for view selection. Default: disabled (no secondary hierarchies are considered).
Example

execute aggregate selection on database ASOsamp.Sample;

Performs the default view selection for ASOsamp Sample. This statement selects the same views as execute aggregate process on database ASOsamp.Sample would build.

execute aggregate selection on database ASOsamp.Sample using views 711, 8941 with outline_ID 4142187876;

Selects views based on the pre-selected view IDs. The view IDs are obtained from previous executions of the statement.

execute aggregate selection on database ASOsamp.Sample using views 711, 8941 with outline_ID 4142187876 force display;

Selects views based on the pre-selected view IDs. force display is used to include the pre-selected views (711 and 8941) in the new selection.

execute aggregate selection on database ASOsamp.Sample stopping when total_size exceeds 1.2;

Selects an aggregation of the ASOsamp Sample database that, when built, would permit the database to grow by no more than 20% as a result of the aggregation.

execute aggregate selection on database ASOsamp.Sample based on query_data;

Selects views based on previously collected query-tracking data. You must have enabled query tracking using alter database <dbs-name> enable query_tracking.

execute aggregate selection on database ASOsamp.Sample dump to view_file myView;

Selects a default aggregation of the ASOsamp Sample database, saving the selection to $APP\DB\myView.csc. You can materialize the view later by running the aggregation script myView.csc. For example:

execute aggregate build on database ASOsamp.Sample using view_file 'myView.csc';

See Also

- Execute Aggregate Build
- Execute Aggregate Process (Aggregate Storage)

Export Data

Click here for aggregate storage version

Export all data, level-0 data, or input-level data, which does not include calculated values. Export data files are written to Essbase Server in the ARBORPATH/app directory, unless an absolute path is specified. To use Report Writer, export the data using a report file. Export data files cannot be written to the client computer.

Minimum permission required: Read.
You can export data from a database in the following ways using `export data`.

**Keyword** | **Description**
--- | ---
`export database <dbs-name>` all data... | Export all data in the specified database to the $ARBORPATH/app directory on the server.  
**Note:** Exporting data does not clear the data from the database.

`export database <dbs-name>` level0 data... | Export level-0 data blocks only (blocks containing only level-0 sparse member combinations. Note that these blocks may contain data for upper level dense dimension members.) A level-0 block is created for sparse member combinations when all of the members of the sparse combination are at the bottom of dimension branches.  
**Note:** Exporting data does not clear the data from the database.

`export database <dbs-name>` input data... | Export only blocks of data where the block contains at least one data value that was loaded (imported), rather than created as the result of a calculation.

`export database <dbs-name>` ... data in columns | Export data in columns, to facilitate loading the exported data into a relational database. In each row, the columnar format displays a member name from every dimension. Names can be repeated from row to row. Columnar format provides a structure to the exported data, so that it can be used for further data processing by applications other than Essbase tools. In non-columnar format, sparse members identifying a data block are included only once for the block. Because the export file in non-columnar format is smaller than in columnar format, reloading a file in non-columnar format is faster.

`export database <dbs-name>` ... data anonymous | Export data in anonymized format. Anonymization removes the risk of sensitive data disclosure, and can be used in case sample data needs to be provided for technical support. Essbase replaces real data values with incremental values beginning with 0, increasing by 1 for each value in the block.

`export database <dbs-name>` ...using...report_file... | Run a stored report script, exporting a subset of the database.

**Notes**
- This statement requires the database to be started.
To export data in parallel, specify a comma-separated list of export files, up to a maximum of 1024 file names. The number of file names determines the number of export threads. The number of available block-address ranges limits the number of export threads that Essbase actually uses. Essbase divides the number of actual data blocks by the specified number of file names (export threads). If there are fewer actual data blocks than the specified number of export threads, the number of export threads that are created is based on the number of actual data blocks. For example, if the block storage database is very small, with only 100 data blocks, Essbase will use only 100 threads, even if you specify a higher number. This approach results in a more even distribution of data blocks between export threads.

Note: In specifying the number of export files, it is important to consider the number of available CPU cores and I/O bandwidth on the computer on which Essbase Server runs. Specifying too large a number can result in poor performance.

If the data for a thread exceeds 2 GB, Essbase may divide the export data into multiple files with numbers appended to the file names.

The naming convention for additional export files is as follows: _1, _2, etc. are appended to the additional file names. If the specified output file name contains a period, the numbers are appended before the period. Otherwise, they are appended at the end of the file name.

For example, if the given file name is /home/exportfile.txt, the next additional file is /home/exportfile_1.txt. If the file name is /home/exportfile, the next additional file is /home/exportfile_1.

To export data in column format, use the optional "in columns" grammar.

During a data export, the export process allows users to connect and perform read-only operations.

When MaxL exports data from a Unicode-mode application, the export file is encoded in UTF-8. You cannot use UTF-8-encoded export files from a Unicode-mode application to import data to a non-Unicode-mode application. For more information about file encoding, see the Unicode section of the Oracle Essbase Database Administrator's Guide.

MaxL cannot export databases with names containing hyphens (-). To export databases with names containing hyphens, use Administration Services.

Example

Example 1 (Export Data)

export database sample.basic data to data_file 'D:\fileout','D:\fileout2','D:\fileout3';

Exports data concurrently to a list of file names.

Example 2 (Export Data)

export database sample.basic input data
to data_file 'exp_input.exp';
export database sample.basic using report_file "'$ARBORPATH/App/Sample/Basic/asym.rep'" to data_file 'home/month2.rpt';

**Note:** In the path to the report file in the above UNIX example, double quotation marks are used to allow variable expansion in the single-token FILE-NAME, and single quotation marks are required because there are special characters (see “MaxL Syntax Notes” on page 834) in the file name.

export database sample.basic using report_file 'EssbaseServer\App\Sample\Basic\asym.rep' to data_file 'c:\home\month2.rpt';

**Note:** In the file paths in the above Windows example, single quotation marks are required because there are special characters (see “MaxL Syntax Notes” on page 834) in the file name. Two backslashes (\) are required by the MaxL Shell to indicate one backslash, because the backslash has a special meaning to the MaxL Shell.

### Export LRO

Export linked-reporting-object information, and binary files if the database has file-type LROs, to a directory on the Essbase Server computer.

**Syntax**

```plaintext
export database DBS-NAME lro to directory
```

You can export LRO information from a database in the following ways using `export lro`.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>to server directory</td>
<td>Export the LRO information to a directory you specify on the Essbase Server to which you are connected.</td>
</tr>
<tr>
<td>to local directory</td>
<td>Export the LRO information to a directory you specify on the current computer.</td>
</tr>
</tbody>
</table>

**Notes**

- This statement requires the database to be started.
- MaxL creates exactly one export directory; it does not create a directory structure. For example, if c:\temp exists, MaxL will create c:\temp\exports, but not c:\temp\exports\to\this\long\path.
- If the specified export directory already exists, the export LRO statement will fail. This is a safeguard against overwriting existing export directories.
- If you do not specify a full path for an export directory to be created on the client or server, MaxL uses your short directory specification (“DBS-EXPORT-DIR” on page 845) as a suffix, and creates the destination export-directory in the ARBORPATH\app directory with

811
a prefix of appname-dbname-. If you do specify a full path, MaxL creates whatever directory you specify.

Oracle recommends that you create export directories in the application/database directory, as MaxL can only display or delete export directories that are in the application/database directory.

- When MaxL exports LROs from a database, if the database is from a Unicode-mode application, the exported LRO-catalog file is encoded in UTF-8. You cannot use UTF-8-encoded export files from a Unicode-mode application to import LROs to a non-Unicode mode application. For more information about file encoding, see the Unicode section of the Oracle Essbase Database Administrator’s Guide.

Example

```sql
export database sample.basic lro to server directory '../home/temp/lros';
```

Exports LRO-catalog information, and binary files if the database has file-type LROs, to a server directory called home/temp/lros. The directory contains file-type LROs, if applicable, and the LRO-catalog export file lros.exp. These can be brought back into a database using import lro.

```sql
export database sample.basic lro to server directory 'exportedLROs';
```

Exports LRO-catalog information, and binary files if the database has file-type LROs, to a server directory $ARBORPATH/app/sample-basic-exportedLROs. The directory contains file-type LROs, if applicable, and the LRO-catalog export file named sample-basic-exportedLROs.exp. These can be brought back into a database using import lro.

```sql
export database sample.basic lro to server directory 'D:\MaxL\LROexports\dir';
```

On Windows, exports LRO-catalog information to a new directory dir under the existing directory structure D:\MaxL\LROexports. The double backslashes (\) must be used because a single backslash is an escape character to MaxL.

**Export Outline**

Export metadata, either from the active database outline or an input outline file, to a specified XML file. Export outline files must be written to a location on the Essbase Server or client computer on which the export outline MaxL statement is run.

Permission required: Database Manager.

**Syntax**

```
export outline DBS-NAME FILE-NAME all dimensions list dimensions [ DIM-NAME ]

- tree
- with alias_table ALT-NAME-SINGLE

to xml_file FILE-NAME
```
You can export metadata information from a database in the following ways using export outline.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBS-NAME</td>
<td>Specify the database name instead of the outline file path.</td>
</tr>
<tr>
<td>FILE-NAME</td>
<td>Specify the outline file path instead of the database name.</td>
</tr>
<tr>
<td>all dimensions</td>
<td>Export information about all dimensions in the database.</td>
</tr>
<tr>
<td>list dimensions</td>
<td>Export information about only the listed dimensions. Specify each dimension name within curly braces, and separated by commas.</td>
</tr>
<tr>
<td>tree</td>
<td>Export only the member names in the hierarchy, omitting full metadata details.</td>
</tr>
<tr>
<td>with alias_table</td>
<td>Export using only the member names indicated in the specified alias table.</td>
</tr>
<tr>
<td>to xml_file</td>
<td>Specify the full path to the output XML file.</td>
</tr>
</tbody>
</table>

**Notes**

- This statement requires the database to be started.
- The following general outline information is included in the XML export:
  - Case sensitiveness
  - Outline Type
  - Duplicate Member Names allowed
  - Typed Measures Enabled
  - Date Format
  - Varying Attributes Enabled
  - Alias Table count and list
  - Active Alias Table
  - Attribute information
  - Auto configure
  - Text list definitions
  - Universal member comments
  - Locale, if it exists
  - Query hint list (if aggregate storage)
  - Get Implied Shared Setting
- The following dimension information is included in the XML export:
  - Name
  - Two pass calc
  - Type
  - Text list, if text typed
- Formula
- Format String
- Comment
- Extended member comment
- Dimension category
- Attribute type
- Data Storage
- Dimension Storage
- Alias Names, if any
- UDAs, if any
- Consolidation
- Attribute dimension associated
- Independent dimensions, if any
- Time balance
- Skip options
- Variance reporting
- Currency conversion
- Currency conversion member
- Dynamic Time Series enabled list
- Attachment level, if linked attribute dimension
- Dimension solve order
- Is Non Unique dimension?
- Hierarchy type
- Level usage for aggregation (for aggregate storage hierarchies)
- Is Compression dimension? (if aggregate storage)
- Storage category

- The following member information is included in the XML export:
  - Name
  - Two pass calc
  - Type
  - Text list, if text typed
  - Is shared?
  - Shared member name, if shared
  - Formula
  - Format string
Example

export outline sample.basic all dimensions to xml_file "c:/temp/basic.xml";

Exports all outline information from Sample.Basic to the specified XML file, basic.xml.

export outline sample.basic list dimensions {"Product", "Market"} tree to xml_file "c:/temp/basic.xml";

Exports information about Product and Market dimensions from Sample.Basic to the XML file.

Export outline "c:/temp/basic.olt" all dimensions with alias_table "Default" to xml_file "c:/temp/basic.xml";

Exports information about all dimensions in Sample.Basic from the specified outline file to the XML file, using only default alias names.

Export Security File

Writes the contents of the Essbase security file (essbase.sec) to a readable, text file (ASCII format) on the system where Essbase Server resides. The statement is run against the Essbase Server instance for which you are currently logged in. The Essbase Server instance can be one that is run as a service.

Exporting the contents of the Essbase security file is useful when you want to review the security information for an Essbase Server instance. Be sure to follow your company’s security procedures to ensure the integrity of the data.
Required permission: Essbase Administrator.

Syntax

```
export security_file to data_file FILE-NAME
```

Notes

- `FILE-NAME` specifies the name, including the path, of the text file to which the exported information is written. The path must be to a location on the system where Essbase Server resides. The file cannot be written to a client system. If a path is not specified, the text file is created in the `ARBORPATH\bin` directory.
- Running the `export security_file` statement against a pre-9.3.1 Essbase Server instance is not supported.
- The `export security_file MaxL` statement is similar to the DUMP agent command, except that the DUMP command cannot be run against an Essbase Server running as a service.

Example

```
export security_file to data_file essbase_security_file.txt;
```

Writes security information to a file named `essbase_security_file.txt` in the `ARBORPATH\bin` directory on the server system.

```
export security_file to data_file C:\security_review\essbase_security_file.txt;
```

Writes security information to a file named `essbase_security_file.txt` in the specified directory on the server system (`C:\security_review`).

Grant

Grant a permission, a filter or a stored calculation to a user or a group.

Syntax

```
grant <SYS-SYSTEM-ROLE> on system to USER-NAME
```

You can grant permissions to users and groups in the following ways using `grant`. 

816
<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>create_application to...</td>
<td>Grant Create/Delete Applications permission to a user or group.</td>
</tr>
<tr>
<td>create_user to...</td>
<td>Grant Create/Delete Users/Groups permission to a user or group.</td>
</tr>
<tr>
<td>no_access to...</td>
<td>Revoke any permissions the user or group may have.</td>
</tr>
<tr>
<td>administrator to...</td>
<td>Grant Administrator permission to a user or group.</td>
</tr>
<tr>
<td>no_access on application...to</td>
<td>Revoke any permissions the user or group may have on the specified application.</td>
</tr>
<tr>
<td>manager on application...to</td>
<td>Grant Application Manager permission to a user or group for the specified application.</td>
</tr>
<tr>
<td>no_access on database...to...</td>
<td>Revoke any permissions the user or group may have on the specified database.</td>
</tr>
<tr>
<td>read on database...to...</td>
<td>Grant Read permission to a user or group for the specified database.</td>
</tr>
<tr>
<td>write on database...to...</td>
<td>Grant Write permission to a user or group for the specified database.</td>
</tr>
<tr>
<td>manager on database...to...</td>
<td>Grant Database Manager permission to a user or group for the specified database.</td>
</tr>
<tr>
<td>filter &lt;filter-name&gt; to...</td>
<td>Assign a filter to a user or group that grants or denies permissions to the specified database at a data-value level of detail.</td>
</tr>
<tr>
<td>execute &lt;calc-name&gt; to...</td>
<td>Grant the user or group permission to run the specified stored calculation script.</td>
</tr>
<tr>
<td>execute any on system to...</td>
<td>Grant the user or group permission to run any calculation against any database on the Essbase Server.</td>
</tr>
<tr>
<td>execute any on application...to</td>
<td>Grant the user or group permission to run any calculation against any databases in the specified application.</td>
</tr>
<tr>
<td>execute any on database...to</td>
<td>Grant the user or group permission to run any calculation against the specified database.</td>
</tr>
<tr>
<td>execute default on system to</td>
<td>Grant the user or group permission to run the default calculation against any database on the Essbase Server.</td>
</tr>
<tr>
<td>execute default on application...to</td>
<td>Grant the user or group permission to run the default calculation against any databases in the specified application.</td>
</tr>
<tr>
<td>execute default on database...to</td>
<td>Grant the user or group permission to run the default calculation against the specified database. The default calculation is typically 'CALC ALL;', but it can be changed using alter application set default calculation.</td>
</tr>
</tbody>
</table>

**Notes**

**Granting permissions:**

Users created using Shared Services must be provisioned an Essbase role before you can grant permissions using the **grant** statement.
At each level (system, application or database) existing roles are replaced. However, the built-in privileges create_user and create_application are not replaced.

After granting a permission to a user or group, it can be revoked by subsequently granting no_access. However, to prevent users from being able to load the application, you should also grant no_access at the application level.

**Granting filters:**
There may be only one filter per user per database. Therefore, granting a filter replaces any filters the user may already have on that database.

Filter permission can be revoked from users and groups by using the `revoke filter` clause of `Alter User` and `Alter Group`.

**Granting calculations:**
A user or group may have any number of calculations per database. Therefore, granting a calculation adds it to the user or group’s list of calculations. `Grant execute any` gives the user or group permission to execute all calculations, including the default calculation.

After granting execute permission, the permission can be revoked by subsequently granting no_access to the database. However, to prevent users from being able to load the application, you should also grant no_access at the application level.

**Example**
```
grant no_access to NewGroup;
grant administrator to Fiona;
grant manager on application Sample to Fiona;
grant read on database Sample.basic to Fiona;
grant filter Sample.basic.filter8 to Fiona;
```

**Import Data**
[Click here for aggregate storage version](#)

Import data from text or spreadsheet data files, with or without a rules file.
Minimum permission required: Write.
You can import data to a database in the following ways using `import data`.

```
Syntax

import database DBS-NAME using max_threads INTEGER data
data_file IMP-FILE
<data-record-spec>
<data-error-spec>
<SQL-connect-spec>
<data-file-spec>
<data-error-spec>
<SQL-connect-spec>
<data-file-spec>
<data-record-spec>
<SQL-connect-spec>
<data-file-spec>
<local>
<text>
excel
lotus_2
lotus_3
lotus_4
<local>
<server>
<local>
<server>
<local>
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<server>
<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
</table>
| ...using max_threads INTEGER | Optionally specify a maximum number of threads to use, if this is a parallel data load. Example:  
```plaintext
import database Sample.Basic using max_threads 12  
data from data_file '/nfshome/data/foo*.txt'  
using rules_file '/nfshome/data/foo.rul'  
on error write to 'nfshome/error/foo.err';
```

If this clause is omitted for a parallel data load, Essbase uses a number of pipelines equal to the lesser of number of files, or half the number of CPU cores.

<table>
<thead>
<tr>
<th>import database &lt;dbs-name&gt; data from...</th>
<th>Specify whether the data import file(s) are local or on the server, and specify the type of import file(s). To import from multiple files in parallel, use the wildcard characters * and/or ? in the IMP-FILE name so that all intended import files are matched.</th>
</tr>
</thead>
</table>
|                                    | - * substitutes any number of characters, and can be used anywhere in the pattern. For example,  
  ```plaintext
day*.txt
```
  matches an entire set of import files ranging from `day1.txt` - `day9.txt`.  

- ?* substitutes one occurrence of any character, and can be used anywhere in the pattern. For example, `0?-*-2011.txt` matches data source files named by date, for the single-digit months (Jan to Sept).  

Example:  
```plaintext
import database Sample.Basic  
data from local data_file '/nfshome/data/foo*.txt'  
using local rules_file '/nfshome/data/foo.rul'  
on error abort;
```

<table>
<thead>
<tr>
<th>...using ... rules_file</th>
<th>Import data into the database using a specified rules file. If you are using a rules file for a parallel data load, all the data files in the load must be able to use the same rules file.</th>
</tr>
</thead>
<tbody>
<tr>
<td>...&lt;data error spec&gt; (on error...)</td>
<td>Required. Tell Essbase what to do in case of errors during the data load: abort the operation, or write or append to a specified error log.</td>
</tr>
</tbody>
</table>
| ...<data record spec> from data_string | Load a single data record into the selected database. The string following `data_string` must be a contiguous line, without newline characters.  
Example:  
```plaintext
import database sample.basic data  
from data_string  
"Sales" "COGS" "Marketing" "Payroll" "Misc" "Opening Inventory"  
"Additions" "Ending Inventory" "100-10" "New York" "Jan" "Actual"  
678 271 94 51 0 2101 644 2067"  
on error abort;
```

<table>
<thead>
<tr>
<th>...&lt;SQL connect spec&gt; (connect as...)</th>
<th>If you are importing data from an SQL source, provide your SQL user name and password. You must always use a rules file when you load SQL data sources.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notes</td>
<td></td>
</tr>
</tbody>
</table>
- This statement requires the database to be started.  
- When using the import statement, you must specify what should happen in case of an error. |
To import from a SQL data source, you must connect as the relational user name, and use a rules file.

**Example**

```plaintext
import database sample.basic data from data_file "'$ARBORPATH\app\sample\basic\calcdat.txt'" on error abort;

import database sample.basic data from data_file '/data/calcdat.txt' using rules_file '/data/rulesfile.rul' on error write to '/logs/dimbuild.log';
```

**Import Dimensions**

Import dimensions from text or spreadsheet data files, using a rules file.

Minimum permission required: Write.

**Syntax**

You can import dimensions to a database in the following ways using `import dimensions`.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>import database</td>
<td>Specify whether the dimension import is from a local or server file, and what type of file to import the dimension from.</td>
</tr>
<tr>
<td>&lt;dbs-name&gt; dimensions from...</td>
<td>...using ... rules_file</td>
</tr>
<tr>
<td>Keyword</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>...enforce verification</td>
<td>Verify the outline resulting from the dimension build. This is the default behavior.</td>
</tr>
<tr>
<td>...suppress verification</td>
<td>Do not verify the outline resulting from the dimension build.</td>
</tr>
</tbody>
</table>

**Caution!** Using this option defers restructuring.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>...preserve all data</td>
<td>If you need to preserve all data when importing dimensions, specify that here.</td>
</tr>
<tr>
<td>...on error...</td>
<td>Tell Essbase what to do in case of errors during the dimension build: abort the operation, or write or append to an error log.</td>
</tr>
<tr>
<td>...&lt;SQL connect spec&gt; (connect as...)</td>
<td>If you are importing dimensions from an SQL source, provide your SQL user name and password. You must always use a rules file when you load SQL data sources.</td>
</tr>
<tr>
<td>...&lt;preserve spec alt&gt; (preserve...data)</td>
<td>If you need to preserve level-0 or input data when importing dimensions, specify that here.</td>
</tr>
</tbody>
</table>

**Notes**

- This statement requires the database to be started.
- When using the import statement, you must specify how error logs should be handled.
- When multiple files are included in the same statement, restructure is deferred until all files have been processed. The deferred-restructure type of dimension build has been called an incremental dimension build.
- When the **suppress verification** option is used, restructure is deferred.
- When multiple files are included in the same statement, **be sure verification is enforced for the last file**.
- To import from a SQL data source, you must connect as the relational user name, and use a rules file.

**Example**

```plaintext
import database sample.basic dimensions
from data_file '/data/calcdat.txt'
using rules_file '/data/rulesfile.rul'
on error append to '/logs/dimbuild.log';
```

**Deferred-Restructure Examples**

**For Data File Sources:**

```plaintext
import database sample.basic dimensions
from server text data_file 'genref' using server rules_file 'genref' suppress verification,
from server text data_file 'level' using server rules_file 'level' suppress verification,
from server text data_file 'time' using server rules_file 'time'
preserve input data on error append to 'C:\Hyperion\products\eas\client\dataload.err';
```
For SQL Sources:

```sql
import database sample.basic dimensions
connect as 'username1' identified by 'password1' using server rules_file 'genref',
connect as 'username2' identified by 'password2' using server rules_file 'level',
connect as 'username3' identified by 'password3' using server rules_file 'time'
on error append to 'C:\Hyperion\products\eas\client\dataload.err';
```

For Data and SQL Sources:

```sql
import database sample.basic dimensions
from server text data_file 'genref' using server rules_file 'genref',
from server text data_file 'level' using server rules_file 'level',
connect as 'username1' identified by 'password1' using server rules_file 'genref',
connect as 'username2' identified by 'password2' using server rules_file 'genref'
on error append to 'C:\Hyperion\products\eas\client\dataload.errr';
```

### Import LRO

Import Linked Reporting Objects (LROs) from the specified output directory created by `export lro`. The directory contains an ASCII `.exp` file containing LRO-catalog information, and LRO binary files (if the database from which LROs were exported contained file-type LROs).

Minimum permission required: Write.

**Syntax**

```plaintext
import database <dbname> lro from directory IMPORT-DIR
```

You can import exported LRO information to a database using `import lro`.

**Keyword**

- `import`    Import Linked Reporting Objects (LROs) from the specified export directory on the local computer or on a remote server where the Essbase Server resides.
- `database`  `<dbname>`  LRO...

**Notes**

- This statement requires the database to be started.
- The specified import directory must come from the results of the `export lro` operation. The exported LRO-catalog file contains a record of the LRO file locations, cell notes, or URL text, and database index locations to use for re-importing to the correct data blocks.
- In the paths in the second two examples, double quotation marks are used to allow variable expansion in the string `IMPORT-DIR`, and single quotation marks are required because there are special characters (see “MaxL Syntax Notes” on page 834) in the path name.
Example

Windows Example
import database sample.basic lro
from server directory 'C:\Hyperion\products\Essbase\EssbaseServer\app\sample-basic-lros';

import database sample.basic lro
from directory "'$ARBORPATH\app\sample-basic-lros'";

UNIX Example
import database sample.basic lro
from server directory "'$ARBORPATH\app\sample-basic-lros'";

From the subdirectory created by export lro in the app directory on the server, both the Windows and UNIX example statements above re-import the LRO-catalog information (and file-type LROs if applicable) that were exported to that location.

Query Application

Click here for aggregate storage version

Get information about the current state of the application.
This statement requires the application to be started.

Syntax

\[ query application \text{APP-NAME} \text{get cache_size} \]

You can query application state information using keywords.

Keyword Description

get cache_size Check the current maximum size setting to which the application cache may grow. The application cache grows dynamically until it reaches this limit. The application cache is used for hybrid aggregation in block storage databases, and can help you manage memory usage for retrievals.

Example

The following MaxL statement:
query application sample get cache_size;
returns the maximum size (in kilobytes) to which the application cache may grow.

Query Archive_File

Retrieve information about the database backup archive file.
Minimum permission required: Read.
The database must be running.
You can query archive file information using keywords.

### Keyword Description

**get overview** Retrieve the following overview information:
- Application name
- Database name
- Time when the archive was performed

**list disk volume** Retrieve a list of disk volume names.

On Windows, Essbase adds the default ARBORPATH drive (for example, the C: drive) as a disk volume, even if the database that you backed up does not store data on that disk volume.

### Example

```plaintext
query archive_file /Hyperion/samplebasic.arc get overview;

Retrieves overview information about the samplebasic.arc backup archive file.
```

```plaintext
query archive_file /Hyperion/samplebasic.arc list disk volume;

Retrieves disk volume information about the samplebasic.arc backup archive file.
```

### Query Database

**Click here for aggregate storage version**

Get advanced information about the current state of the database.

Minimum permission required: Read.

This statement requires the database to be started.
You can query for database information in the following ways using `query database`.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>get active alias_table</td>
<td>Display the active alias table for the user issuing the statement.</td>
</tr>
<tr>
<td>get attribute_info</td>
<td>Get attribute member, dimension, and name information for the specified attribute member.</td>
</tr>
<tr>
<td>get attribute_spec</td>
<td>Display the current attribute specifications for the database. These specifications include attribute member name format, Attribute Calculation dimension member names, Boolean and date member names, and numeric range specifications. These settings are defined in Outline Editor.</td>
</tr>
<tr>
<td>get currency_rate</td>
<td>Display the currency rate for every currency partition.</td>
</tr>
<tr>
<td>Keyword</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>get dbstats dimension</td>
<td>Get information about dimensions.</td>
</tr>
<tr>
<td></td>
<td><strong>Output</strong></td>
</tr>
<tr>
<td></td>
<td>The <em>index_type</em> field values are numeric, and translate as follows:</td>
</tr>
<tr>
<td></td>
<td>0   Dense</td>
</tr>
<tr>
<td></td>
<td>1   Sparse</td>
</tr>
<tr>
<td></td>
<td>3   None (database is aggregate storage)</td>
</tr>
<tr>
<td>get dbstats data_block</td>
<td>Get information about data blocks. The information returned has little relevance to aggregate storage databases.</td>
</tr>
<tr>
<td></td>
<td><strong>Output</strong></td>
</tr>
<tr>
<td></td>
<td>The type field values are numeric, and translate as follows:</td>
</tr>
<tr>
<td></td>
<td>0   Array</td>
</tr>
<tr>
<td></td>
<td>1   AVL (or &quot;B+ Tree&quot;)</td>
</tr>
<tr>
<td>get default calculation</td>
<td>View the contents of the calculation designated as default for the database. The default calculation refers to either the relations defined in the database outline (CALC ALL) or to the set of calculation strings defined as the default database calculation.</td>
</tr>
</tbody>
</table>
Keyword | Description
--- | ---
get member_info | Get information on a specific member.
MEMBER-NAME | 
Output

The **unary_type** field values are numeric, and translate as follows:

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Add</td>
</tr>
<tr>
<td>1</td>
<td>Subtract</td>
</tr>
<tr>
<td>2</td>
<td>Multiply</td>
</tr>
<tr>
<td>3</td>
<td>Divide</td>
</tr>
<tr>
<td>4</td>
<td>Percent</td>
</tr>
<tr>
<td>5</td>
<td>NoRollUp</td>
</tr>
</tbody>
</table>

The **member_tag_type** field values translate as follows:

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SkipNone</td>
</tr>
<tr>
<td>16384</td>
<td>SkipMissing</td>
</tr>
<tr>
<td>32768</td>
<td>SkipZero</td>
</tr>
<tr>
<td>49152</td>
<td>SkipBoth</td>
</tr>
<tr>
<td>1</td>
<td>BalFirst</td>
</tr>
<tr>
<td>2</td>
<td>BalLast</td>
</tr>
<tr>
<td>4</td>
<td>TwoPass</td>
</tr>
<tr>
<td>8</td>
<td>Average</td>
</tr>
<tr>
<td>64</td>
<td>Expense</td>
</tr>
</tbody>
</table>

Variations are possible. The field value consists of one of the first four "skip" values plus any/all/none of the last five values. Some examples:

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SkipNone</td>
</tr>
<tr>
<td>77</td>
<td>SkipNone, BalFirst, TwoPass, Average, Expense</td>
</tr>
<tr>
<td>16385</td>
<td>SkipMissing and BalFirst</td>
</tr>
</tbody>
</table>

The first four "skip" values are base values, and added to them are combinations of 1, 2, 4, 8, and 64.

The **status** field values are hexadecimal, and translate as follows:

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Normal</td>
</tr>
<tr>
<td>1</td>
<td>Never Share</td>
</tr>
<tr>
<td>2</td>
<td>Label</td>
</tr>
<tr>
<td>4</td>
<td>Refer Share</td>
</tr>
<tr>
<td>8</td>
<td>Refer Share (with different name)</td>
</tr>
<tr>
<td>16</td>
<td>Implicit share</td>
</tr>
<tr>
<td>32</td>
<td>Virtual Member (stored)</td>
</tr>
<tr>
<td>64</td>
<td>Virtual Member (not stored)</td>
</tr>
<tr>
<td>2048</td>
<td>Attribute</td>
</tr>
<tr>
<td>32768</td>
<td>Referred</td>
</tr>
</tbody>
</table>

get member_calculation | View the formula associated with the selected member.
MEMBER-NAME | 
get estimated size | Display an estimate of the number of blocks a database will create after full calculation (CALC ALL), based on the number of blocks that exist before calculation. The database can have all data loaded, or it can have a random sampling of data loaded. Outlines that contain sparse formulas of any type or top-down formulas are not supported. Results of the estimation on such databases may be invalid.
<table>
<thead>
<tr>
<th><strong>Keyword</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>performance statistics...table</td>
<td>Display one of several choices of performance statistics tables. Before you can use this statement, you must enable performance statistics gathering, using alter database DBS-NAME set performance statistics enabled.</td>
</tr>
<tr>
<td>list alias_table</td>
<td>Get a list of alias tables that are defined for the database.</td>
</tr>
<tr>
<td>list alias_names in alias_table</td>
<td>List the alias names defined in an alias table. Alias tables contain sets of aliases for member names and are stored in the database outline. Use this grammar to see a list of alias names defined in the specified table.</td>
</tr>
<tr>
<td>list lro</td>
<td>Get information about linked objects, including the object type, name, and description, based on criteria you specify. If you specify both a user name and modification date, objects matching both criteria are listed. If you specify no user name or date, a list of all linked objects in the database is displayed.</td>
</tr>
<tr>
<td>list...file information</td>
<td>Get accurate index and data file information. Provides index and data file names, counts, sizes, and totals, and indicates whether or not each file is presently opened by Essbase. The file size information is accurate. Note that the file size information provided by the Windows operating system for index and data files that reside on NTFS volumes may not be accurate.</td>
</tr>
<tr>
<td>list transactions</td>
<td>Display, in the MaxL Shell window, database transactions that were logged after the time when the last replay request was originally executed or after the last restored backup's time (which ever occurred later).</td>
</tr>
<tr>
<td>list transactions after LOG-TIME</td>
<td>Display, in the MaxL Shell window, database transactions that were logged after the specified time. Enclose the TIME value in quotation marks; for example: '11_20_2007:12:20:00'</td>
</tr>
<tr>
<td>list transactions after LOG-TIME write to file</td>
<td>Write the list of database transactions to the specified file. The list output is written to a comma-separated file on the Essbase Server computer. Provide the full pathname to an existing directory and the name of the output file. If only the output file name is provided, Essbase writes the file to the ARBORPATH/app directory. When writing to an output file that already exists, you must use the force grammar to overwrite the file.</td>
</tr>
<tr>
<td>list transactions force write to file</td>
<td>Overwrite the contents of an existing output file.</td>
</tr>
<tr>
<td>list transactions after TIME...write to file</td>
<td>Write the list of database transactions that were logged after the specified time to the specified file.</td>
</tr>
</tbody>
</table>

**Example**

**Example 1**

```sql
query database Sample.Basic list transactions;
```

Displays, in the MaxL Shell window, Sample.Basic database transactions that were logged after the time when the last replay request was originally executed or after the last restored backup's time (which ever occurred later).
Example 2
query database Sample.Basic list transactions after '11_20_2007:12:20:00'
write to file 'C:\Hyperion\products\Essbase\EssbaseServer\app\Sample\Basic\listoutput.csv';

Writes the transactions in the Sample.Basic database that were logged after November 20, 2007 at 12:20:00 to a CSV file in the Sample.Basic database directory.

Example 3
query database sample.basic get member_calculation 'Profit per Ounce';

Displays the formula associated with the 'Profit per Ounce' member.

Example 4
query database sample.basic list lro before '06_16_2008';

Displays information about linked objects, in the Sample.Basic database, that were modified before the specified time.

Refresh Custom Definitions
Refresh the definitions of custom-defined functions or macros associated with an application, without restarting the application.

Syntax
refresh custom definitions on application APP-NAME

You can update Anylitic Services' record of custom-defined function and macro definitions using refresh custom definitions.

Keyword Description
refresh custom definitions on application... Refresh the definitions of custom-defined functions or macros associated with the specified application, without restarting the application. To refresh global definitions, issue the statement separately for each application on the Essbase Server.

Notes
- This statement re-reads the custom-defined function and macro records on the Agent, and associates newly created functions or macros with the specified application (since the last refresh, or since the last time the application was restarted).
- A local function or macro must have been created using the double naming convention to indicate application context: see create function or create macro for details.
- Invalidly defined functions and macros are not loaded to the application.
- Validation occurs at the application level only, during the refresh (not during creation). There is no validation on the system level.
Example
refresh custom definitions on application Sample;

Loads all valid, newly created local functions and macros for the application Sample.

Refresh Outline
Synchronize the outlines between partitioned databases. Use this in the event that one outline has undergone changes to dimensions, members, or member properties, and you wish to propagate those changes to the partitioned database.

Outline synchronization is not currently enabled for partitions that involve aggregate storage databases.

Syntax
```
refresh outline on [transparent | replicated | linked] partition DBS-NAME to from DBS-NAME

at HOST-NAME

purge outline change_file

apply all
apply nothing

<otl-change-spec>
```

```
<otl-change-spec> ::= 
apply on dimension add , delete , rename , update , move ,
apply on member add , delete , rename , move ,
apply on member_property account_type , alias , cals_formula , consolidation , currency_conversion , currency_category , data_storage , uda ,
```

You can synchronize the outlines between partitioned databases using `refresh outline`.
<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>...to...</td>
<td>Use the current source outline to refresh the remote target outline.</td>
</tr>
<tr>
<td>...from...</td>
<td>Refresh the current target outline using the remote source outline.</td>
</tr>
<tr>
<td>purge outline change_file</td>
<td>Clear any source outline changes that have already been applied to the target outline or have been rejected. Source outline changes that have not been applied or rejected are not deleted from the outline change file.</td>
</tr>
<tr>
<td>apply all</td>
<td>Refresh all aspects of the target outline, including dimension changes, member changes, and member property changes made to the source outline. This is the recommended method for refreshing outlines, because if you choose to omit some changes, those changes cannot be applied later.</td>
</tr>
<tr>
<td>apply nothing</td>
<td>Do not apply source outline changes to any aspects of the target outline. The target outline will be considered synchronized to the source, and the timestamp will be updated, although source changes were not actually applied to the target.</td>
</tr>
<tr>
<td>apply on dimension...</td>
<td>Refresh the target outline with all or some dimension changes made to the source outline.</td>
</tr>
<tr>
<td></td>
<td>- <strong>add</strong>: Refresh with added dimensions.</td>
</tr>
<tr>
<td></td>
<td>- <strong>delete</strong>: Refresh by deleting dimensions.</td>
</tr>
<tr>
<td></td>
<td>- <strong>rename</strong>: Refresh with renamed dimensions.</td>
</tr>
<tr>
<td></td>
<td>- <strong>update</strong>: Refresh with dimensions that have member updates (required if the statement will also use apply on member).</td>
</tr>
<tr>
<td></td>
<td>- <strong>move</strong>: Refresh the order of dimensions in the outline.</td>
</tr>
<tr>
<td></td>
<td>Use commas to separate the types of source dimension changes to refresh on the target. For example, to refresh only with added or moved dimensions, use the following phrase: apply on dimension add, move.</td>
</tr>
<tr>
<td>apply on member...</td>
<td>Refresh the target outline with all or some physical member changes made to the source outline. Requires apply on dimension update.</td>
</tr>
<tr>
<td></td>
<td>- <strong>add</strong>: Refresh dimensions with added members.</td>
</tr>
<tr>
<td></td>
<td>- <strong>delete</strong>: Refresh dimensions by deleting members.</td>
</tr>
<tr>
<td></td>
<td>- <strong>rename</strong>: Refresh dimensions with renamed members.</td>
</tr>
<tr>
<td></td>
<td>- <strong>move</strong>: Refresh the order or hierarchy of members in the dimension.</td>
</tr>
<tr>
<td></td>
<td>Use commas to separate the types of source member changes to refresh on the target. For example, to refresh only with added or moved members, use the following phrase: apply on dimension update, apply on member add, move.</td>
</tr>
</tbody>
</table>
**Keyword**

- **apply on** member_property...
  
  Refresh the target outline with all or some member property changes made to the source outline. Requires **apply on dimension update**.
  
  - **account_type**: Refresh with changes in account type.
  - **alias**: Refresh with changes to aliases.
  - **calc_formula**: Refresh with changes to member formulas.
  - **consolidation**: Refresh with changes to consolidation tags.
  - **currency_conversion**: Refresh with changes to currency conversion flags.
  - **currency_category**: Refresh with changes to currency categories.
  - **data_storage**: Refresh with changes to data storage tags.
  - **uda**: Refresh with changes to UDAs.

  Use commas to separate the types of source member-property changes to refresh on the target. For example, to refresh only with updated member formulas, use the following phrase:
  
  **apply on dimension update, apply on member_property calc_formula.**

**Example**

```
refresh outline on replicated partition sampeast.east to samppart.company
apply all;
```

Refreshes the target outline (for Samppart.company database) with any and all changes made to the source outline (Sampeast.east).

```
refresh outline on replicated partition Sampeast.east to Samppart.company
apply on dimension update, apply on member rename, apply on member_property account_type;
```

Refreshes the target outline (for Samppart.company database) with changes made to the source outline (Sampeast.east), reflecting the following update to a dimension: a member tagged Accounts was renamed.

**Refresh Replicated Partition**

Refresh the current replicated-partition database target from the remote (second DBS-NAME) source partition. Database Manager permission for each database is required.

**Syntax**

```
refresh replicated partition DBS-NAME to DBS-NAME
from
at HOST-NAME
all updated
```

You can update a replicated-partition database using **refresh replicated partition**.
<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>...to...</td>
<td>Use the current replicated-partition database source to refresh the remote target partition.</td>
</tr>
<tr>
<td>...from...</td>
<td>Refresh the current replicated-partition database target from the remote source partition.</td>
</tr>
<tr>
<td>...updated data</td>
<td>Refresh a replicated-partition database only with data that has been updated since the last refresh.</td>
</tr>
<tr>
<td>...all data</td>
<td>Refresh a replicated-partition database with all data, regardless of the last refresh.</td>
</tr>
</tbody>
</table>

**Notes**

Do not use `localhost` or `127.0.0.1` as the host name.

**Example**

```
refresh replicated partition sampeast.east to samppart.company at servername01.cn.oracle.com all data;
```

**MaxL Definitions**

This section contains the following topics:

- “MaxL Syntax Notes” on page 834
- “Numbers in MaxL Syntax” on page 835
- “Terminals” on page 836
- “Privileges and Roles” on page 875
- “Quoting and Special Characters Rules for MaxL Language” on page 879

**MaxL Syntax Notes**

The following syntax scheme applies to the creation of MaxL statements.

A MaxL **statement** corresponds to a sentence telling Essbase what to do with users and database objects. In this documentation, the grammar of MaxL statements is illustrated using railroad diagrams.

When issued via the MaxL Shell (esmsh), statements must be terminated by semicolons. Semicolons are used only to tell the shell when to terminate the statement; semicolons are not part of the MaxL language itself. Therefore, when issuing MaxL statements programmatically through Perl or API programs, do not terminate with a semicolon.

A **token** is a delimited sequence of characters recognized by MaxL as a single readable unit. Tokens may be singleton names, keywords, strings, or numbers. Names can have one, two, or three tokens, delimited by periods. The space delimiting tokens can be any white space: spaces, tabs, new lines, or blank lines.

A **keyword** is a sequence of alphabetic characters that is part of the MaxL grammar. Each keyword is recognized as one token. To be recognized as keywords, keywords cannot be enclosed in quotation marks. However, if you wish to use MaxL keywords outside of the grammar as
**terminals** (for example, as database names or passwords), they must be enclosed in single or double quotation marks.

A **terminal** is something referenced in the grammar for which you provide the correct name or definition. Terminals can be names, numbers, or strings. Examples: user-name, filter-name, size-string.

A **name** is a string which can be quoted or unquoted. Unquoted names must begin with an alphabetic character. Quoted names can consist of any sequence of characters. Names in MaxL are used to uniquely identify databases and database objects, such as users, applications, or filters.

Names in MaxL may be one of three types:

- **singleton**, which are names with one token (example: `Sample`). Use a singleton name for objects that have a system-wide context: for example, applications.

- **doubles**, which are names with two tokens. A double is two names connected by a period (example: `Sample.basic`). Use doubles to name objects with application-wide contexts, such as databases.

- **triples**, which are names with three tokens. A triple is three names connected by two periods (example: `Sample.Basic.Calcname`). Use triples to name objects having database-wide contexts, such as filters.

A **string** is unquoted or quoted. An unquoted string can be any sequence of non-special characters. A quoted string can be any sequence of characters (special, alphabetic, or numeric) in the MaxL Alphabet, enclosed in single or double quotation marks.

A **number** is one kind of token which may be passed to Essbase by MaxL. To have meaning, the number must be in the correct format for the Essbase value it represents. In the MaxL grammar documentation, labels for numbers indicate whether the allowed number is positive, negative, an integer, or a real. See “**Numbers in MaxL Syntax**” on page 835.

The MaxL **alphabet** consists of the following elements:

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special characters</td>
<td>Valid special characters: . , ; % $ &quot; ' SPACE TAB * + - = &lt; &gt; [ ] { } ( ) ? ! / \</td>
</tr>
<tr>
<td></td>
<td>When using special characters in MaxL terminals, note the quoting rules (see &quot;Quoting and Special Characters Rules for MaxL Language&quot; on page 879).</td>
</tr>
<tr>
<td>Non-special characters</td>
<td>Alphabetic characters and numbers.</td>
</tr>
<tr>
<td>Alphabetic characters</td>
<td>Letters of the alphabet, and the underscore. [a-z, A-Z, _]</td>
</tr>
<tr>
<td>Numbers</td>
<td>See “<strong>Numbers in MaxL Syntax</strong>” on page 835</td>
</tr>
</tbody>
</table>

**Numbers in MaxL Syntax**

Numbers in MaxL statements fit into one of the following categories.
<NUMBER> ::= INTEGER | REAL

- INTEGER—Zero or a positive integer. Decimals and scientific notation are permitted.
  Examples: 0, 1, 1000, 1.3e4
- REAL—Zero or a positive real number. Decimals and scientific notation are permitted.
  Examples: 0.0, 1, 1000, 1000.4, 13.1e-4

**Terminals**

The following sections describe terminals in alphabetical order.

**ACCESS-TYPE**

The domains that a user can access based on the license. The only possible input value for this string is **Essbase**.

*Type*

string (see “MaxL Syntax Notes” on page 834)

*Example*

Essbase

*Referenced By*

Alter User

**ACTION**

The required action if a data-monitoring trigger is activated.

*Syntax*

mail [smtp],[sender],[receiver1,receiver2,...],[subject]
spool FILE-NAME

- mail - sends an email from the specified sender, to a specified email address or addresses, with the specified subject line (optional). Enclose email addresses containing special characters in square brackets ([ ]). The mail action is not supported for after-update triggers, which are the only triggers available for use with aggregate storage databases.
- spool - logs a message in a specified file in the $ARBORPATH\app\appname\dbname\trig folder.

*Type*

string (see “MaxL Syntax Notes” on page 834)
Example
mail manager.sales.com, [mktdir@CC.com, Monitor@acnts.com]
spool "trgmonitor"

Referenced By
create trigger
drop trigger

**ADMIN-SVCS-LOCATION**
The name (or IP address) and port number of the computer on which Essbase Administration Server runs.

Type
string (see “MaxL Syntax Notes” on page 834)

Example
Aspen:10080 127.0.0.1:10080

Referenced By
alter system

**ALT-NAME-SINGLE**
The name of an alias table. If the name contains special characters (see “MaxL Syntax Notes” on page 834), it must be enclosed in single or double quotation marks.

Type
name (see “MaxL Syntax Notes” on page 834)

Example
Region
'Long Names'

Referenced By
alter database
query database

**APP-NAME**
The name of the application.
The application name must not exceed 8 bytes (non-Unicode-mode applications) or 30 characters (Unicode-mode applications). Avoid using spaces. Application names are not case-sensitive.

If the name contains any allowed special characters, it must be enclosed in single or double quotation marks. Only the following special characters are allowed by Essbase within application names:

- % (percent sign)
- $ (dollar sign)
- - (minus sign)
- { (open brace)
- } (close brace)
- ( (open parenthesis)
- ) (close parenthesis)
- ! (exclamation mark)
- ~ (tilde)
- ` (accent mark)
- # (pound sign)
- & (ampersand)
- @ (at sign)
- ^ (caret)

Type name (see “MaxL Syntax Notes” on page 834)

Example Sample

Referenced By
alter application
alter partition
alter system
create application
display application
display calculation
display database
display function
display location alias
display lock
display macro
display object
display session
display trigger spool
drop application
drop lock
grant
refresh custom definitions
query application

AREA-ALIAS

A shorthand name used in the in the create partition statement for referring to an already-specified member expression that designates which areas of the databases should be partitioned.

Type
name (see "MaxL Syntax Notes" on page 834)

Example

In the create partition statement below, "foo" is an area-alias for the member expression specified in the area specification. To create area-aliases, enter the alias names after the member expression in each area specification. To specify which area is relevant when mapping members (if applicable), refer to its alias name in the mapped phrase.

In the example below, the alias name as created is shown in this color, and it specifies which area (in other words, it refers to the entire member expression string, '@IDESCENDANTS(East) @IDESCENDANTS(Qtr1)'). The alias name as referenced is shown in this color.

create or replace replicated partition sampeast.east
    area '@IDESCENDANTS("Eastern Region"), @IDESCENDANTS(Qtr1)'
to samppart.company at aspen
as admin identified by 'password'
    area '@IDESCENDANTS(East) @IDESCENDANTS(Qtr1)' foo
    mapped foo (Year) to (Yr)
update allow validate only;

Note: All area aliases used in a mapping should be associated with the target (as in the example above), and the direction of member names listed in the mapped clause should go from source to target.
**BUFFER-ID**
A number between 1 and 999,999 inclusive. To destroy a buffer before a data load is complete, you must use the same BUFFER-ID number that was used to initialize the buffer.

**Type**
number (see “MaxL Syntax Notes” on page 834)

**Referenced By**
create partition

**CALC-NAME**
A stored calculation.

**Syntax**
- Syntax for database-level calculation:
  \[ \text{name1}\text{name2}\text{name3} \]
- Syntax for application-level calculation:
  \[ \text{name1}\text{name3} \]
- \text{name1}—Application name.
- \text{name2}—Database name (not required for application-level calcs).
- \text{name3}—Calculation script name.

**Type**
name (see “MaxL Syntax Notes” on page 834)

For calculations associated with databases, three tokens are required, to indicate application and database context and the calculation name.

**Example**
\[ \text{Sample.basic.'alloc.csc'} \]

For application-level calculations, two tokens are required, indicating application context and the calculation name. When executing application-level calculations, you must specify which database to calculate using the syntax 'on database STRING.'

**Example**
- \text{Sample.'alloc.csc'} is the application-level CALC-NAME.
execute calculation Sample.'alloc.csc' on database Basic; is a way to execute the application-level calculation on a database.

If any part of the name contains special characters (see “MaxL Syntax Notes” on page 834), it must be enclosed in single or double quotation marks.

Referenced By
create calculation
display calculation
drop calculation
execute calculation
grant

**CALC-NAME-SINGLE**
A stored calculation name that is the third token of a database-level “CALC-NAME” on page 840.

If any part of the name contains special characters (see “MaxL Syntax Notes” on page 834), it must be enclosed in single or double quotation marks.

Type
name (see “MaxL Syntax Notes” on page 834)

Example
If the full database-level calc name is sample.basic.'alloc.csc', then CALC-NAME-SINGLE is 'alloc.csc'.

Referenced By
alter database

**CALC-SPEC-STRING**
An optional Essbase calculator-syntax specification string. Must be enclosed in single quotation marks.

Type
string (see “MaxL Syntax Notes” on page 834)

Example
'@COVARIANCE (expList1, expList2)'
Use CALC-SPEC-STRING only if the function or macro needs to be returned through the API that lists functions.

Referenced By
create function
create macro

**CALC-STRING**
A calculation string. The body of an anonymous (unstored) calculation, or the string used to specify the body of a stored calculation at create time.

Because calculations are terminated with a semicolon, and semicolons are special characters to MaxL, CALC-STRING should be enclosed in single or double quotation marks.

Type
string (see “MaxL Syntax Notes” on page 834)

Example
CALC DIM(Year, Measures, Product);

Referenced By
alter database
execute calculation

**COLUMN-WIDTH**
A number (at least 8) representing character-width of columns; or, the keyword default, representing 20 characters wide.

Type
number (see “MaxL Syntax Notes” on page 834) or default

Example
set display column width 80
set display column width default

Referenced By
“Set Display Column Width” on page 898
**COMMENT-STRING**

A string of user-defined informational text. If the string contains special characters (see “MaxL Syntax Notes” on page 834), it must be enclosed in single or double quotation marks.

**Type**

string (see “MaxL Syntax Notes” on page 834)

**Example**

'This is a comment.'

**Referenced By**

alter application  
alter database  
alter group  
alter user  
create application  
create database  
create function  
create group  
create macro  
create partition  
create user

**CONDITION**

A numeric-value-expression developed in MDX. Must be enclosed in double quotation marks. Enclose strings containing special characters in square brackets ([]).

**Type**

string (see “MaxL Syntax Notes” on page 834)

**Example**

"Jan>20"

**Referenced By**

create trigger
**CUBE-AREA or MDX-SET**

A cube area or other specification developed in MDX as a symmetric, syntactically-valid set. The area specification must be static, for example it cannot contain Dynamic Calc members or runtime functions such as Filter, TopSum, or BottomSum. Enclose strings containing special characters in square brackets ([ ]). For complete information about defining MDX sets, see “MDX Set Specification” on page 1032 in the MDX section.

**Type**

string (see “MaxL Syntax Notes” on page 834)

**Examples**

The following is a set of siblings.

```
'{[Jan 2000], [Feb 2000], [Mar 2000]}'
```

The following is a crossjoined set.

```
'({[Qtr1], [New York]}, {[Qtr1], [California]},
   {[Qtr2], [New York]}, {[Qtr2], [California]})'
```

The following set is also a tuple.

```
'({Jun, FY2011, Actual})'
```

The following statement clears data from a region of ASOsamp.Sample. The region is defined using a CUBE-AREA expressed in MDX.

```
alter database ASOsamp.sample clear data in region '{(Coupon, [Prev Year], South)}'
physical;
```

**Referenced By**

- create trigger
- alter database (aggregate storage)
- execute allocation
- execute calculation (aggregate storage)

**CUBE-SCHEMA-PATH**

The path to the cube schema in Essbase Studio from the root folder.

**Type**

string (see “MaxL Syntax Notes” on page 834)

**Example**

```
"\folderinpath1\folderinpath2\cubeschemaname"
```
DATE

A valid date string formatted according to these rules:

- **MM/DD/YYYY** or **MM/DD/YY**
- Any character can be used as a separator; for example, **MM-DD-YY** is valid.

If the string contains special characters (see “MaxL Syntax Notes” on page 834), it must be enclosed in single or double quotation marks.

Type

string (see “MaxL Syntax Notes” on page 834)

Example

'04/16/03'
'04.16.2003'
04_16_2003

DBS-EXPORT-DIR

Suffix for the name of a database directory to contain export files, to be created (upon export lro) on the server or client as $ARBORPATH/app/appname-dbname-suffix.

After export lro, the directory contains file-type LRO binary files (if applicable to the database), and the LRO-catalog export file with file-extension .exp.

If for a Sample.Basic export, DBS-EXPORT-DIR is given as lros, then the sample-basic-lros directory is created in the $ARBORPATH/app directory structure. The sample-basic-lros directory contains file-type LRO binary files and the LRO-catalog export file ‘sample-basic-lros.exp’.

Notes:

- MaxL creates exactly one export directory; it does not create a directory structure.
- If the specified export directory already exists, the export LRO statement will fail. This is a safeguard against overwriting existing export directories.

Type

string (see “MaxL Syntax Notes” on page 834)
DBS-NAME

The name of a database. Two tokens are required, to indicate application context.

Syntax

\[ \text{name1.name2} \]

- **name1**—The name of the application containing the database.
  
  The application name must not exceed 8 bytes (non-Unicode-mode applications) or 30 characters (Unicode-mode applications). Avoid using spaces.

- **name2**—The name of the database.
  
  The database name must not exceed 8 bytes (non-Unicode-mode applications) or 30 characters (Unicode-mode applications). Avoid using spaces.

Database names are not case-sensitive.

If the name contains any allowed special characters, it must be enclosed in single or double quotation marks. Only following special characters are allowed by Essbase within database names:

\[
\% \text{ (percent sign)} \\
\$ \text{ (dollar sign)} \\
- \text{ (minus sign)} \\
\{} \text{ (open brace)} \\
\} \text{ (close brace)} \\
( \text{ (open parenthesis)} \\
) \text{ (close parenthesis)} \\
! \text{ (exclamation mark)} \\
~ \text{ (tilde)} \\
` \text{ (accent mark)} \\
# \text{ (pound sign)} \\
& \text{ (ampersand)} \\
@ \text{ (at sign)} \\
^ \text{ (caret)}
\]

Type

name (see “MaxL Syntax Notes” on page 834)

Example

Sample.basic

Referenced By

alter database
alter partition
**DBS-STRING**

The second token of “DBS-NAME” on page 846. Limit 8 characters.

If the name contains special characters (see “MaxL Syntax Notes” on page 834), it must be enclosed in single or double quotation marks.

**Type**

string (see “MaxL Syntax Notes” on page 834)

**Example**

basic

**Referenced By**

alter application
alter database
alter partition
execute calculation

**DIM-NAME**

The name of a database dimension.

If the string contains special characters (see “MaxL Syntax Notes” on page 834), it must be enclosed in single or double quotation marks.

**Type**

string (see “MaxL Syntax Notes” on page 834)

**Example**

Year
Market

**Referenced By**

query database

**ESS-CONN**

The name of an Essbase connection stored on the Essbase Studio Server.

**Referenced By**

deploy
**ESS-MODEL-NAME**

The name of an Essbase model on the Essbase Studio Server.

**Referenced By**

deploy

**EXPORT-DIR**

The exact name of a directory in $ARBORPATH\app where LRO-catalog information was exported using `Export LRO`. Give only the directory name; do not give the full path. Must be enclosed in single or double quotation marks. The typical format is `appname-dbname-suffix`.

**Type**

string (see “MaxL Syntax Notes” on page 834)

**Example**

'sample-basic-out'

**Referenced By**

alter system

**FILE-NAME**

A file name or an absolute path to a file. If the string contains special characters (see “MaxL Syntax Notes” on page 834), it must be enclosed in single or double quotation marks. Double quotation marks allows variable expansion; single quotation marks does not. If the file path contains a backslash (\), it must be preceded with another backslash (\\) to be interpreted correctly by the MaxL Shell.

**Type**

string (see “MaxL Syntax Notes” on page 834)

**Example**

- `file01`
- `'D:\filename'`
- `"$ARBORPATH\errors.txt"`
- `"$ARBORPATH\app\sample\basic\calcdat.txt"` (double quotation marks to expand the variable)
- `'\homes/fiona/scriptfile.msh'` (UNIX file path)
Referenced By
alter database
export data
import data
import dimensions

**FILE-NAME-PREFIX**

Prefix for one or more file names to be created (upon display drillthrough DBS-NAME to FILE-NAME-PREFIX) on the client in the working directory of MaxL execution.

These display output files contain the URL XML content of URL drill-through definitions used to link to content hosted on ERP and EPM applications.

If the string contains special characters (see “MaxL Syntax Notes” on page 834), it must be enclosed in single or double quotation marks.

**Type**

string (see “MaxL Syntax Notes” on page 834)

**Example**

-urlxmls

Referenced By
display drillthrough

**FILTER-NAME**

The name of a security filter. Three tokens are required, to indicate application and database context.

**Syntax**

\(name1.name2.name3\)

- \(name1\)—Application name.
- \(name2\)—Database name.
- \(name3\)—Filter name.

**Type**

name (see “MaxL Syntax Notes” on page 834)

**Example**

Sample.basic.filt1
FULL-EXPORT-DIR

Full path for the name of a directory for LRO export files, to be created (upon export LRO) anywhere on the client or server.

After export LRO, the directory contains file-type LRO binary files (if applicable to the database), and the LRO-catalog export file named in the format directoryname.exp.

For example, if for a Sample.Basic export, FULL-EXPORT-DIR is given as home/temp/lros, then the lros directory structure is created under home/temp if home/temp exists. The lros subdirectory contains file-type LRO binary files and the LRO-catalog export file ’lros.exp’.

Notes:

- MaxL creates exactly one export directory; it does not create a directory structure. In the above example, if the home/temp directory structure exists, MaxL creates the lros directory as a subdirectory of home/temp, but if home/temp does not exist, MaxL will not create home/temp/lros.

- If the specified export directory already exists, the export LRO statement will fail. This is a safeguard against overwriting existing export directories.

- On Windows, use double backslashes (\ \) to represent backslashes in file paths. This is so that the MaxL Shell can interpret the second backslash literally, and not as an escape sequence.

Type

string (see “MaxL Syntax Notes” on page 834)

Example

'\\temp\\lros'

Referenced By

Export LRO
**FUNC-NAME**

The name of a custom-defined Essbase function. Using one token indicates a global function. For a local (application-level) function, use two tokens.

The name of a custom-defined function is a unique string that begins with a letter or a @, #, $, _ symbol. The name can include alphanumeric characters or the aforementioned symbols. Oracle recommends that you start a function name with @.

Any token of the name that contains special characters (see “MaxL Syntax Notes” on page 834), must be enclosed in single or double quotation marks.

Syntax

Syntax for local (application-level) function:

```
name1 . name2
```

Syntax for global function:

```
name2
```

See “MaxL Syntax Notes” on page 834

- `name1`—Application name.
- `name2`—Function name.

**Type**

name (see “MaxL Syntax Notes” on page 834)

**Example**

- Example of a local function:
  ```
  Sample . '@COVARIANCE'
  ```
- Example of a global function:
  ```
  '@COVARIANCE'
  ```

**Referenced By**

display function
drop function

**GROUP-NAME**

The name of the Essbase security group. If the group is authenticated with Shared Services, the name must match a valid group name on one of the configured authentication repositories.

Group name guidelines:

- Non-Unicode application limit: 256 bytes
- Unicode-mode application limit: 256 characters
Group names must start with a letter or a number

If the group name contains any special characters (see “MaxL Syntax Notes” on page 834), the name must be enclosed in single or double quotation marks.

In EPM System security mode, GROUP-NAME can include a user directory specification or unique identity attribute.

In EPM System security mode, user and group names can be non unique, if you specify either the user or group’s provider directory or unique identity attribute.

Types

- name (see “MaxL Syntax Notes” on page 834)
- name@provider
- WITH IDENTITY ID-STRING

In EPM System security mode, provider is the name of a user directory (such as LDAP or Active Directory) that hosts the external group, and ID-STRING is a unique identity assigned to every user and group.

**Note:** If a user or group name includes the @ character, you must specify the provider as well, or else Shared Services considers the @ character as a delimiter indicating a provider name. For example, if you want to log in user admin@msad which is on a Native Directory provider, you must specify 'admin@msad@Native Directory'.

**Examples**

Sales010

Sales010@Native Directory

with identity "native://nvid=f0ed2a6d7fb07688:5a342200:1265973105c:-7f46?GROUP"

**Referenced By**

alter application
alter group
alter user
create group
create user
display group
display privilege
display user
drop group
grant
**HOST-NAME**

The name of a computer. The maximum length of a computer name can be 1024 bytes (non-Unicode application) or characters (Unicode application).

Leading or trailing spaces in the host name are illegal and will be trimmed off.

**Type**

name (see “MaxL Syntax Notes” on page 834)

**Failover Clusters**

For Essbase failover clusters, you must use the URL-based Essbase Server name for the host name:

```
http[s]://host:port/aps/Essbase?clusterName=logicalName
```

For secure mode (SSL), the URL syntax is

```
http[s]://host:port/aps/Essbase?ClusterName=logicalName&SecureMODE=yesORno
```

For example,

```
```

**Partitions**

You can optionally use IP addresses in place of host names when creating, dropping, or altering partition definitions. For example: 

```
'127.0.0.1'
```

If you are creating, altering, or dropping a partition to or from another agent on the same computer, see “Specifying Port Numbers in Partition Host Names” on page 1002 for more information.

If you are using host name aliases, see “Using Host Name Aliases When Partitioning” on page 1003.

For information about partitioning in secure mode (SSL), see also “Partitioning and SSL” on page 1004.

**Essbase Studio**

You can use a custom port number to refer to Essbase Studio server from the on host phrase of the MaxL deploy statement. For example,

```
deploy from model 'B_BPMOR' in cube schema '\oracle\BPM_OR5' login 'admin' identified by 'password' on host 'std01azl:12081' to application 'app01' database 'db01' odbc_dsn 'TBC_ORA' using connection 'essbase';
```

**ID-RANGE**

A comma-separated list of sequence ID ranges for logged sequential transactions. A range can consist of:
A single transaction: \( n \) to \( m \); for example, 1 to 1

Multiple transactions: \( x \) to \( y \); for example, 20 to 100

**Type**

string (see “MaxL Syntax Notes” on page 834)

**Example**

1 to 10, 20 to 100

**Referenced By**

alter database

**ID-STRING**

Unique identity attribute identifying a user or group in a directory.

In EPM System security mode, a unique identity attribute, or "identity," is a unique string assigned to every user and group. The identity enables Essbase to distinguish between users and groups with the same name across providers.

To find the identities of existing users or groups, use display user or display group.

For more information about unique identity attributes, see Oracle Hyperion Enterprise Performance Management System Security Administration Guide.

**Example**

native://nvid=f0ed2a6d7fb07688:5a342200:1265973105c:-7f46?USER

**Referenced By**

USER-NAME

GROUP-NAME

**IMPORT-DIR**

A string representing the full path to the directory used in the export lro statement.

**Note:** If importing lros from a server directory (using from server syntax of import lro), you can give just the full directory name instead of the full path, as specified by “EXPORT-DIR” on page 849.

The string must be enclosed in single or double quotation marks.

**Type**

string (see “MaxL Syntax Notes” on page 834)
Example

- 'C:\Hyperion\products\Essbase\EssbaseServer\app\sample-basic-lros'
- 'home/exports/temp/sample-basic-lros'
- "\$ARBORPATH\app\sample-basic-lros"

Note: If variables are used, the string should be enclosed in double quotation marks.

For information about how IMPORT-DIR is created, see the grammar and definitions for export lro.

Referenced By

import lro

IMP-FI L E

A name or absolute path to a server-side rules file or data file, used for import data and import dimension statements.

If the data or rules file is specified to be on the server, the following rules apply. If the data or rules file is specified to be local (or left unspecified, in which case it is also local), skip the following and use “FILE-NAME” on page 849.

If you are using server data_file or server rules_file, you can get the file from any application (not just the current application) by starting the IMP-FILE string using the following pattern:

FILE_SEP AppName FILE_SEP DbName FILE_SEP rest_of_file_name

where FILE_SEP must be either / or \.

Type

name (see “MaxL Syntax Notes” on page 834)

Examples

Consider the MaxL statement:

import database demo.basic data
from server rules_file 'IMP-FILE'
on error abort;

If IMP-FILE is 'calcdat.txt', the file will be looked for in \Demo\Basic\calcdat.txt.

If IMP-FILE is '/Sample/Basic/calcdat.txt' (or '\\Sample\\Basic\\calcdat.txt'), the file will be looked for in \Sample\Basic\calcdat.txt.

If the FILE_SEP string FILE_SEP string FILE_SEP pattern does not start the string, the entire string is used as the file name, but the current application directory is assumed. For example, if the initial file separator is omitted and IMP-FILE is incorrectly specified as 'Sample/Basic/calcdat.txt', the file will be looked for in /Demo/Basic/Sample/Basic/calcdat.txt.
import database demo.basic data
from server file '/Sample/Basic/Calcdat.txt'
on error abort;

Essbase looks for calcdat.txt inside the Sample.Basic directory, and loads the data to Demo.Basic.

Referenced By
import data
import dimensions

**JAVACLASS.METHOD**
The java class and the method representing the custom-defined function. Must be a fully qualified java method name and signature, enclosed in single or double quotation marks.

Type
string (see “MaxL Syntax Notes” on page 834)

Example
'com.hyperion.essbase.calculator.Statistics.covariance'

For Java code examples and MaxL registration scripts for custom-defined functions, see Custom-Defined Calculation Function Examples

Referenced By
create function

**LOCATION-_ALIAS-NAME**
The name of a location alias referencing another database.

Syntax
name1.name2.name3

- name1—Application name.
- name2—Database name.
- name3—Location alias name.

Type
name (see “MaxL Syntax Notes” on page 834)

Example
Sample.Basic.EasternDB
LOC-ALIAS-SINGLE
The single form of a location alias name. Use if you are creating a new location alias.

Type
name (see “MaxL Syntax Notes” on page 834)

Example
EasternDB

Referenced By
alter database
create location alias

LOG-TIME
A specific log time after which to replay subsequent transactions. Enclose the value in quotation marks.

Type
string (see “MaxL Syntax Notes” on page 834)

Example
'11_20_2007:12:20:00'

Referenced By
alter database

MACRO-EXPANSION
Extended definition of the macro, to be substituted in wherever the registered macro name is referenced in a calculation. If the string contains special characters (see “MaxL Syntax Notes” on page 834), it must be enclosed in single or double quotation marks.

Type
string (see “MaxL Syntax Notes” on page 834)
Example
'
@COUNT(SKIPMISSING, @RANGE(@@S))'

See “Custom-Defined Macros” on page 326.

Referenced By
create macro

MACRO-NAME

The name of a custom-defined Essbase macro. Macro names are a shorthand way to refer to macro expansions.

The name of a macro is a unique string that begins with a letter or a @, #, $, _ symbol. The name can include alphanumeric characters or the aforementioned symbols. Oracle recommends that you start a macro name with @. Although macros must have unique names within a given application, a global macro and a local macro can share the same name. However, the local macro takes precedence.

To create or refer to a local (application-level) macro, use the double name (for example, Sample.'@JSUM').

Any part of the name that contains special characters (see “MaxL Syntax Notes” on page 834), must be enclosed in single or double quotation marks.

Syntax

Syntax for local (application-level) macro:

name1.name2

Syntax for global macro:

name2

- name1—Application name.
- name2—Macro name.

Type

name (see “MaxL Syntax Notes” on page 834)

Example

- Sample.'@COUNTRANGE'—Application-level (local) macro name without a signature, meaning that there are no restrictions on its arguments.
- Sample.'@COUNTRANGE(Any)'—Same as Sample.'@COUNTRANGE'. Once registered for the application, @COUNTRANGE can take any arguments.
- '@JCOUNTS' - System-level (global) macro name.
- '@JCOUNTS(single, group)' — Same as '@JCOUNTS', but with a signature restricting its arguments.
For more information about macro signatures (input parameters), see “Custom-Defined Macro Input Parameters” on page 326

Referenced By
create macro
display macro
drop macro

**ALLOC-NUMERIC**

An MDX numeric value expression used to specify the amount for an allocation source. The amount value is allocated to cells in the target region. The allocation numeric is one of the following:

- An MDX tuple
- A number
- An arithmetic expression using member names, with the following restrictions:
  - All members in the expression must be from the same dimension.
  - Tuples cannot be used.
  - Only arithmetic operators (+, -, /, and *) can be used.
  - MDX functions (such as Avg and Parent) are not allowed.

Type  
string (see “MaxL Syntax Notes” on page 834)

Examples

- (Acc_1000, Jan_2009)
- 100.00
- (Acc_1000 + Acc_2000)/2
- AcctA + AcctB
- Balance * 1.1

Referenced By
execute allocation

**MEMBER-EXPRESSION**

Outline member specification of members from one or more dimensions, member combinations separated by commas, or member sets defined with functions. Must be enclosed in single or double quotation marks.
Type
string (see “MaxL Syntax Notes” on page 834)

Example
'@ANCESTORS(Qtr2)'

If MEMBER-EXPRESSION contains MEMBER-NAMES that begin with numbers or contain special characters, enclose those member names in double quotation marks, and the entire MEMBER EXPRESSION in single quotation marks. For example:

- create or replace filter demo.basic.numfilt no_access on '"2"';
- '@DESCENDANTS("Eastern Region"), @CHILDREN(Qtr1)'

The following example shows how create drillthrough uses a member expression to define the list of drillable regions.

create drillthrough sample.basic.myURL from xml_file "temp.xml" on
{'@Ichildren("Qtr1"), '@Ichildren("Qtr2")'} level0 only;

Referenced By
alter filter
create filter
create partition
create drillthrough
alter drillthrough

MEMBER-NAME
The name of a database outline member.

If the name contains special characters (see “MaxL Syntax Notes” on page 834), it must be enclosed in single quotation marks.

Type
name (see “MaxL Syntax Notes” on page 834)

Example
Jan

'New York'

If MEMBER-NAME is part of “MEMBER-EXPRESSION” on page 860 and MEMBER-NAME begins with a number or contains special characters (see “MaxL Syntax Notes” on page 834), enclose MEMBER-NAME in double quotation marks and enclose MEMBER-EXPRESSION in single quotation marks.
**OBJ-NAME**
The name of a database object. Three tokens are required, to indicate application and database context.

**Syntax**

\[ name1.name2.name3 \]

- *name1*—Application name.
- *name2*—Database name.
- *name3*—Object name.

**Type**

name (see “MaxL Syntax Notes” on page 834)

**Example**

Sample.basic.Calcdat

Referenced By
alter object
drop object

**OBJ-NAME-SINGLE**
A stored database object name that is the third token of a database-level “OBJ-NAME” on page 862.

If any part of the name contains special characters (see “MaxL Syntax Notes” on page 834), it must be enclosed in single or double quotation marks.

**Type**

name (see “MaxL Syntax Notes” on page 834)

**Example**

If the full database object name is `sample.basic.calcdat`, then OBJ-NAME-SINGLE is `calcdat`.
**OUTLINE-ID**

The numeric identification of an aggregate storage outline associated with a view. The outline ID is returned by the `execute aggregate selection` statement. The `execute aggregate selection` statement returns a set of views, including the outline ID for the views it returns.

**Type**

number (see “MaxL Syntax Notes” on page 834)

**Example**

4142187876

**Referenced By**

alter partition
alter user
create location alias
create outline
create partition
create user

**PASSWORD**

A user’s password. Not applicable for externally authenticated users.

Password guidelines:

- Non-Unicode application limit: 100 bytes
- Unicode-mode application limit: 100 characters
- If the string contains special characters (see “MaxL Syntax Notes” on page 834), the password must be enclosed in single or double quotation marks
- Leading or trailing spaces are illegal and will be trimmed off

**Type**

string (see “MaxL Syntax Notes” on page 834)

**Referenced By**

alter partition
alter user
create location alias
create outline
create partition
create user
**PATHNAME_FILENAME**

An absolute path to a file. If the string contains special characters (see “MaxL Syntax Notes” on page 834), it must be enclosed in single or double quotation marks. Double quotation marks allows variable expansion; single quotation marks does not. If the file path contains a backslash (\), it must be preceded with another backslash (\\) to be interpreted correctly by the MaxL Shell.

**Type**

string (see “MaxL Syntax Notes” on page 834)

**Example**

- 'C:\Hyperion\products\Essbase\EssbaseServer\app\Sample\Basic\listoutput.csv'
- "$ARBORPATH/errors.txt"
- "$ARBORPATH\app\sample\basic\calcdat.txt" (double quotation marks to expand the variable)

**Referenced By**

query database

**PRECISION-DIGITS**

An integer between 0 and 15, inclusive.

**Type**

number (see “MaxL Syntax Notes” on page 834)

**Referenced By**

alter session

**PROPS**

Aggregate storage data load properties that determine how missing and zero values, duplicate values, and multiple values for the same cell in the data source are processed.

- **ignore_missing_values**: Ignore missing values in the data source.
- **ignore_zero_values**: Ignore zeros in the data source.
- **aggregate_use_last**: Combine duplicate cells by using the value of the cell that was loaded last into the data load buffer. When using this option, data loads are significantly slower, even if there are not any duplicate values.
Caution! The aggregate_use_last method has significant performance impact, and is not intended for large data loads. If your data load is larger than one million cells, consider separating the numeric data into a separate data load process (from any typed measure data). The separate data load can use aggregate_sum instead.

- aggregate_sum: (Default) Add values when the buffer contains multiple values for the same cell.

If you use multiple properties and any conflict occurs, the last property listed takes precedence.

Type
cstring (see “MaxL Syntax Notes” on page 834)

Referenced By
alter database (aggregate storage)

RNUM

Resource usage specification for temporary aggregate storage data load buffer.

Must be a number between .01 and 1.0 inclusive. If not specified, the default value is 1.0. Only two digits after the decimal point are significant (for example, 0.029 is interpreted as 0.02). The total resource usage of all load buffers created on a database cannot exceed 1.0 (for example, if a buffer of size 0.9 exists, you cannot create another buffer of a size greater than 0.1). Send operations internally create load buffers of size 0.2; therefore, a load buffer of the default size of 1.0 will cause send operations to fail because of insufficient load buffer resources.

Type

number (see “MaxL Syntax Notes” on page 834)

Example

0.02

Referenced By

alter database (aggregate storage)

RTSV-LIST

A string of runtime substitution variables that can be used in calculation scripts. Runtime substitution variables are specified as key/value pairs. The string must be enclosed with single quotation marks, and key/value pairs must be separated by a semicolon, including a semicolon after the last runtime substitution variable in the string and before the terminal single quotation mark.
Runtime substitution variables must be declared in the SET RUNTIMESUBVARS calculation command. The name is required; the value is optional. If you include a runtime substitution variable in RTSV-LIST that has not been declared in SET RUNTIMESUBVARS, Essbase ignores the undeclared runtime substitution variable (no warnings or exceptions are generated).

**Type**

string (see “MaxL Syntax Notes” on page 834)

**Example**

In this example of a runtime substitution variable string, the name and value of four runtime substitution variables are specified (for example, the value of the runtime substitution variable named “a” is 100):

'a=100;b=@CHILDREN("100");c="Actual"->"Final";d="New York";'

**Referenced By**

execute calculation (block storage only)

**See Also**

SET RUNTIMESUBVARS calculation command

**RULE-FILE-NAME**

A comma separated list of strings of rules-file names. Each rules-file name should be an 8-character object file name with no extension. The rule files must reside on the Essbase server.

**Type**

string (see “MaxL Syntax Notes” on page 834)

**Example**

'h1h1h1' , 'h1h1h2'

**Referenced By**

import data (aggregate storage)

**SESSION-ID**

The unique session ID. This ID can be used to logout a user session, or kill the current request in that session.

**Type**

number (see “MaxL Syntax Notes” on page 834)
Example
3310545319

Referenced By
alter system
display session
query database

SIZE-STRING

Syntax

number units

OR

number

- number—Any positive number. Decimals and scientific notation are permitted. Whitespace between number and units is optional.
- units—One of the following: b, kb, mb, gb, tb (case-insensitive). If units are unspecified, bytes are assumed.

Type

number (see “MaxL Syntax Notes” on page 834)

Examples

51040b
51040 b
11MB
11000kb
12.34gb
1234e-2gb

Referenced By

alter application
alter database
alter tablespace

SPOOL-NAME

The name of a trigger’s output file, as specified in the THEN or ELSE section of the create trigger statement.
Syntax

\texttt{name1.name2.name3}

Type

name (see “MaxL Syntax Notes” on page 834)

Example

In the following create trigger statement, the \textbf{bold} section is the spool name.

\begin{verbatim}
cREATE OR REPLACE TRIGGER Sample.Basic.Trigger_Jan_20
WHERE "(Jan,Sales,[100],East,Actual)"
WHEN Jan > 20 AND is(Year.currentmember,Jan)
THEN spool \texttt{Trigger_Jan_20}
END;
\end{verbatim}

Referenced By

display trigger spool
drop trigger spool

\textbf{ST-HIER}

A named hierarchy in Essbase Studio.

Referenced By

deploy

\textbf{ST-LEAF}

A path in an Essbase Studio hierarchy leading from a top level to level 0. All levels from top to bottom must be included. Each level name must be enclosed in single quotation marks. Level names must be separated using the following character sequence: \texttt{-->}

Example

\begin{verbatim}
'H_Market'-->'REGION'-->'STATE'
\end{verbatim}

Referenced By

deploy

\textbf{STOPPING-VAL}

Optional stopping value for the \texttt{execute aggregate process} statement. Use this value to give the ratio of the growth size you want to allow during the materialization of an aggregate storage database, versus the pre-aggregation size of the database (Before an aggregation is materialized, the database contains only level 0 input-level data.)
Type
number (see "MaxL Syntax Notes" on page 834)

Example
A stopping value of 1.5 means that during the materialization of the aggregation, the aggregate cells are allowed to occupy up to 50% of the disk space occupied by the level-0 data.

Referenced By
execute aggregate selection
execute aggregate process

**TABLSP-NAME**
The name of a tablespace. Tablespaces are applicable only to aggregate storage databases. For this release, possible names for tablespaces you can alter are default and temp. Other tablespace names reserved by the system are metadata and log.

Syntax

\[ name1.name2 \]

- \[ name1 \]—Application name.
- \[ name2 \]—Tablespace name.

Type
name (see "MaxL Syntax Notes" on page 834)

Example
temp

Referenced By
alter tablespace
display tablespace

**TRIGGER-NAME**
The name of the trigger device created to track and respond to database updates. Trigger names must be triple names, specifying application name, database name, and trigger name (if you rename the application or database, the trigger is invalidated). Trigger names are case-insensitive, are a maximum of 30 bytes, and cannot contain special characters.

Syntax

\[ name1.name2.name3 \]
- **name1**—Application name.
- **name2**—Database name.
- **name3**—The name of the trigger.

**Type**

name (see “MaxL Syntax Notes” on page 834)

**Example**

*Sample.Basic.MyTrigger*

**Referenced By**

- alter trigger
- create trigger
- display trigger
- drop trigger

### UNIQUE-VOL-NAME

The unique name of the disk volume definition. Unlike the name used when the disk volume definition was created (“VOLUME-NAME” on page 875), the unique disk-volume name must be a triple. The first two parts of the name specify application and database context. The third part of the name, on Windows, is a drive letter. On UNIX, it is a path to the `EssbaseServer` directory.

If any part of the name contains special characters (see “MaxL Syntax Notes” on page 834), that part must be enclosed in single or double quotation marks.

If a Windows file path is used which contains a backslash (\), it must be preceded with another backslash (\\) to be interpreted correctly by the MaxL Shell. If variables are used, the variable string that is enclosed with single quotation marks must be enclosed with double quotation marks so that the MaxL Shell knows to expand the variables.

**Syntax**

`name1.name2.name3`

- **name1**—Application name.
- **name2**—Database name.
- **name3**—Disk volume name.

**Type**

name (see “MaxL Syntax Notes” on page 834)
Example

sample.basic.'vol3/hyperion/products/Essbase/EssbaseServer'
sample.basic.c
sample.basic."'$ARBORPATH\diskvol_area'"

Referenced By
display disk volume

URL-NAME

The name of a drill-through URL definition used to link to content hosted on Oracle ERP and EPM applications.

Syntax

\textit{name1.name2.name3}

- \textit{name1}—Application name
- \textit{name2}—Database name
- \textit{name3}—URL name

Type

name (see “MaxL Syntax Notes” on page 834)

Example

Sample.basic.MyURL

If any part of the name contains special characters (see “MaxL Syntax Notes” on page 834), the name must be enclosed in single or double quotation marks.

Referenced By
create drillthrough
alter drillthrough
display drillthrough
drop drillthrough

USER-NAME

The name of the user. If the user is authenticated with Shared Services, the name must match a valid login name on one of the configured authentication repositories.

User name guidelines:

- Non-Unicode application limit: 256 bytes
- Unicode-mode application limit: 256 characters
If the user name contains any special characters (see “MaxL Syntax Notes” on page 834), the name must be enclosed in single or double quotation marks.

In EPM System security mode, USER-NAME can include a user directory specification or unique identity attribute.

In EPM System security mode, user and group names can be non unique, if you specify either the user or group’s provider directory or unique identity attribute.

Types

- name (see “MaxL Syntax Notes” on page 834)
- name@provider
- WITH IDENTITY ID-STRING

In EPM System security mode, provider is the name of a user directory (such as LDAP or Active Directory) that hosts the external user, and ID-STRING is a unique identity assigned to every user and group.

Note: If a user or group name includes the @ character, you must specify the provider as well, or else Shared Services considers the @ character as a delimiter indicating a provider name. For example, if you want to log in user admin@msad which is on a Native Directory provider, you must specify ‘admin@msad@Native Directory’.

Examples

JWSmith

JWSmith@Native Directory

with identity “native://nvid=f0ed2a6d7fb07688:5a342200:1265973105c:-7f46?USER”

Referenced By

alter application
alter database
alter partition
alter system
alter user
create location alias
create outline
create partition
create user
display privilege
display user
drop lock
drop user
grant
query database
Login

**VARIABLE-NAME**

The name of the substitution variable. The name can only contain alphanumeric characters and the underscore: (a-z A-Z 0-9 _).

Type
name (see "MaxL Syntax Notes" on page 834)

Example
curmonth

Referenced By
alter application
alter database
alter system
display variable

**VIEW-FILE-NAME**

An aggregation script containing information derived during aggregate view selection.
The file is created under ARBORPATH\app\app_name\db_name\ with a .csc extension.
Aggregation scripts are valid as long as the dimension level structure in the outline has not changed.
Executing an aggregation script (using execute aggregate build) materializes the aggregate views specified within it.
The .csc extension is optional when executing the script.

The file name can be a maximum of 8 characters in length (excluding the extension) and must not contain any of the following characters, or whitespace: ; , =+*?[]<>"'\/

Type
string (see “MaxL Syntax Notes” on page 834)
VIEW-ID

The numeric identification of an aggregate view, returned by the execute aggregate selection statement. The concept of views applies only to aggregate storage databases.

VIEW-IDs persist only as long as their associated “OUTLINE-ID” on page 863s. OUTLINE-IDs change when changes are made to the outline.

Type

number (see “MaxL Syntax Notes” on page 834)

Example

8941

VOL-REPL

A disk-volume replacement specification when restoring from an archive file.

Valid values are a comma-separated list of volumes to replace:

- 'VOL1' with 'VOL2'
- 'VOL3' with 'VOL4'
- 'VOL5' with 'VOL6'
Type
string (see “MaxL Syntax Notes” on page 834)

Example
'C' with 'F', 'D' with 'G', 'E' with 'H'

Referenced By
alter database

VOLUME-NAME
The name of the disk volume. On Windows, a drive letter or UNC specification (see Examples). On UNIX, a path to the EssbaseServer directory.

If the name contains special characters (see “MaxL Syntax Notes” on page 834), it must be enclosed in single or double quotation marks.

If a Windows file path is used which contains a backslash (\), it must be preceded with another backslash (\\) to be interpreted correctly by the MaxL Shell. If variables are used, the variable string that is enclosed with single quotation marks must be enclosed with double quotation marks so that the MaxL Shell knows to expand the variables.

Type
name (see “MaxL Syntax Notes” on page 834)

Examples
'vol3/hyperion/products/Essbase/EssbaseServer'
"'$ARBORPATH\diskvol_area'"

On Windows, you can specify the disk volume using Uniform Naming Convention (UNC) syntax, which is \ComputerName\SharedFolder\Resource. Including the escape characters required by MaxL Shell, the UNC specification would look like the following:
'\\\ComputerName\SharedFolder\Resource'

Referenced By
alter database

Privileges and Roles
Essbase system privileges are indivisible database access types. In MaxL, privileges are grouped together to form permission-sets called roles. With the exception of create_user and create_application, privileges themselves are not grantable using MaxL; you typically grant roles, which are the equivalent of privilege levels. The scope of a role can be the system, the application, or the database.
While one privilege does not imply another, roles are hierarchical. The following table illustrates the Essbase system privileges that are contained in each MaxL system role.

<table>
<thead>
<tr>
<th>Privileges and Roles</th>
<th>read</th>
<th>write</th>
<th>calculate</th>
<th>manage database</th>
<th>create database</th>
<th>start application</th>
<th>manage application</th>
<th>create/drop application</th>
<th>create/drop user</th>
</tr>
</thead>
<tbody>
<tr>
<td>no access</td>
<td>.</td>
<td>.</td>
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<td>.</td>
<td>.</td>
<td>.</td>
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<td>.</td>
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</tr>
<tr>
<td>read</td>
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<td>.</td>
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<tr>
<td>write</td>
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<td>.</td>
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</tr>
<tr>
<td>execute</td>
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<td>.</td>
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<td>.</td>
<td>.</td>
<td>.</td>
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<tr>
<td>manager (database)</td>
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<tr>
<td>manager (application)</td>
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<tr>
<td>administrator</td>
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</tr>
</tbody>
</table>

### System-Level System Privileges

The following privileges apply at the system level. These privileges are built-in; they do not apply to any specific application or database. They are not included in any role except for the role of administrator.

```
SYS-SYSTEM-PRIVILEGE ::= create_application
                      create_user
```

- create_application—Ability to create and delete applications.
- create_user—Ability to create and delete users and groups.

### System-Level System Roles

System-level system roles are applicable to the Essbase system. The following roles have a system-wide scope:

```
SYS-SYSTEM-ROLE ::= no_access
                    administrator
```

- no_access—No access to the system.
- administrator—Full access to the entire system, including other administrators.
Application-Level System Roles

Application-level system roles are applicable to an application. The following roles may have an application-wide scope:

```
<APP-SYSTEM-ROLE> ::= no_access -> manager
```

- no_access—No access to the application or any databases within it.
- manager—Manager access to the application and any databases within it. Manager access means ability to create, delete, and modify databases within the application, in addition to having Read, Write, and Execute access for that application.

Database-Level System Roles

Minimum Database Permissions

Database-level system roles are applicable to databases. The following roles have a database-wide scope and are available when assigning minimum database permissions:

```
<DBS-SYSTEM-ROLE> ::= no_access -> read -> write -> execute -> manager
```

- no_access—No access to the database (if assigned using alter database) or to any databases in the application (if assigned using alter application).
- read—Read-only access to the database (if assigned using alter database) or to all databases in the application (if assigned using alter application). Read access means ability to view files, retrieve data values, and run report scripts.
- write—Write access to the database (if assigned using alter database) or to all databases in the application (if assigned using alter application). Write access means ability to update data values, in addition to having Read access.
- execute—Calculate access to the database (if assigned using alter database) or to all databases in the application (if assigned using alter application). Calculate access means ability to update data values, in addition to having Read and Write access.
- manager—Manager access to the database (if assigned using alter database) or to all databases in the application (if assigned using alter application). Manager access means ability to modify database outlines, in addition to having Read and Write access.

Database Roles Grantable to Users and Groups

The following database-level system roles are available for granting to users and groups:
**no_access**—No access to the database.

**read**—Read-only access to the database. Read access means ability to view files, retrieve data values, and run report scripts.

**write**—Write access to the database. Write access means ability to update data values, in addition to having Read access.

**manager**—Manager access to the database. Manager access means ability to modify database outlines, in addition to having Read and Write access.

**Note:** After granting read, write, or manager privilege to a user or group, these can be revoked by subsequently granting no_access. However, to prevent users from being able to load the application, you should also grant no_access at the application level. For example:

```c
/* Grant read permission on a database */
grant read on database Sample.Basic to user1;

/* Revoke read permission on the database */
grant no_access on database Sample.Basic to user1;

/* Revoke read permission at the application level, to remove application-startup permission */
grant no_access on application Sample to user1;
```

**Filter Roles**

The following subset of database-level system roles may be granted or revoked using filters.

```
<FILTER-SYSTEM-ROLE> ::= no_access

read
write
meta_read
```

- **no_access**—No access to the database.
- **read**—Read-only access to the database. Read access means ability to view files, retrieve data values, and run report scripts.
- **write**—Write access to the database. Write access means ability to update data values, in addition to having Read access.
- **meta_read**—Restricted access to sibling and ancestral metadata (dimensions and members). In case of a filtering conflict, the MetaRead filtering overrides the other filter permissions. For more information about metadata filtering, see “Metadata Filtering” on page 1005.
After granting permissions using a filter, the permission can be revoked by subsequently granting no_access to the database. However, to prevent users from being able to load the application, you should also grant no_access at the application level. For example:

```cpp
/* Grant read permission on a database, using a filter */
grant filter Sample.basic.filter8 to user1;

/* Revoke the filter, removing read permission on the database */
grant no_access on database Sample.Basic to user1;

/* Revoke read permission at the application level, to remove application-startup permission */
grant no_access on application Sample to user1;
```

### Quoting and Special Characters Rules for MaxL Language

These rules apply to terminals of MaxL statements; for example, USER-NAME or FILE-NAME. Rules for MaxL Shell also apply (see “MaxL Shell Syntax Rules and Variables” on page 890).

#### Tokens enclosed in Single Quotation Marks

Contents are preserved as literal, with the following exceptions:

- One backslash is ignored; two are treated as one.
- Apostrophe must be escaped using one backslash (\').

**Example:**

```maxl
export database sample.basic data to data_file 'D:\export.txt';
```

**Result:** Exports data to `D:\export.txt`.

**Example:**

```maxl
create user 'O’Brian' identified by 'password';
```

**Result:** Error.

**Example:**

```maxl
create user 'O'\'Brian' identified by 'password';
```

**Result:** User `O'Brian` is created.

#### Tokens Enclosed in Double Quotation Marks

Contents are preserved as literal, with the following exceptions:

- Variables are expanded.
- One backslash is ignored; two are treated as one.
- Apostrophe must be escaped using one backslash (\').

**Example:**

```maxl
export database sample.basic data to data_file "D:\export.txt";
```

**Result:** Exports data to `D:\export.txt`. 
Example: export database sample.basic data to data_file "$ARBORPATH\App\Sample\Basic\export.txt";

Result: Exports data to C:\Hyperion\products\Essbase\EssbaseServer\App\Sample \Basic\export.txt.

Example: create user "O'Brian" identified by 'password';

Result: Error.

Example: create user "O\'Brian" identified by 'password';

Result: User O'Brian is created.

Use of Backslashes in MaxL

Ignored unless preceded by another backslash (the escape character). Must use single or double quotation marks around the token containing the two backslashes.

create application 'finance\budget';

Result: Application finance\budget is created.

Example (Windows):

    export database sample.basic using report_file 'EssbaseServer\App\Sample\Basic\asym.rep' to data_file 'c:\home\month2.rpt';

Result: The Windows file paths are interpreted correctly as EssbaseServer\App\Sample \Basic\asym.rep and c:\home\month2.rpt.

Use of Apostrophes (Single Quotation Marks)

Syntax error returned, unless preceded by a backslash (the escape character) and enclosed in single or double quotation marks.

Example: create user 'O\'Brian' identified by 'password';

Result: User O'Brian is created.

Note: Use sparingly. Apostrophes are permitted by Essbase in user and group names, but not in application or database names.

Use of Dollar Signs

Syntax error returned, unless preceded by a backslash (the escape character) and enclosed in single quotation marks. Dollar signs ($) intended literally need to be escaped by the backslash so that they are not considered variable indicators.

Example: create application '"\$App1';

Result: Application $App1 is created.
MaxL Shell Commands

The MaxL Shell (essmsh) is a pre-parser mechanism for entering MaxL statements. The MaxL Shell has a separate set of useful commands, independent of the MaxL language itself. Before using any of the following MaxL Shell commands, you need to log in (see “Login” on page 889).

- “Spool on/off” on page 896
- “Set Display Column Width” on page 898
- “Set Message Level” on page 898
- “Set Timestamp” on page 899
- “Echo” on page 899
- “Shell Escape” on page 899
- “Nesting” on page 900
- “Error Checking and Branching” on page 900
- “Version” on page 902
- “Logout” on page 903
- “Exit” on page 903

Overview of MaxL Shell

The MaxL Shell (essmsh) is one way to execute MaxL statements or scripts. The other interfaces available for passing MaxL statements to the Essbase Server are:

- The MaxL Script Editor in the Administration Services Console. See the Oracle Essbase Administration Services Online Help for information about using the script editor.
- Perl programs with embedded MaxL DDL statements, made possible by adding the “MaxL Perl Module” on page 903 to your Perl package.

This section contains the following topics:

- Invocation and Login
- Syntax Rules and Variables
- Shell Commands
- “MaxL Shell and Unicode” on page 896

MaxL Shell Invocation

The MaxL Shell (essmsh) is a pre-parser mechanism for entering MaxL statements.

You can start the shell to be used interactively, to read input from a file, or to read stream-oriented input (standard input from another process). You can log in after you start the shell,
interactively or using a login statement in the input file. You can also log in at invocation time, by using the -l flag (see “-l Flag: Login” on page 886).

To start the essmsh shell, do not invoke it directly. In order for the environment to be set correctly, you must start essmsh using startMAXL.bat (Windows) or startMAXL.sh (UNIX).

- “Prerequisites for Using MaxL” on page 882
- “MaxL Invocation Summary” on page 882
- “Interactive Input” on page 884
- “File Input” on page 887
- “Standard Input” on page 888
- “Login” on page 889
- “LoginAs” on page 889
- “Encryption” on page 890
- “Query Cancellation” on page 890

**Prerequisites for Using MaxL**

Before the Essbase Server can receive MaxL statements,

1. The Essbase Server must be running.
2. The MaxL Shell (essmsh) must be invoked (see “MaxL Invocation Summary” on page 882), if you are using the shell.
3. You must log in (see “Login” on page 889) to the Essbase Server from the MaxL Shell. If you are running a MaxL script, the first line of your script must be a login statement.

When using the MaxL Shell or the MaxL Script Editor, you must use a semicolon (;) to terminate each MaxL statement.

**MaxL Invocation Summary**

The following MaxL Shell help page summarizes invocation options. This help is also available at the operating-system command prompt if you type startMAXL.bat -h | more.

**Note:** The following help text is for essmsh shell; however, in order for the environment to be set correctly, you must start essmsh using startMAXL.bat (Windows) or startMAXL.sh (UNIX). You can pass the same arguments to startMAXL as you would formerly pass to essmsh. For example, instead of essmsh -l username password, you should now use startMAXL.bat -l username password.
essmsh -- MaxL Shell

SYNOPSIS

essmsh [-hlsmup] [-a | -i | file] [arguments...]

DESCRIPTION

This document describes ways to invoke the MaxL Shell.
The shell, invoked and nicknamed essmsh, takes input in the following
ways: interactively (from the keyboard), standard input (piped from another
program), or file input (taken from file specified on the command line).
The MaxL Shell also accepts any number of command-line arguments,
which can be used to represent any name.

OPTIONS

essmsh accepts the following options on the command line:

-h
Prints this help.

-l <user> <pwd>
Logs in a user name and password to the local Essbase Server instance.

-u <user>
Specifies a user to be logged in to an Essbase Server instance.
If omitted but the '-p' or '-s' flags are used, essmsh will
prompt for the username.

-p <pwd>
Specifies a password of the user set by the '-u' option to
be logged in to an Essbase Server instance. If omitted, essmsh
will prompt for the password, and the password will be hidden
on the screen.

-s <server>
Used after -l, or with [-u -p], logs the specified user into a named
server. When omitted, localhost is implied.

-m <msglevel>
Sets the level of messages returned by the shell. Values for <msglevel>
are: all (the default), warning, error, and fatal.

-i
Starts a MaxL session which reads from <STDIN>, piped in from another program.
The end of the session is signalled by the EOF character in that program.

-a
Allows a string of command-line arguments to be referenced from within the
subsequent INTERACTIVE session. These arguments can be referenced with positional
parameters, such as $1, $2, $3, etc. Note: omit the -a when using arguments with
a file-input session.

NOTES

No option is required to pass a filename to essmsh.

Arguments passed to essmsh can represent anything: for example, a user name, an
application name, or a filter name. Arguments must appear at the end of the
invocation line, following '-a', '-i', or filename.

EXAMPLES

Interactive session, simplest case:
essmsh

Interactive session, logging in a user:
essmsh -l user pwd

Interactive session, logging user in to a server:
essmsh -l user pwd -s server

Interactive session, logging in with two command-line arguments (referenced thereafter at the keyboard as $1 and $2):
essmsh -l user pwd -a argument1 argument2

Interactive session, with setting the message level:
essmsh -m error

Interactive session, hiding the password:
essmsh -u user1
Enter Password > ******

File-input session, simplest case:
essmsh filename

File-input session, with three command-line arguments (referenced anonymously in the file as $1, $2, and $3):
essmsh filename argument1 argument2 argument3

Session reading from <STDIN>, logging into a server with two command-line arguments:
essmsh -l user pwd -s server -i argument1 argument2

Interactive Input

You can log into the MaxL Shell for interactive use (typing statements at the keyboard) in the following ways. See "MaxL Invocation Summary" on page 882 for more descriptions of login flags.

“No Flag” on page 885

“-a Flag: Arguments” on page 885

“-l Flag: Login” on page 886

“-u, -p, and -s Flags: Login Prompts and Hostname Selection” on page 886

“-m Flag: Message Level” on page 887
**No Flag**

Invoked without a flag, file name, or arguments, the Maxl Shell starts in interactive mode and waits for you to log in. Note to UNIX users: In the following examples, replace `startMAXL.bat` with `startMAXL.sh`.

**Example:**

```batch
startMAXL.bat
```

Essbase MaxL Shell - Release 11.1.2
Copyright (c) 2000, 2010, Oracle and/or its affiliates.
All rights reserved.
MAXL> **login Fiona identified by sunflower;**

49 - User logged in: [Fiona].

**-a Flag: Arguments**

With the `-a` flag, the MaxL Shell starts in interactive mode and accepts space-separated arguments to be referenced at the keyboard with positional parameters.

**Note:** If interactive arguments are used with spooling turned on, variables are recorded in the log file just as you typed them (for example, `$1`, `$2`, `$ARBORPATH`).

**Example:**

```batch
startMAXL.bat -a Fiona sunflower appname dbsname
```

Essbase MaxL Shell - Release 11.1.1
Copyright (c) 2000, 2008, Oracle and/or its affiliates.
All rights reserved.
MAXL> **spool on to 'D:\output\createapp.out';**

MAXL> **login $1 identified by $2;**

49 - User logged in: [Fiona].

MAXL> **create application $3;**

30 - Application created: ['appname'].

MAXL> **create database $3.$4 as Sample.Basic;**

36 - Database created: ['appname'. 'dbsname'].

MAXL> **echo $ARBORPATH;**

C:\Hyperion\products\Essbase\EssbaseClient

MAXL> **spool off;**
Contents of logfile createapp.out:

MAXL> login $1 identified by $2;

OK/INFO - 1051034 - Logging in user Fiona.
OK/INFO - 1051035 - Last login on Friday, January 18, 2008 4:09:16 PM.
OK/INFO - 1241001 - Logged in to Essbase.

MAXL> create application $3;

OK/INFO - 1051061 - Application appname loaded - connection established.
OK/INFO - 1054027 - Application [appname] started with process id [404].
OK/INFO - 1056010 - Application appname created.

MAXL> create database $3.$4 as Sample.Basic;

OK/INFO - 1056020 - Database appname.dbname created.

MAXL> echo $ARBORPATH;

C:\Hyperion\products\Essbase\EssbaseClient

MAXL> spool off;

-l Flag: Login

When the -l flag is used followed by a user name and password, the MaxL Shell logs in the given user name and password and starts in interactive or non-interactive mode. The user name and password must immediately follow the -l, and be separated from it by a space.

Example:

startMAXL.bat -l Fiona sunflower

Entered at the command prompt, this starts the MaxL Shell in interactive mode and logs in user Fiona, who can henceforth issue MaxL statements at the keyboard.

-u, -p, and -s Flags: Login Prompts and Hostname Selection

The MaxL Shell can be invoked using -u and -p options in interactive mode, for passing the user name and password to the shell upon startup. To be prompted for both username and password, use the -s option with the host name of the Essbase Server.

-s Flag: Host Name

If -s <host-name> is passed to the shell, MaxL will prompt for the user name and password, and the password will be hidden.

Example:

startMAXL.bat -s localhost
Enter UserName> admin
Enter Password> ********

OK/INFO - 1051034 - Logging in user admin.
-u Flag: User Name

If -u <username> is passed to the shell and -p <password> is omitted, MaxL Shell will prompt for the password, and the password will be hidden.

Example:

```
startMAXL.bat -u user1
  Enter Password > *****
```

-p Flag: Password

If -p <password> is passed to the shell and -u <username> is omitted, MaxL Shell will prompt for the user name.

Example:

```
startMAXL.bat -p passwd
  Enter Username > user1
```

-m Flag: Message Level

If -m <messageLevel> is passed to the shell, only the specified level of messages will be returned by the shell.

Example:

```
startMAXL.bat -m error
```

Values for the <messageLevel> include: default, all, warning, error, and fatal. The default value is all (same as specifying default).

File Input

You invoke the MaxL Shell to run scripts (instead of typing statements at the keyboard) in the following ways. See “MaxL Invocation Summary” on page 882 for a complete description of login flags.

“File Only” on page 887

“File Only” on page 887

File Only

If you type startMAXL.bat followed by a file name or path, the shell takes input from the specified file.

Examples:

```
startMAXL.bat C:\Hyperion\products\Essbase\EssbaseClient\scripts\filename.msh
```

Entered at the command prompt, this starts the shell, tells it to read MaxL statements from a file, and terminates the session when it is finished.
**startMAXL.bat filename**

Starts the shell to read MaxL statements from `filename`, located in the current directory (the directory from which the MaxL Shell was invoked).

**File with Arguments**

If you type `startMAXL.bat` followed by a file name followed by an argument or list of space-separated arguments, essmsh remembers the command-line arguments, which can be referenced as $1, $2, etc. in the specified file. If spooling is turned on, all variables are expanded in the log file.

**Example:**

D:\Scripts>**startMAXL.bat filename.msh Fiona sunflower localhost newuser**

Starts the shell to read MaxL statements from `filename.msh`, located in the current directory.

**Contents of script filename.msh:**

```plaintext
spool on to $HOME\output\filename.out;
login $1 $2 on $3;
create user $4 identified by $2;
echo "Essbase is installed in $ESSBASEPATH";
spool off;
exit;
```

**Contents of logfile filename.out:**

```
MAXL> login Fiona sunflower on localhost;
  49 - User logged in: [Fiona].
MAXL> create user newuser identified by sunflower;
  20 - User created: ['newuser'].
Essbase is installed in C:\Hyperion\products\Essbase\EssbaseClient
```

**Standard Input**

With the -i flag, essmsh uses standard input, which could be input from another process. For example,

```
program.sh | startMAXL.bat -i
```

When `program.sh` generates MaxL statements as output, you can pipe `program.sh` to `startMAXL.bat` -i to use the standard output of `program.sh` as standard input for essmsh. Essmsh receives input as `program.sh` generates output, allowing for efficient co-execution of scripts.

**Example:**

```
echo login Fiona sunflower on localhost; display privilege user;|startMAXL.bat -i
```
The MaxL Shell takes input from the echo command’s output. User Fiona is logged in, and user privileges are displayed.

**Login**

Before you can send MaxL statements from the MaxL Shell to Essbase Server, you must log in to an Essbase Server session.

**Note:** Before logging in to an Essbase Server session, you must start the MaxL Shell (see “MaxL Invocation Summary” on page 882). Or, you can start the MaxL Shell and log in (see “-l Flag: Login” on page 886) at the same time.

```plaintext
login USER-NAME PASSWORD on HOST-NAME;
```

| login USER-NAME | identified by | PASSWORD | on HOST-NAME |

**Note:** Login is part of the MaxL Shell grammar, not the MaxL language itself. You can use a login statement in MaxL scripts and the MaxL Shell, but you cannot embed it in Perl.

**Example**

login admin mypassword on localhost;

Establishes a connection to the Essbase Server for user Admin identified by mypassword.


Establishes a connection to an Essbase failover cluster for user Admin identified by password.

**LoginAs**

To facilitate creating scheduled reports with user-appropriate permissions, administrators can log in as another user from MaxL.

**Example of "log in as" statement:**

loginas USER-NAME PASSWORD MIMICKED-USER-NAME [on HOST-NAME];

**Example of "log in as" invocation method:**

essmsh -la USER-NAME PASSWORD MIMICKED-USER-NAME [-s HOST-NAME]

Interactive example:

MAXL>loginas;
Enter UserName> username
Enter Password> password
Enter Host> machine_name
Enter UserName to Login As> mimicked_user_name
**Encryption**

You can encrypt user and password information stored in MaxL scripts.

The following MaxL Shell invocation generates a public-private key pair that you can use to encrypt a MaxL script.

```shell
essmsh -gk
```

The following MaxL Shell invocation encrypts the input MaxL script, obscuring user name and password, and changing the file extension to .mxls.

```shell
essmsh -E scriptname.mxl PUBLIC-KEY
```

Nested scripts are also encrypted. To avoid this and encrypt only the base script, use `-Em`.

The following MaxL Shell invocation decrypts and executes the MaxL script.

```shell
essmsh -D scriptname.mxls PRIVATE-KEY
```

The following invocation encrypts input data and returns it in encrypted form. This is useful if there is a need to manually prepare secure scripts.

```shell
essmsh -ep DATA PUBLIC-KEY
```

The following invocation enables you to encrypt the base script while saving any nested scripts for manual encryption.

```shell
essmsh -Em scriptname.mxl PUBLIC-KEY
```

**Query Cancellation**

You can use the Esc key to cancel a query running from MaxL Shell.

**MaxL Shell Syntax Rules and Variables**

The MaxL Shell (essmsh) is a pre-parser mechanism for entering MaxL statements. The following syntax information can help you use the MaxL Shell successfully.

“Semicolons” on page 890

“Variables” on page 891

“Quoting and Special Characters Rules for MaxL Language” on page 879

**Semicolons**

When a MaxL statement is passed to Essbase Server interactively or in batch mode via the MaxL Shell (essmsh), it must be terminated by a semicolon. Semicolons are used only to tell essmsh when to terminate the statement; semicolons are not part of the MaxL language itself. Therefore, when issuing MaxL statements programmatically through Perl or API programs, do **not** use semicolons.
Examples

<table>
<thead>
<tr>
<th>Program</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interactive MaxL Shell</td>
<td>create application Sample;</td>
</tr>
<tr>
<td>MaxL Shell script</td>
<td>login $1 identified by $2; create application Sample; create currency database Sample.Interntl; display database Sample.Interntl; exit;</td>
</tr>
<tr>
<td>Perl function (Correct)</td>
<td>print $dbh-&gt;do(&quot;create currency database Sample.Interntl&quot;);</td>
</tr>
<tr>
<td>Perl function (Incorrect)</td>
<td>print $dbh-&gt;do(&quot;create currency database Sample.Interntl&quot;);</td>
</tr>
</tbody>
</table>

Variables

“Overview of MaxL Shell” on page 881
“Environment Variables” on page 892
“Positional Parameters” on page 892
“Locally Defined Shell Variables” on page 893
“Quotation Marks and Variable Expansion” on page 893
“Exit Status Variable” on page 894

Overview of MaxL Shell Variables

In the MaxL Shell, you can use variables as placeholders for any data that is subject to change or that you refer to often; for example, the name of a computer, user names, and passwords. You can use variables in MaxL scripts as well as during interactive use of the shell. Using variables in MaxL scripts eliminates the need to create many customized scripts for each user, database, or host.

Variables can be environment variables (for example, $ESSBASEPATH, which references the directory Essbase is installed to), positional parameters (for example, $1, $2, etc.), or locally defined shell variables.

All variables must begin with a $ (dollar sign). Locally defined shell variables should be set without the dollar sign, but should be referenced with the dollar sign. Example:

```
set A = val_1;
echo $A;
val_1
```

**Note:** Variables can be in parentheses. Example: if $1 = arg1, then $(1)23 = arg123.
Use double quotation marks around a string when you want the string interpreted as a single token with the variables recognized and expanded. For example, "$ESSBASEPATH" is interpreted as C:\Hyperion\products\Essbase\EssbaseServer.

Use single quotation marks around a string to tell essmsh to recognize the string as a single token, without expanding variables. For example, 'ESSBASEPATH' is interpreted as $ESSBASEPATH, not C:\Hyperion\products\Essbase\EssbaseServer.

Environment Variables

You can reference any environment variable in the MaxL Shell.

Example (Windows): spool on to "$ESSBASEPATH\out.txt";
Result: MaxL Shell session is recorded to C:\Hyperion\products\Essbase\EssbaseServer\out.txt.

Example (UNIX): spool on to "$HOME/output.txt";
Result: MaxL Shell session is recorded to output.txt in the directory referenced by the $HOME environment variable.

Positional Parameters

Positional parameter variables are passed in to the shell at invocation time as arguments, and can be referred to generically by the subsequent script or interactive MaxL Shell session using $n, where n is the number representing the order in which the argument was passed on the command line.

For example, given the following invocation of the MaxL Shell,

```
essmsh filename Fiona sunflower
```

and the following subsequent login statement in that session,

```
login $1 identified by $2 on $COMPUTERNAME;
```

- $COMPUTERNAME is a Windows environment variable.
- $1 and $2 refer to the user name and password passed in as arguments at invocation time.

The values of positional parameters can be changed within a session. For example, if the value of $1 was originally Fiona (because essmsh was invoked with Fiona as the first argument), you can change it using the following syntax:

```
set 1 = arg_new;
```

**Note:** If you nest MaxL Shell scripts or interactive sessions, the nested shell does not recognize positional parameters of the parent shell. The nested shell should be passed separate arguments, if positional parameters are to be used.

The file or process that the MaxL Shell reads from can be referred to with the positional parameter $0. Examples:
1) Invocation: essmsh filename
   $0 = filename
2) Invocation: program.sh | essmsh -i
   $0 = stdin
3) Invocation: essmsh
   $0 = null

**Locally Defined Shell Variables**

You can create variables of any name in the MaxL Shell without the use of arguments or positional parameters. These variables persist for the duration of the shell session, including in any nested shell sessions.

Example:

MaxL>login user1 identified by password1;
MaxL>set var1 = sample;
MaxL>echo $var1; /* see what the value of $var1 is */
sample
MaxL>display application $var1; /* MaxL displays application "sample" */

**Note:** Locally defined variables can be named using alphabetic characters, numbers, and the underscore (_). Variable *values* can be any characters, but take note of the usual quoting and syntax rules that apply for the MaxL Shell (see “MaxL Shell Syntax Rules and Variables” on page 890).

**Note:** Variables defined or changed in a nested script persist into the parent script after the nested script executes.

**Quotation Marks and Variable Expansion**

In the following examples, assume you logged in to the MaxL Shell interactively with arguments, as follows. In addition to these examples, see “Quoting and Special Characters Rules for MaxL Shell” on page 894.

essmsh -a Fiona sunflower sample basic login $1 $2;

<table>
<thead>
<tr>
<th>Example</th>
<th>Return Value</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>echo $1;</td>
<td>Fiona</td>
<td>$1 is expanded as the first invocation argument.</td>
</tr>
<tr>
<td>echo &quot;$1's hat&quot;;</td>
<td>Fiona's hat</td>
<td>$1 is expanded as the first invocation argument, and the special character ‘ is allowed because double quotation marks are used.</td>
</tr>
<tr>
<td>echo $3;</td>
<td>sample</td>
<td>$3 is expanded as the third invocation argument.</td>
</tr>
<tr>
<td>echo '$3';</td>
<td>$3</td>
<td>$3 is taken literally and not expanded, because it is protected by single quotation marks.</td>
</tr>
</tbody>
</table>
Exit Status Variable

A successful MaxL Shell operation should have an exit status of zero. Most unsuccessful MaxL Shell operations have an exit status number, usually 1. Exit status can be referred to from within the shell, using `$?`. For example,

```
MAXL> create application test1;
OK/INFO - 1051061 - Application test1 loaded - connection established.
OK/INFO - 1054027 - Application [test1] started with process id [234].
OK/INFO - 1056010 - Application test1 created.
MAXL> echo $?;
0
```

```
MAXL> drop application no_such;
ERROR - 1051030 - Application no_such does not exist.
MAXL> echo $?;
2
```

Quoting and Special Characters Rules for MaxL Shell

These rules are for MaxL Shell commands. Applicable MaxL Shell commands include `Spool on/off`, `Echo`, `Shell Escape`, and `Nesting`.

See Also

"Quoting and Special Characters Rules for MaxL Language" on page 879
"Tokens enclosed in Single Quotation Marks" on page 879
"Tokens Enclosed in Double Quotation Marks" on page 879
"Use of Backslashes in MaxL" on page 880
"Use of Apostrophes (Single Quotation Marks)" on page 880

Tokens enclosed in single quotation marks

Contents within single quotation marks are preserved as literal, without variable expansion.

Example: `echo '3';`

Result: `3`
Tokens enclosed in double quotation marks
Contents of double quotation marks are treated as a single token, and the contents are perceived as literal except that variables are expanded.

Example: spool on to "$ESSBASEPATH\out.txt";
Result: MaxL Shell session is recorded to C:\Hyperion\products\Essbase\EssbaseServer\out.txt.

Example: spool on to "Ten o'clock.txt"
Result: MaxL Shell session is recorded to a file named Ten o'clock.txt

Use of apostrophes (single quotation marks)
Preserved if enclosed in double quotation marks. Otherwise, causes a syntax error.

Example: spool on to "Ten o'clock.txt"
Result: MaxL Shell session is recorded to a file named Ten o'clock.txt

Use of Backslashes
Backslashes must be enclosed in single or double quotation marks because they are special characters.

One backslash is treated as one backslash by the shell, but is ignored or treated as an escape character by MaxL. Two backslashes are treated as one backslash by the shell and MaxL.

' \ ' = \ (MaxL Shell)
' \ ' = (nothing) (MaxL)
' \\ ' = \ (MaxL Shell)
' \\ ' = \ (MaxL)

Example: spool on to 'D:\output.txt'
Result: MaxL Shell records output to D:\output.txt.

Example: spool on to 'D:\output.txt'
Result: MaxL Shell records output to D:\output.txt.

Example: import database sample.basic lro from directory "$ARBORPATH\app\sample-basic-lros";
Result: Error. Import is a MaxL statement, and for MaxL, ' \ ' is ignored.

Example: import database sample.basic lro from directory "$ARBORPATH\app\sample-basic-lros";
Result: MaxL imports LRO information to Sample.Basic from $ARBORPATH\app\sample-basic-lros.
MaxL Shell and Unicode

MaxL Shell is in native mode when started in interactive mode.
MaxL Shell is in native mode when processing a script without a UTF8 byte header.
MaxL Shell is in UTF8 mode when processing a script with the UTF8 byte header.
For more information, see the Oracle Essbase Database Administrator’s Guide section titled "Compatibility Between Different Versions of Client and Server Software."

MaxL Shell Command Reference

The following topics describe the MaxL Shell commands.

- Spool on/off
- Set display column width
- Set message level
- Set Timestamp
- Echo
- Shell Escape
- Nesting
- Error Checking and Branching
- Cube Deployment from Essbase Studio
- Version
- Logout
- Exit

Spool on/off

Log the output of a MaxL Shell session to a file. Send standard output, informational messages, error messages, and/or warning messages generated by the execution of MaxL statements to a file.

If FILE-NAME does not exist, it is created. If FILE-NAME already exists, it is overwritten. If a directory path is not specified for FILE-NAME, FILE-NAME is created in the current directory of the MaxL Shell. Directories cannot be created using the spool command.

Message logging begins with spool on and ends with spool off.
Example

spool on to 'output.txt';

[MaxL statements]
spool off;

Sends output of MaxL statements to a file called output.txt, located in the current directory where the MaxL Shell was invoked, or in eas\console\bin if the MaxL Script Editor is being used.

spool on to 'c:\hyperion\output.txt';

Sends output of MaxL statements to a file called output.txt, located in the pre-existing directory specified by an absolute path.

spool on to ' ../../../output.txt';

Sends output of MaxL statements to a file called output.txt, located in the pre-existing directory specified by a relative path. The file would be located three directories above the current directory, or three directories above eas\console\bin if the MaxL Script Editor is being used.

Description

Most operating systems support three channels for input/output:

- STDIN (standard input channel)
- STDOUT (standard output channel)
- STDERR (standard error channel)

Most operating systems also provide command-line options for re-directing data generated by applications, depending on which of the above channels the data is piped through.

Errors in MaxL are flagged as STDERR, allowing command-line redirection of errors using operating-system redirection handles. Non errors are flagged as STDOUT; thus normal output may be logged separately from error output. Here is an example of redirecting error-output at invocation time:

```
issmsh script.mxl 2>errorfile.err
```

Note: Operating-system redirection handles vary; check the platform documentation.

You can also redirect STDERR and STDOUT independently to different MaxL output logs, using the corresponding options in the spool command. For example, you can direct errors to one file and output to another by placing the following lines in your script:

```
spool stdout on to 'output.txt';
spool stderr on to 'errors.txt';
```

or you can direct errors only:

```
spool stderr on to 'errors.txt';
```
or you can direct output only:

spool stdout on to 'output.txt';

**Note:** You cannot use the generic spool and the special output-channel spools in the same script. For example, the following is not valid:

spool on to 'session.txt';
spool stderr on to 'errors.txt';

**Set Display Column Width**

Set the width of the columns that appear in MaxL display output tables, for the current MaxL Shell session.

Default: 20 characters
Minimum: 8 characters
Maximum: No maximum.

```
set column_width default;
```

Sets the column width back to 20 characters.

**Set Message Level**

Set the level of messaging you want returned from MaxL Shell sessions. By default, all messages are returned.

```
set message level all;
```

Sets the column width to 10 characters.

```
set column_width 10;
```

Sets the column width back to 20 characters.

**Message level | Description**

<table>
<thead>
<tr>
<th>Message level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>all</td>
<td>Errors, warnings, status reporting, and informational messages. This is the default message level.</td>
</tr>
<tr>
<td>error</td>
<td>Essbase and MaxL Shell error messages.</td>
</tr>
<tr>
<td>warning</td>
<td>Essbase warning messages.</td>
</tr>
<tr>
<td>Message level</td>
<td>Description</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------</td>
</tr>
<tr>
<td>fatal</td>
<td>Only errors which cause the shell to disconnect from Essbase.</td>
</tr>
</tbody>
</table>

Example

```plaintext
set message level all;
```

### Set Timestamp

Enable or disable the display of a timestamp after execution of each MaxL statement. By default, no timestamps are returned.

```plaintext
-> set timestamp on
```

Notes

The timestamp information does not display after the error-control shell statements goto, iferror, and define.

Example

```plaintext
set timestamp on;
```

### Echo

Display text or expand variables to the screen or to a log file. When used in scripts with spooling (log-file generation) turned on, echo expands variables in the log file. For interactive sessions, variables are not expanded in the log file; instead, the variable name you typed is recorded (for example, $1).

Syntax

```plaintext
echo <text> | <variablename>
```

Example

See examples of echo under the discussion of variables ("Quotation Marks and Variable Expansion" on page 893).

### Shell Escape

Issue operating-system commands directly from a MaxL Shell session. The operating-system output becomes part of the shell session's output, and may be logged to a file. When the operating system finishes executing whatever commands are issued (as STRING), it returns control to the shell session.
Nesting

Reference (include) a MaxL script from within another MaxL script. You might use this if variables are defined in the referenced MaxL script which are useful to the current MaxL script.

Syntax

\[\text{msh} \text{<scriptfile>;}\]

Example

\begin{verbatim}
login fiona sunflower;
alter database sample.basic end archive;
\text{msh calculate.msh;}
alter database sample.basic
        begin archive to file bak;
logout;
\end{verbatim}

Note: Variables defined or changed in a nested script persist into the parent script after the nested script executes.

Note: Because msh is a shell command, it is limited to the originating session. Therefore, you should not reference MaxL scripts that contain new login statements.

Error Checking and Branching

The MaxL Perl Module is the most powerful way to integrate error handling into MaxL. However, the following method is for users who do not implement the MaxL Perl Module.

\text{IfError} instructs the MaxL Shell to respond to an error in the previous statement by skipping subsequent statements, up to a certain location in the script that is defined by a label name.

\text{IfError} checks the presence of errors only in the precedent statement. \text{IfError} checks for:

- Errors in MaxL statement execution
- Errors in MaxL Shell command execution, including:
  - Errors in \text{spool on/off}, such as permission errors
  - Errors in \text{set column_width}, such as invalid widths
  - Errors in script nesting, such as permission errors or nonexistent include files

\text{Goto} forces the MaxL Shell to branch to a certain location in the script defined by a label name; \text{goto} is not dependent on the occurrence of an error.
Syntax

iferror LABELNAME
goto LABELNAME
define label LABELNAME

Example: Iferror (MaxL)

The following example script contains a dimension build statement and a data load statement. If the dimension build fails, the data load is skipped.

login $1 $2;

import database sample.basic dimensions
  from data_file 'C:\data\dimensions.txt'
  using rules_file 'C:\\data\rulesfile.rul'
  on error append to 'C:\\logs\dimbuild.log';
iferror 'dimbuildFailed';

import database sample.basic data from data_file
  "$ARBORPATH\app\sample\basic\calcdat.txt"
  on error abort;

define label 'dimbuildFailed';
exit;

Example: Iferror (MaxL Shell)

The following example script tests various errors including MaxL Shell errors, and demonstrates how you can set the exit status variable to a nonzero argument to return an exit status to the MaxL Shell.

###  Begin Script ###

login $1 $2;
echo "Testing syntactic errors...";
spool on to spool.out;

set timestampTypo on;
iferror 'End';

echo "Testing shell escape...";
shell "cat doesnotexist.txt";
iferror 'ShellError';

msh "doesnotexistlerr.mxl";
iferror 'FileDoesNotExistError';

echo "Script completed successfully...";
spool off;
logout;
exit 0;

define label 'FileDoesNotExistError';
echo "Error detected: Script file does not exist";
Example: Goto

The following example script contains a dimension build statement and a data load statement. Goto is used to skip the data load.

```
login $1 $2;

import database sample.basic dimensions
from data_file 'C:\data\dimensions.txt'
using rules_file 'C:\data\rulesfile.rul'
on error append to 'C:\\logs\dimbuild.log';
goto 'Finished';

import database sample.basic data from data_file
"$ARBORPATH\app\sample\basic\calcdat.txt"
on error abort;

define label 'Finished';
exit;
```

Notes

The MaxL Shell will skip forward in the script to LABELNAME but not backwards.

Cube Deployment from Essbase Studio

The MaxL Shell Deploy statement replicates the behavior of the Oracle Essbase Studio Cube Deployment Wizard.

For more information, please see Deploy, listed in the MaxL Statements section.

Version

To see which version of MaxL you are using, type version.
Example

version;

Returns

Essbase MaxL Shell - Release 11.1.2
Copyright (c) 2000, 2010, Oracle and/or its affiliates.
All rights reserved.
MAXL>

Logout

Log out from Essbase without exiting the interactive MaxL Shell.

Syntax

logout;

Example

logout;

Exit

Exit from the MAXL> prompt after using interactive mode. You can optionally set the exit status variable to a non zero argument to return an exit status to the parent shell.

Note: It is not necessary to exit at the end of MaxL script files or stream-oriented input (using the -i switch).

Syntax

exit;

Example

exit;

Closes the MaxL Shell window or terminal.

exit 10;

Closes the MaxL Shell window or terminal with a return status of 10. You can use this in combination with IfError to return a non zero error status to the parent shell.

MaxL Perl Module

The MaxL Perl Module, Essbase.pm, provides access to Essbase multi-dimensional databases from Perl programs through MaxL, the multi-dimensional access language for Essbase.
Communication from Perl to MaxL to Essbase provides the system-administrative functionality of MaxL with the rich programmatic control of Perl.

This section contains the following topics:

- “Installation Help” on page 904
- “Functions” on page 905
- “Perl Scripting Examples” on page 908

To get Perl and learn about it, go to the Comprehensive Perl Archive Network.

**Installation Help**

The MaxL Perl Module is available for all supported Essbase platforms.

**Windows Prerequisites**

We recommend that you download the Perl source from www.cpan.org and build it yourself. You may also use a binary distribution; many of these are listed on www.cpan.org.

Before you install the `Essbase.pm` extension to Perl, ensure that:

1. You have Perl 5.6 (or higher) installed on your system.
2. You have Microsoft Visual C++ version 6 or higher installed on your system.
3. The Essbase Server is either installed locally, or you have at least the Runtime Client installed and your system’s environment is set up to access a remote Essbase Server. Your system should have an environment variable `$ESSBASEPATH` pointing to the root directory of the Essbase Server installation. In addition, `%ESSBASEPATH%\Bin` should be included in your path variable.

**Note:** MaxL Perl Module can only be used with the same version Essbase Server.

**Windows Instructions**

1. Install Essbase Server. The MaxL Perl Module files are included as part of the installation, and a `Perlmod` directory will be created under `%ESSBASEPATH%`.
2. Follow the instructions in README, included in the `Perlmod` directory.

**UNIX Prerequisites**

Before you install the `Essbase.pm` extension to Perl, ensure that:

1. You have Perl 5.6 (or higher) installed on your system.
2. You have a C compiler installed on your system.
3. The Essbase Server is installed. Your system should have an environment variable $ESSBASEPATH pointing to the root directory the Essbase installation. In addition, $ESSBASEPATH/bin should be included in your path variable.

4. The following MaxL and Essbase files exist in the appropriate directories. If Essbase is installed correctly, this is already the case.

<table>
<thead>
<tr>
<th>File Name</th>
<th>Directory</th>
</tr>
</thead>
<tbody>
<tr>
<td>essmsh</td>
<td>$ESSBASEPATH/bin</td>
</tr>
<tr>
<td>essmaxl.h</td>
<td>$ESSBASEPATH/api/include</td>
</tr>
<tr>
<td>maxldefs.h</td>
<td>$ESSBASEPATH/api/include</td>
</tr>
<tr>
<td>essapi.h</td>
<td>$ESSBASEPATH/api/include</td>
</tr>
<tr>
<td>essxlat.h</td>
<td>$ESSBASEPATH/api/include</td>
</tr>
<tr>
<td>esstypes.h</td>
<td>$ESSBASEPATH/api/include</td>
</tr>
<tr>
<td>esstsa.h</td>
<td>$ESSBASEPATH/api/include</td>
</tr>
<tr>
<td>essauth.h</td>
<td>$ESSBASEPATH/api/include</td>
</tr>
<tr>
<td>libessutlu.so</td>
<td>$ESSBASEPATH/bin</td>
</tr>
<tr>
<td>libessshru.so</td>
<td>$ESSBASEPATH/bin</td>
</tr>
<tr>
<td>libessotlnu.so/libessotlsu.so</td>
<td>$ESSBASEPATH/bin</td>
</tr>
<tr>
<td>libesssdtapiu.so/libessdvrq.so</td>
<td>$ESSBASEPATH/bin</td>
</tr>
<tr>
<td>libglobalc.so</td>
<td>$ESSBASEPATH/bin</td>
</tr>
</tbody>
</table>

**Note:** You do not have to install the API to use MaxL. The necessary api/include and api/lib directories are created to contain the MaxL; libraries and header files.

**UNIX Instructions**

1. If you have met the above prerequisites, change to the MaxL Perl Module; directory, which is perlmod in the Essbase directory.

2. Follow the instructions in README, included in the perlmod directory.

**Functions**

- “connect (user, password, host);” on page 906
- “do (statement);” on page 906
- “pop_msg();” on page 906
- “fetch_desc();” on page 907
connect (user, password, host);

- **user**- Required. The Essbase user name.
- **password**- Required. A valid password for user.
- **host**- Optional. The computer name hosting the Essbase instance.

**Usage**

```perl
my $dbh = Essbase->connect("user", "password", "host");
```

Establishes a connection to Essbase using $dbh, the database handle in "my" namespace. Returns: A session object (for example, $dbh).

do (statement);

**statement**- Required. A MaxL statement to be passed to the Essbase Server.

**Usage**

```perl
$dbh->do("display user");
```

Where display user is a valid MaxL statement.

Returns (and sets Essbase{STATUS} to):

- `$MAXL_STATUS {NOERR}` if execution was successful. There are likely to be informational and feedback massages on the message stack, which may be obtained with pop_msg().
- `$MAXL_STATUS {ERROR}` if there was a user error. Error numbers, levels, and texts may be obtained with the pop_msg method.

**Note:** There are likely to be informational messages on the message stack even if execution was successful. These also may be obtained using pop_msg.

pop_msg();

Navigates through MaxL status messages one at a time.

Arguments: none.

Returns: a list of the form (`<message_number>`, `<message_level>`, `<message_text>`) 

Each invocation of the "do" method results in a stack of status messages. This stack is unwound by repeatedly calling pop_msg until it returns nothing. It is acceptable for a Perl program to ignore the message stack or to unwind it only partially. The next call to "do" will clear left-over messages.
There will probably be a number of messages on the stack even after a successful execution. In most cases, a Perl program will only need to know if the execution of the last "do" was successful, which is indicated by the return value from "do".

When the message stack is empty, the return list elements are undefined and Essbase\{STATUS\} is set to $\text{MAXL\_STATUS\{END\_OF\_DATA\}}$.

\textbf{fetch\_desc();}

Returns a reference to a row of query results and a reference to a corresponding row of datatypes for the query results.

The function should be called as follows:

To return column names and datatypes:

\[ ($\text{column\_name}, \text{datatype}) = \text{$dbh->fetch\_desc();} \]

To return only column names:

\[ ($\text{column\_name}) = \text{$dbh->fetch\_desc();} \]

A datatype is information about what kind of data a particular value is. For example, \texttt{Hello} is a string, and is represented by a \texttt{Char} datatype. 0 could be a \texttt{Number}, but it could also be a False value for a Boolean datatype.

If you fetch only column-description records and ignore the datatypes, the array of values might look like the following:

\begin{verbatim}
application  comment  startup  max\_file\_size
\end{verbatim}

By fetching the datatype information in addition to the column values, the array of values might look like the following:

\begin{verbatim}
application  comment  startup  max\_file\_size
3          3          1          2
\end{verbatim}

A row of datatype is defined the same way as a row of column descriptions:

\[ \{ \text{val}[0], \text{val}[1], \ldots, \text{val}[\text{NUM\_OF\_FIELDS}-1] \} \]

Row numbers are counted cardinally from 0: [0, 1, 2, ... , \text{NUM\_OF\_ROWS} - 1]

The values placed into the row of datatypes are 0, 1, 2, or 3 corresponding to the values of \texttt{MAXL\_DTINT\_T} inside \texttt{maxldefs.h}.

\begin{itemize}
  \item None = 0
  \item Bool = 1
  \item Number = 2
  \item Char = 3
\end{itemize}

\textbf{fetch\_row();}

Returns a reference to a row of query results in a MaxL output table, as a list.

Essbase\{STATUS\} is set to one of the following:

\begin{itemize}
  \item $\text{MAXL\_STATUS\{NOERR\}}$ on success.
\end{itemize}
- $MAXL_STATUS{END_OF_DATA} if there were no rows to fetch.
- $MAXL_STATUS{ERROR} if a user error has occurred.

A row of record is defined as \{ val[0], val[1], \ldots, val[NUM_OF_FIELDS-1] \} 
Row numbers are counted cardinally from 0: [0, 1, 2, \ldots, NUM_OF_ROWS - 1]

disconnect();
Terminates an Essbase session and destroys the session object.
Returns: Completion status.

Perl Scripting Examples

Createuser.pl
The following is the simplest example of a Perl script using Essbase.pm. The script establishes a connection to the Essbase Server, creates a user, and disconnects.

# Use the Essbase.pm module. This statement is required to use Essbase within a Perl script.
use Essbase;

# Create a handle to the Essbase Server by connecting as admin, mypassword to the local machine.
my $dbh = Essbase->connect("admin", "mypassword", "localhost");

# Use the do Perl function to pass the MaxL create user statement (enclosed in quotation marks) to the Essbase Server.
$dbh->do("create user Essbase identified by mypassword");

# Disconnect from the Essbase Server.
$dbh->disconnect();

Createusers.pl
The following Perl script tests whether Perl is able to use the MaxL Perl Module. If Essbase.pm is loaded, the program establishes a connection to Essbase, creates three users with different passwords, and disconnects.

BEGIN { $| = 1; }
END {print "ERROR: System NOT Loaded\n" unless $loaded;)
use Essbase;
$loaded = 1;

sub create_user
{
# In connect statements, replace the sample login details.
my $dbh = Essbase->connect("admin", "pass1", "localhost");

# Create array of users.
@user = (
    "Fred",
    "George",
    "Mary",
);

# Create array of passwords.
@password = (
    "password1*",
    "password2*",
    "password3*",
);

$i = 0;
while ($i le 2) {
    $username = $user[$i];
    $newpassword = $password[$i];
    $j = $i + 1;

    print $dbh->do("create user $username identified by $newpassword") == 0 ? "user$j created\n" : "ERROR: user user$j NOT created\n";
    $i = $i + 1;
}

print $dbh->disconnect() == 0 ? "Essbase database handle released\n" : "ERROR: Essbase database handle NOT released\n";

#
# Create user test.
#
&create_user;

Maketable.pl

The following subroutines from a Perl script return a message list that resulted from executing
a MaxL statement, and build a table from a result set.

use Essbase;

#
# Returns a message list that resulted from executing
# a MaxL statement.
#
sub msgs { my $dbh = shift(@_); my $msglist;
# dump all messages one thread at a time
while (1) {
    my ($msgno, $level, $msg);
    ($msgno, $level, $msg) = $dbh->pop_msg();
    # gets us out of the loop if a $msg comes back as undef
    last if ! $msg;
    $msgstr = sprintf " %-8d", $msgno;
    $msglist .= "$msgstr - $msg\n";
}
return $msglist;

# Returns a result set in the form of a table.
# sub tab
{
    my $dbh = shift;
    my ($colnum, $rec, $dt, $name, $tab, $line);
    # build an output table
    # setup the header
    ($name, $dt) = $dbh->fetch_desc();
    for ($col = 0; $col < $dbh->{NUM_OF_FIELDS}; $col++) {
        $str = sprintf " %-19.19s", $name->[$col];
        $tab .= $str;
        $line .= "+-------------------";
    }
    $tab .= "$\n$line\n";
    # now populate the table with data
    $rec = $dbh->fetch_row();
    while(defined($rec)) {
        for ($col = 0; $col < $dbh->{NUM_OF_FIELDS}; $col++) {
            if ($dt->[$col] == 3) {
                #format for characters
                $str = sprintf " %-19.19s", $rec->[$col];
            } elsif ($dt->[$col] == 2) {
                #format for numbers
                $str = sprintf " %19.19s", $rec->[$col];
            } elseif ($dt->[$col] == 1) {
                #format for bools
                if ($rec->[$col] == 0) {
                    $str = sprintf " %19.19s", "FALSE";
                } else {
                    $str = sprintf " %19.19s", "TRUE";
                }
            }
        }
        $tab .= $str;
    }
}
ESSCMD Script Conversion

cmd2mxl is a fully supported utility for converting existing ESSCMD scripts to their corresponding MaxL scripts. To convert an ESSCMD script to a MaxL script, go to the operating-system command prompt and enter the executable name, the ESSCMD script name, the desired MaxL script name, and the name of a logfile to write to in case of errors.

- “ESSCMD Script Utility Usage” on page 911
- “Things to Note About the ESSCMD Script Utility” on page 911
- “ESSCMD to MaxL Mapping” on page 912

ESSCMD Script Utility Usage

cmd2mxl esscmd_script maxl_output logfile

For example, if the ESSCMD script name is %ARBORPATH%\dailyupd.scr, the command issued on the operating-system command line would be:

cmd2mxl %ARBORPATH%\dailyupd.scr %ARBORPATH%\dailyupd.mxl %ARBORPATH%\log\dailyupd.log

Subsequently, the MaxL script can be executed using the MaxL Shell by the following command:

essmsh %ARBORPATH%\dailyupd.mxl

Things to Note About the ESSCMD Script Utility

1. The utility will only translate syntactically and semantically valid ESSCMD scripts.
2. For invalid ESSCMD scripts, the resulting MaxL script is undefined.
3. All ESSCMD statements in the scripts should end with a semicolon (;) statement terminator.
4. This utility will only work on Windows platforms.
5. Although most ESSCMD commands have corresponding MaxL statements, there are exceptions. For such exceptions, a comment will be generated in the logfile, and the resulting MaxL script will have to be modified to work correctly. Note that if an ESSCMD command
is still needed, it can be invoked from a MaxL script using `shell esscmd <scriptname>`.

6. All strings in the ESSCMD scripts should be surrounded by double quotation marks (" ").

### ESSCMD to MaxL Mapping

The following table compares ESSCMD usage to MaxL usage, and the following conversions are supported by `cmd2mxl`.

<table>
<thead>
<tr>
<th>ESSCMD Command</th>
<th>ESSCMD Usage Example</th>
<th>MaxL Equivalent Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADDUSER</td>
<td>ADDUSER finance essxer1;</td>
<td>alter user essxer1 add to group finance;</td>
</tr>
<tr>
<td>BEGINARCHIVE</td>
<td>beginarchive sample basic &quot;test.txt&quot;;</td>
<td>alter database Sample.Basic begin archive to file 'test.txt';</td>
</tr>
<tr>
<td>BEGININCBUILDDIM</td>
<td>beginincbuilddim;</td>
<td>import database Sample.Basic dimensions from local text data_ file 'c:\data.txt' using local rules_file 'c:\data_rule.rul' on error write to 'c:\error.log';</td>
</tr>
<tr>
<td>BUILDDIM</td>
<td>builddim 1 &quot;c:\data_rul.rul&quot; 3 &quot;c:\data.txt&quot; 4 &quot;c:\error.log&quot;;</td>
<td>Same as BEGININCDIMBUILD</td>
</tr>
<tr>
<td>CALC</td>
<td>calc &quot;CALC ALL;&quot;;</td>
<td>execute calculation 'CALC ALL' on sample.basic;</td>
</tr>
<tr>
<td>CALCDEFAULT</td>
<td>calcdefault;</td>
<td>execute calculation default on Sample.Basic;</td>
</tr>
<tr>
<td>CALCLINE</td>
<td>calcline &quot;CALC ALL;&quot;;</td>
<td>execute calculation 'CALC ALL;' on sample.basic;</td>
</tr>
<tr>
<td>COPYAPP</td>
<td>copyapp sample sampnew;</td>
<td>create application sampnew as sample;</td>
</tr>
<tr>
<td>COPYDB</td>
<td>copydb sample basic sample basic2;</td>
<td>create or replace database sample.basic2 as sample.basic;</td>
</tr>
<tr>
<td>COPYFILTER</td>
<td>copyfilter sample basic westwrite sample basic westmgr;</td>
<td>create filter sample.basic.westmgr as sample.basic.westwrite;</td>
</tr>
<tr>
<td>COPYOBJECT</td>
<td>copyobject &quot;9&quot; &quot;sample&quot; &quot;basic&quot; &quot;calcdat&quot; &quot;sample&quot; &quot;basic&quot; &quot;calcdat2&quot;;</td>
<td>alter object sample.basic.calcdat of type text copy to 'sample. basic.calcdat2';</td>
</tr>
<tr>
<td>CREATEAPP</td>
<td>createapp finance;</td>
<td>create or replace application finance;</td>
</tr>
<tr>
<td>CREATEDB</td>
<td>createdb finance investor;</td>
<td>create or replace database finance.investor;</td>
</tr>
<tr>
<td>CREATEGROUP</td>
<td>creategroup managers;</td>
<td>create group managers;</td>
</tr>
<tr>
<td>CREATELOCATION</td>
<td>select sample basic; createlocation hq hqserver finance investor admin password;</td>
<td>alter system load application sample; alter application sample load database basic; create location alias hq from sample.basic to finance.investor at hqserver as admin identified by 'password';</td>
</tr>
<tr>
<td>CREATEUSER</td>
<td>createuser karen password;</td>
<td>create user karen identified by 'password';</td>
</tr>
<tr>
<td>ESSCMD Command</td>
<td>ESSCMD Usage Example</td>
<td>MaxL Equivalent Example</td>
</tr>
<tr>
<td>-------------------</td>
<td>----------------------------------------------------------</td>
<td>--------------------------------------------------------------</td>
</tr>
<tr>
<td>CREATEVARIABLE</td>
<td>createvariable CurMnth localhost sample basic Jan;</td>
<td>alter database sample.basic add variable CurMnth 'Jan';</td>
</tr>
<tr>
<td></td>
<td></td>
<td>alter application sample add variable CurMnth 'Jan';</td>
</tr>
<tr>
<td></td>
<td></td>
<td>alter system add variable CurMnth 'Jan';</td>
</tr>
<tr>
<td>DELETEAPP</td>
<td>deleteapp sampnew;</td>
<td>drop application sampnew cascade;</td>
</tr>
<tr>
<td>DELETEDB</td>
<td>deletedb demo basic;</td>
<td>drop database demo.basic;</td>
</tr>
<tr>
<td>DELETGROUP</td>
<td>deletegroup engg;</td>
<td>drop group engg;</td>
</tr>
<tr>
<td>DELETELOCATION</td>
<td>select finance investor;</td>
<td>alter system load application finance;</td>
</tr>
<tr>
<td></td>
<td>delelocation hq1;</td>
<td>alter application finance load database investor;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>drop location alias finance.investor.hq1;</td>
</tr>
<tr>
<td>DELETELOG</td>
<td>deletelog sample;</td>
<td>alter application sample clear logfile;</td>
</tr>
<tr>
<td>DELETEUSER</td>
<td>deleteuser rob;</td>
<td>drop user rob;</td>
</tr>
<tr>
<td>CREATEVARIABLE</td>
<td>select sample basic;</td>
<td>alter system load application sample;</td>
</tr>
<tr>
<td></td>
<td>deletevariable CurMnth &quot;localhost&quot;;</td>
<td>alter application sample load database basic;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>alter database sample.basic drop variable CurMnth;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>alter application sample drop variable CurMnth;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>alter system drop variable CurMnth;</td>
</tr>
<tr>
<td>DISABLELOGIN</td>
<td>disablelogin demo;</td>
<td>alter application demo disable connects;</td>
</tr>
<tr>
<td>DISPLAYALIAS</td>
<td>select sample basic;</td>
<td>query database sample.basic list alias_names in alias_table</td>
</tr>
<tr>
<td></td>
<td>displayalias &quot;default&quot;;</td>
<td>'Default';</td>
</tr>
<tr>
<td>ENABLELOGIN</td>
<td>enablelogin demo;</td>
<td>alter application demo enable connects;</td>
</tr>
<tr>
<td>ENDARCHIVE</td>
<td>endarchive sample basic;</td>
<td>alter database sample.basic end archive;</td>
</tr>
<tr>
<td>ENDINCBUILDDIM</td>
<td>ENDINCBUILDDIM;</td>
<td>See BEGININCBUILDDIM</td>
</tr>
<tr>
<td>ESTIMATEFULLDBSIZE</td>
<td>select sample basic;</td>
<td>query database sample.basic get estimated size;</td>
</tr>
<tr>
<td></td>
<td>estimatefulldbsize;</td>
<td></td>
</tr>
<tr>
<td>EXIT</td>
<td>exit;</td>
<td>exit;</td>
</tr>
<tr>
<td>EXPORT</td>
<td>select sample basic;</td>
<td>alter system load application sample;</td>
</tr>
<tr>
<td></td>
<td>export &quot;c:\data.txt&quot; 1;</td>
<td>alter application sample load database basic;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>export database Sample.Basic all data to data_file 'c:\data.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>txt';</td>
</tr>
<tr>
<td>GETALLREPLCELLS</td>
<td>select samppart company;</td>
<td>alter system load application samppart;</td>
</tr>
<tr>
<td></td>
<td>getallreplcells &quot;svr2&quot; &quot;sampeast&quot; &quot;east&quot;;</td>
<td>alter application samppart load database company;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>refresh replicated partition samppart.company from sampeast.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>east at svr2;</td>
</tr>
<tr>
<td>ESSCMD Command</td>
<td>ESSCMD Usage Example</td>
<td>MaxL Equivalent Example</td>
</tr>
<tr>
<td>------------------</td>
<td>------------------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>GETAPPINFO</td>
<td>getappinfo &quot;demo&quot;;</td>
<td>display application demo;</td>
</tr>
<tr>
<td>GETAPPSTATE</td>
<td>getappstate demo;</td>
<td>display application demo;</td>
</tr>
<tr>
<td>GETATTRIBUTESPCS</td>
<td>select sample basic;</td>
<td>query database sample.basic get attribute_spec;</td>
</tr>
<tr>
<td></td>
<td>getattributespcs;</td>
<td></td>
</tr>
<tr>
<td>GETATTRINFO</td>
<td>select sample basic;</td>
<td>query database sample.basic get attribute_info 'Caffeinated_True';</td>
</tr>
<tr>
<td></td>
<td>getattrinfo &quot;Caffeinated_True&quot;;</td>
<td></td>
</tr>
<tr>
<td>GETDBINFO</td>
<td>select sample basic;</td>
<td>display database sample.basic request_history;</td>
</tr>
<tr>
<td></td>
<td>getdbinfo;</td>
<td></td>
</tr>
<tr>
<td>GETDBSTATE</td>
<td>getdbstate sample basic;</td>
<td>display database sample.basic;</td>
</tr>
<tr>
<td>GETDBSTATS</td>
<td>select sample basic;</td>
<td>query database sample.basic get dbstats data_block;</td>
</tr>
<tr>
<td></td>
<td>getdbstats;</td>
<td></td>
</tr>
<tr>
<td>GETCRRATE</td>
<td>getcrrate;</td>
<td>query database sample.basic get currency_rate;</td>
</tr>
<tr>
<td>GETDEFAULTCALC</td>
<td>select sample basic;</td>
<td>query database sample.basic get default calculation;</td>
</tr>
<tr>
<td></td>
<td>getdefaultcalc;</td>
<td></td>
</tr>
<tr>
<td>GETMBRCALC</td>
<td>select sample basic;</td>
<td>query database sample.basic get member_calculation 'Profit %';</td>
</tr>
<tr>
<td></td>
<td>getmbrcalc &quot;Profit %&quot;;</td>
<td></td>
</tr>
<tr>
<td>GETMBRINFO</td>
<td>select sample basic;</td>
<td>query database sample.basic get member_info 'Ounces_20';</td>
</tr>
<tr>
<td></td>
<td>getmbrinfo &quot;Ounces_20&quot;;</td>
<td></td>
</tr>
<tr>
<td>GETPERFSTATS</td>
<td>select sample basic;</td>
<td>query database sample.basic get performance statistics kernel_cache_table;</td>
</tr>
<tr>
<td></td>
<td>getperfstats;</td>
<td></td>
</tr>
<tr>
<td>GETUPDATEDREPLCELLS</td>
<td>See GETALLREPLCELLS</td>
<td>See GETALLREPLCELLS</td>
</tr>
<tr>
<td>GETUSERINFO</td>
<td>getuserinfo admin;</td>
<td>display user admin;</td>
</tr>
<tr>
<td>GETVERSION</td>
<td>getversion;</td>
<td>version;</td>
</tr>
<tr>
<td>IMPORT</td>
<td>select sample basic;</td>
<td>alter system load application sample;</td>
</tr>
<tr>
<td></td>
<td>import 1 &quot;c:\data.txt&quot; 4 y 3 &quot;c:\import.rul&quot; n &quot;c:\data_load.err&quot;;</td>
<td>alter application sample load database basic;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>import database sample.basic data from local text data_file 'c:\data.txt' using local rules_file 'c:\data_rule.rul' on error write to 'c:\data_load.err';</td>
</tr>
<tr>
<td>INCBUILDDIM</td>
<td>See BEGININCBUILDDIM</td>
<td>See BEGININCBUILDDIM</td>
</tr>
<tr>
<td>LISTALIASES</td>
<td>select sample basic;</td>
<td>query database sample.basic list alias_table;</td>
</tr>
<tr>
<td></td>
<td>listaliases;</td>
<td></td>
</tr>
<tr>
<td>LISTAPP</td>
<td>listapp;</td>
<td>display application all;</td>
</tr>
<tr>
<td>ESSCMD Command</td>
<td>ESSCMD Usage Example</td>
<td>MaxL Equivalent Example</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>LISTDB</td>
<td>listdb;</td>
<td>display database all;</td>
</tr>
<tr>
<td>LISTFILES</td>
<td>listfiles &quot;&quot; &quot;sample&quot; &quot;basic&quot;;</td>
<td>query database sample.basic list all file information;</td>
</tr>
<tr>
<td>LISTFILTERS</td>
<td>listfilters sample basic;</td>
<td>display filter on database Sample.Basic;</td>
</tr>
<tr>
<td>LISTGROUPS</td>
<td>listgroups;</td>
<td>display group all;</td>
</tr>
<tr>
<td>LISTGROUPUSERS</td>
<td>listgroupusers finance;</td>
<td>display user in group finance;</td>
</tr>
<tr>
<td>LISTLINKEDOBJECTS</td>
<td>select sample basic;</td>
<td>query database sample.basic list lro by Fiona before '07/07/2003';</td>
</tr>
<tr>
<td></td>
<td>listlinkedobjects &quot;Fiona&quot; &quot;07/07/2003&quot;;</td>
<td></td>
</tr>
<tr>
<td>LISTLOCATIONS</td>
<td>select sample basic;</td>
<td>alter system load application sample;</td>
</tr>
<tr>
<td></td>
<td>listlocations;</td>
<td>alter application sample load database basic;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>display location alias on database sample.basic;</td>
</tr>
<tr>
<td>LISTLOCKS</td>
<td>listlocks;</td>
<td>display lock;</td>
</tr>
<tr>
<td>LISTLOGINS</td>
<td>listlogins;</td>
<td>display session all;</td>
</tr>
<tr>
<td>LISTOBJECTS</td>
<td>listobjects &quot;2&quot; &quot;Sample&quot; &quot;Basic&quot;;</td>
<td>display object of type calc_script on database sample.basic;</td>
</tr>
<tr>
<td>LISTUSERS</td>
<td>listusers;</td>
<td>display user all;</td>
</tr>
<tr>
<td>LISTVARIABLES</td>
<td>listvariables localhost sample basic;</td>
<td>display variable on database sample.basic;</td>
</tr>
<tr>
<td>LOADALIAS</td>
<td>select sample basic;</td>
<td>alter database sample.basic load alias_table 'special_flavors' from data_file &quot;$ARBORPATH\app\sample\basic\seasonal.txt&quot;;</td>
</tr>
<tr>
<td></td>
<td>loadalias &quot;special_flavors&quot; &quot;C:\Hyperion\products\Essbase\EssbaseServer\app\sample\basic\seasonal.txt&quot;;</td>
<td></td>
</tr>
<tr>
<td>LOADAPP</td>
<td>loadapp sample;</td>
<td>alter system load application sample;</td>
</tr>
<tr>
<td>LOADDB</td>
<td>loaddb sample basic;</td>
<td>alter application sample load database basic;</td>
</tr>
<tr>
<td>LOADDATA</td>
<td>select sample basic;</td>
<td>alter system load application sample;</td>
</tr>
<tr>
<td></td>
<td>loaddata 3 &quot;c:\data.txt&quot;;</td>
<td>alter application sample load database basic;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>import database sample.basic data from local text data_file 'c:\data.txt' on error abort;</td>
</tr>
<tr>
<td>LOGIN</td>
<td>login local admin password;</td>
<td>login admin 'password' on local;</td>
</tr>
<tr>
<td>LOGOUT</td>
<td>logout;</td>
<td>logout;</td>
</tr>
<tr>
<td>LOGOUTALLUSERS</td>
<td>logoutallusers y;</td>
<td>alter system logout session all;</td>
</tr>
<tr>
<td>LOGOUTUSER</td>
<td>Available only in interactive ESSCMD sessions.</td>
<td>alter system logout session 4294967295;</td>
</tr>
<tr>
<td>OUTPUT</td>
<td>output 1 c:\test.log;</td>
<td>spool on 'c:\test.log';</td>
</tr>
<tr>
<td></td>
<td>output 4;</td>
<td>spool off;</td>
</tr>
<tr>
<td>ESSCMD Command</td>
<td>ESSCMD Usage Example</td>
<td>MaxL Equivalent Example</td>
</tr>
<tr>
<td>-------------------</td>
<td>-------------------------------------------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>PURGELINKEDOBJECTS</td>
<td>purgelandobjects &quot;Fiona&quot; &quot;07/07/2002&quot;;</td>
<td>alter database sample.basic delete lro by 'fiona' before '07/07/2002';</td>
</tr>
<tr>
<td>PUTALLREPLCELS</td>
<td>select sampseast east;</td>
<td>alter system load application sampseast;</td>
</tr>
<tr>
<td></td>
<td>putallreplcells svr1 samppart company;</td>
<td>alter application sampseast load database east;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>refresh replicated partition sampseast.east from samppart. company at svr1 updated data;</td>
</tr>
<tr>
<td>PUTUPDATEDREPLCELS</td>
<td>See PUTALLREPLCELS</td>
<td>See PUTALLREPLCELS</td>
</tr>
<tr>
<td>REMOVELOCKS</td>
<td>removelocks *2;</td>
<td>drop lock held by Fiona;</td>
</tr>
<tr>
<td>REMOVEUSER</td>
<td>removeuser finance steve;</td>
<td>alter user steve remove from group finance;</td>
</tr>
<tr>
<td>RENAMEAPP</td>
<td>renameapp sample newsamp1;</td>
<td>alter application sample rename to newsamp1;</td>
</tr>
<tr>
<td>RENAMEDB</td>
<td>renamedb sample basic newbasic;</td>
<td>alter database sample.basic rename to newbasic;</td>
</tr>
<tr>
<td>RENAMEFILTER</td>
<td>renamefilter sample basic westmng allwest;</td>
<td>create or replace filter sample.basic.westmng as sample.basic. allwest;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>drop filter sample.basic.westmng;</td>
</tr>
<tr>
<td>RENAMEOBJECT</td>
<td>RENAMEOBJECT &quot;9&quot; *sample&quot; &quot;basic&quot; &quot;calcdat&quot; &quot;calcdat2&quot;;</td>
<td>alter object sample.basic.calcdat of type text rename to 'calcdat2';</td>
</tr>
<tr>
<td>RENAMEUSER</td>
<td>renameuser steve_m m_steve;</td>
<td>alter user steve_m rename to m_steve;</td>
</tr>
<tr>
<td>RESETDB</td>
<td>select sample basic;</td>
<td>alter database sample.basic reset;</td>
</tr>
<tr>
<td>RESETPERFSTATS</td>
<td>reserterfstats enable;</td>
<td>alter database sample.basic set performance statistics enabled;</td>
</tr>
<tr>
<td>RUNCALC</td>
<td>The only command supported is the server based calc script execution. Select Sample.Basic; Runcalc 2 one;</td>
<td>execute calculation Sample.Basic.one;</td>
</tr>
<tr>
<td>RUNREPT</td>
<td>select sample basic; runrept 2 complex &quot;c:\complex.out&quot;;</td>
<td>alter system load application sample;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>alter application load database basic;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>export database sample.basic using server report_file 'complex' to data_file 'c:\complex.out';</td>
</tr>
<tr>
<td>SELECT</td>
<td>select sample basic;</td>
<td>alter system load application sample;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>alter application load database basic;</td>
</tr>
<tr>
<td>SETALIAS</td>
<td>select sample basic; setalas &quot;long names&quot;;</td>
<td>alter database sample.basic set active alias_table 'Long Names';</td>
</tr>
<tr>
<td>ESSCMD Command</td>
<td>ESSCMD Usage Example</td>
<td>MaxL Equivalent Example</td>
</tr>
<tr>
<td>--------------------</td>
<td>---------------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>SETAPPSTATE</td>
<td>setappstate sample ** y y 4 y y y 1000 1000;</td>
<td>alter application sample enable startup; alter application sample enable autostartup; alter application sample set minimum permission manager; alter application sample enable connects; alter application sample enable commands; alter application sample enable updates; alter application sample enable security; alter application sample set lock_timeout after 1000 seconds; alter application sample set max_lro_file_size 1000 kb;</td>
</tr>
<tr>
<td>SETDBSTATE</td>
<td>setdbstate &quot; &quot; Y &quot;Y&quot; 4 3145728 &quot;Y&quot; &quot;Y&quot; &quot;Y&quot; == 0 1048576 1025 &quot;Y&quot;;</td>
<td>alter database sample.basic enable startup; alter database sample.basic enable autostartup; alter database sample.basic set minimum permission manager; alter database sample.basic set data_cache_size 3145728; alter database sample.basic enable aggregate_missing; alter database sample.basic enable two_pass_calc; alter database sample.basic enable create_blocks; alter database sample.basic set currency_conversion division; alter database sample.basic set index_cache_size 1048576; alter database sample.basic enable compression;</td>
</tr>
<tr>
<td>SETDBSTATEITEM</td>
<td>.</td>
<td>See the alter database statement.</td>
</tr>
<tr>
<td>SETDEFAULTCALC</td>
<td>select sample basic; setdefaultcalc &quot;CALC ALL;&quot;;</td>
<td>alter database sample.basic set default calculation as 'CALC ALL';</td>
</tr>
<tr>
<td>SETDEFAULTCALCFILE</td>
<td>select sample basic; setdefaultcalcfile defcalc;</td>
<td>Create a calculation file in the server containing the calculation string. Then, alter database sample.sasic set default calculation sample.basic.defcalc; will set the default calculation.</td>
</tr>
<tr>
<td>SETMSGLEVEL</td>
<td>setmsglevel 2;</td>
<td>set message level all;</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Note:</strong> This is part of the separate MaxL Shell grammar, not the MaxL language itself. You can use set message level with the MaxL Shell, but it is not embeddable in Perl.</td>
</tr>
<tr>
<td>SETPASSWORD</td>
<td>setpassword steve newpass;</td>
<td>alter user steve set password newpass;</td>
</tr>
<tr>
<td>SHUTDOWNSERVER</td>
<td>shutdownserver local admin password;</td>
<td>login admin 'password' on local; alter system shutdown;</td>
</tr>
<tr>
<td>SLEEP</td>
<td>sleep 10;</td>
<td>shell sleep 10;</td>
</tr>
<tr>
<td>UNLOADALIAS</td>
<td>select sample basic; unloadalias &quot;flavors&quot;;</td>
<td>alter database sample.basic unload alias_table 'flavors';</td>
</tr>
<tr>
<td>ESSCMD Command</td>
<td>ESSCMD Usage Example</td>
<td>MaxL Equivalent Example</td>
</tr>
<tr>
<td>------------------</td>
<td>----------------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>UNLOADAPP</td>
<td>unloadapp sample;</td>
<td>alter system unload application sample;</td>
</tr>
<tr>
<td>UNLOADDB</td>
<td>unloaddb sample basic;</td>
<td>alter application sample unload database basic;</td>
</tr>
<tr>
<td>UNLOCKOBJECT</td>
<td>unlockobject &quot;1&quot; &quot;sample&quot; &quot;basic&quot; &quot;basic&quot;;</td>
<td>alter object 'sample.basic.basic' of type outline unlock;</td>
</tr>
<tr>
<td>UPDATE</td>
<td>select sample.basic</td>
<td>import database sample.basic from data_string 'Jan Sales 100-10 Florida Actual 220';</td>
</tr>
<tr>
<td></td>
<td>update &quot;Jan Sales '100-10' Florida Actual 220&quot;;</td>
<td></td>
</tr>
<tr>
<td>UPDATEFILE</td>
<td>updatefile 3 &quot;c:\data.txt&quot; 1;</td>
<td>same as LOADDATA;</td>
</tr>
<tr>
<td>UPDATEVARIABLE</td>
<td>updatevariable hot_product local sample basic &quot;100-10&quot;;</td>
<td>alter system set variable 'hot_product' '100-10'; alter application sample set variable 'hot_product' '100-10'; alter database Sample.Basic set variable 'hot_product' '100-10';</td>
</tr>
<tr>
<td>VALIDATE</td>
<td>validate;</td>
<td>alter database sample.basic validate data to local logfile 'validation.txt';</td>
</tr>
</tbody>
</table>

**Reserved Words List**

The following keywords are part of the MaxL DDL grammar, and are reserved. If you intend to use any of these words as names or passwords, you must enclose the word in single quotation marks.

- abort
- absolute_value
- account_type
- active
- add
- administrator
- advanced
- after
- aggregate
- aggregates
- aggregate_assume_equal
- aggregate_missing
- aggregate_storage
- aggregate_sum
- aggregate_view
- aggregate_use_last
- algorithm
- alias
- alias_names
- alias_table
- all
- all_users_groups
- allocation
- alloc_rule
- allow
allow_merge
alter
alternate_rollups
amount
amountcontext
amounttimespan
any
append
application
application_access_type
apply
archive
archive_file
area
as
aso_level_info
at
attribute
attribute_calc
attribute_info
attribute_spec
attribute_to_base_member_association
auto_password
autostartup
b
backup_file
based
basis
basistimespan
basistimespanoptions
before
begin
bitmap
blocks
buffer_id
buffered
build
by
cache_pinning
cache_size
calc_formula
calc_script
calc_string
calculation
cascade
cell_status
change_file
clear
client
cnt_sempaphore
column_width
columns
combinebasis
commands
comment
commitblock
committed_mode
hostname
identified
identify
ignore_missing_values
ignore_zero_values
immediate
implicit_commit
import
in
inactive
inactive_user_days
including
incremental
index
index_cache_size
index_data
index_page_size
information
initialize
input
instead
invalid_block_headers
invalid_login_limit
io_access_mode
kb
kernel_io
kernel_cache
kill
level
level0
license_info
linked
list
load
load_buffer
load_buffers
load_buffer_block
local
location
lock
lock_timeout
locked
log_level
logfile
login
logout
long
lotus_2
lotus_3
lotus_4
low
lro
macro
manager
mapped
max_disk_size
max_file_size
output
override
overview
partition
partition_file
partition_size
passive
password
password_reset_days
performance
permission
persistence
perspective
physical
pmml_file
ports
pov
pre_image_access
precision
preserve
preserve_groups
private
privilege
process
project
property
protocol
purge
query
query_data
query_tracking
range
read
recover
reference_cube
reference_cube_reg
refresh
region
registration
reregister
remote
remove
remove_zero_cells
rename
repair
repeatamount
replace
replay
replicated
replication_assume_identical
report_file
request
request_history
request_id
reset
resource_usage
restore
statistics
status
stop
stopping
storage
storage_info
structure_file
subtract
supervisor
suppress
sync
system
table
tablespace
target
targettimespan
targettimespanoptions
task
tb
template
text
thread
to
total_size
transactions
transformation
transparent
trigger
trigger_func
trigger_spool
two_pass_calc
type
uda
unicode
unicode_mode
unlimited
unload
unlock
update
updated
updates
use
user
username_as_password
using
validate
values
variable
vector
verification
version
view_file
views
volume
wait_for_resources
warn
when
with
wizard
worksheet
write
xml_file
zero_value
zeroamountoptions
zerobasisoptions
zlib

MaxL BNF

MaxL BNF diagrams are an optional alternative to railroad diagrams, for reading MaxL syntax.

Key

{} Alternatives (at least one required)
[] Options (none required)
!! Default option if none indicated
| Separates options (OR)
[,]...] Comma-separated list (of previous item) allowed
[...] Whitespace-separated list (of previous item) allowed
'' Literal
::= "is defined as." Symbol to the left is to be replaced with expression on the right

TERMINAL
%NON-TERMINAL%

alter application

alter application
{APP-Name
{set
{lock_timeout after INTEGER[!seconds!|minutes]
|max_lro_file_size {unlimited|SIZE-STRING}
|minimum permission %DBS-SYSTEM-ROLE%
|variable VARIABLE-NAME STRING
|cache_size SIZE-STRING
|type unicode_mode
|[lease_manager] message_level {info|warn|error|debug}
}

|{load|unload} database DBS-STRING
|{enable|disable} {startup|autostartup|commands|updates|connects|security}
|comment COMMENT-STRING
|clear logfile
|add variable VARIABLE-NAME [STRING]
|drop variable VARIABLE-NAME
|rename to APP-NAME
|reregister
}

{all register}

DBS-SYSTEM-ROLE::=
{no_access|read|write|execute|manager}
alter application (aggregate storage)

alter application
{APP-Name
{set
{
|minimum permission %DBS-SYSTEM-ROLE%
|variable VARIABLE-NAME STRING
|cache_size SIZE-STRING
|type unicode_mode
|{lease_manager} message_level {info|warn|error|debug}
}
{|load|unload} database DBS-STRING
{|enable|disable} {startup|autostartup|commands|updates|connects|security}
|comment COMMENT-STRING
|clear logfile
|add variable VARIABLE-NAME [STRING]
|drop variable VARIABLE-NAME
|rename to APP-NAME
|reregister
}
{all register}

DBS-SYSTEM-ROLE::=
{no_access|read|write|execute|manager}

alter database enable|disable

alter database DBS-NAME
{enable|disable}
{
|two_pass_calc
|aggregate_missing
|startup
|autostartup
|compression
|create_blocks
|committed_mode
|pre_image_access
|cache_pinning
}

alter database set

alter database DBS-NAME
set
{
|retrieve_buffer_size SIZE-STRING
|retrieve_sort_buffer_size SIZE-STRING
|data_cache_size SIZE-STRING
|data_file_cache_size SIZE-STRING
|index_cache_size SIZE-STRING
|currency_database DBS-STRING
|currency_member MEMBER-NAME
|currency_conversion {division|multiplication}
|minimum permission %DBS-SYSTEM-ROLE%
|compression {rle|bitmap|zlib}
|lock_timeout
{immediate
  |never
  |after INTEGER {(!seconds!|minutes})
}
|implicit_commit after INTEGER {blocks|rows}
|io_access_mode {!buffered!|direct}
|variable VARIABLE-NAME STRING
|default calculation {CALC-NAME-SINGLE|as calc_string CALC-STRING}
|active alias_table ALT-NAME-SINGLE
|performance statistics {enabled|disabled|mode to %PST-SPEC%}
|note COMMENT-STRING
}

DBS-SYSTEM-ROLE::=
{no_access|read|write|execute|manager}

PST-SPEC::=
{
  default
  |{(medium|long) persistence {all|database|server} scope
}

alter database misc

alter database DBS-NAME
{
  reset {[(all|data)]}
  |validate
    {
      data to local logfile FILE-NAME
      |using {error_file FILE-NAME|default error_file}
    }
  |repair invalid_block_headers
  |recover freespace
  |force restructure
  |load alias_table ALT-NAME-SINGLE from data_file FILE-NAME
  |unload alias_table ALT-NAME-SINGLE
  |add variable VARIABLE-NAME [STRING]
  |drop variable VARIABLE-NAME
  |delete lro
    {
      all
      |by USER-NAME
      |before DATE
      |by USER-NAME before DATE
    }
  |unlock all objects
  |begin archive to file FILE-NAME
  |end archive
  |[(force] archive to file FILE-NAME
  |[(force] restore from file FILE-NAME [replace disk volume VOL-REPL]
  |replay transactions
    {
      after LOG-TIME
      |using sequence_id_range ID-RANGE
    }

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alter database disk volumes
alter database DBS-NAME
{
    (add|drop) disk volume VOLUME-NAME
    set disk volume VOLUME-NAME
    {
        file_type {data|index|index_data}
        file_size SIZE-STRING
        partition_size (SIZE-STRING|unlimited)
    }
}

alter database (aggregate storage)
alter database DBS-NAME
{
    (enable|disable)
    {
        startup
        |autostartup
        |query_tracking
        |replication_assume_identical_outline
    }
    set
    {
        retrieve_buffer_size SIZE-STRING
        |retrieve_sort_buffer_size SIZE-STRING
        |minimum permission %DBS-SYSTEM-ROLE%
        |variable VARIABLE-NAME STRING
        |active alias_table ALT-NAME-SINGLE
    }
    reset [{all|data}]
    |compact outline
    |add variable VARIABLE-NAME [STRING]
    |drop variable VARIABLE-NAME
    |%LOAD-BUFFER-INIT%
    |destroy load_buffer with buffer_id BUFFER-ID[,....]
    |unlock all objects
    |rename to DBS-STRING
    |comment COMMENT-STRING
    |merge {all|incremental} data
    |begin archive to file FILE-NAME
    |end archive
}

DBS-SYSTEM-ROLE::=
    {no_access|read|write|execute|manager}

LOAD-BUFFER-INIT::=
    initialize load_buffer with buffer_id BUFFER-ID[,....]
    [resource_usage RNUM][property PROPS][wait_for_resources]
alter drillthrough

alter drillthrough
URL-NAME from xml_file FILE-NAME
on '{MEMBER-EXPRESSION}'[,...]
[allow_merge]

alter filter

alter filter FILTER-NAME
add {no_access|read|write|meta_read} on MEMBER-EXPRESSION [,....]

alter group

alter group
{
  GROUP-NAME
  {
    rename to GROUP-NAME
    |comment COMMENT-STRING
    |set sss_mode
    |revoke filter FILTER-NAME
  }
  |all set sss_mode
}

alter object

alter object OBJ-NAME of type %OBJ-TYPE%
{rename to OBJ-NAME-SINGLE|unlock|[force]copy to OBJ-NAME}

OBJ-TYPE::=
  outline
  |calc_script
  |report_file
  |rules_file
  |text
  |partition_file
  |lro
  |selection
  |wizard
  |eqd
  |outline_paging_file
  |worksheet
  |alias_table

alter partition

alter {transparent|replicated|linked} partition DBS-NAME
{to|from} DBS-NAME [at HOST-NAME]
set{
  connect as USER-NAME identified by PASSWORD
  |hostname as HOST-NAME instead of HOST-NAME direction {single|all}
  |application as APP-NAME instead of APP-NAME direction {single|all}
  |database as DSB-STRING instead of DBS-STRING
}
alter session

alter session set dml_output
{
    [
        !default!
        |alias {on|off}
        |metadata_only {on|off}
        |cell_status {on|off}
        |numerical_display {!default!|fixed_decimal|scientific_notation}
        |precision PRECISION-DIGITS
        |formatted_value {on|off}
        |get_missing_cells {on|off}
        |get_meaningless_cells {on|off}
        [, ...]
    ]
}

alter system

alter system
{
    (load|unload) application {all|APP-NAME}
    |set
    {
        session_idle_limit {INTEGER[!seconds!|minutes]|none}
        |session_idle_poll {INTEGER[!seconds!|minutes]|none}
        |invalid_login_limit {INTEGER|none}
        |inactive_user_days {INTEGER[days]|none}
        |password_reset_days {INTEGER[days]|none}
        |variable VARIABLE-NAME STRING
        |sss_mode %ENFORCE-PWD-SPEC%
        |eas_loc ADMIN-SVCS LOCATION
        |server_port begin at INTEGER end at INTEGER
        |[lease_manager] message_level {info|warn|error|debug}
    }
    |clear logfile
    |delete export_directory EXPORT-DIR
    |add variable VARIABLE-NAME[STRING]
    |drop variable VARIABLE-NAME
    |logout session %SESSION-SPEC% [force]
    |shutdown
    |kill request %SESSION-SPEC%
    |sync security_backup
    |{(enable|disable) unicode
    |compact security file
    |reconcile[force]
}

SESSION SPEC::= all
    |SESSION-ID
    |by user USER-NAME
    [
        on application APP-NAME
        |on database DBS-NAME
    ]
ALTER SYSTEM (aggregate storage)

ALTER SYSTEM {
  {load|unload} application {all|APP-NAME}
  |set
  |
  |session_idle_limit {INTEGER[!seconds|minutes]|none}
  |session_idle_poll {INTEGER[!seconds|minutes]|none}
  |invalid_login_limit {INTEGER|none}
  |inactive_user_days {INTEGER[days]|none}
  |password_reset_days {INTEGER[days]|none}
  |variable VARIABLE-NAME STRING
  |sss_mode %ENFORCE-PWD-SPEC%
  |eas_loc ADMIN-SVCS LOCATION
  |server_port begin at INTEGER end at INTEGER
  |[lease_manager] message_level {info|warn|error|debug}
  }
  |clear logfile
  |add variable VARIABLE-NAME[STRING]
  |drop variable VARIABLE-NAME
  |logout session %SESSION-SPEC% [force]
  |shutdown
  |kill request %SESSION-SPEC%
  |sync security_backup
  |compact security file
  |reconcile[force]
}

SESSION SPEC::=

all
|SESSION-ID
|by user USER-NAME
|
|on application APP-NAME
|on database DBS-NAME
|
|on database DBS-NAME

ON APPLICATION APP-NAME
ON DATABASE DBS-NAME

ENFORCE-PWD-SPEC::=
enforce {
  username_as_password
  |auto_password
  |
  |[force] save password to server file FILE-NAME
  |
  |password PASSWORD
  }

ENFORCE-PWD-SPEC ::= 
enforce { 
  username_as_password | auto_password [ 
    [force] save password to server file FILE-NAME ] 
  |password PASSWORD } 

alter tablespace (aggregate storage) 
alter tablespace TABLSP-NAME 
  { 
    add file_location FILE-NAME [ 
      set max_file_size SIZE-STRING 
      |set max_disk_size SIZE-STRING [,..] 
    ] 
  |alter file_location FILE-NAME [ 
      set max_file_size SIZE-STRING 
      |set max_disk_size SIZE-STRING [,..] 
    ] 
  |drop file_location FILE-NAME 
} 

alter trigger 
alter trigger 
  { 
    TRIGGER-NAME {enable|disable} 
    |on database DBS-NAME disable 
  } 

alter user 
alter user 
  { 
    USER-NAME 
    { 
      add 
      ([!to group!] GROUP-NAME 
      |application_access_type ACCESS-TYPE ) 
    |remove 
      ([!from group!]GROUP-NAME 
      |application_access_type ACCESS-TYPE ) 
    |rename to USER-NAME 
    |enable 
    |disable 
    |set 
    { 
      password PASSWORD 
    } 
  }
|password_reset_days
{| INTEGER[^days!]|
|none |
|immediate |
|exact |
}
|type external
|sss_mode %ENFORCE-PWD-SPEC%

|comment COMMENT-STRING
|reset
|revoke filter FILTER-NAME
|all set sss_mode %ENFORCE-PWD-SPEC%

ENFORCE-PWD-SPEC::= enforce
{ username_as_password
|auto_password
|
[force] save password to server file FILE-NAME
]
|password PASSWORD
}

create application
create [or replace] application APP-NAME
[type (!nonunicode_mode!|unicode_mode)]
[as APP-NAME]
[comment COMMENT-STRING]

create application (aggregate storage)
create [or replace] application APP-NAME
[type (!nonunicode_mode!|unicode_mode)]
[using aggregate_storage]
[as APP-NAME]
[comment COMMENT-STRING]

create calculation
create [or replace] calculation CALC-NAME (CALC-STRING|as CALC-NAME)

create database
create [or replace] [currency] database DBS-NAME
[using non_unique_members]
[as DBS-NAME]
[comment COMMENT-STRING]

create database (aggregate storage)
create [or replace] database DBS-NAME
[using non_unique_members]
[comment COMMENT-STRING]
create drillthrough
create drillthrough URL-NAME from xml_file FILE-NAME
  on '{MEMBER-EXPRESSION [, . . . ]}'
  [level0 only]

create filter
create [or replace] filter FILTER-NAME
  {
    as FILTER-NAME
    |
    {
      no_access
      | read
      | write
      | meta_read
    }
    on MEMBER-EXPRESSION
    [, . . . ]
  }
  [definition_only]

create function
create [or replace] function FUNC-NAME
    as JAVACLASS.METHOD
    [spec CALC-SPEC-STRING
     [comment COMMENT-STRING]]
    [with property runtime]

create group
create [or replace] group GROUP-NAME
  [as GROUP-NAME]
  [comment COMMENT-STRING]
  [type external]

create location alias
create [or replace] location alias
  {
    LOC-ALIAS-SINGLE from DBS-NAME
    | LOCATION-ALIAS-NAME
  }
to DBS-NAME at HOST-NAME as USER-NAME identified by PASSWORD

create macro
create [or replace] macro MACRO-NAME
  [%MACRO-SIGNATURE%]
  as MACRO-EXPANSION
  [spec CALC-SPEC-STRING [comment COMMENT-STRING]]
!any!
| single
| group
| optional
| optional_group
[,...]
)
'

create linked partition

create [or replace] linked partition DBS-NAME
%AREA-SPEC%
(to|from)
DBS-NAME [at HOST-NAME][as USER-NAME identified by PASSWORD]
[using USER-NAME identified by PASSWORD for creation]
[%AREA-SPEC%]
[
 mapped
 (globally|AREA-ALIAS)
 ('MEMBER-NAME [,...]')
 to '('MEMBER-NAME [,...]')'
[,...]
]
[outline (!direct!|reverse)]
[comment COMMENT-STRING]
[remote comment COMMENT-STRING]
default login as USER-NAME identified by PASSWORD
[validate only]

AREA-SPEC::= 
area MEMBER-EXPRESSION [AREA-ALIAS] [ ...]

create replicated partition

create [or replace] replicated partition DBS-NAME
%AREA-SPEC%
(to|from)
DBS-NAME [at HOST-NAME][as USER-NAME identified by PASSWORD]
[using USER-NAME identified by PASSWORD for creation]
[%AREA-SPEC%]
[
 mapped
 (globally|AREA-ALIAS)
 ('MEMBER-NAME [,...]')
 to '('MEMBER-NAME [,...]')'
[,...]
]
[outline (!direct!|reverse)]
[comment COMMENT-STRING]
[remote comment COMMENT-STRING]
[update {allow|disallow}]
[validate only]

AREA-SPEC::= 
area MEMBER-EXPRESSION [AREA-ALIAS] [ ...]
create transparent partition

create [or replace] transparent partition DBS-NAME
%AREA-SPEC%
{to|from}
DBS-NAME [at HOST-NAME][as USER-NAME identified by PASSWORD]
[using USER-NAME identified by PASSWORD for creation]
[%AREA-SPEC%]
[
   mapped
   (globally|AREA-ALIAS)
   '('MEMBER-NAME [,..]')'
   to '('MEMBER-NAME [,..]')'
   [,..]
]
[outline {!direct!|reverse}]
[comment COMMENT-STRING]
[remote comment COMMENT-STRING]
[validate only]

AREA-SPEC::=
   area MEMBER-EXPRESSION [AREA-ALIAS] [ ..]

create after-update trigger

create [or replace] after update trigger TRIGGER-NAME
   where CUBE-AREA [when CONDITION then ACTION][ ..] end

create on-update trigger

create [or replace] [!on update!] trigger TRIGGER-NAME
   [log_value {!OFF!|ON}]
   where CUBE-AREA
   [when CONDITION then ACTION][ ..]
   [else ACTION]
end

create user

create [or replace] user USER-NAME
{+%ESSBASE-USER-SPEC%|+%EXTERNAL-USER-SPEC%}

ESSBASE-USER-SPEC::=
   identified by PASSWORD
   [as USER-NAME
   |member of [group]GROUP-NAME
   |preserve_groups
   ]
   [comment COMMENT-STRING]

EXTERNAL-USER-SPEC::=
   type external [preserve_groups]

deploy

deploy [!all!|outline|data|outline_in_background]
   from model ESS-MODEL-NAME
in cube schema CUBE-SCHEMA-PATH

with option
{
delete_members
|delete_database
|%INCR-SPEC%
|rule_file_only %USING-INCR-SPEC%
}
}

%STUDIO-LOGIN-SPEC%
to application APP-NAME database DBS-NAME
{{!overwrite!|add|subtract} values}
[odbc_dsn 'STRING']
[use streaming build]
( %ESS-LOGIN-SPEC%
|using connection ESS-CONN
)
{{!keep all errors!|keep INTEGER errors}
[on error [[ignore|abort] dataload]
]
[
[append|write][FILE-NAME|to default]]
]

STUDIO-LOGIN-SPEC::=
login USER-NAME identified by PASSWORD on host HOST-NAME

ESS-LOGIN-SPEC::=
login USER-NAME identified by PASSWORD on host HOST-NAME

USING-INCR-SPEC::=
using %INCR-SPEC%

INCR-SPEC::=
incremental_load
[
!update all!
|modify using
{
update for ST-LEAF[,...]
|rebuild for ST-HIER
}[,...]
]
[
!preserve! {!all!|input|level0|no} !data!
]
[
{{!overwrite!|add|subtract} !values!
]

display application
display application {{!all!|APP-NAME [message_level]]}
display calculation

display calculation
[
  !all!
  |CALC-NAME
  |on application APP-NAME
  |on database DBS-NAME
]

display database

display database
[
  !all!
  |DBS-NAME
  |on application APP-NAME
]
[request_history]

display disk volume

display disk volume
[
  !all!|UNIQUE-VOL-NAME|on database DBS-NAME]

display drillthrough

display drillthrough
{
  DBS-NAME [to FILE-NAME-PREFIX]
  |URL-NAME [to FILE-NAME]
}

display filter

display filter [!all!|FILTER-NAME|on database DBS-NAME]

display filter row

display filter row [!all!|FILTER-NAME|on database DBS-NAME]

display function

display function [!all!|on system|on application APP-NAME|FUNC-NAME]

display group

display group [!all!|failed_sss_migration|GROUP-NAME]

display location alias

display location alias [!all!|LOCATION-ALIAS-NAME|on application APP-NAME|on database DBS-NAME]

display lock

display lock [!all!|on system|on application APP-NAME|on database DBS-NAME]
display macro

display macro [[!all!|on system|on application APP-NAME|MACRO-NAME]

display object

display [locked] object
[
[[!all!|of type %OBJ-TYPE%]
[[!on system!|on application APP-NAME|on database DBS-NAME]
|OBJ-NAME of type %OBJ-TYPE%
]

OBJ-TYPE::=
|outline
|calc_script
|report_file
|rules_file
|text
|partition_file
|lro
|selection
|wizard
|eqd
|outline_paging_file
|worksheet
|alias_table

display partition

display partition [[!all!|on database DBS-NAME][advanced]

display privilege

display privilege
{
  user [[!all!|USER-NAME]
  |group [[!all!|GROUP-NAME]
}

display session

display session
[
[[!all!|SESSION-ID
|by user USER-NAME [on application APP-NAME|on database DBS-NAME]
|on application APP-NAME
|on database DBS-NAME
]

display system

display system
[
  version
  |ports {in use|overview}
  |export_directory

941
|security file fragmentation percent
|license info
|security mode
|configuration
|
\{
|agent
|network
|lease_manager
|errors
|on database DBS-NAME
\}

message_level
]

display trigger

display trigger
[
  !all!
  |on system
  |on application APP-NAME
  |on database DBS-NAME
  |TRIGGER-NAME
]

display trigger spool

display trigger_spool
[
  !all!
  |on application APP-NAME
  |on database DBS-NAME
  |SPOOL-NAME
]

display user

display user
[
  in group ![all!] |GROUP-NAME]
  ![all! failed_sss_migration
  |shared_services_native with auto_password
  |migr_modified_access
  |USER-NAME
]

display variable

display variable
[
  !all!
  |VARIABLE-NAME
  |on application APP-NAME
  |on database DBS-NAME
  |on system
]
drop application
drop application APP-NAME [cascade] [force]

drop calculation
drop calculation CALC-NAME

drop database
drop database DBS-NAME [force]

drop drillthrough
drop drillthrough URL-NAME

drop filter
drop filter FILTER-NAME

drop function
drop function FUNC-NAME

drop group
drop group GROUP-NAME
  [from security_file]

drop location alias
drop location alias LOCATION-ALIAS-NAME

drop lock
drop lock
  [!
    !all!
  ]
    [!
      !on system!
      |on application APP-NAME
      |on database DBS-NAME
    ]
  [!all!|held by USER-NAME]
]

drop macro
drop macro MACRO-NAME

drop object
drop object OBJ-NAME of type %OBJ-TYPE% [force]

OBJ-TYPE::=
  outline
  |calc_script
  |report_file
drop partition

drop
  {transparent|replicated|linked}
partition DBS-NAME (from|to) DBS-NAME
  [at HOST-NAME][force]

drop trigger

drop trigger TRIGGER-NAME

drop trigger spool

drop trigger_spool {SPOOL-NAME|all on database DBS-NAME}

drop user

drop user USER-NAME
  [from security_file]

execute aggregate build

execute aggregate build on database DBS-NAME
  using
    {
      views VIEW-ID VIEW-SIZE [,....] with outline_id OUTLINE-ID
      |view_file VIEW-FILE-NAME
    }

execute aggregate process

execute aggregate process on database DBS-NAME
  [stopping when total_size exceeds STOPPING-VAL]
  [based on query_data]
  [{enable|!disable!} alternate_rollups]

execute aggregate selection

execute aggregate selection on database DBS-NAME
  [using views VIEW-ID[,....]
    with outline_id OUTLINE-ID
    [[!]suppress![force] display]
  ]
  [selecting INTEGER views]
  [stopping when total_size exceeds STOPPING-VAL]
  [based on query_data]
execute allocation (aggregate storage)

execute allocation process on database DBS-NAME with
{
  pov MDX-SET
  amount ALLOC-NUMERIC
  {
    [amountcontext MDX-TUPLE]
    [amounttimespan MDX-SET]
  }
  target MDX-TUPLE
  {
    [targettimespan MDX-SET]
    [targettimespanoptions {!divideamout|repeatamount}]
    [offset MDX-TUPLE]
    [debitmember MDX-MBR]
    [creditmember MDX-MBR]
  }
  range MDX-SET
  {
    [excludedrange MDX-SET]
    [basis MDX-TUPLE]
    [basistimespan MDX-SET]
    [basistimespanoptions {splitbasis|combinebasis}]
    {
      share
      [spread [{skip_missing|skip_zero|skip_negative}_,...]
    }
    [zeroamountoptions {skip_to_next_amount|abort}]
    [zerobasisoptions
      {
        skip_to_next_amount
        abort
      }
    ]
    [negativebasisoptions
      {
        skip_to_next_amount
        abort
        absolute_value
        missing_value
        zero_value
      }
    ]
  }
  [round
    (INTEGER|MDX-NUMERIC)
    {
      discard errors
      [errors_to_lowest
      errors_to_highest
      errors_to_location MDX-TUPLE
      ]
    }
  ]
}
execute calculation
execute calculation
{
   CALC-NAME
   |CALC-NAME on database DBS-STRING
   |{(CALC-STRING|default) on DBS-NAME
}

execute calculation (aggregate storage)
execute calculation on database DBS-NAME with
local script_file FILE-NAME pov MDX-SET sourceregion MDX-SET
{
   [target MDX-TUPLE]
   |[debitmember MDX-MBR]
   |[creditmember MDX-MBR]
   |[offset MDX-TUPLE]
}

export data
export database DBS-NAME
{
   ![all!]|level0|input
   data [anonymous] [in columns] to ![server!] data_file FILE-NAME[,]
   |using ![local!|server] report_file FILE-NAME to data_file FILE-NAME
}

export data (aggregate storage)
export database DBS-NAME
{
   ![level0!]|input
   data [anonymous] to ![server!] data_file FILE-NAME[,]
   |using ![local!|server] report_file FILE-NAME to data_file FILE-NAME
}

export lro
export database DBS-NAME lro to
   ![server!|local] directory
   {DBS-EXPORT-DIR|FULL-EXPORT-DIR}

export outline
export outline {DBS-NAME|FILE-NAME}
{
   all dimensions
   |list dimensions '{'DIM-NAME'}}[,...]
}
[tree|with alias_table ALT-NAME-SINGLE]
to xml_file FILE-NAME

export security file
export security_file to data_file FILE-NAME
grant

grant
{
(create_application|create_user|no_access|administrator)
[on system]
|no_access|manager) on application APP-NAME
|no_access|read|write|manager) on database DBS-NAME
filter FILTER-NAME
|execute
{
CALC-NAME
|{any|default}
|
!on system!
|on application APP-NAME
|on database DBS-NAME
}
}
to {USER-NAME|GROUP-NAME}

import data

import database DBS-NAME
[using max_threads INTEGER]
data
{
from
[!local!|server]
[!text!|excel|lotus_2|lotus_3|lotus_4]
data_file IMP-FILE
[using [[!local!|server] rules_file IMP-FILE]
|from data_string STRING
|connect as SQL-USR identified by SQL-PASS
using [[!local!|server] rules_file IMP-FILE
}
|on error {{write|append}to FILE-NAME|abort}

import data (aggregate storage)

import database DBS-NAME data
{
from
[!local!|server]
[!text!|excel|lotus_2|lotus_3|lotus_4]
data_file IMP-FILE
[using [[!local!|server] rules_file IMP-FILE]
|from data_string STRING
|connect as SQL-USR identified by SQL-PASS
using
{
[[!local!|server] rules_file IMP-FILE
|multiple rules_file RULE-FILE-NAME[,....]
to load_buffer_block starting with buffer id BUFFER-ID
on error {write to FILE-NAME|abort}
}
|from load_buffer with buffer_id BUFFER-ID[,....]
[[!override!|add|subtract) values]
import dimensions

import database DBS-NAME dimensions
{
from
[[!local!|server]
[[!text!|excel|lotus_2|lotus_3|lotus_4] data_file IMP-FILE
using[[!local!|server] rules_file IMP-FILE
[[!enforce!|suppress] verification]
|connect as SQL-USR identified by SQL-PASS
using[[!local!|server] rules_file IMP-FILE
}[,...]
[
!preserve all data!
|preserve (level0|input) data
]
on error (write|append) to FILE-NAME

import lro

import database DBS-NAME
lro from [[!local!|server] directory IMPORT-DIR

query application

query application APP-NAME get cache_size

query application (aggregate storage)

query application APP-NAME
{
get cache_size
|list aggregate_storage storage_info
}

query archive file

query archive_file FILE-NAME (get overview|list disk volume)

query database

query database DBS-NAME
{
get
{
active_alias_table
|attribute_info MEMBER-NAME
|attribute_spec
|currency_rate
|dbstats {dimension|data_block}
|default calculation
query database (aggregate storage)

query database DBS-NAME
{
  
get
{
  active_alias_table
  |attribute_info MEMBER-NAME
  |attribute_spec
  |cube_size_info
  |dbstats {dimension|data_block}
  |member_info MEMBER-NAME
  |opg_state of %OPG-SECTION% for dimension DIM-NAME
}

list
{
  |aggregate_storage runtime_info
  |aggregate_storage compression_info
  |aggregate_storage group_id_info
  |aggregate_storage slice_info
  |aggregate_storage uncommitted_transaction_info
  |alias_table
  |alias_names in alias_table ALT-NAME-SINGLE
}

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| existing_views [based on query_data |
| (!all!|data|index) file information |
| load_buffers |
| aso_level_info |
|
| (dump|force_dump) |
| existing_views to view_file VIEW-FILE-NAME |
| [based on query_data] |
|
refresh custom definitions
refresh custom definitions on application APP-NAME

refresh outline
refresh outline on {transparent|replicated|linked} |
partition DBS-NAME {to|from} DBS-NAME |
[at HOST-NAME] |
|
| purge outline change_file |
| apply all |
| apply nothing |
| %OTL-CHANGE-SPEC% |
|
OTL-CHANGE-SPEC::= |
apply on dimension |
{add|delete|rename|update|move}[[...],] |
apply on member |
{add|delete|rename|move}[[...],] |
apply on member_property { |
| account_type |
| alias |
| calc_formula |
| consolidation |
| currency_conversion |
| currency_category |
| data_storage |
| uda |
][[[...],]

refresh replicated partition
refresh replicated partition DBS-NAME |
{to|from} DBS-NAME |
[at HOST-NAME] |
[![all!|updated|data]|

MaxL Statements (Aggregate Storage)
Click here for non-aggregate storage list
Some MaxL grammar is applicable only to aggregate storage mode, and some standard grammar is not applicable to aggregate storage mode. The following statements support aggregate storage application and database operations.

- alter application
- alter database
- alter filter
- alter group
- alter object
- alter partition
- alter system
- alter tablespace
- alter trigger
- alter user
- create application
- create database
- create filter
- create group
- create outline
- create partition
- create after-update trigger
- create user
- display application
- display calculation
- display database
- display disk volume
- display filter
- display filter row
- display group
- display lock
- display object
- display partition
- display privilege
- display session
- display system
- display tablespace
- display trigger
- display user
- display variable
- drop application
- drop calculation
- drop database
- drop filter
- drop group
- drop lock
- drop object
- drop partition
- drop trigger
- drop user
- execute aggregate process
- execute aggregate build
- execute aggregate selection
- export data
- grant
- import data
- import dimensions
- login
- query application
- query database
- refresh outline
- refresh replicated partition

The MaxL grammar is case-insensitive. Semicolon statement-terminators are required when using the MaxL Shell. However, do not use semicolons at the end of statements passed using Perl functions. Key words of the MaxL grammar are represented in this document in lower-case. Terminals, represented in upper-case, are to be replaced by the appropriate names, numbers, privileges, or strings. For more information about components of MaxL statements, see “MaxL Definitions” on page 834.

Note: “Login” on page 889 is part of the separate command shell grammar, not the MaxL language itself. You can use the login statement with the MaxL Shell, but it is not embeddable in Perl. For Perl, use “connect (user, password, host);” on page 906.
Alter Application (Aggregate Storage)

Click here for non-aggregate storage version

Change application-wide settings.
Permission required: Application Manager.

Syntax

```
alter application APP-NAME

set minimum <DBS-SYSTEM-ROLE>
variable VARIABLE-NAME STRING
cache_size SIZE-STRING
message_level
info
 warn
error
debug

load database DB-STRING

enable
 disable

startup
 commands
 updates
 connects
 security

comment COMMENT-STRING

message_level

unload

add variable VARIABLE-NAME

drop variable VARIABLE-NAME

rename to APP-NAME

reregister

all reregister
```

You can change the following application-wide settings using `alter application`.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>set minimum permission</td>
<td>Grant all users a minimum level of permission to all databases in the application. Users with higher permissions than this minimum are not affected.</td>
</tr>
<tr>
<td>set variable</td>
<td>Assign a string value to an existing substitution-variable name. If the variable does not exist, first create it using <code>add variable</code>. Substitution variables may be referenced by calculations in the application.</td>
</tr>
<tr>
<td>set cache_size</td>
<td>Set the maximum size to which the aggregate storage cache may grow. The aggregate storage cache grows dynamically until it reaches this limit. This setting takes effect after you restart the application. To check the currently set limit, use the following MaxL statement: <code>query application APP-NAME get cache_size;</code></td>
</tr>
<tr>
<td>set type unicode_mode</td>
<td>Migrate an application to Unicode mode. Migration to Unicode mode cannot be reversed.</td>
</tr>
<tr>
<td>set message_level</td>
<td>Set the message level for application-related messages written to the Essbase application log files or Lease Manager log files.</td>
</tr>
<tr>
<td>Keyword</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>load database</td>
<td>Start (by loading into memory) an idle database. The statement will fail if you do not have at least read privilege for the database.</td>
</tr>
<tr>
<td>unload database</td>
<td>Stop (by unloading from memory) an active database. The statement will fail if you do not have at least read privilege for the database.</td>
</tr>
<tr>
<td>enable startup</td>
<td>Permit all users to load (start) the application. This only applies to users who have at least read privilege for the application. Startup is enabled by default.</td>
</tr>
<tr>
<td>disable startup</td>
<td>Prevent all users from loading (starting) the application. Startup is enabled by default.</td>
</tr>
<tr>
<td>enable autostartup</td>
<td>Start the application automatically when Essbase Server starts. By default, autostartup is disabled.</td>
</tr>
<tr>
<td>disable autostartup</td>
<td>Do not start the application automatically when Essbase Server starts. By default, autostartup is disabled.</td>
</tr>
<tr>
<td>enable commands</td>
<td>Allow all users with sufficient permissions to make requests to databases in the application. Use to reverse the effect of disable commands. The disable commands setting remains in effect only for the duration of your session. By default, commands are enabled.</td>
</tr>
<tr>
<td>disable commands</td>
<td>Prevent all requests to databases in the application, including non-data-specific requests, such as viewing database information or changing database settings. All users are affected, including other administrators. Administrators are affected by this setting as a safety mechanism to prevent accidental updates to databases during maintenance operations. This setting remains in effect only for the duration of your session. The setting takes effect immediately, and affects users who are currently logged in, as well as users who log in later during your session.</td>
</tr>
<tr>
<td>Caution!</td>
<td>If performing maintenance operations that require disabling commands, you must make those maintenance operations within the same session and the same script as the one in which commands were disabled.</td>
</tr>
<tr>
<td>enable updates</td>
<td>Allow all users with sufficient permissions to make requests to databases in the application. Use to reverse the effect of disable updates. Disabling updates remains in effect only for the duration of your session. By default, updates are enabled.</td>
</tr>
<tr>
<td>disable updates</td>
<td>Prevent all users from making requests to databases in the application. Use before performing update and maintenance operations. The disable updates setting remains in effect only for the duration of your session.</td>
</tr>
<tr>
<td>Caution!</td>
<td>If performing maintenance operations that require updates to be disabled, you must make those maintenance operations within the same session and the same script as the one in which updates were disabled. By default, updates are enabled.</td>
</tr>
<tr>
<td>enable connects</td>
<td>Allow all users with sufficient permissions to make connections to databases in the application. Use to reverse the effect of disable connects. By default, connections are enabled.</td>
</tr>
<tr>
<td>disable connects</td>
<td>Prevent any user with a permission lower than Application Manager from making connections to the databases that require the databases to be started. This includes starting the databases or performing the ESSCMD SELECT command on the databases. Database connections remain disabled for all databases in the application, until the application setting is re-enabled by the administrator. By default, connections are enabled.</td>
</tr>
<tr>
<td>Keyword</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>enable security</td>
<td>When security is disabled, Essbase ignores all security settings in the application and treats all users as Application Managers. By default, security is enabled.</td>
</tr>
<tr>
<td>disable security</td>
<td>When security is disabled, Essbase ignores all security settings in the application and treats all users as Application Managers. By default, security is enabled.</td>
</tr>
<tr>
<td>comment</td>
<td>Enter an application description (optional). The description can contain up to 80 characters.</td>
</tr>
<tr>
<td>clear logfile</td>
<td>Delete the application log located in the application directory. A new log is created for entries recording subsequent application activity.</td>
</tr>
<tr>
<td>add variable</td>
<td>Create an application-level substitution variable by name, and optionally assign a string value for the variable to represent. You can assign or change the value later using set variable. A substitution variable acts as a global placeholder for information that changes regularly. Substitution variables may be referenced by calculations and report scripts. If substitution variables with the same name exist at server, application, and database levels, the order of precedence for the variables is as follows: a database level substitution variable supersedes an application level variable, which supersedes a server level variable.</td>
</tr>
<tr>
<td>drop variable</td>
<td>Remove a substitution variable and its corresponding value from the application.</td>
</tr>
<tr>
<td>rename to</td>
<td>Rename the application. When you rename an application, the application and the application directory (ARBORPATH\app\app_name) are renamed.</td>
</tr>
<tr>
<td>reregister</td>
<td>Re-establish this Essbase application as a Shared Services application. This statement reregisters the application with Shared Services, in the event that you have:</td>
</tr>
<tr>
<td></td>
<td>● deleted the application from Shared Services but kept using it in Essbase.</td>
</tr>
<tr>
<td></td>
<td>● changed the Essbase Administration Server location, name, or port number.</td>
</tr>
<tr>
<td></td>
<td>● changed the Essbase Server name or port number.</td>
</tr>
<tr>
<td></td>
<td>To issue this statement, you must be an Administrator or Application Manager.</td>
</tr>
<tr>
<td>all reregister</td>
<td>Re-establish this and all other Essbase applications as Shared Services applications. This statement reregisters the applications with Shared Services, in the event that you have:</td>
</tr>
<tr>
<td></td>
<td>● deleted the application from Shared Services but kept using it in Essbase.</td>
</tr>
<tr>
<td></td>
<td>● changed the Essbase Administration Server location, name, or port number.</td>
</tr>
<tr>
<td></td>
<td>● changed the Essbase Server name or port number.</td>
</tr>
<tr>
<td></td>
<td>To issue this statement, you must be an Administrator or Application Manager on all applications; for any applications for which you do not have sufficient permissions, the re-registration will be skipped with a warning.</td>
</tr>
</tbody>
</table>

**Example**

```
alter application ASOsamp set cache_size 64MB;
Sets the maximum size of the aggregate storage cache to 64 MB.
alter application ASOsamp disable commands;
Prevents all users from making requests to the application scope. Use this statement before performing application-wide update and maintenance operations.
alter application ASOsamp comment 'Aggregate storage application';
```
Attaches a descriptive comment to the ASOsamp application.

**Alter Database (Aggregate Storage)**

Click here for non-aggregate storage version

Change database-wide settings.

Permission required: create_application.
You can change the following database-wide settings using `alter database`.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enable startup</td>
<td>Enable users to start the database directly or as a result of requests requiring the database to be started. Startup is enabled by default.</td>
</tr>
<tr>
<td>disable startup</td>
<td>Prevent all users from starting the database directly or as a result of requests that would start the database. Startup is enabled by default.</td>
</tr>
<tr>
<td><strong>Keyword</strong></td>
<td><strong>Description</strong></td>
</tr>
<tr>
<td>--------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>enable autostartup</td>
<td>Automatically start the database when the application to which it belongs starts. Autostartup is enabled by default. This setting is applicable only when startup is enabled.</td>
</tr>
<tr>
<td>disable autostartup</td>
<td>Prevent automatic starting of the database when the application to which it belongs starts. Autostartup is enabled by default.</td>
</tr>
<tr>
<td>enable query_tracking</td>
<td>Begin collecting query data for this database, to be used for query-based view optimization.</td>
</tr>
<tr>
<td></td>
<td>To utilize the results of query tracking, use the optional based on query_data grammar in any of the following statements:</td>
</tr>
<tr>
<td></td>
<td>- query database &lt;dbs-name&gt; list existing_views</td>
</tr>
<tr>
<td></td>
<td>- execute aggregate process</td>
</tr>
<tr>
<td></td>
<td>- execute aggregate selection</td>
</tr>
<tr>
<td>disable query_tracking</td>
<td>Stop collecting query data for query-based view optimization. Query tracking is disabled by default.</td>
</tr>
<tr>
<td>set retrieve_buffer_size</td>
<td>Change the database retrieval buffer size. This buffer holds extracted row data cells before they are evaluated by the RESTRICT or TOP/BOTTOM Report Writer commands. The default size is 10 KB. The minimum size is 2 KB. Increasing the size may improve retrieval performance.</td>
</tr>
<tr>
<td>set retrieve_sort_buffer_size</td>
<td>Change the database retrieval sort buffer size. This buffer holds data until it is sorted. The Report Writer and Essbase Query Designer use the retrieval sort buffer. The default size is 10 KB. The minimum size is 2 KB. Increasing the size may improve retrieval performance.</td>
</tr>
<tr>
<td>set minimum permission</td>
<td>Set a level of permission that all users or groups can have to the database. Users or groups with higher granted permissions than the minimum permission are not affected.</td>
</tr>
<tr>
<td>set variable</td>
<td>Change the value of an existing substitution variable on the database. The value must not exceed 256 bytes. It may contain any character except a leading ampersand (&amp;).</td>
</tr>
<tr>
<td>set active alias_table</td>
<td>Set an alias table as the primary table for reporting and any additional alias requests. Only one alias table can be used at a time. This setting is user-specific; it only sets the active alias table for the user issuing the statement.</td>
</tr>
<tr>
<td>reset</td>
<td>Clear all data and linked-reporting objects from the database, but preserve the outline.</td>
</tr>
</tbody>
</table>

**Note:** If kernel queries are running when a clear data operation starts, the clear data operation waits for the kernel queries to complete and then the clear data operation proceeds. This information also applies to the reset all and reset data grammar.

<p>| reset all | Clear all data, Linked Reporting Objects, and the outline.                                                                                           |
| reset data | Same as using reset.                                                                                                                               |</p>
<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>clear aggregates</td>
<td>Delete all aggregate views.</td>
</tr>
<tr>
<td>compact outline</td>
<td>Compact the outline file to decrease the outline file size. Compaction helps keeps the outline file at an optimal size. After the outline file is compacted, the file continues to grow as before, when members are added or deleted.*** Note: Compacting the outline does not cause Essbase to clear the data. When a member is deleted from the outline, the corresponding record of that member in the outline file is marked as deleted but the record remains in the outline file. Compacting the outline file does not remove the records of deleted members.</td>
</tr>
<tr>
<td>add variable</td>
<td>Create a database-level substitution variable by name, and optionally assign a string value for the variable to represent. You can assign or change the value later using <code>set variable</code>. A substitution variable acts as a global placeholder for information that changes regularly. Substitution variables may be referenced by calculations and report scripts. If substitution variables with the same name exist at server, application, and database levels, the order of precedence for the variables is as follows: a database level substitution variable supersedes an application level variable, which supersedes a server level variable.</td>
</tr>
<tr>
<td>drop variable</td>
<td>Remove a substitution variable and its corresponding value from the database.</td>
</tr>
<tr>
<td>initialize load_buffer</td>
<td>Create a temporary buffer in memory for loading data. Data load buffers are used in aggregate storage databases for allocations, custom calculations, and lock and send operations. Multiple data load buffers can exist on a single aggregate storage database. You can control the share of aggregate storage cache resources the load buffer is allowed to use and how long to wait for resources to become available before aborting load buffer operations. You can also set properties that determine how missing and zero values, duplicate values, and multiple values for the same cell in the data source are processed.</td>
</tr>
<tr>
<td>destroy load_buffer</td>
<td>Destroy the temporary data-load memory buffer.</td>
</tr>
<tr>
<td>unlock all objects</td>
<td>Unlock all objects on the database that are in use by a user or process.</td>
</tr>
<tr>
<td>rename to</td>
<td>Rename the database. When you rename a database, the database directory is also renamed.</td>
</tr>
<tr>
<td>comment</td>
<td>Create a description of the database. The maximum number of characters is 80. This description is available to database administrators. To annotate the database for Smart View or other grid client users, use <code>set note</code>.</td>
</tr>
</tbody>
</table>
Keyword | Description
--- | ---
merge all [incremental data] [remove_zero_cells] | Merge incremental data slices. Use these keywords:
- all—Merge all incremental data slices into the main database slice.
- incremental—Merge all incremental data slices into a single data slice. The main database slice is not changed.
- (Optional) remove_zero_cells—When merging incremental data slices, remove cells that have a value of zero (logically clearing data from a region results in cell with a value of zero).

**Note:** Before you copy an aggregate storage application, you must merge all incremental data slices into the main database slice. Data in unmerged incremental data slices is not copied.

clear data in region … | Clear the data in the specified region.

There are two methods for clearing data from a region:

- Physical, in which the input cells in the specified region are physically removed from the aggregate storage database. The process for physically clearing data completes in a length of time that is proportional to the size of the input data, not the size of the data being cleared. Therefore, you might typically use this method only when you need to remove large slices of data.

  Use the MaxL statement with the physical keyword:

  \[
  \text{alter database appname.dbname clear data in region 'MDX set expression' physical;}
  \]

- Logical, in which the input cells in the specified region are written to a new data slice with negative, compensating values that result in a value of zero for the cells you want to clear. The process for logically clearing data completes in a length of time that is proportional to the size of the data being cleared. Because compensating cells are created, this option increases the size of the database.

  Use the MaxL statement without a keyword:

  \[
  \text{alter database appname.dbname clear data in region 'MDX set expression';}
  \]

The region must be symmetrical. Members in any dimension in the region must be stored members. When physically clearing data, members in the region can be upper-level members in alternate hierarchies. (If the region contains upper-level members from alternate hierarchies, you may experience a decrease in performance.) Members cannot be dynamic members (members with implicit or explicit MDX formulas), nor can they be from an attribute dimension.

To remove cells with a value of zero, use the \text{alter database} MaxL statement with the \text{merge} grammar and the \text{remove_zero_cells} keyword.
### enable replication_assume_identical_outline

Optimize the replication of an aggregate storage database when the aggregate storage database is the target and a block storage database is the source and the two outlines are identical.

Replication optimization affects only the target aggregate storage application; the source block storage application is not affected. This functionality does not apply to block storage replication.

This statement can be enabled only at the database level. To enable this functionality at the server or application (or database) level, use the `REPLICATIONASSUMEIDENTICALOUTLINE` configuration setting in the `essbase.cfg` file.

### disable replication_assume_identicaloutline

Do not optimize the replication of an aggregate storage database when the aggregate storage database is the target and a block storage database is the source and the two outlines are identical.

### begin archive to file

Prepare the database for backup by an archiving program, and prevent writing to the files during backup.

Begin archive achieves the following outcomes:

- Switches the database to read-only mode. The read-only state persists, even after the application is restarted, until it is changed back to read-write using `end archive`.
- Creates a file containing a list of files that need to be backed up. Unless a different path is specified, the file is stored in the database directory.

Begin archive and end archive do not perform the backup; they simply protect the database during the backup process.

### end archive

Return the database to read-write mode after backing up the database files.

### Example

```
alter database ASOsamp.Sample clear aggregates;

Deletes all aggregate views in the ASOsamp.Sample database.

alter database ASOsamp.Sample initialize load_buffer with buffer_id 1;

See “Loading Data Using Buffers” on page 1000.

alter database ASOsamp.Sample initialize load_buffer with buffer_id 1 resource_usage .5 property ignore_missing_values, ignore_zero_values;

Creates a data-load buffer in memory for the ASOsamp.Sample database. The buffer can use only 50% of available resources. Missing values and zeros in the data source are ignored.

alter database ASOsamp.Sample disable query_tracking;

Turns off the harvesting of query data for the ASOsamp.Sample database.

alter database ASOsamp.Sample merge all data;

Merges all incremental data slices into the main slice in the ASOsamp.Sample database.

alter database ASOsamp.Sample merge incremental data;
```
Merges all incremental data slices into a single data slice within the ASOsamp.Sample database.

`alter database ASOsamp.Sample merge all data remove_zero_cells;`

Merges all incremental data slices into the main slice in the ASOsamp.Sample database, and removes cells with a value of zero.

`alter database ASOsamp.Sample clear data in region '{Jan, Budget}';`

Clears all Budget data for the month of Jan, using the logical method, from the ASOsamp.Sample database.

`alter database ASOsamp.Sample clear data in region '{Jan, Budget}' physical;`

Clears all Budget data for the month of Jan, using the physical method, from the ASOsamp.Sample database.

`alter database ASOsamp.Sample clear data in region 'CrossJoin({Jan},{Forecast1, Forecast2})';`

Clears all January data for the Forecast1 and Forecast2 scenarios from the ASOsamp.Sample database.

**Alter System (Aggregate Storage)**

[Click here for non-aggregate storage version](#)

Change the state of the Essbase Server. Start and stop applications, delete application log files, manipulate system-wide variables, manage password and login activity, disconnect users, kill processes, back up the security file, and shut down the server.

Permission required: Administrator.
You can change the following system-wide settings using `alter system`.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>load application</td>
<td>Start an application, or start all applications on the Essbase Server.</td>
</tr>
<tr>
<td>unload application</td>
<td>Stop an application, or stop all applications on the Essbase Server.</td>
</tr>
<tr>
<td>Keyword</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>set session_idle_limit</td>
<td>Set the interval of time permitted for a session to be inactive before Essbase Server logs off the user. The minimum limit that you can set is five minutes (or 300 seconds). When the session idle limit is set to none, all users can stay logged on until the Essbase Server is shut down.</td>
</tr>
<tr>
<td></td>
<td>The default user idle logout time is 60 minutes. When a user initiates a calculation in the background, after 60 minutes the user is considered idle and is logged out, but the calculation continues in the background.</td>
</tr>
<tr>
<td></td>
<td>Because the user may mistakenly assume that the calculation stopped because he or she was logged out, you can do one of the following to correct the user experience:</td>
</tr>
<tr>
<td></td>
<td>- Run the calculation in the foreground</td>
</tr>
<tr>
<td></td>
<td>- Increase the session idle limit in to a time that exceeds the duration of the calculation, or to none</td>
</tr>
<tr>
<td>set session_idle_poll</td>
<td>Set the time interval for inactivity checking and security-backup refreshing. The time interval specified in the session idle poll gives Essbase instructions:</td>
</tr>
<tr>
<td></td>
<td>- Tells it how often to check whether user sessions have passed the allowed inactivity interval indicated by session_idle_limit in the alter system statement.</td>
</tr>
<tr>
<td></td>
<td>- Tells it how often to refresh the security backup file. If session_idle_poll is set to zero, the security backup file is still refreshed every five minutes.</td>
</tr>
<tr>
<td>set invalid_login_limit</td>
<td>Set the number of unsuccessful login attempts allowed by any user before the user account becomes disabled. When you change this setting, the counter resets to 0. When the invalid login limit is set to none, there is no limit. By default, there is no limit.</td>
</tr>
<tr>
<td>set inactive_user_days</td>
<td>Set the number of days a user account may remain inactive before the system disables it. The counter resets when the user logs in, is edited, or is activated by an administrator. When the inactive days limit is set to none, user accounts remain enabled even if they are not used. By default, there is no limit.</td>
</tr>
<tr>
<td>set password_reset_days</td>
<td>Set the number of days users may retain passwords. After the allotted number of days, users are prompted at login to change their passwords. The counter resets for a user when the user changes the password, is edited, or is activated by an administrator. When the password reset days limit is set to none, there is no built-in limit for password retention. By default, there is no limit.</td>
</tr>
<tr>
<td>set variable</td>
<td>Change the value of an existing substitution variable on the system. The value must not exceed 256 bytes. It may contain any character except a leading ampersand (&amp;).</td>
</tr>
</tbody>
</table>
**Keyword** | **Description**
---|---
set sss_mode | Migrate Essbase Server and any existing users and groups to EPM System security mode. After you have converted to EPM System security mode, you cannot revert to native security mode. Essbase native security mode is no longer supported.

Minimum permission required: Administrator.

Password Enforcement Grammar:

- **enforce username_as_password**—Create passwords that are the same as user names for users being migrated to EPM System security.

  **Note:** The passwords are created in lowercase letters, even if the user name includes uppercase letters. For example, if a user name KSmith is migrated with this option, the password will be ksmith.

- **enforce auto_password**—Automatically generate new passwords for users being migrated to Shared Services. To see the generated passwords, use `display user all in shared_services_native with auto_password;`

  Optionally save the generated passwords to a nondefault file location. If specifying a file name that already exists, use the `force` keyword to overwrite the file.

  If file name and location are not specified, passwords are saved by default to `$ARBORPATH\bin\MigratedUsersPassword.txt`.

- **enforce password <PASSWORD>**—Generate the specified password for users being migrated to Shared Services.

set eas_loc | Set or change the Essbase Administration Server location that will be registered with Shared Services upon application creation or migration.

set server_port | Expand a port range specified in `essbase.cfg`. Each Essbase application uses two ports from this range. If no more ports are available, an error message is displayed.

  **Note:** You can expand port ranges only so that the beginning port range is less than SERVERPORTBEGIN and the ending port range is greater than SERVERPORTEND.

set [lease_manager] message_level | Set the message level for system-related messages written to the Essbase Server log files or Lease Manager log files.

clear logfile | Clear accumulated entries from the Essbase Server log located in the `Essbase` directory. New log entries are created to record subsequent activity.

add variable | Create a system-level substitution variable by name, and optionally assign a string value for the variable to represent. You can assign or change the value later using `set variable`. A substitution variable acts as a global placeholder for information that changes regularly. Substitution variables may be referenced by calculations and report scripts.

  If substitution variables with the same name exist at server, application, and database levels, the order of precedence for the variables is as follows: a database-level substitution variable supersedes an application-level variable, which supersedes a server-level variable.

drop variable | Remove a substitution variable and its corresponding value from the system.

logout session all | Terminate all user sessions currently running on the Essbase Server.

logout session...force | Terminate a session (or sessions) even if it is currently processing a request. The request is allowed to proceed to a safe point, and then the transaction is rolled back.
<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>logout session</td>
<td>Terminate a session by its unique session ID number. To see the session ID number, use display session.</td>
</tr>
<tr>
<td>logout session &lt;session-id&gt;</td>
<td></td>
</tr>
<tr>
<td>logout session by user</td>
<td>Terminate all current sessions by a particular user, either across the entire Essbase Server, or limited to a specific application or database.</td>
</tr>
<tr>
<td>logout session by user on application</td>
<td></td>
</tr>
<tr>
<td>logout session by user on database</td>
<td></td>
</tr>
<tr>
<td>logout session on application</td>
<td>Terminate all current user sessions across a specific application.</td>
</tr>
<tr>
<td>logout session on database</td>
<td>Terminate all current user sessions across a specific database.</td>
</tr>
<tr>
<td>shutdown</td>
<td>Shut down the Essbase Server.</td>
</tr>
<tr>
<td>kill request all</td>
<td>Terminate all current requests on the Essbase Server.</td>
</tr>
<tr>
<td>kill request &lt;session-id&gt;</td>
<td>Terminate the current request indicated by the session ID. You can obtain session IDs using display session.</td>
</tr>
<tr>
<td>kill request by user</td>
<td>Terminate all current requests by the specified user on the Essbase Server.</td>
</tr>
<tr>
<td>kill request on application</td>
<td>Terminate all current requests on the specified application.</td>
</tr>
<tr>
<td>kill request on database</td>
<td>Terminate all current requests on the specified database.</td>
</tr>
<tr>
<td>sync security_backup</td>
<td>Check whether the security backup file is the same as the security file, and if not, synchronize the security backup file with the current state of Essbase security. The effect is to refresh the backup file with any additions, changes, or deletions related to applications, databases, users, groups, filters, permissions, substitution variables, locked objects, and system settings.</td>
</tr>
<tr>
<td></td>
<td>If sync security_backup is not issued directly as described above, the security backup file is checked/refreshed automatically at the same frequency with which session inactivity is checked globally. The default inactivity check interval is every five minutes. To change the interval, use set session_idle_poll, or see the Oracle Essbase Administration Services Online Help.</td>
</tr>
<tr>
<td>compact security file</td>
<td>Defragment the security file. Fragmentation can gradually develop when objects such as users, groups, applications, or databases are removed or changed. Please note that this operation slows down agent activity until the operation is completed, which could take a few minutes.</td>
</tr>
</tbody>
</table>
Keyword  |  Description
--- | ---
reconcile  |  When Essbase is started using a security backup file (essbase_timestamp.bak) instead of essbase.sec, reconcile the security file to match the state of Essbase on an external disk. This grammar displays discrepancies in application and database information between the security file and the external disk:

- If an application folder is on the disk but not in the security file, display a message indicating the discrepancy. (Essbase checks for the presence of a appname/appname.app file in the ARBORPATH/app directory.)

  The `force` option does not apply in this scenario.

- If an application file is in the security file but not on the disk, display a message indicating the discrepancy.

  The `force` option removes the application from the security file.

- If an application database folder is on the disk but not in the security file, display a message indicating the discrepancy. (Essbase checks for the presence of a dbname/dbname.ot1 file in the ARBORPATH/app/appname directory.)

  The `force` option does not apply in this scenario.

- If an application database file is in the security file but not on the disk, display a message indicating the discrepancy.

  The `force` option removes the database from the security file.

**Notes**

**SESSION SPECIFICATION**

A *session* is a single user connection to Essbase Server. The session can be identified by keywords and names indicating context, or by a unique session ID number.

A *request* is a query sent to Essbase Server by a user or by another process; for example, starting an application or restructuring a database outline. Only one request at a time can be processed in each session.

If a session is processing a request at the time that an administrator attempts to terminate the session, the administrator must either terminate the request first, or use the `force` keyword available with `alter system` to terminate the session and the current request.

```plaintext
<SESSION SPEC> ::= all

  | SESSION-ID
  | by user USER-NAME
  | on application APP-NAME
  | on database DBS-NAME
  | on application APP-NAME
  | on database DBS-NAME
```
PASSWORD ENFORCEMENT SPECIFICATION

Example

alter system unload application Sample;

   Stops the Sample application, if it is currently running.

alter system logout session by user Fiona;

   Disconnects Fiona from any applications or databases to which she is connected.

Note: To log out a user, log out the sessions owned by that user.

alter system set password_reset_days 10;

   Specifies that all users will be prompted after 10 days to change their passwords. The day count for any user is reset when the user changes the password or is edited or reactivated by an administrator.

alter system set sss_mode enforce password "password";

   Migrates the Essbase Server to Oracle Enterprise Performance Management System security mode, specifying the initial password for all users.

Create Application (Aggregate Storage)

Click here for non-aggregate storage version

Create or re-create an application, either from scratch or as a copy of another application on the same system. See APP-NAME for information on the maximum length of and special characters that are allowed in an application name. Application names are not case-sensitive.

Permissions required: Essbase create_application role and Oracle Hyperion Shared Services Project Manager role.

To copy an application, Application Manager permission on the source application is also required.
You can create an application in the following ways using the aggregate storage version of `create application`.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>create application</td>
<td>Create a new application. Application names are not case-sensitive.</td>
</tr>
<tr>
<td>create or replace application</td>
<td>Create an application, or replace an existing application of the same name. Application names are not case-sensitive.</td>
</tr>
<tr>
<td>...type nonunicode_mode</td>
<td>Create a Non Unicode-mode application. This is also the default if these keywords are omitted.</td>
</tr>
<tr>
<td>...type unicode_mode</td>
<td>Create a Unicode-mode application.</td>
</tr>
<tr>
<td>...using aggregate_storage</td>
<td>Create an application using an aggregate storage model. Only one database per application is allowed. Selecting to use aggregate storage model for an application is non-reversible. Use the aggregate storage model if the following is true for your database:</td>
</tr>
<tr>
<td></td>
<td>● The database is sparse and has many dimensions, or a large hierarchical depth of members in the dimensions.</td>
</tr>
<tr>
<td></td>
<td>● The database is used primarily for read-only purposes; there are few or no data updates.</td>
</tr>
<tr>
<td></td>
<td>● There are no formulas on the outline except in the dimension tagged as Accounts.</td>
</tr>
<tr>
<td></td>
<td>● Calculation of the database is frequent and highly aggregational, with no dependency on calculation scripts.</td>
</tr>
<tr>
<td>create application as</td>
<td>Create an application as a copy of another application. Application names are not case-sensitive. You cannot copy block storage applications to aggregate storage applications or vice versa. The copy will always use the same storage as the original. However, you can convert an outline from a block storage database to an aggregate storage database, using <code>create outline</code>. Before you copy an aggregate storage application, you must merge all incremental data slices into the main database slice. Data in unmerged incremental data slices is not copied.</td>
</tr>
<tr>
<td>comment</td>
<td>Create an application description (optional). The description can contain up to 80 characters.</td>
</tr>
</tbody>
</table>

**Example**

```sql
create application Sample2 using aggregate_storage comment 'aggregate storage application.';
```

Creates a new aggregate storage application called Sample2, with an associated comment.

**Create Database (Aggregate Storage)**

Click here for non-aggregate storage version
Create or re-create a database for an aggregate storage application. See `DBS-NAME` for information on the maximum length of and special characters that are allowed in a database name. Database names are not case-sensitive.

The syntax for creating an aggregate storage database is the same as for creating a block storage database, except that the currency database option is not supported. You must create an aggregate storage database as part of an aggregate storage application.

Permission required: Application Manager.

**Syntax**

```
create database DBS-NAME
```

or

```
create or replace database DBS-NAME
```

```
using non_unique_members
```

```
comment COMMENT-STRING
```

Use `create database` to create a database in the following ways:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>create database</td>
<td>Create a new database. Database names are not case-sensitive.</td>
</tr>
<tr>
<td>create or replace database</td>
<td>Create a database, or replace an existing database of the same name. Database names are not case-sensitive.</td>
</tr>
<tr>
<td>create database using non_unique_members</td>
<td>Create a database that supports the use of duplicate member names. Once you have created a database with a duplicate member outline, you cannot convert it back to a unique member outline. For more information about duplicate member names, see the <em>Oracle Essbase Database Administrator's Guide</em> chapter titled &quot;Creating and Working With Duplicate Member Outlines.&quot;</td>
</tr>
<tr>
<td>comment</td>
<td>Create a database description (optional). The description can contain up to 80 characters.</td>
</tr>
</tbody>
</table>

**Notes**

- You cannot create an aggregate storage database as a copy of another aggregate storage database. Only one aggregate storage database is allowed per application.
- You cannot copy a block storage database to an aggregate storage database. For an example of how to create an aggregate storage application and database based on a block storage application and database, see “Creating an Aggregate Storage Sample Using MaxL” on page 999.

**Example**

```
create or replace database Sample.Basic comment 'This is a test.';
```

Creates a database called Basic within the Sample application. If a database named Basic within the Sample application already exists, it is overwritten.
Create Outline (Aggregate Storage)

Create an aggregate storage outline based on a block storage outline. The outline you are creating must be for an aggregate storage database that is local to your current login session. The block-storage database you are using as a source can be remote. If a remote host is specified, you can also specify a user name and password if the connection is remote.

Permission required: Database Manager.

Essbase supports the following scenarios for converting block storage outlines to aggregate storage outlines:

- Non-Unicode block storage outline to non-Unicode aggregate storage outline
- Non-Unicode block storage outline to Unicode aggregate storage outline
- Unicode block storage outline to Unicode aggregate storage outline

The following conversion scenarios are not supported:

- Unicode block storage outline to non-Unicode aggregate storage outline
- Aggregate storage outline to a block storage outline

Syntax

You can create an outline in the following ways using `create outline`.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>create outline...</td>
<td>Create an aggregate-storage database outline based on a block storage outline. If an outline of the same name already exists, it is replaced.</td>
</tr>
<tr>
<td>create or replace</td>
<td>This statement has the same result as <code>create outline</code> above.</td>
</tr>
<tr>
<td>outline...</td>
<td></td>
</tr>
<tr>
<td>database DBS-NAME</td>
<td></td>
</tr>
<tr>
<td>at HOST-NAME</td>
<td>If the block-storage database you are using as a source is remote, specify the host name.</td>
</tr>
<tr>
<td>as USER-NAME identified by PASSWORD</td>
<td>If the block-storage database you are using as a source is remote (requires a different authentication), provide the user name and password, as you would do when creating a remote partition.</td>
</tr>
</tbody>
</table>

Example

```
create or replace outline on aggregate_storage database Sample2.Basic2 as outline on database sample.basic;
```

Creates an aggregate storage outline based on the Sample.Basic outline. For a complete example of how to create an aggregate storage version of a block storage database, see “Creating an Aggregate Storage Sample Using MaxL” on page 999.
Display Tablespace (Aggregate Storage)

View details about a tablespace.

Tablespaces are applicable only to aggregate storage databases.

Permission required: Application Manager.

This statement requires the application to be started.

Syntax

- `display tablespace TABLSP-NAME`

Example

- `set column_width 50; /* so file_location will not be truncated */
  display tablespace ASOsamp.'default';`

This example displays the following output:

<table>
<thead>
<tr>
<th>Column Header</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>file_location</td>
<td><code>C:\Hyperion\products\Essbase\EssbaseServer\APP\</code></td>
</tr>
<tr>
<td>max_file_size</td>
<td>56</td>
</tr>
<tr>
<td>max_disk_size</td>
<td>4294967295</td>
</tr>
</tbody>
</table>

Execute Allocation

Allocate one or more given source amounts to a target range of cells in an aggregate storage database. The source amount can be allocated to the target proportionately to a given basis, or the source amount can be spread evenly to the target region.

Allocations are typically used in the budgeting process to distribute revenues or costs.

Minimum permission required: Execute.

For more information about allocations and to understand the input parameters, see “Performing Custom Calculations and Allocations on Aggregate Storage Databases” in the Oracle Essbase Database Administrator's Guide.
**Syntax**

```plaintext
execute allocation process on database DBS-NAME with pov MDX-SET amount ALLOC-NUMERIC
```

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>pov &lt;mdx-set&gt;</td>
<td>Required. Provide an MDX set defining the context region in which the allocation is performed.</td>
</tr>
<tr>
<td>amount &lt;alloc-numeric&gt;</td>
<td>Required. Provide an MDX numeric value expression indicating the amount to be allocated.</td>
</tr>
<tr>
<td>amountcontext &lt;mdx-tuple&gt;</td>
<td>Optional. Provide an MDX tuple with one member from each dimension missing from pov and amount. This clause is required when amount is an arithmetic expression and pov does not specify two or more dimensions. It should not be used otherwise.</td>
</tr>
<tr>
<td>amounttimespan &lt;mdx-set&gt;</td>
<td>Optional. Provide an MDX set indicating one or more time periods to be considered for the amount. The amount value is aggregated over the specified time periods, and the aggregated amount value is allocated. Time periods must be level 0 members in a Time dimension.</td>
</tr>
<tr>
<td>target &lt;mdx-tuple&gt;</td>
<td>Required. Provide an MDX tuple defining the database region where results are written.</td>
</tr>
<tr>
<td>targettimespan &lt;mdx-set&gt;</td>
<td>Optional. Provide an MDX set indicating one or more time periods to be considered for the target. Time periods must be level 0 members in a Time dimension.</td>
</tr>
<tr>
<td>targettimespanoptions</td>
<td>Optional, but required if targettimespan is used. Select a method for allocating values across the target time span:</td>
</tr>
<tr>
<td></td>
<td>● divideamount—Divide the amount evenly across the time periods</td>
</tr>
<tr>
<td></td>
<td>● repeatamount—Repeat the amount across the time periods</td>
</tr>
<tr>
<td>offset &lt;mdx-tuple&gt;</td>
<td>Optional. If offsetting entries are used, provide an MDX tuple defining the location in the database where an offsetting value is written for each source amount.</td>
</tr>
<tr>
<td><strong>Keyword</strong></td>
<td><strong>Description</strong></td>
</tr>
<tr>
<td>-----------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>debitmember &lt;mdx-mbr&gt;</td>
<td>Optional. If double-entry accounting is used, provide an MDX member expression indicating the member to which positive result values are written.</td>
</tr>
<tr>
<td>creditmember &lt;mdx-mbr&gt;</td>
<td>Optional. If double-entry accounting is used, provide an MDX member expression indicating the member to which negative result values are written.</td>
</tr>
<tr>
<td>range &lt;mdx-set&gt;</td>
<td>Required. Provide an MDX set indicating the database region in which allocated values are calculated and written.</td>
</tr>
<tr>
<td>excludedrange &lt;mdx-set&gt;</td>
<td>Optional. Provide an MDX set specifying locations in the range where you do not want allocation values written.</td>
</tr>
<tr>
<td>basis &lt;mdx-tuple&gt;</td>
<td>Required in most cases. Provide an MDX tuple that, when combined with the range, defines the location of basis values that determine how the amount is allocated. The basis can consist of upper-level or level 0 members. Optional if the allocation method used is spread, and no values are skipped; required otherwise. Basis must be omitted when the allocation method spread is used without skip options.</td>
</tr>
<tr>
<td>basistimespan &lt;mdx-set&gt;</td>
<td>Optional. Provide an MDX set that indicates one or more time periods to be considered for the basis. Time periods must be level 0 members in a Time dimension.</td>
</tr>
<tr>
<td>basistimespanoptions</td>
<td>Optional, but required if basistimespan is used. Select a method for using the basis time span:</td>
</tr>
<tr>
<td></td>
<td>• splitbasis—Use the basis value for each time period individually</td>
</tr>
<tr>
<td></td>
<td>• combinebasis—Use the sum of the basis values across the time periods specified by basistimespan</td>
</tr>
<tr>
<td>share</td>
<td>Optional. Specify to allocate the amount(s) proportionately to the basis values. For syntax, see Allocation Method Specification in Notes.</td>
</tr>
<tr>
<td>spread</td>
<td>Optional. Specify to allocate the amount(s) evenly. For syntax, see Allocation Method Specification in Notes. You can include one or more of the following skip options when using spread allocation:</td>
</tr>
<tr>
<td></td>
<td>• skip_missing—Skip missing basis values</td>
</tr>
<tr>
<td></td>
<td>• skip_zero—Skip zero basis values</td>
</tr>
<tr>
<td></td>
<td>• skip_negative—Skip negative basis values</td>
</tr>
<tr>
<td>zeroamountoptions</td>
<td>Optional. If omitted, zero or #MISSING amount values are allocated. Otherwise, specify treatment of amount values that are zero or #MISSING:</td>
</tr>
<tr>
<td></td>
<td>• skip_to_next_amount—Skip to the next nonzero, non-#MISSING amount value</td>
</tr>
<tr>
<td></td>
<td>• abort—Cancel the entire allocation operation</td>
</tr>
<tr>
<td>zerobasisoptions</td>
<td>Optional. For share, this option specifies the action when the sum of all basis values is zero. For spread, this option specifies the action when all the basis values are skipped. Select one of the following options:</td>
</tr>
<tr>
<td></td>
<td>• skip_to_next_amount—Skip to the next nonzero, non-#MISSING amount value</td>
</tr>
<tr>
<td></td>
<td>• abort—Cancel the entire allocation operation</td>
</tr>
</tbody>
</table>
**Keyword** | **Description**
--- | ---
round | Optional. Specify rounding options. The following options are available:
- Round to a specified number of decimal places, using an integer or MDX numeric value expression. The value must be between 100 and -100, and is truncated if it is not a whole number.
- Perform rounding, but discard rounding errors
- Add rounding errors to the highest allocated value
- Add rounding errors to the lowest allocated value
- Provide an MDX tuple indicating a cell to which the rounding error should be added

**Notes**
- The clauses following the `with` keyword can be entered in any order, each separated by white space.
- Each clause can only be entered once.
- The `pov`, `amount`, `target`, `range`, and `basis` clauses are mandatory; the others are optional.
- You can specify only stored, level-0 members in all of the clauses except for `amount`, `amountcontext`, `basis`, and the number of rounding digits; for all other arguments, do not use upper-level members, attribute members, or dynamic calc members.

**Allocation Method Specification**

```
<Alloc-Method>::=
  share
    spread
      [skip_missing]
      [skip_zero]
      [skip_negative],
```

**Rounding Method Specification**

```
<Rounding-Method>::=
  round
    [INTEGER]
    [MDX-NUMERIC]
    [discard errors]
    [errors_to_location MDX-TUPLE],
```

**Example**

The following statement executes an allocation. For a more complete use case, see “Performing Custom Calculations and Allocations on Aggregate Storage Databases” in the *Oracle Essbase Database Administrator’s Guide*.

```
execute allocation process on database glrpt.db with
```
Execute Calculation (Aggregate Storage)

Execute a custom calculation script expressed in MDX, specifying the script file, source region, and point of view (POV). Optionally specify the target, offset, and debit or credit members.

Minimum permission required: Execute.

For more information about custom calculation script parameters, see “Performing Custom Calculations and Allocations on Aggregate Storage Databases” in the Oracle Essbase Database Administrator’s Guide.

Syntax

```
execute calculation on database DBS-NAME with local script_file FILE-NAME pov MDX-SET
```

You can execute custom calculations with the following options:
Keyword | Description
--- | ---
local script_file | Required. Run the specified local calculation script file. Custom calculation scripts are expressed in MDX. The following is an example of a custom calculation script, `script.txt`.

```
(AccountA,Proj1) := 100;
([AccountB], Proj1) := ([AccountB], [Proj1]) * 1.1;
(AccountC,Proj1) :=
    ((AccountB,Proj1,2007) + (AccountB, Proj1)) / 2;
(AccountA,Proj2) :=
    ((AccountD,Proj1) +
     (AccountB, Proj2)) / 2;
```

For information about writing custom calculation scripts, see “Performing Custom Calculations and Allocations on Aggregate Storage Databases” in the Oracle Essbase Database Administrator’s Guide.

pov <mdx-set> | Required. Provide an MDX set defining the context region in which the calculation is performed. The calculation script will be executed once for every cross-product in the POV region.

sourceregion <mdx-set> | Required. Provide an MDX set specifying the region of the cube referred to by the formulas in the script. At a minimum, the source region should include all members from the right-hand sides of the assignment statements in the custom calculation script.

target <mdx-tuple> | Optional. Provide an MDX tuple defining the database region where results are written. You can use only stored, level-0 members in the tuple; do not use upper-level members, attribute members, or dynamic calc members.

debitmember <mdx-mbr> | Optional. If double-entry accounting is used, provide an MDX member expression indicating the member to which positive result values are written. You can specify only stored, level-0 members; do not use upper-level members, attribute members, or dynamic calc members.

creditmember <mdx-mbr> | Optional. If double-entry accounting is used, provide an MDX member expression indicating the member to which negative result values are written. You can specify only stored, level-0 members; do not use upper-level members, attribute members, or dynamic calc members.

offset <mdx-tuple> | Optional. If offsetting entries are used, provide an MDX tuple defining the location in the database where an offsetting value for each source amount is written. You can use only stored, level-0 members in the tuple; do not use upper-level members, attribute members, or dynamic calc members.

Notes

- Each clause can only be entered once.
- The `script_file`, `pov`, and `sourceregion` clauses are mandatory; the others are optional.
- The optional clauses following the `sourceregion` specification can be entered in any order, each separated by white space.
- You can specify only stored, level-0 members on the left side of the assignment statement in the custom calculation script; do not use upper-level members, attribute members, or dynamic calc members.
- You can specify only stored, level-0 members in the following clauses: DebitMember, CreditMember, Target, and Offset.
Example

The following statement executes script.txt referenced above. For a sample use case, see “Performing Custom Calculations and Allocations on Aggregate Storage Databases” in the Oracle Essbase Database Administrator’s Guide.

execute calculation on database app.db with
local script_file "script.txt"
POV "Crossjoin({[VisionUS]},
Crossjoin({[101]},
Crossjoin ({[Jan]},
Crossjoin({[Scenario]},
Descendants(Geography, Geography.Levels(0)))))"
SourceRegion "Crossjoin({[AccountB], [AccountD]},
Crossjoin({[Proj1], [Proj2]}, {[2007]}))"
Target "(Allocation)"
DebitMember "[BeginningBalance_Debit]"
CreditMember "[BeginningBalance_Credit]"
Offset "([Account_000], [Project_000])"

Export Data (Aggregate Storage)

Click here for non-aggregate storage version

Export level-0 data, which does not include calculated values, from an aggregate storage database. Export data files are written to Essbase Server in the ARBORPATH/app directory, unless an absolute path is specified. To use Report Writer, export the data using a report file. Export data files cannot be written to the client computer.

Minimum permission required: Read.

Syntax

```
export database DBS-NAME
  level 0
  input
  data
     anonymous
   to server
     data_file
        file
           FILE-NAME
   using
      local
      server
      report_file FILE-NAME to data_file FILE-NAME
```

On aggregate storage databases, use export data to export in the following ways:
Keyword | Description
--- | ---
export database <dbs-name> level0 data... | Export level-0 input data to a text file. You cannot export aggregates, upper level data, or data from dynamically calculated members.

**Note:** Exporting data does not clear the data from the database.

export database <dbs-name> input data... | This statement performs the same action as `export database <dbs-name> level0 data...`

export database <dbs-name> ... data anonymous | Export data in anonymized format. Anonymization removes the risk of sensitive data disclosure, and can be used in case sample data needs to be provided for technical support. Essbase replaces real data values with 1, for each value in the block.

export database <dbs-name> ...using...report_file... | Run a stored report script, exporting a subset of the database.

**Notes**

- This statement requires the database to be started.
- Exports on aggregate storage databases are limited as follows:
  - You can export level-0 data only (level-0 data is the same as input data in aggregate storage databases).
  - You cannot perform upper-level data export on an aggregate storage database.
  - You cannot perform columnar export on an aggregate storage database.
  - To export data in parallel, specify a comma-separated list of export files, from 1 to 8 file names. This number should generally be equal to the number of processors on the machine that you wish to commit to doing parallel export. The number of threads Essbase uses typically depends on the number of file names you specify. However, on a very small aggregate storage database with a small number of data blocks, it is possible that only a single file will be created (in effect, performing serial export), even though parallel export to multiple files is requested. In this case, the export file name will be the first file name given as input.
  - During a data export, the export process allows users to connect and perform read-only operations.
  - If the data for a thread exceeds 2 GB, Essbase may divide the export data into multiple files with numbers appended to the file names.

  The naming convention for additional export files is as follows: _1, _2, etc. are appended to the additional file names. If the specified output file name contains a period, the numbers are appended before the period. Otherwise, they are appended at the end of the file name.

  For example, if the given file name is `/home/exportfile.txt`, the next additional file is `/home/exportfile_1.txt`. If the file name is `/home/exportfile`, the next additional file is `/home/exportfile_1`. 

Example

Example 1
The following example exports all level 0 data from ASOsamp.Sample to an export file.

```sql
export database ASOsamp.Sample data to data_file 'exportfile.exp';
```

Example 2
The following Windows example uses a report script, Bottom.rep, to export a subset of sorted data from ASOsamp.Sample to an output file, Bottom.rpt.

```sql
export database ASOsamp.Sample using report_file 'C:\inst2\Essbase\EssbaseServer\app \ASOsamp\Sample\Bottom.rep' to data_file 'c:\temp\Bottom.rpt';
```

Example 3
The following example is a UNIX version of Example 2.

```sql
export database ASOsamp.Sample using report_file "'$ARBORPATH/app/ASOsamp/Sample/ Bottom.rep'" to data_file 'Bottom.rpt';
```

Sample Report Script and Output
For examples 2 and 3, assume that `Bottom.rep` is the following report script file based on ASOsamp.Sample:

```xml
//Bottom.rep
<Sym
<Column (Measures, Years)
<Row (Geography, Products)
<ICHILDREN Geography
<ICHILDREN Products
<Bottom (3, @DataColumn(1))
!
```

The report script produces the following report (Bottom.rpt):

Measures          Years          Time          Transaction Type        Payment Type        Promotions        Age           Income        Level        Stores

<table>
<thead>
<tr>
<th>Geography</th>
<th>All Merchandise</th>
<th>43,250,241</th>
<th>11,379,402</th>
<th>8,436,598</th>
<th>76,041,079</th>
<th>19,816,000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Products</td>
<td>43,250,241</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>High End Mercha~</td>
<td>11,379,402</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South</td>
<td>All Merchandise</td>
<td>32,790,838</td>
<td>8,436,598</td>
<td>76,041,079</td>
<td>19,816,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Products</td>
<td>32,790,838</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>High End Mercha~</td>
<td>8,436,598</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Import Data (Aggregate Storage)

Click here for non-aggregate storage version

Import data from text or spreadsheet data files, with or without a rules file.
Minimum permission required: Write.
Use **import data** in the following ways to load data into an aggregate storage database:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>import database &lt;dbs-name&gt; data from...</td>
<td>Specify whether the data import is from a local or server file, and what type of file to import data from.</td>
</tr>
<tr>
<td>...using ... rules_file</td>
<td>Import data into the database using a specified rules file.</td>
</tr>
<tr>
<td>...&lt;data error spec&gt; (on error...)</td>
<td>Required. Tell Essbase what to do in case of errors during the data load: abort the operation, or write or append to a specified error log.</td>
</tr>
<tr>
<td>...&lt;data record spec&gt; from data_string</td>
<td>Load a single data record into the selected database. The string following data_string must be a contiguous line, without newline characters.</td>
</tr>
</tbody>
</table>
| ...<SQL connect spec> (connect as...) | If you are importing data from an SQL source, provide your SQL user name and password. You must always use a rules file when you load SQL data sources. When loading SQL data into aggregate storage databases, you can use up to eight rules files to load data in parallel by using the **multiple rules_file** grammar with the grammar specified in <buffer-block-spec>. Essbase initializes multiple temporary aggregate storage data load buffers (one for each rules file) and, when the data is fully loaded into the buffers, commits the contents of all buffers into the database in one operation. Each rules file must use the same authentication information (SQL user name and password). In the following example, SQL data is loaded from two rules files (rule1.rul and rule2.rul):

```sql
import database ASOsamp.Sample data
  connect as TBC identified by 'password'
  using multiple rules_file 'rule1','rule2'
  to load_buffer_block starting with buffer_id 100
  on error write to "error.txt";
```

In specifying the list of rules files, use a comma-separated string of rules file names (excluding the .rul extension). The file name for rules files must not exceed eight bytes and the rules files must reside on Essbase Server.

In initializing a data load buffer for each rules file, Essbase uses the starting data load buffer ID you specify for the first rules file in the list (for example, ID 100 for rule1) and increments the ID number by one for each subsequent data load buffer (for example, ID 101 for rule2).

The ODBC driver you are using must be configured for parallel SQL connections. See the *Oracle Essbase SQL Interface Guide*.

**Note:** Performing multiple SQL data loads in parallel to aggregate storage databases is different than using the **to load_buffer with buffer_id** grammar to load data into a buffer, and then using the **from load_buffer with buffer_id** grammar to explicitly commit the buffer contents to the database. For more information on aggregate storage data load buffers, see the *Oracle Essbase Database Administrator’s Guide*.

...to load_buffer with buffer_id | If you are importing data from multiple data files to an aggregate storage database, you can import to a buffer first, in order to make the data import operation more efficient. |
<p>| ...from load_buffer with buffer_id | If you are importing data from multiple data files to an aggregate storage database, you can import from a data load buffer in order to make the data import operation more efficient. |</p>
<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>...from load_buffer with buffer_id...values</td>
<td>Specify whether you want to add to existing values, subtract from existing values, or override existing values when committing the contents of the specified data load buffer to the database.</td>
</tr>
<tr>
<td>...from load_buffer with buffer_id...create slice</td>
<td>Commit the contents of the specified data load buffer to the database by creating a new data slice.</td>
</tr>
<tr>
<td>...from load_buffer with buffer_id override all data</td>
<td>Remove the current contents of the database and replace the database with the contents of the specified data load buffer.</td>
</tr>
<tr>
<td>...from load_buffer with buffer_id override incremental data</td>
<td>Remove the current contents of all incremental data slices in the database and create a new data slice with the contents of the specified data load buffer. The new data is created with the data load property &quot;add values&quot; (aggregate_sum). If there are duplicate cells between the new data and the primary slice, their values are added together when you query for them.</td>
</tr>
</tbody>
</table>

**Notes**

- This statement requires that the database is started.
- When using the import statement, you must specify what should happen in case of an error.
- To import from a SQL data source, you must connect as the relational user name and use a rules file.

**Example**

```sql
import database ASOsamp.Sample data from data_file "'$ARBORPATH\app\asosamp\sample\dataload.txt'" using rules_file "'$ARBORPATH\app\asosamp\sample\dataload.rul'" on error abort;

Loads data into the ASOsamp.Sample database.

import database ASOsamp.Sample data from load_buffer with buffer_id 1;

Commits the contents of a specified data load buffer to the ASOsamp.Sample database.

import database ASOsamp.Sample data from load_buffer with buffer_id 1, 2;

Commits the contents of multiple data load buffers (buffer_id 1 and buffer_id 2) to the ASOsamp.Sample database.

import database ASOsamp.Sample data from load_buffer with buffer_id 1 add values;

Commits the contents of a specified data load buffer to the ASOsamp.Sample database by adding values.

import database ASOsamp.Sample data from load_buffer with buffer_id 1 override values create slice;

Commits the contents of the specified data load buffer into a new data slice in the ASOsamp.Sample database.

import database ASOsamp.Sample data from load_buffer with buffer_id 1 override all data;
```
Replaces the contents of the ASOsamp.Sample database with the contents of the specified data load buffer.

```maxl
import database ASOsamp.Sample data from load_buffer with buffer_id 1 override incremental data;
```

Replaces the contents of all incremental data slices in the ASOsamp.Sample database by creating a new data slice with the contents of the specified data load buffer. The new data is created with the data load property "add values" (aggregate_sum). If there are duplicate cells between the new data and the primary slice, their values are added together when you query for them.

See “Loading Data Using Buffers” on page 1000.

**Query Application (Aggregate Storage)**

**Click here for block storage version**

Get information about the current state of the application.

This statement is only applicable for aggregate storage applications.

This statement requires the application to be started.

**Syntax**

```maxl
query application APP-NAME get cache_size list aggregate_storage storage_info
```

**Example**

The following MaxL statement:

```maxl
query application sample get cache_size;
```

returns the maximum size (in kilobytes) to which the aggregate storage cache may grow.

The following MaxL statement:

```maxl
query application asoapp list aggregate_storage storage_info;
```

returns the following information:

<table>
<thead>
<tr>
<th>Output Columns</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cache hit ratio</td>
<td>Ratio of the number of requests answered from aggregate storage cache as opposed to from the hard disk.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> This statistic may not be accurate when parallel data load or parallel calculation operations are in use.</td>
</tr>
<tr>
<td>Current cache size (KB)</td>
<td>The current size of the aggregate storage cache. See description for current cache size limit (KB).</td>
</tr>
<tr>
<td>Current cache size limit (KB)</td>
<td>The maximum size (in kilobytes) to which the aggregate storage cache may grow.</td>
</tr>
<tr>
<td>Page reads since last startup</td>
<td>Number of data blocks (pages) read from disk since the last time the application was started.</td>
</tr>
<tr>
<td>Output Columns</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Page writes since last startup</td>
<td>Number of data blocks (pages) written to disk since the last time the application was started.</td>
</tr>
<tr>
<td>Page size (KB)</td>
<td>Size of the data block (page) in kilobytes.</td>
</tr>
<tr>
<td>Disk space allocated for data (KB)</td>
<td>Total space used by all disk files in the default tablespace.</td>
</tr>
<tr>
<td>Disk space used by data (KB)</td>
<td>Total space actually in use within the disk files in the default tablespace (some space within files may be free).</td>
</tr>
<tr>
<td>Temporary disk space allocated (KB)</td>
<td>Total space used by all disk files in the temp tablespace.</td>
</tr>
<tr>
<td>Temporary disk space used (KB)</td>
<td>Total space actually in use within the disk files in the temp tablespace (some space within files may be free).</td>
</tr>
</tbody>
</table>

**Query Database (Aggregate Storage)**

**Click here for non-aggregate storage version**

Get advanced information about the current state of the database.

Minimum permission required: Read.

This statement requires the database to be started.
You can query for database information in the following ways using `query database`:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>get active alias_table</td>
<td>Display the active alias table for the user issuing the statement.</td>
</tr>
<tr>
<td>get attribute_info</td>
<td>Get attribute member, dimension, and name information for the specified attribute member.</td>
</tr>
<tr>
<td>get attribute_spec</td>
<td>Display the current attribute specifications for the database. These specifications include attribute member name format, Attribute Calculation dimension member names, Boolean and date member names, and numeric range specifications. These settings are defined in Outline Editor.</td>
</tr>
<tr>
<td>get cube_size_info</td>
<td>Display information about input data size, aggregated data size, and number of queries tracked (when query tracking is enabled).</td>
</tr>
</tbody>
</table>

This statement returns the output listed in the following table:

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>input_data_ size_cells</td>
<td>Number of input-level cells in the cube.</td>
</tr>
<tr>
<td>input_data_ size_bytes</td>
<td>Number of bytes used by the input-level data (approximate).</td>
</tr>
<tr>
<td>Keyword</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td><strong>Keyword</strong></td>
</tr>
<tr>
<td>aggregate_data_size_cells</td>
<td>Total number of cells in all aggregate views in the cube.</td>
</tr>
<tr>
<td>aggregate_data_size_bytes</td>
<td>Number of bytes used by the aggregate cells (approximate).</td>
</tr>
<tr>
<td>kernel_queries_tracked</td>
<td>Number of kernel queries executed since the last time query tracking was enabled or query tracking information was reset.</td>
</tr>
<tr>
<td>total_query_cost</td>
<td>Total cost of all queries executed since the last time query tracking information was reset.</td>
</tr>
<tr>
<td>query_tracking_enabled</td>
<td>Values: True or False. Tells whether user retrieval statistics are being collected for the aggregate storage database. The statistics can be used by the following MaxL statements for query-based view optimization:</td>
</tr>
<tr>
<td></td>
<td>- query database &lt;dbs-name&gt; list existing_views</td>
</tr>
<tr>
<td></td>
<td>- execute aggregate process</td>
</tr>
<tr>
<td></td>
<td>- execute aggregate selection</td>
</tr>
<tr>
<td></td>
<td>Query tracking is disabled by default.</td>
</tr>
</tbody>
</table>

get dbstats dimension: Get information about dimensions.

The **index_type** field values are numeric, and translate as follows:

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Dense</td>
</tr>
<tr>
<td>1</td>
<td>Sparse</td>
</tr>
<tr>
<td>3</td>
<td>None (database is aggregate storage)</td>
</tr>
</tbody>
</table>

get dbstats data_block: Get information about data blocks. The information returned has little relevance to aggregate storage databases.
<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>get member_info &lt;MEMBER-NAME&gt;</td>
<td>Get information on a specific member.</td>
</tr>
<tr>
<td>Output</td>
<td>The <strong>unary_type</strong> field values are numeric, and translate as follows:</td>
</tr>
<tr>
<td></td>
<td>0 Add</td>
</tr>
<tr>
<td></td>
<td>1 Subtract</td>
</tr>
<tr>
<td></td>
<td>2 Multiply</td>
</tr>
<tr>
<td></td>
<td>3 Divide</td>
</tr>
<tr>
<td></td>
<td>4 Percent</td>
</tr>
<tr>
<td></td>
<td>5 NoRollUp</td>
</tr>
<tr>
<td>The <strong>member_tag_type</strong> field values translate as follows:</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>SkipNone</td>
</tr>
<tr>
<td>16384</td>
<td>SkipMissing</td>
</tr>
<tr>
<td>32768</td>
<td>SkipZero</td>
</tr>
<tr>
<td>49152</td>
<td>SkipBoth</td>
</tr>
<tr>
<td>1</td>
<td>BalFirst</td>
</tr>
<tr>
<td>2</td>
<td>BalLast</td>
</tr>
<tr>
<td>4</td>
<td>TwoPass</td>
</tr>
<tr>
<td>8</td>
<td>Average</td>
</tr>
<tr>
<td>64</td>
<td>Expense</td>
</tr>
<tr>
<td>Variations are possible. The field value consists of one of the first four &quot;skip&quot; values plus any/all/none of the last five values. Some examples:</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>SkipNone</td>
</tr>
<tr>
<td>77</td>
<td>SkipNone, BalFirst, TwoPass, Average, Expense</td>
</tr>
<tr>
<td>16385</td>
<td>SkipMissing and BalFirst</td>
</tr>
<tr>
<td>The first four &quot;skip&quot; values are base values, and added to them are combinations of 1, 2, 4, 8, and 64.</td>
<td></td>
</tr>
<tr>
<td>The <strong>status</strong> field values are hexadecimal, and translate as follows:</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>Normal</td>
</tr>
<tr>
<td>1</td>
<td>Never Share</td>
</tr>
<tr>
<td>2</td>
<td>Label</td>
</tr>
<tr>
<td>4</td>
<td>Refer Share</td>
</tr>
<tr>
<td>8</td>
<td>Refer Share (with different name)</td>
</tr>
<tr>
<td>16</td>
<td>Implicit share</td>
</tr>
<tr>
<td>32</td>
<td>Virtual Member (stored)</td>
</tr>
<tr>
<td>64</td>
<td>Virtual Member (not stored)</td>
</tr>
<tr>
<td>2048</td>
<td>Attribute</td>
</tr>
<tr>
<td>32768</td>
<td>Referred</td>
</tr>
<tr>
<td>get opg_state of member_data</td>
<td>Display outline navigational information (for example, parent, child, or sibling), fixed-length information (for example, the line aggregation symbol or the number of children), and text strings (for example, member names or aliases).</td>
</tr>
<tr>
<td>See “Outline Paging Dimension Statistics” on page 995 for a description of the output.</td>
<td></td>
</tr>
<tr>
<td>Keyword</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| get opg_state of member_name_namespace       | Display information that matches member names to internal member identifiers (one section per database, thus the information for all dimensions is the same).  
See “Outline Paging Dimension Statistics” on page 995 for a description of the output. |
| get opg_state of member_formula              | Display all formulas for the dimension.  
See “Outline Paging Dimension Statistics” on page 995 for a description of the output.                                                                                                                   |
| get opg_state of member_UDA                  | Display all user defined attributes (UDAs) for the dimension.  
See “Outline Paging Dimension Statistics” on page 995 for a description of the output.                                                                                                                   |
| get opg_state of member_UDA_namespace        | Display information that matches UDAs to internal member identifiers.  
See “Outline Paging Dimension Statistics” on page 995 for a description of the output.                                                                                                                   |
| get opg_state of attribute_to_base_member_association | Display information that identifies the attribute member associated with each base member of the dimension.  
See “Outline Paging Dimension Statistics” on page 995 for a description of the output.                                                                                                                   |
| get opg_state of member_comment              | Display all member comments for the dimension.  
See “Outline Paging Dimension Statistics” on page 995 for a description of the output.                                                                                                                   |
| get opg_state of member_alias_namespace      | Display information that matches member alias names to internal member identifiers (one section per alias table, thus the information for all dimensions is the same).  
See “Outline Paging Dimension Statistics” on page 995 for a description of the output.                                                                                                                   |
| list aggregate_storage runtime_info          | Display runtime statistics about the aggregate storage database. For a description of the output returned by this statement, see “Aggregate Storage Runtime Statistics” on page 996.                         |
Keyword: list aggregate_storage group_id_info

Description: Display information about group IDs and their timestamps related to General Ledger cubes.

Note: This grammar applies to General Ledger cubes, not to non-general-ledger aggregate storage databases. For normal aggregate storage databases, this table will be empty.

This MaxL grammar is disabled for previous release Essbase MaxL clients.

This statement returns the following output:

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>group_id</td>
<td>The allocation group id, according to the begin allocation command that created the allocation group. The number is an unsigned 64-bit integer.</td>
</tr>
<tr>
<td>transaction_id</td>
<td>The aggregate storage transaction ID that is used internally. The number is an unsigned 64-bit integer.</td>
</tr>
<tr>
<td>state</td>
<td>A string describing the state of the group ID. For example: BeginAllocation Done, Allocation In Progress, Allocation Done, EndAllocation In Progress.</td>
</tr>
<tr>
<td>time_last_used</td>
<td>The date and time the group ID was last used. The value is either the time the group ID was created or the time that an allocation or custom calculation was last performed with this group ID. The value is a string.</td>
</tr>
<tr>
<td>time_expired</td>
<td>The date and time when the group ID will time out (expire). The value is a string.</td>
</tr>
<tr>
<td>expired</td>
<td>Indicates whether the group ID has timed out. If the group ID has expired, the group ID will be rolled back the next time a begin allocation command is executed. The value is a boolean.</td>
</tr>
</tbody>
</table>

For a description of the output returned by this statement, see "Aggregate Storage Group ID Information Output" on page 998.
Display information about data slices and views, some information of which applies only to General Ledger cubes (not to non-general-ledger aggregate storage databases).

**Note:** Small incremental slices may have fewer aggregate views than the primary slice (slice number 0). Incremental slices with less than 100,000 cells will never have any aggregate views built. However, if an incremental slice is larger than 100,000 cells and it is larger than the primary slice, then it will always have the same aggregate views as the primary slice.

This MaxL grammar is disabled for previous release Essbase MaxL clients.

This statement returns the following output:

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Contents</th>
</tr>
</thead>
</table>
| transaction_id | **(Applies to General Ledger cubes only)**
The ID of the transaction to which this slice and view belong. There is one transaction ID for each GL group ID.  
The number is an unsigned 64-bit integer.  
To find the corresponding group ID, use the following MaxL command:
```
query database app.db list aggregate_storage group_id_info;
```
For non-general-ledger aggregate storage databases, this number is always 0. |
| slice_id | ID number of the data slice.  
The number is an unsigned 32-bit integer. |
| slice_tag | **(Applies to General Ledger cubes only)**
When an allocation or custom calculation is done within an allocation begin/end, this number is the rule_id of the allocation that made this data slice.  
The number is an unsigned 64-bit integer.  
For non-general-ledger aggregate storage databases, this number is always 0. |
| view_id | 0 indicates an input view; otherwise, the view is an aggregate view.  
The number is an unsigned 64-bit integer.  
To list the levels in a given aggregate view, use the following MaxL command:
```
query database app.db list existing_views;
``` |
**Keyword**

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>size_cells</td>
<td>The number of cells in the given view of the slice.</td>
</tr>
<tr>
<td></td>
<td>The number is an unsigned 64-bit integer.</td>
</tr>
<tr>
<td>size_kb</td>
<td>The size in KB of the given view of the slice.</td>
</tr>
<tr>
<td></td>
<td>The number is an unsigned 64-bit integer.</td>
</tr>
</tbody>
</table>

For a description of the output returned by this statement, see “Aggregate Storage Slice Information Output” on page 998.

**list aggregate_storage uncommitted_transaction_info**

Display information about uncommitted transactions that are related to General Ledger cubes.

**Note:** This grammar applies to General Ledger cubes, not to non-general-ledger aggregate storage databases. For normal aggregate storage databases, this table will be empty.

This MaxL grammar is disabled for previous release Essbase MaxL clients.

This statement returns the following output:

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>unc_transactions</td>
<td>The number of existing user transactions that are not</td>
</tr>
<tr>
<td></td>
<td>yet committed.</td>
</tr>
<tr>
<td>unc_data_slices</td>
<td>The number of data slices used by uncommitted</td>
</tr>
<tr>
<td></td>
<td>transactions.</td>
</tr>
<tr>
<td>unc_input_data_size_cells</td>
<td>The number of input cells used by uncommitted</td>
</tr>
<tr>
<td></td>
<td>transactions.</td>
</tr>
<tr>
<td>unc_aggregate_views</td>
<td>The number of aggregate views used by</td>
</tr>
<tr>
<td></td>
<td>uncommitted transactions.</td>
</tr>
<tr>
<td>unc_aggregate_data_size_cells</td>
<td>The number of aggregate cells used by uncommitted</td>
</tr>
<tr>
<td></td>
<td>transactions.</td>
</tr>
<tr>
<td>unc_input_data_size_kb</td>
<td>The total disk space used by uncommitted input-</td>
</tr>
<tr>
<td></td>
<td>level data.</td>
</tr>
<tr>
<td>unc_aggregate_data_size_kb</td>
<td>The total disk space occupied by uncommitted aggregate cells.</td>
</tr>
</tbody>
</table>

For a description of the output returned by this statement, see “Aggregate Storage Uncommitted Transaction Information Output” on page 999.
list aggregate_storage compression_info

Display estimated compression for aggregate storage databases when different dimensions are hypothetically used as the compression dimension. These estimates can help you choose the best dimension to use as the compression dimension.

In aggregate storage databases, the compression dimension enables database compression. A good candidate for a compression dimension is one that optimizes data compression and maintains retrieval performance. The following table lists data for all non-attribute dimensions, even though it may not be possible to select them as the compression dimension without significant changes to the outline. For information on the requirements of a compression dimension, see “Understanding the Compression Dimension for Aggregate Storage Databases” in the Oracle Essbase Database Administrator’s Guide.

This statement returns the following output:

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>dimension_name</td>
<td>Each dimension name in the database, hypothetically considered to be the compression dimension.</td>
</tr>
<tr>
<td>is_compression</td>
<td>Indicates whether the dimension is the aggregate storage compression dimension. (There can be only one compression dimension in an aggregate storage database.)</td>
</tr>
<tr>
<td>stored_level0_members</td>
<td>The number of leaf-level members in the dimension. A large number of stored level-0 members in a dimension indicates that it may not perform well as a compression dimension.</td>
</tr>
<tr>
<td>average_bundle_fill</td>
<td>Estimated average number of values per compression dimension bundle. Choosing a compression dimension that has a higher average bundle fill means that the database compresses better.</td>
</tr>
<tr>
<td>average_value_length</td>
<td>Estimated average number of bytes required to store a value. Dimensions with a smaller average value length compress the database better.</td>
</tr>
<tr>
<td>level0_mb</td>
<td>Estimated size of the compressed database, in megabytes. A smaller expected level-0 size indicates that choosing this dimension enables better compression.</td>
</tr>
</tbody>
</table>

Except for the scenario in which there is no compression dimension (None), all estimates assume that all pages are compressed. Since compressed pages require additional overhead that uncompressed pages do not, the estimated level-0 database size for some dimensions may be larger than the value for None.

list alias_table
Get a list of alias tables that are defined for the database.

list alias_names in alias_table
List the alias names defined in an alias table. Alias tables contain sets of aliases for member names and are stored in the database outline. Use this grammar to see a list of alias names defined in the specified table.
list existing_views

Display information about all aggregate views. An aggregate view is a collection of aggregate cells based on the levels of the members within each dimension.

The optional based on query_data clause causes the returned query cost information to be based on the collected cost of actual user queries. If this clause is not used, the default assumption is that all possible queries happen with the same probability.

To use the based on query_data clause, query tracking must first be enabled. To enable query tracking, use alter database <dbs-name> enable query tracking.

For more information about aggregate views, see the Oracle Essbase Database Administrator’s Guide.

list ... file information

Get accurate index and data file information. Provides index and data file names, counts, sizes, and totals, and indicates whether or not each file is presently opened by Essbase. The file size information is accurate. Note that the file size information provided by the Windows operating system for index and data files that reside on NTFS volumes may not be accurate.

list load_buffers

Display a list and description of the data load buffers that exist on an aggregate storage database. See “Using Aggregate Storage Data Load Buffers” on page 1002.

list aso_level_info

Display the aggregation level count for each real dimension in the outline. Aggregation level count is the total number of aggregation levels in a real dimension (including associated attribute dimensions) that exist on an aggregate storage database.

dump|force_dump existing views...

Saves existing views of this database to an aggregation script. This action requires a minimum permission of execute (“Execute” on page 693).

If the specified script name already exists, you can use the force_dump keyword to overwrite it; otherwise, an error is returned if the file name already exists.

If the based on query_data phrase is used, the view selection that is saved will be based on previously collected query-tracking data. You must have enabled query tracking to use this option. For more information about query tracking, see the based on query_data description in execute aggregate selection. See also the Oracle Essbase Database Administrator’s Guide.

Example

query database ASOsamp.Sample list load_buffers;

Display a list and description of the data load buffers that exist on ASOsamp.Sample.

Outline Paging Dimension Statistics

The following columns are the output of the MaxL statement beginning with query database DBS-NAME get opg_state.

This statement is only applicable to databases using aggregate storage.
<table>
<thead>
<tr>
<th>Column Name</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>version</td>
<td>The version of the outline paging section (a Berkeley DB database).</td>
</tr>
<tr>
<td>unique_keys</td>
<td>The number of unique keys in the outline paging section.</td>
</tr>
<tr>
<td>key/data_pairs</td>
<td>The number of key/data pairs in the outline paging section.</td>
</tr>
<tr>
<td>page_size</td>
<td>The page size (in bytes) of the underlying database.</td>
</tr>
<tr>
<td>minimum_keys_per_page</td>
<td>The minimum number of keys per page.</td>
</tr>
<tr>
<td>length_of_fixed_length_records</td>
<td>The length of the fixed-length records (only available when the outline paging section is a Recno database).</td>
</tr>
<tr>
<td>padding_byte_value_for_fixed_length_columns</td>
<td>The padding byte value for fixed-length records.</td>
</tr>
<tr>
<td>levels</td>
<td>Number of levels in the underlying database corresponding to the outline paging section.</td>
</tr>
<tr>
<td>internal_pages</td>
<td>Number of internal pages in the underlying database.</td>
</tr>
<tr>
<td>leaf_pages</td>
<td>Number of leaf pages in the underlying database.</td>
</tr>
<tr>
<td>duplicate_pages</td>
<td>Number of duplicate pages in the underlying database.</td>
</tr>
<tr>
<td>overflow_pages</td>
<td>Number of overflow pages in the underlying database.</td>
</tr>
<tr>
<td>pages_on_free_list</td>
<td>Number of pages on the free list in the underlying database.</td>
</tr>
<tr>
<td>bytes_free_in_internal_pages</td>
<td>Number of bytes free in internal pages of the underlying database.</td>
</tr>
<tr>
<td>bytes_free_in_leaf_pages</td>
<td>Number of bytes free in leaf pages of the underlying database.</td>
</tr>
<tr>
<td>bytes_free_in_duplicate_pages</td>
<td>Number of bytes free in duplicate pages of the underlying database.</td>
</tr>
<tr>
<td>bytes_free_in_overflow_pages</td>
<td>Number of bytes free in overflow pages of the underlying database.</td>
</tr>
</tbody>
</table>

### Aggregate Storage Runtime Statistics

#### Statistics per Dimension

The following MaxL statement:

```
query database asoapp.asodb list aggregate_storage runtime_info;
```

Returns output which includes the following lines:

<table>
<thead>
<tr>
<th>parameter</th>
<th>value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimension [Year] has [3] levels, bits used</td>
<td>4</td>
</tr>
<tr>
<td>Dimension [Measures] has [1] levels, bits</td>
<td>4</td>
</tr>
<tr>
<td>Dimension [Product] has [3] levels, bits u</td>
<td>5</td>
</tr>
<tr>
<td>Dimension [Market] has [3] levels, bits us</td>
<td>5</td>
</tr>
<tr>
<td>Dimension [Scenario] has [1] levels, bits</td>
<td>2</td>
</tr>
<tr>
<td>...</td>
<td></td>
</tr>
</tbody>
</table>
For each dimension, the following statistics are shown:

- The name of the dimension.
- How many stored levels the dimension has, in the aggregate storage perspective. Not all levels are stored in aggregate storage databases; some are virtual levels.
- The number of bits being used in the key for the dimension.

Each cell in an aggregate storage database is stored as a key/value pair. The key length is 8 bytes or a multiple of 8 bytes; for example, 8, 16, 24.

Each key corresponds to a numeric value in the database. The number of bits each dimension uses in the dimensional key is shown in the value column for each dimension.

The number of bits used in each key may amount to less than the bytes needed for physical storage of the key. As an example where this knowledge might be useful, consider a case in which a key is using 65 bits. If you can reduce the key length by one bit to 64, then you can have the key length be 8 bytes instead of 16, an improvement which reduces the overall size of the database. Another use for these statistics might be to examine them to see how much you gain from removing any particular dimension.

**Statistics for the Whole Database**

The same MaxL statement used above also returns the following lines in its output:

<table>
<thead>
<tr>
<th>parameter</th>
<th>value</th>
</tr>
</thead>
<tbody>
<tr>
<td>+------------------------------------------------+-------</td>
<td></td>
</tr>
<tr>
<td>...</td>
<td></td>
</tr>
<tr>
<td>Max. key length (bits)</td>
<td>20</td>
</tr>
<tr>
<td>Max. key length (bytes)</td>
<td>8</td>
</tr>
<tr>
<td>Number of input-level cells</td>
<td>0</td>
</tr>
<tr>
<td>Number of incremental data slices</td>
<td>0</td>
</tr>
<tr>
<td>Number of incremental input cells</td>
<td>0</td>
</tr>
<tr>
<td>Number of aggregate views</td>
<td>0</td>
</tr>
<tr>
<td>Number of aggregate cells</td>
<td>0</td>
</tr>
<tr>
<td>Number of incremental aggregate cells</td>
<td>0</td>
</tr>
<tr>
<td>Cost of querying incr. data (ratio to total cost)</td>
<td>0</td>
</tr>
<tr>
<td>Input-level data size (KB)</td>
<td>0</td>
</tr>
<tr>
<td>Aggregate data size (KB)</td>
<td>0</td>
</tr>
</tbody>
</table>

The whole-database statistics are described in the following table.

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. key length (bits)</td>
<td>The sum of all the bits used by each dimension. For example, there are 20 bits in the key used for dimensions, and the first 4 are used by Year.</td>
</tr>
<tr>
<td>Max. key length (bytes)</td>
<td>How many bytes the key uses per cell.</td>
</tr>
<tr>
<td>Number of input-level cells</td>
<td>The number of existing level-0 cells in the database, including incremental slices.</td>
</tr>
<tr>
<td>Number of incremental data slices</td>
<td>The number of data slices resulting from incremental data loads.</td>
</tr>
</tbody>
</table>
### Table

<table>
<thead>
<tr>
<th>Column Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of incremental input cells</td>
<td>The number of level-0 cells in the incremental data slices. To see the number of unique aggregate views, use the MaxL statement: <code>query database appname.dbname list existing_views;</code></td>
</tr>
<tr>
<td>Number of aggregate views</td>
<td>The number of aggregate views in the database, including those automatically built on incremental slices.</td>
</tr>
<tr>
<td>Number of aggregate cells</td>
<td>The number of cells stored in the database's aggregate views.</td>
</tr>
<tr>
<td>Number of incremental aggregate cells</td>
<td>The number of cells stored in the incremental slices' aggregate views.</td>
</tr>
<tr>
<td>Cost of querying incr. data (ratio to total cost)</td>
<td>The average percentage of query time spent processing incremental data slices. This functionality is useful in deciding when slices should be merged together to improve query performance.</td>
</tr>
<tr>
<td>Input-level data size (KB)</td>
<td>The total disk space used by input-level data.</td>
</tr>
<tr>
<td>Aggregate data size (KB)</td>
<td>The total disk space occupied by aggregate cells.</td>
</tr>
</tbody>
</table>

For input-level and aggregate cells, the above statistics show:

1. Number of cells
2. Disk space occupied by those cells

Because Essbase uses compression, these statistics are useful because it is not always possible to derive disk size based on the number of cells.

### Aggregate Storage Slice Information Output

The following MaxL statement:

```maxl
query database "dmglex4"."basic" list aggregate_storage slice_info;
```

Returns the following output:

```
transaction_id  slice_id  slice_tag  view_id  size_cells  size_kb
+----------------------------------+
   0      0        0       0         38         64
   3      1        66      0          21         32
   3      2        77      0          21         32
```

See [Query Database](#).

### Aggregate Storage Group ID Information Output

The following MaxL statement:

```maxl
998
```
query database "dmglex4"."basic" list aggregate_storage group_id_info;

Returns the following output:

<table>
<thead>
<tr>
<th>group_id</th>
<th>transaction_id</th>
<th>state</th>
<th>time_last_used</th>
<th>time_expired</th>
</tr>
</thead>
<tbody>
<tr>
<td>1234</td>
<td>1</td>
<td>Allocation Done</td>
<td>Wed Jul 20 17:39:57</td>
<td>Wed Jul 20 17:44:57</td>
</tr>
<tr>
<td>FALSE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See Query Database.

Aggregate Storage Uncommitted Transaction Information Output

The following MaxL statement:

query database "dmglex4"."basic" list aggregate_storage uncommitted_transaction_info;

Returns the following output (columns are truncated):

<table>
<thead>
<tr>
<th>unc_trans</th>
<th>unc_data_</th>
<th>unc_input</th>
<th>unc_aggre</th>
<th>unc_aggre</th>
<th>unc_input</th>
<th>unc_aggre</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

See Query Database.

MaxL Use Cases

Creating an Aggregate Storage Sample Using MaxL

Related MaxL statements: create application, create database, create outline, alter database, import data, execute aggregate process,

The following sample MaxL script creates an aggregate storage application and database based on Sample.Basic.

login $1 $2;

spool on to 'maxl_log.txt';

create or replace application Sample2 using aggregate_storage
  comment 'aggregate storage version of Sample';

create database Sample2.Basic2
  comment 'aggregate storage version of Sample Basic';

create or replace outline on aggregate_storage database Sample2.Basic2
  as outline on database sample.basic;
alter database Sample2.Basic2 initialize load buffer with buffer_id 1;

import database Sample2.Basic2 data from server data_file 'C:\Hyperion\products\Essbase\EssbaseServer\app\Sample2\Basic2\calcdat.txt' to load_buffer with buffer_id 1
on error abort;

import database Sample2.Basic2 data from load_buffer with buffer_id 1;

execute aggregate process on database Sample2.Basic2 stopping when total_size exceeds 1.9;

spool off;

logout;

**Loading Data Using Buffers**

Related MaxL Statements

- Alter Database (Aggregate Storage)
- Query Database (Aggregate Storage)
- Import Data (Aggregate Storage)

If you use multiple Import Data (Aggregate Storage) statements to load data values to aggregate storage databases, you can significantly improve performance by loading values to a temporary data load buffer first, with a final write to storage after all data sources have been read.

While the data load buffer exists in memory, you cannot build aggregations or merge slices, as these operations are resource-intensive. You can, however, load data to other data load buffers, and perform queries and other operations on the database. There might be a brief wait for queries, until the full data set is committed to the database and aggregations are created.

The data load buffer exists in memory until the buffer contents are committed to the database or the application is restarted, at which time the buffer is destroyed. Even if the commit operation fails, the buffer is destroyed and the data is not loaded into the database.

Multiple data load buffers can exist on a single aggregate storage database. To save time, you can load data into multiple data load buffers at the same time by using separate MaxL Shell sessions. Although only one data load commit operation on a database can be active at any time, you can commit multiple data load buffers in the same commit operation, which is faster than committing buffers individually.

You can query the database for a list and description of the data load buffers that exist on an aggregate storage database. See “Using Aggregate Storage Data Load Buffers” on page 1002.

Examples:

- Example: Load Multiple Data Sources into a Single Data Load Buffer
- Example: Perform Multiple Data Loads in Parallel
Example: Load Multiple Data Sources into a Single Data Load Buffer

Assume there are three data files that need to be imported. With aggregate storage databases, data loads are most efficient when all data files are loaded using one import operation. Therefore, load buffers are useful when loading more than one data file.

1. Use **Alter Database (Aggregate Storage)** to create a load buffer.

   ```sql
   alter database ASOsamp.Sample
   initialize load_buffer with buffer_id 1;
   ```

2. Load data into the buffer, using the **Import Data (Aggregate Storage)** statement.

   ```sql
   import database ASOsamp.Sample data
   from server data_file 'file_1'
   to load_buffer with buffer_id 1
   on error abort;

   import database ASOsamp.Sample data
   from server data_file 'file_2'
   to load_buffer with buffer_id 1
   on error abort;

   import database ASOsamp.Sample data
   from server data_file 'file_3'
   to load_buffer with buffer_id 1
   on error abort;
   ```

3. Move the data from the buffer into the database.

   ```sql
   import database ASOsamp.Sample data
   from load_buffer with buffer_id 1;
   ```

   The data-load buffer is implicitly destroyed.

4. Assume that in Step 2, after loading 'file_2' into the load buffer, you decided not to load the data. Because the data is in a buffer and not yet in the database, you would simply use **Alter Database (Aggregate Storage)** to destroy the buffer without moving the data to the database.

   ```sql
   alter database ASOsamp.Sample
   destroy load_buffer with buffer_id 1;
   ```

Example: Perform Multiple Data Loads in Parallel

1. In one MaxL Shell session, load data into a buffer with an ID of 1:

   ```sql
   alter database ASOsamp.Sample
   initialize load_buffer with buffer_id 1 resource_usage 0.5;

   import database ASOsamp.Sample data
   from data_file "dataload1.txt"
   to load_buffer with buffer_id 1
   on error abort;
   ```

2. Simultaneously, in another MaxL Shell session, load data into a buffer with an ID of 2:

   ```sql
   alter database ASOsamp.Sample
   initialize load_buffer with buffer_id 2 resource_usage 0.5;

   import database ASOsamp.Sample data
   from data_file "dataload2.txt"
   ```
to load_buffer with buffer_id 2
on error abort;

3. When the data is fully loaded into the data load buffers, use one MaxL statement to commit the contents of both buffers into the database by using a comma separated list of buffer IDs:

   import database ASOsamp.Sample data
   from load_buffer with buffer_id 1, 2;

Using Aggregate Storage Data Load Buffers

Related MaxL Statement:

Query Database (Aggregate Storage)

Use the following MaxL statement to get a list and description of the data load buffers that exist on an aggregate storage database.

query database appname.dbname list load_buffers;

This statement returns the following information about each existing data load buffer:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>buffer_id</td>
<td>ID of a data load buffer (a number between 1 and 4294967296).</td>
</tr>
<tr>
<td>internal</td>
<td>A Boolean that specifies whether the data load buffer was created internally by Essbase (TRUE) or by a user (FALSE).</td>
</tr>
<tr>
<td>active</td>
<td>A Boolean that specifies whether the data load buffer is currently in use by a data load operation.</td>
</tr>
<tr>
<td>resource_usage</td>
<td>The percentage (a number between .01 and 1.0 inclusive) of the aggregate storage cache that the data load buffer is allowed to use.</td>
</tr>
<tr>
<td>aggregation method</td>
<td>One of the methods used to combine multiple values for the same cell within the buffer:</td>
</tr>
<tr>
<td></td>
<td>- AGGREGATE_SUM: Add values when the buffer contains multiple values for the same cell.</td>
</tr>
<tr>
<td></td>
<td>- AGGREGATE_USE_LAST: Combine duplicate cells by using the value of the cell that was loaded last into the load buffer.</td>
</tr>
<tr>
<td>ignore_missings</td>
<td>A Boolean that specifies whether to ignore #MI values in the incoming data stream.</td>
</tr>
<tr>
<td>ignore_zeros</td>
<td>A Boolean that specifies whether to ignore zeros in the incoming data stream.</td>
</tr>
</tbody>
</table>

Specifying Port Numbers in Partition Host Names

You can install multiple agents on a single Windows computer. When multiple agents are installed on a single computer, you can connect to an agent by specifying the host name and the agent port number, in the form: `hostname:agentPort`.

When creating partitions across different ports, you must do the following:

1. Specify the current `hostname:agentPort` when you log in to Essbase. For example, `login partitionuser mypassword on 'localhost:3300';`
2. Specify the target `hostName:agentPort` as part of the create, alter, drop, or refresh partition statement. For example,

```sql
create or replace transparent partition sampeast.east
    area '@CHILDREN("Eastern Region"), @CHILDREN(Qtr1)' sourceArea
to samppart.company at 'localhost:2200'
as partitionuser identified by mypassword
    area '@CHILDREN(East) @CHILDREN(Qtr1)' targetArea;
```

If you log on to Essbase specifying the agent port, then you must specify the agent port for partition operations. If you do not log in specifying the agent port, then do not specify the agent port for partition operations.

The first DBS-NAME specified in a statement is the local database, and the second DBS-NAME is the remote database. Only the remote (second) DBS-NAME in any partition statement can be specified using an agent port. Therefore, when dealing with multiple agent ports, always put the side of the partition that you aren’t logged on to second in the statement, so that you can specify which `hostName:agentPort` it is on.

See Also

“Using Host Name Aliases When Partitioning” on page 1003

### Using Host Name Aliases When Partitioning

If you want to use network aliases for the data source or data target names, you must make sure that the aliases are propagated to all computers on your system. Otherwise, use the full server name.

To propagate an alias to all the computers on your system, edit the `/etc/hosts` file (on UNIX systems) or the `%WINDIR%/system32/drivers/etc/hosts` file (on Windows systems), adding an entry with the IP address, followed by the host name, followed by the alias.

For example, if you want to use an alias `abcdefg.hijk.123` for a system with host name `hostname.domainname` having IP address `172.234.23.1`, then the host file entry should be:

```
172.234.23.1 hostname.domainname abcdefg.hijk.123
```

In case of multiple aliases, append the aliases following the hostname. For example, if you want to use multiple aliases `abcdefg.hijk.123` and `lmnopqrs.tuvw.456` for a system with host name `hostname.domainname` having IP address `172.234.23.1`, then the host file entries should be:

```
172.234.23.1 hostname.domainname abcdefg.hijk.123 lmnopqrs.tuvw.456
172.234.23.1 hostname.domainname lmnopqrs.tuvw.456 abcdefg.hijk.123
```

### Notes

- Do not use localhost as an alias to specify source and target server names.
- The user should have root or admin privileges for the system to edit the hosts file.
Partitioning and SSL

The following considerations apply when partitioning in secure (SSL) mode:

- The partition source and target must have the same security protocol; for example, both or neither use SSL.
- To enable Essbase to use SSL connectivity, you must set `ENABLESECUREMODE` to TRUE.
- Consider setting `CLIENTPREFERREDMODE` to SECURE.

    If `CLIENTPREFERREDMODE` is not set, or is set to FALSE, but `ENABLESECUREMODE` is set to TRUE, you can securely create and refresh partitions in MaxL by adding `:secure` to the HOST-NAME string. For example,

```
login esbuser esbpassword on "localhost:6423:secure";
```

Forcing Deletion of Partitions

The `force` keyword used at the end of the `drop partition` statement specifies that the source half of a partition definition should be dropped regardless of whether the target half is missing or invalid.

For example, in the following session, assume there is a partition definition between app1.source and app2.target, but the app2.target database has been dropped. An ordinary attempt to drop the partition definition fails:

```
MAXL> drop transparent partition app1.source to app2.target;
```

```
OK/INFO - 1053012 - Object source is locked by user system.
OK/INFO - 1051034 - Logging in user System.
OK/INFO - 1051035 - Last login on Friday, January 10, 2005 2:28:09 PM.
ERROR - 1051032 - Database target does not exist.
OK/INFO - 1053013 - Object source unlocked by user system.
OK/INFO - 1051037 - Logging out user system, active for 0 minutes.
```

In the second attempt, the `force` keyword allows the invalid source partition to be dropped:

```
MAXL> drop transparent partition app1.source to app2.target force;
```

```
OK/INFO - 1053012 - Object source is locked by user system.
OK/INFO - 1051034 - Logging in user System.
OK/INFO - 1051035 - Last login on Friday, January 10, 2005 2:31:50 PM.
ERROR - 1051032 - Database target does not exist.
OK/INFO - 1051037 - Logging out user system, active for 0 minutes.
OK/INFO - 1053013 - Object source unlocked by user system.
OK/INFO - 1241125 - Partition dropped.
```
**Note:** The force keyword only works to drop a partition definition when the source half of the partition definition remains valid. In other words, if the source database is deleted, the partition cannot be dropped from the dangling target.

## Metadata Filtering

**Related MaxL statements:** `create filter`, `alter filter`.

Metadata filtering provides an additional layer of security in addition to data filtering. With metadata filtering, an administrator can remove outline members from a user’s view, providing access only to those members that are of interest to the user.

When a filter is used to apply MetaRead permission on a member,

1. Data for all ancestors of that member are hidden from the filter user’s view.
2. Data and metadata (member names) for all siblings of that member are hidden from the filter user’s view.

### Example

The following report script for Sample.Basic:

```maxl
//Meta02.rep
<COLUMN (Year, Product)
<CHILDREN Cola
<ROW (Market)
<ICHILDREN West
!
```

under normal unfiltered conditions returns

```
Year 100-10 Measures Scenario
California    3,498
Oregon       159
Washington  679
Utah         275
Nevada     (18)
West         4,593
```

But with the following filter granted to an otherwise read-access user,

```maxl
create or replace filter sample.basic.meta02
meta_read on '"California","Oregon"
;
```

the report script then returns:

```
Year 100-10 Measures Scenario
California    3,498
Oregon       159
West        #Missing
```

In summary, MetaRead permission on California and Oregon means that:
1. The affected user can see no data for ancestors of California and Oregon members. West data shows only #Missing (or #NoAccess, in a grid client interface).

2. The affected user can see no sibling metadata (or data) for siblings of California and Oregon. In other words, the user sees only the western states for which the filter gives MetaRead permission.

**Overlapping Metadata Filter Definitions**

You should define a MetaRead filter using multiple rows only when the affected member set in any given row (the metaread members and their ancestors) has no overlap with MetaRead members in other rows. Oracle recommends that you specify one dimension per row in filters that contain MetaRead on multiple rows. However, as long as there is no overlap between the ancestors and MetaRead members, it is still valid to specify different member sets of one dimension into multiple MetaRead rows.

For example, in Sample.Basic, the following filter definition has overlap conflicts:

<table>
<thead>
<tr>
<th>Access</th>
<th>Member Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>MetaRead</td>
<td>California</td>
</tr>
<tr>
<td>MetaRead</td>
<td>West</td>
</tr>
</tbody>
</table>

In the first row, applying MetaRead to California has the effect of allowing access to California but blocking access to its ancestors. Therefore, the MetaRead access to West is ignored; users who are assigned this filter will have no access to West.

If you wish to assign MetaRead access to West as well as California, then the appropriate method is to combine them into one row:

<table>
<thead>
<tr>
<th>Access</th>
<th>Member Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>MetaRead</td>
<td>California,West</td>
</tr>
</tbody>
</table>

**Examples of Triggers**

Related MaxL statements: alter trigger, create trigger, display trigger, drop trigger.

The following examples are based on the Sample.Basic database.

**Note:** You cannot define a trigger that requires data from Dynamic Calc members or members from another partition.

**Example 1: Tracking Sales for January**

Example 1 tracks the Actual, Sales value for the following month, product, and region:

- January (Year dimension member Jan)
- Colas (Product dimension member 100)
In the Eastern region (Market dimension member East)

When the current member being calculated is Jan, and when the Actual, Sales value of Colas for January exceeds 20, the example logs an entry in the file Trigger_jan_Sales.

cREATE OR REPLACE TRIGGER Sample.Basic.Trigger_Jan_20
WHERE
  (Jan, Sales, [100], East, Actual)
WHEN
  Jan > 20 AND Is(Year.CurrentMember, Jan)
THEN spool Trigger_Jan_20
END;

Example 2: Tracking Sales for Quarter 1

Example 2 tracks the Actual, Sales value for the following months, product, and region:

- January, February, March (The children of Year dimension member Qtr1)
- Colas (Product dimension member 100)
- In the Eastern region (Market dimension member East)

When the current member being calculated is Jan, Feb or Mar, and when the Actual, Sales value of Colas for any of the months January, February, or March exceeds 20, the example logs an entry in the file Trigger_Jan_Sales_20, Trigger_Feb_Sales_20, or Trigger_Mar_Sales_20.

cREATE OR REPLACE TRIGGER Sample.Basic.Trigger_Qtr1_Sales
WHERE
  Crossjoin(  
    {Qtr1.children},
    {([Measures].[Sales], [Product].[100], [Market].[East], [Scenario].[Actual])}
  )
WHEN
  Year.Jan > 20 and is(Year.currentmember, Jan)
THEN spool Trigger_Jan_Sales_20
WHEN
  Year.Feb > 20 and is(Year.currentmember, Feb)
THEN spool Trigger_Feb_Sales_20
WHEN
  Year.Mar > 20 and is(Year.currentmember, Mar)
THEN spool Trigger_Mar_Sales_20
END;

Example 3: Tracking Inventory Level

Example 3 tracks the inventory level for the following product, region, and months:

- Colas (product 100)
- In the eastern region (market East)
- For January, February, and March (the children of Qtr1)

If the inventory of Colas in the eastern region falls below 500,000, the example trigger sends an email to recipient@company.com.
create or replace trigger Sample.Basic.Inventory_east
where CrossJoin(
    {[Qtr1].children},
    {[East],[100],[Ending Inventory]})
)
when [Ending Inventory] < 500000 then
mail ({smtp_server.company.com},{sender@company.com},
    {recipient@company.com},
    [Subject of E-Mail])
end;
Overview of MDX

MDX is a language-based data analysis mechanism to Essbase databases. MDX exhibits all of the following characteristics:

- Provides advanced data extraction capability
- Provides advanced reporting capability
- Includes functions for identifying and manipulating very specific subsets of data
- Is a data-manipulation language, complementing MaxL DDL (the data-definition language for Essbase)
- Utilizes the platform-independent XML for Analysis specification

MDX is a joint specification of the XMLA Council, who are the XML for Analysis founding members.

MDX is a language for anyone who needs to develop scripts or applications to query and report against data and metadata in Essbase databases. The following prerequisite knowledge is assumed:

- A working knowledge of the operating system your server uses and the ones your clients use.
- An understanding of Essbase concepts and features.
- Familiarity with XML.
In order for Essbase to receive MDX statements, you must pass the statements to Essbase. To pass statements, use either the MaxL Shell (essmsh) or MDX Script Editor in Administration Services. When using the MaxL Shell, terminate all statements with a semicolon. Results are returned in the form of a grid.

**MDX Query Format**

Every query using the SELECT statement has the following basic format. Items in [brackets] are optional.

```
[<with_section>]
SELECT [<axis_specification> [, <axis_specification>...]]
[FROM [<cube_specification>]]
[WHERE [<slicer_specification>]]
```

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>&lt;with_section&gt;</code></td>
<td>An optional section, beginning with the keyword WITH, in which you can define referenceable sets or members.</td>
</tr>
<tr>
<td>SELECT</td>
<td>A literal keyword that must precede axis specifications.</td>
</tr>
<tr>
<td>[&lt;axis_specification&gt; [, &lt;axis_specification&gt;...]]</td>
<td>Any number of comma-separated axis specifications. Axes represent an n dimensional cube schema. Each axis is conceptually a framework for retrieving a data set; for example, one axis could be thought of as a column, and the next could be considered a row. See “MDX Axis Specifications” on page 1028 for more information.</td>
</tr>
<tr>
<td>FROM</td>
<td>A literal keyword that must precede the cube specification.</td>
</tr>
<tr>
<td><code>&lt;cube_specification&gt;</code></td>
<td>The name of the database from which to select. If left blank, the current database context is assumed.</td>
</tr>
<tr>
<td>WHERE</td>
<td>A literal keyword that must precede the slicer specification, if one is used.</td>
</tr>
<tr>
<td><code>&lt;slicer_specification&gt;</code></td>
<td>A tuple, member, or set representing any further level of filtering you want done on the results. For example, you may want the entire query to apply only to Actual Sales in the Sample Basic database, excluding budgeted sales. The WHERE clause might look like the following: WHERE ([Scenario].[Actual], [Measures].[Sales])</td>
</tr>
</tbody>
</table>

**MDX Syntax and Grammar Rules**

The following topics describe syntax and grammar rules for MDX functions:

- “Understanding BNF Notation” on page 1011
- “MDX Grammar Rules” on page 1012
- “MDX Syntax for Specifying Duplicate Member Names and Aliases” on page 1026
- “MDX Axis Specifications” on page 1028
- “MDX Slicer Specification” on page 1031
- “MDX Cube Specification” on page 1031
- “MDX Set Specification” on page 1032
Understanding BNF Notation

This section briefly explains the meaning of symbolic notations used to describe grammar in this document. The query grammar rules are presented using Backus-Naur Form (BNF) syntax notation.

The following table of conventions is not a complete description of BNF, but it can help you read the grammar rules presented in this document.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;word&gt;</td>
<td>The word presented in angle brackets is not meant to be literally used in a statement; its rules are further defined elsewhere.</td>
<td>When reading the following syntax, SELECT &lt;axis-specification&gt; ... you know that axis-specification is not meant to be typed literally into the statement. The rules for axis-specification are further defined in the documentation (look for &lt;axis-specification&gt; ::= to get the definition).</td>
</tr>
</tbody>
</table>
| ::=          | A definition, or BNF "production." The symbol ::= can be interpreted to mean "is defined as." The word referred to elsewhere as the placeholder <word> is defined here, directly following <word> ::=. | The following syntax tells you that a tuple is defined as either one member in parenthesis, or two or more comma-separated members in parenthesis.  
<tuple> ::= '(' <member> [,<member>]... ')' |
| | The pipe symbol or "OR" symbol. | The following syntax: ON COLUMNS | ROWS | PAGES | CHAPTERS | SECTIONS can be used to build any of the following literal statement parts:  
| | | ● ON COLUMNS  
| | | ● ON ROWS  
| | | ● ON PAGES  
| | | ● ON CHAPTERS  
| | | ● ON SECTIONS  

<table>
<thead>
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</tr>
</thead>
</table>
| **WORD** (Text in all caps.) | A query-grammar keyword, to be typed literally. | When reading the following syntax,  
SELECT <axis-specification> ...  
you know that SELECT is a keyword, and therefore should be typed literally into its proper location in the statement. |
| [<word>] or [word] or [WORD] (Square brackets enclosing some word or item.) | An optional element. | In the following high-level query syntax,  
[<with_section>]  
SELECT [axis_specification>  
[, axis_specification>...]]  
FROM [cube_specification>]  
[WHERE slicer_specification>]  

everything, technically, is optional except for SELECT and FROM. Therefore, a query containing only the words  
SELECT FROM  
would in fact be valid; however, it would select one consolidated data value from its best estimate of a cube context, which might not be very useful. |
| [, word>...] (A comma, a word, and an ellipsis, all enclosed in square brackets.) | You can optionally append a comma-separated list of one or more words. | The following syntax  
SELECT [axis_specification>  
[, axis_specification<...]]  
indicates that multiple, comma-separated axis specifications can optionally be supplied to the SELECT statement. |

**MDX Grammar Rules**

The following is a comprehensive view of the syntax for MDX in Essbase.

In this document, the syntax for MDX is illustrated using **BNF notation**.

```
[<with_section>]  
SELECT [axis_specification>  
[, axis_specification>...]]  
[FROM [cube_specification>]  
[WHERE [slicer_specification> [.dim Props>]]  

<cube_specification> ::=  
  [' ident_or_string>ident_or_string> ']  
  | <delim_ident>ident_or_string>  

<delim_ident> ::=  
  [' ident> ']  
  | ident_or_string>  

<ident_or_string> ::=  
  ' ident>  
  | ident  
```
Note: <ident> refers to a valid Essbase application/database name. In the cube specification, if there are two identifiers, the first one should be application name and the second one should be database name. For example, all of the following are valid identifiers:

- Sample.Basic
- [Sample.Basic]
- [Sample].[Basic]
- 'Sample'. 'Basic'

<axis_specification> ::= [NON EMPTY] <set> [<dim_props>] ON COLUMNS | ROWS | PAGES | CHAPTERS | SECTIONS | AXIS (<unsigned_integer>)

<dim_props> ::= [DIMENSION] PROPERTIES <property> [, <property>...]

<slicer_specification> ::= <set> | <tuple> | <member>

Note: The cardinality of the <set> in the slicer should be 1.

A member name can be specified in the following ways:

1. By specifying the actual name or the alias; for example, Cola, Actual, COGS, and [100].

   If the member name starts with number or contains spaces, it should be within brackets; for example, [100]. Brackets are recommended for all member names, for clarity and code readability.

   For attribute members, the long name (qualified to uniquely identify the member) should be used; for example, [Ounces_12] instead of just [12].

2. By specifying dimension name or any one of the ancestor member names as a prefix to the member name; for example, [Product].[100-10] and [Diet].[100-10] This is a recommended practice for all member names, as it eliminates ambiguity and enables you to refer accurately to shared members.

   Note: Use only one ancestor in the qualification. Essbase returns an error if multiple ancestors are included. For example, [Market].[New York] is a valid name for New York, and so is [East].[New York]. However, [Market].[East].[New York] returns an error.

3. By specifying the name of a calculated member defined in the WITH section.
4. For outlines that have duplicate member names enabled, see also “MDX Syntax for Specifying Duplicate Member Names and Aliases” on page 1026.

```
<member_value_expression> ::= 
    Parent ( <member> [,<hierarchy>] ) 
    | <member>.Parent [(<hierarchy>)] 
    |FirstChild ( <member> ) 
    | <member>.FirstChild 
    | LastChild ( <member> ) 
    | <member>.LastChild 
    | PrevMember ( <member> [,<layertype>] ) 
    | <member>.PrevMember [(<layertype>)] 
    | NextMember ( <member> [,<layertype>] ) 
    | <member>.NextMember [(<layertype>)] 
    | FirstSibling ( <member> [,<hierarchy>] ) 
    | <member>.FirstSibling [(<hierarchy>)] 
    | LastSibling ( <member> [,<hierarchy>] ) 
    | <member>.LastSibling [(<hierarchy>)] 
    | Ancestor ( <member> , <layer> | <index> [,<hierarchy>] ) 
    | Lead ( <member> , <index> [,<layertype>] [,<hierarchy>] ) 
    | <member>.Lead ( <index> [,<layertype>] [,<hierarchy>] ) 
    | Lag ( <member> , <index> [,<layertype>] [,<hierarchy>] ) 
    | <member>.Lag ( <index> [,<layertype>] [,<hierarchy>] ) 
    | CurrentAxisMember () 
    | CurrentMember ( <dim_hier> ) 
    | <dim_hier>.CurrentMember 
    | DefaultMember ( <dim_hier> ) 
    | <dim_hier>.DefaultMember 
    | OpeningPeriod ( [<layer> [,<member>]] ) 
    | ClosingPeriod ( [<layer> [,<member>]] ) 
    | Cousin ( <member>, <member> ) 
    | ParallelPeriod( [<layer> [,<index> [,<member> [,<hierarchy>]]]] ) 
    | Item ( <tuple>, <index> ) 
    | tuple[.Item] ( <index> ) 
    | LinkMember ( <member>, <hierarchy> ) 
    | member.LinkMember ( <hierarchy> ) 
    | DateToMember (<date>, <dim_hier> [,<genlev>]) 
    | StrToMbr (<string_value_expr[,<dimension> [,MEMBER_NAMEONLY | 
    | <alias_table_name>]])) 

<dim_hier> ::= <dimension> 

<dimension> ::= 
    <dimension-name-specification> 
    | Dimension ( <member> | <layer> ) 
    | <member>.DIMENSION 
    | <layer>.DIMENSION 

<dimension-name-specification> ::= 
    Same as <member_name-specification> case 1. 
    e.g. Product, [Product] 

<hierarchy> ::= 

A hierarchy refers to a root member of an alternate hierarchy, which is always at generation 2 of a dimension. Member value expressions are not allowed as hierarchy
arguments.

<layertype> ::=  
    GENERATION | LEVEL

[layer] ::=  
    <layer-name-specification>  
    | Levels ( <dim_hier>, <index> )  
    | <dim_hier>.Levels ( <index> )  
    | Generations ( <dim_hier>, <index> )  
    | <dim_hier>.Generations ( <index> )  
    | <member>.Generation  
    | <member>.Level

[layer-name-specification] ::=  

A layer name can be specified in the following ways:

1. By specifying the generation or level names; for example, States or Regions.  
   The generation or level name can be within brackets; for example, [Regions]. Using 
   brackets is recommended.

2. By specifying the dimension name along with the generation or level name; for example, 
   Market.Regions and [Market].[States]. This naming convention is recommended.

<tuple> ::=  
    <member>  
    | ( <member> [,<member>.. ] )  
    | <tuple_value_expression>

A tuple is a collection of member(s) with the restriction that no two members can be from the 
same dimension. For example, (Actual, Sales) is a tuple. (Actual, Budget) is not a tuple, 
as both members are from the same dimension.

<tuple_value_expression> ::=  
    CurrentTuple ( <set> )  
    | <set>.Current  
    | Item ( <set>, <index> )  
    | <set> [.Item] ( <index> )

A set is a collection of tuples where members in all tuples must be from the same dimensions 
and in the same order.

For example, {(Actual, Sales), (Budget, COGS)} is a set.

{(Actual, Sales), (COGS, [100])} is not a set because the second tuple has members from Scenario and Product dimensions, whereas the first tuple has members from Scenario and Measures dimensions.

{(Actual, Sales), (COGS, Budget)} is not a set because the second tuple has members from Scenario and Measures dimensions, whereas the first tuple has members from Measures and Scenario dimensions (the order of dimensions is different).

Note: The size of an input set to a function has range between 0 and 4294967295 tuples.
<set> ::= 
  MemberRange ( <member>, <member> 
                   [,<layertype>] [,<hierarchy>] ) 
| <member> : <member> 
| { <tuple>|<set> [, <tuple>|<set>].. } 
| ( <set> ) 
| <set_value_expression> 

<set_value_expression> ::= 
| Members ( <dim_hier> ) 
  | <dim_hier>.Members 
| Members ( <layer> ) 
  | <layer>.Members 
| Children ( <member> ) 
  | <member>.Children 
| CrossJoin ( <set> , <set> ) 
| Union ( <set> , <set> [,ALL] ) 
| Intersect ( <set> , <set> [,ALL]) 
| Except ( <set> , <set> [,ALL]) 
| Extract ( <set> , <dim_hier> [, <dim_hier>].. ) 
| Head ( <set> [, <index>]) 
| Subset ( <set> , <index> [,index]) 
| Tail ( <set> [,index]) 
| Distinct ( <set> ) 
| Siblings ( <member> [, <selection_flags>, [INCLUDEMEMBER|EXCLUDEMEMBER]] ) 
  | <member>.Siblings 
| Descendants ( <member> , [{<layer>|<index>},{ <Desc_flags>}] ) 
| PeriodsToDate ( [{<layer>},{ <member> }[,<hierarchy>]] ] ) 
| LastPeriods ( <index> [, <member> [,<hierarchy>]] ) 
| xTD ( [member]) 
  where xTD could be {HTD|YTD|STD|PTD|QTD|MTD|WTD|DTD} 
| Hierarchize ( <set> [,POST] ) 
| Filter ( <set> , <search_condition> ) 
| Order ( <set> , <value_expression> [,BASC | BDESC] ) 
| TopCount ( <set> , <index> [,<numeric_value_expression>] ) 
| BottomCount ( <set> , <index> [,<numeric_value_expression>] ) 
| TopSum ( <set> , <numeric_value_expression> 
  , <numeric_value_expression> ) 
| BottomSum ( <set> , <numeric_value_expression> 
  , <numeric_value_expression> ) 
| TopPercent ( <set> , <percentage> , <numeric_value_expression> ) 
| BottomPercent ( <set> , <percentage> , <numeric_value_expression> ) 
| Generate ( <set> , <set> [,ALL]) 
| DrillDownMember ( <set> , <set>[, RECURSIVE] ) 
| DrillUpMember ( <set> , <set> ) 
| DrillDownByLayer ( <set> [, {<layer>|<index>}] ) 
  | DrilldownLevel ( <set> [, {<layer>|<index>}] ) 
| DrillUpByLayer ( <set> [, <layer>] ) 
  | DrillupLevel ( <set> [, <layer>] ) 
| WithAttr ( <member> , <character_string_literal>, <value_expression> ) 
| WithAttrEx ( <member> , <character_string_literal>, <value_expression>, ANY, 
  <tuple>|<member> [, <tuple>|<member>] ) 
| Attribute ( <member> ) 
| AttributeEx ( <member> , <character_string_literal>, <value_expression> ) 
| Uda ( <dimension> | <member> , <string_value_expression> ) 
| RelMemberRange ( <member>, <prevcount>, <nextcount>,
| Ancestors ( <member>, <layer>|<index> ) |
| <conditional_expression> |

**Note:** <conditional_expression> is expected to return a <set> in the above production.

<Desc_flags> ::= SELF | AFTER | BEFORE | BEFORE_AND_AFTER | SELF_AND_AFTER | SELF_AND_BEFORE | SELF_BEFORE_AFTER | LEAVES

<selection_flags> ::= LEFT | RIGHT | ALL

/value_expression> ::= <numeric_value_expression> | <string_value_expression>

<numeric_value_expression> ::= <term> | <numeric_value_expression> + <term> | <numeric_value_expression> - <term>

<term> ::= <factor> | <term> * <factor> | <term> / <factor>

<factor> ::= [+ | -]<numeric_primary>

<numeric_primary> ::= <value_expr_primary> | <numeric_value_function> | <mathematical_function> | <date_function>

**Note:** The data type of <value_expr_primary> in the above production must be numeric.

<base> ::= <numeric_value_expression> <power> ::= <numeric_value_expression> <mathematical_function> ::= Abs ( <numeric_value_expression> ) | Exp ( <numeric_value_expression> )
Factorial ( <index> )
Int ( <numeric_value_expression> )
Ln ( <numeric_value_expression> )
Log ( <numeric_value_expression> [, , <base>] )
Log10 ( <numeric_value_expression> )
Mod ( <numeric_value_expression>, <numeric_value_expression> )
Power ( <numeric_value_expression>, <power> )
Remainder ( <numeric_value_expression> )
Stddev ( <set> [, <numeric_value_expression> [,IncludeEmpty] ] )
Stddevp ( <set> [, <numeric_value_expression> [,IncludeEmpty] ] )
Round ( <numeric_value_expression>, <index> )
Truncate ( <numeric_value_expression> )

<date_function> ::= 
  DateRoll(<date>, <date_part>, <index>)
| DateDiff(<date>, <date>, <date_part>)
| DatePart(<date>, <date_part>)
| Today()
| TodateEx(<date_format_string>, <string>)
| GetFirstDate(<member>)
| GetLastDate(<member>)
| UnixDate(<numeric_value_expression>)
| GetFirstDay(<date>, <date_part>)
| GetLastDay(<date>, <date_part>)
| GetNextDay(<date>, <week-day-specification>, [0|1] )
| GetRoundDate(<date>, <date_part>)

The <date> argument is a number representing the input date. The number is the number of seconds elapsed since midnight, January 1, 1970. To retrieve this number, use any of the following functions: Today(), TodateEx(), GetFirstDate(), GetLastDate().

<date_part> ::= 
  DP_YEAR
  | DP_QUARTER
  | DP_MONTH
  | DP_WEEK
  | DP_DAY
  | DP_DAYOFYEAR
  | DP_WEEKDAY

Note: DP_DAYOFYEAR and DP_WEEKDAY are not valid arguments in functions DateRoll and DateDiff.

<week-day-specification> ::= 
  1 | 2 | 3 | 4 | 5 | 6 | 7
e.g. 1 implying Sunday, 7 implying Saturday

$date_format_string$ ::= 
  "mon dd yyyy"
  | "Month dd yyyy"
  | "mm/dd/yy"
  | "mm/dd/yyyy"
<string_value_expression> ::=  
  <string_value_primary>  
  | FormatDate (<date>, <date_format_string>)  
  | Concat (<string_value_expression> [<, string_value_expression> ...])  
  | Left (<string_value_expression>, <length>)  
  | Right (<string_value_expression>, <length>)  
  | Substring (<string_value_expression>, <index> [,[<index>]])  
  | Upper (<string_value_expression>)  
  | Lower (<string_value_expression>)  
  | RTrim (<string_value_expression>)  
  | LTrim (<string_value_expression>)  
  | NumToStr (<value_expr_primary>)  
  | EnumText (<textlistname> | <member>, <numeric_value_expression>)

<value_expr_primary> ::=  
  <unsigned_numeric_literal>  
  | ( <numeric_value_expression> )  
  | <tuple>[.RealValue]  
  | <member>[.RealValue]  
  | <tuple> [.Value]  
  | <member>[.Value]  
  | CellValue()  
  | <property>  
  | <conditional_expression>  
  | MISSING

<string_value_primary> ::=  
  <character_string_literal>  
  | <string_property>

Notes

● <conditional_expression> is expected to return a numeric value in the above production.

● String literals are delimited by double quotes("").

<conditional_expression> ::=  
  <if_expression>
| <case_expression> |
| CoalesceEmpty ( <numeric_value_expression>, <numeric_value_expression> ) |

<case_expression> ::= <simple_case> | <searched_case>

<if_expression> ::= IIF ( <search_condition>, <true_part>, <false_part> )
<true_part> ::= <value_expression> | <set>
<false_part> ::= <value_expression> | <set>

<simple_case> ::= Case <case_operand>
               [ <simple_when_clause>... [ <else_clause> ] ]
END

<simple_when_clause> ::= WHEN <when_operand> THEN <result>
<else_clause> ::= ELSE <value_expression> | <set>

<case_operand> ::= <value_expression>
<when_operand> ::= <value_expression>
<result> ::= <value_expression> | <set>

<searched_case> ::= Case
               [ <searched_when_clause>... [ <else_clause> ] ]
END

<searched_when_clause> ::= WHEN <search_condition> THEN <result>
<numeric_value_function> ::= Avg ( <set> [, <numeric_value_expression>] [, IncludeEmpty] )
| Max ( <set> [, <numeric_value_expression>])
| Min ( <set> [, <numeric_value_expression>])
| Sum ( <set> [, <numeric_value_expression>])
| NonEmptyCount ( <set> [, <numeric_value_expression>])
| Count ( <set> [, IncludeEmpty] )
| <dts-specification> ::= DTS ( <dts-operation-specification>, <member> )
| <dts-operation-specification> ::= HTD|YTD|STD|PTD|QTD|MTD|WTD|DTD
| Todate ( <string_value_expression> , <string_value_expression> )
| Ordinal ( <layer> )
| Aggregate ( <set> [, <member-name-specification>] )
| Rank ( <member_or_tuple>, <set> [, <numeric_value_expression> [, IncludeEmpty] ]
| [, <rank_flags>]]

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| NTile (<member_or_tuple>, <set>, <index>, <numeric_value_expression>) |
| Percentile (<set>, <numeric_value_expression>, <numeric_value_expression>) |
| Median (<set>, <numeric_value_expression>) |
| Len (<string_value_expression>) |
| InStr (<index>, <string_value_expression>, <string_value_expression>, <numeric_value_expression>) |
| StrToNum (<string_value_expression>) |
| EnumValue (<enum_string>) |
| JulianDate (<date>) |

**Note:** The `<member-name-specification>` in Aggregate function should refer to an Accounts dimension member name.

**Note:** `<enum_string>` represents an enumerated string. It should be in the following format. The member should refer to a member of type text.

<enum_string> ::= 
  <textlist-name-specification>.<character_string_literal>
  | <member>.<character_string_literal>

<textlist-name-specification> ::= 
  Same as `<member_name-specification>` case 1. The text list name specification should refer to the name of a text list object.
  e.g. AccountStatus, [AccountStatus]

<member_or_tuple> ::= 
  <member>
  | <tuple>

<index> ::= 
  <numeric_value_expression>

**Note:** The input `<index>` argument has range between -2147483647 and 2147483647.

<percentage> ::= 
  <numeric_value_expression>

<search_condition> ::= 
  <bool_term>
  | <search_condition> OR <bool_term>

<bool_term> ::= 
  <bool_factor>
  | <bool_term> AND <bool_factor>

<bool_factor> ::= 
  <bool_primary>
  | NOT <bool_primary>

<bool_primary> ::= 
  <value_expression> [=|>|<|<>|=|>=|<=] <value_expression>
Note: Only properties with boolean values can be used as `<bool_primary>`.

`<AcctTag> ::=`  
  `FIRST`  
  `| LAST`  
  `| AVERAGE`  
  `| EXPENSE`  
  `| TWO-PASS`

`<rank_flags> ::=`  
  `ORDINALRANK`  
  `| DENSERANK`  
  `| PERCENTRANK`

`<with_section> ::=`  
  `WITH <frml_spec>`

`<frml_spec> ::=`  
  `<single_frml_spec>`  
  `<frml_spec> <single_frml_spec>`

`<single_frml_spec> ::=`  
  `<set_spec>`  
  `<perspective_specification>`  
  `<member_specification>`

`<set_spec> ::=`  
  `SET <set_name> AS ' <set> '`

`<set_name> ::=`  

The name of the set to be defined. The name cannot be same as any names/aliases of database members, generation/level names, or UDA names.

`<perspective_specification> ::=`
PERSPECTIVE REALITY | <tuple> FOR <dimension-name-specification>

<member_specification> ::= 
  MEMBER <member_name> AS ' 
  <nonempty_specification> 
  <numeric_value_expression> ' 
  [, <solve_order_specification>]

<member_name> ::= 
  <dimension-name-specification>..<calculated member name>

<calculated member name> ::= 
Names used for calculated members cannot be the same as any names/aliases of database members, generation/level names, or UDA names.

<solve_order_specification> ::= 
  SOLVE_ORDER = <unsigned_integer>

<property> ::= 
  <member>..<property_specification> 
  | <dim_hier>..<property_specification> 
  | <property_specification> 
  | <property_expr_specification>

Note: The last three alternatives in the above rule can be used only inside the DIMENSION PROPERTIES section.

Assume an axis has 2 dimensions, Product and Market. Using DIMENSION PROPERTIES Gen_number, [Product].level_number, the generation number will be present in the output for the members of both dimensions, whereas the level number will be present only for the members of the Product dimension.

Within a value expression, [Product].Gen_number refers to the generation number of the member named [Product].

[Product].CurrentMember.Gen_number refers to the generation number of the current member of the [Product] dimension.

For example,
Filter ([Product].Members, [Product].Gen_number > 1)
returns an empty set. Product.Generation is 1, so the search condition fails for each tuple of [Product].Members.

Filter ([Product].Members, [Product].CurrentMember.Gen_number > 1)
returns all members of Product dimension except the top dimension member, [Product].

<string_property> ::= <member>..<property_specification>

Note: The above rule specifies string properties such as MEMBER_NAME, MEMBER_ALIAS.
<property_specification> ::= 
   MEMBER_NAME 
   | MEMBER_ALIAS 
   | GEN_NUMBER 
   | LEVEL_NUMBER 
   | <dimension-name-specification> 
   | <uda-specification>

Note: The <dimension-name-specification> in <property_specification> should be an attribute dimension-name specification. The attribute dimension names are treated as properties of members from their corresponding base dimensions.

<uda-specification> ::= 

The <uda-specification> specifies a User Defined Attribute(UDA). UDA properties are Boolean-valued properties. A TRUE value indicates presence of a UDA for a member. For example,

Filter (Market.Members, Market.CurrentMember.[Major Market])

returns the Market dimension members tagged with "Major Market" UDA in the outline.

<property_expr_specification> ::= 
   PROPERTY_EXPR ( <dimension name>, 
                      <property_name>, 
                      <member_value_expression>, 
                      <display_name>)

<property_name> ::= <property_specification>
<display_name> ::= <character_string_literal>

For more discussion of properties, see “About MDX Properties” on page 1043.

The following rule describes the syntax for Essbase outline formulas in aggregate storage applications.

<formula_specification> ::= <nonempty_specification> 
   <numeric_value_expression>

<nonempty_specification> ::= NONEMPTYMEMBER <nonempty_member_list> 
   | NONEMPTYTUPLE ( <nonempty_member_list> )

<nonempty_member_list> ::= <nonempty_member_name> 
   | <nonempty_member_name> [ , <nonempty_member_list> ]

<nonempty_member_name> ::= 
   An Essbase member name or a calculated member name (only when used in another calculated member).
Note: The member name (or member names when multiple names are specified) in a NONEMPTYMEMBER directive should belong to the same dimension as the calculated member or formula member in which it is specified.

\[
\text{<signed_numeric_literal> ::= } \\
\quad [+-] \text{<unsigned_numeric_literal>}
\]

\[
\text{<unsigned_numeric_literal> ::= } \\
\quad \text{<exact_numeric_literal> } \\
\quad | \text{<approximate_numeric_literal>}
\]

\[
\text{<exact_numeric_literal> ::= } \\
\quad \text{<unsigned_integer>[.<unsigned_integer>] } \\
\quad | \text{<unsigned_integer>}. \\
\quad | .\text{<unsigned_integer>}
\]

\[
\text{<unsigned_integer> ::= } \\
\quad \{\text{<digit>}\}...
\]

\[
\text{<approximate_numeric_literal> ::= } \\
\quad \text{<mantissa>E<exponent>}
\]

\[
\text{<mantissa> ::= } \\
\quad \text{<exact_numeric_literal>}
\]

\[
\text{<exponent> ::= } \\
\quad [\text{<sign>}]\text{<unsigned_integer>}
\]

\[
\text{<digit> ::= } \\
\quad 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9
\]

Note: Numbers can also be input in scientific notation (mantissa/exponent), using the E character.

\[
\text{<character_string_literal> ::= } \\
\quad \text{<quote>[<character_representation>...] <quote>}
\]

\[
\text{<character_representation> ::= } \\
\quad \text{<nonquote_character> } \\
\quad | \text{<quote_symbol>}
\]

\[
\text{<nonquote_character> ::= } \\
\quad \text{Any character in the character set other than <quote>}
\]

\[
\text{<quote_symbol> ::= } \\
\quad \text{<quote> <quote>}
\]

\[
\text{<quote> ::= "}
\]

The following is the syntax for Format Strings in Essbase:

\[
\text{MdxFORMAT( string_value_expression )}
\]
MDX Syntax for Specifying Duplicate Member Names and Aliases

The following member specification rules apply to databases with duplicate member names enabled.

Note: These rules are also applicable if you need to use MDX to explicitly reference shared member names in a unique member name outline (an outline with duplicate member names NOT enabled). See the “Shared Member Names Example” in this topic.

Qualified names must be used to specify duplicate member names. Qualified member or alias names can be specified using:

- **Fully qualified member names**—Consist of duplicate member or alias name and all ancestors up to and including the dimension name. Each name must be enclosed in square brackets([]) and separated by a period.
  
  \[DimensionMember].[Ancestors...].[DuplicateMember]

  For example:
  
  \[Product\].[100].[100-10]

- **Shortcut qualified member names**—Essbase internally constructs shortcut qualified names for members in duplicate member outlines. These can be inserted into scripts using Administration Services by right clicking on the member and selecting Insert member name. You can also manually insert shortcut qualified names into scripts, Smart View or other grid clients, or MDX queries.

  Essbase uses the following syntax to construct shortcut qualified names. Using the same syntax that Essbase uses when you reference members in scripts, grid clients, and MDX queries is optimal, but not required.

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Qualified Name Syntax</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duplicate member names exist at generation 2</td>
<td>[DimensionMember].[DuplicateMember]</td>
<td>[Year].[Jan] or [Product].[Jan]</td>
</tr>
<tr>
<td>Duplicate member names exist in an outline, but are unique within a dimension</td>
<td>[DimensionMember]@[DuplicateMember]</td>
<td>[Year]@[Jan]</td>
</tr>
<tr>
<td>Duplicate member names have a unique parent</td>
<td>[ParentMember].[DuplicateMember]</td>
<td>[East].[New York]</td>
</tr>
<tr>
<td>Duplicate member names exist at generation 3</td>
<td>[DimensionMember].[ParentMember].[DuplicateMember]</td>
<td>[Products].[Personal Electronics].[Televisions]</td>
</tr>
</tbody>
</table>
In MDX, either one of the following syntax methods must be used to reference shortcut qualified member names:

- **Escape Character method**—Because MDX syntax also uses square brackets:
  1. Any internal closing bracket ( ] ) used by name parts within the shortcut qualified names requires an additional | escape character.
  2. The entire shortcut qualified member name must be enclosed in a set of square brackets ([ ]).

Examples:

- [Year].[Jan] is referenced as [[Year]].[Jan]] in MDX.
- [Year][@Jan] is referenced as [[Year][@Jan]] in MDX.
- [2006][@Gen1][@Jan] is referenced as [[2006][@Gen1][@Jan]] in MDX.

**Note:** The above syntax also works for fully qualified member names, but is not required.

- **StrToMbr Function method**—You can use the StrToMbr function to convert qualified name strings to member value expressions.

Examples:

- [Year].[Jan] is referenced as StrToMbr("[Year].[Jan]") in MDX.
- [Year][@Jan] is referenced as StrToMbr("[Year][@Jan]") in MDX.
- [2006][@Gen1][@Jan] is referenced as StrToMbr("[2006][@Gen1][@Jan]") in MDX.

**Note:** The above syntax also works for fully qualified member names, but is not required.

**Duplicate Member Names Query Example**

The following query uses both methods of referencing shortcut member names in MDX:

```sql
SELECT
  { Sales, Profit }
ON COLUMNS,
  {[[Store]]@[6]], StrToMbr("Product.SKU.1")
ON ROWS
```
FROM MySample.Basic
WHERE ([[1998]].[Q1].[1]])

**Note:** StrToMbr accepts any type of member-identifier strings: names, aliases or qualified names.

### Shared Member Names Example

The following example applies to a unique member name outline that contains shared members.

In the Sample Basic database, the member [100-20] is an original member under parent [100], and has a shared member associated with it under parent [Diet]. The shared member [100-20] can be referred to explicitly, using the unique name [Diet].[100-20], as shown in the following query:

```plaintext
SELECT
  {Sales}
ON COLUMNS,
  {[[Diet]].[100-20]}
PROPERTIES MEMBER_UNIQUE_NAME
ON ROWS
FROM Sample.Basic;
```

### MDX Axis Specifications

An axis specification consists of a set and one or more axis keywords.

```
<axis_specification> :: =
  [NON EMPTY] <set> ON COLUMNS|ROWS|PAGES|CHAPTERS|SECTIONS|AXIS(<unsigned_integer>)
```

Understanding the following concepts will help you construct axis specifications for many SELECT queries

### Ordering of Axes

If providing multiple axes, you cannot skip axes. For example, you can specify a Row axis only if you have a Column axis. You can specify a Pages axis only if you also have Column and Row axes.

You can also use ordinals to represent the axes. For example, you can specify <set> ON AXIS(0), <set> ON AXIS(1), etc.

You can specify up to 64 axes (though it is common to use just two). The first five ordinal axes have keyword aliases:

<table>
<thead>
<tr>
<th>Axis Keyword</th>
<th>Axis Ordinal</th>
</tr>
</thead>
<tbody>
<tr>
<td>COLUMNS</td>
<td>AXIS(0)</td>
</tr>
<tr>
<td>ROWS</td>
<td>AXIS(1)</td>
</tr>
<tr>
<td>PAGES</td>
<td>AXIS(2)</td>
</tr>
</tbody>
</table>
For example:

```
SELECT set1 ON COLUMNS,
set2 ON ROWS
FROM Sample.Basic
```

is the same as:

```
SELECT set1 ON AXIS(0),
set2 ON AXIS(1)
FROM Sample.Basic
```

Both return a hypothetical data cube (or subset) of the following format:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Member names in set1</th>
<th>Member names in set2</th>
<th>Data at intersections of set1 and set2 members</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The examples above are hypothetical because they will not return a cube until values are provided for the sets. In the following example, we replace set1 and set2 with real sets:

```
SELECT
{[100-10], [100-20]} ON COLUMNS,
{[Qtr1], [Qtr2], [Qtr3], [Qtr4]} ON ROWS
FROM Sample.Basic
```

which returns the following results:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>100-10</th>
<th>100-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qtr1</td>
<td>5096</td>
<td>1359</td>
</tr>
<tr>
<td>Qtr2</td>
<td>5892</td>
<td>1534</td>
</tr>
<tr>
<td>Qtr3</td>
<td>6583</td>
<td>1528</td>
</tr>
<tr>
<td>Qtr4</td>
<td>5206</td>
<td>1287</td>
</tr>
</tbody>
</table>

**Specifying the Set**

You can represent the sets in each axis in many ways.

```
SELECT
{ } ON COLUMNS
FROM Sample.Basic
```

illustrates that you can choose nothing for a set. However, no cell values will be returned. The following rules apply:
When any of the axes contains an empty set, no cell values are returned. The axes whose sets have at least one tuple will have their tuples returned.

If there are no axes at all, then exactly one cell is returned using the default member of each dimension. The slicer tuple, if present, overrides the default member for the respective dimensions.

```
SELECT { ( [Year].[Qtr2] ) } ON COLUMNS
from sample.basic
```

illustrates using a set that contains a single tuple.

For more information about sets, see “MDX Set Specification” on page 1032.

**NON EMPTY**

The axis specification syntax including NON EMPTY is shown below:

```
<axis_specification> ::= [NON EMPTY] <set> ON
   COLUMNS | ROWS | PAGES | CHAPTERS |
   SECTIONS | AXIS (<unsigned_integer>)
```

Including the optional keywords NON EMPTY before the set specification in an axis causes suppression of slices in that axis that would contain entirely #MISSING values.

For any given tuple on an axis (such as (Qtr1, Actual)), a slice consists of the cells arising from combining this tuple with all tuples of all other axes. If all of these cell values are #MISSING, the NON EMPTY keyword causes the tuple to be eliminated.

For example, if even one value in a row is not empty, the entire row is returned. Including NON EMPTY at the beginning of the row axis specification would eliminate the following row slice from the set returned by a query:

<table>
<thead>
<tr>
<th>Qtr1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual</td>
</tr>
</tbody>
</table>

For another example, see the Tail function.

**Dimension Properties**

A property, in MDX grammar, refers to the Essbase concepts of attributes and UDAs.

The axis specification syntax including the properties specification is shown below:

```
<axis_specification> ::= [NON EMPTY] <set> [<dim_props>] ON
   COLUMNS | ROWS | PAGES | CHAPTERS |
   SECTIONS | AXIS (<unsigned_integer>)
```

As shown in the above syntax, a properties specification can follow the set specification in an axis.

For more information about properties, see “About MDX Properties” on page 1043.
**MDX Slicer Specification**

This section shows rules for the slicer specification (WHERE clause). The slicer axis is a way of limiting a query to apply only to a specific area of the database.

A slicer specification consists of the WHERE keyword followed by a tuple, member, or set. You can optionally query for certain dimension properties in the slicer specification.

Syntax

```
[WHERE [<slicer_specification> [<dim_props>]]]
```

```
<slicer_specification> ::= <set> | <tuple> | <member>
```

**Note:** The cardinality of the `<set>` in the slicer should be 1; in other words, if a set is used, it must evaluate to a single tuple.

```
<dim_props> ::= [DIMENSION] PROPERTIES <property> [, <property>...] ...
```

**Example**

For example, you may want an entire query to apply only to Actual Sales in the Sample Basic database, excluding budgeted sales or any other measures. The WHERE clause might look like the following:

```
SELECT
    {([West].children)}
ON COLUMNS,
    {([Diet].children)}
ON ROWS
FROM Sample.Basic
WHERE ([Scenario].[Actual], [Measures].[Sales])
```

**MDX Cube Specification**

Use the cube specification to name the database at which the query is directed. A cube specification consists of the FROM keyword followed by delimited or nondelimited identifiers indicating an application name and a database name.

The first identifier should be an application name and the second one should be a database name. For example, all of the following are valid identifiers:

- Sample.Basic
- [Sample.Basic]
- [Sample].[Basic]
- 'Sample'.Basic
Syntax

\[ \text{[FROM [<cube_specification>]]} \]

\[ \text{<cube_specification>} ::= \]
\[ \quad \text{['} <\text{ident_or_string}> . <\text{ident_or_string}> \text{'] } \]
\[ \quad | <\text{delim_ident}> . <\text{delim_ident}> \]

\[ \text{<delim_ident>} ::= \]
\[ \quad \text{['} <\text{ident}> \text{']} \]
\[ \quad | <\text{ident_or_string}> \]

\[ \text{<ident_or_string>} ::= \]
\[ \quad \text{'} <\text{ident}> \text{'} \]
\[ \quad | <\text{ident}> \]

Notes

If [FROM [<cube_specification>]] is omitted from a query, the current database context is assumed.

Example

Sample.Basic is the cube specification in the following hypothetical query.

SELECT ...
FROM Sample.Basic

**MDX Set Specification**

A set is a collection of *tuples*. In each tuple of the set, members must represent the same dimensions as do the members of other tuples of the set. Additionally, the dimensions must be represented in the same order.

\[ \text{<set>} ::= \]
\[ \quad \text{MemberRange (} <\text{member}, <\text{member}> \text{) } \]
\[ \quad | <\text{member}> : <\text{member}> \]
\[ \quad | \text{\{} [\text{<tuple>} \text{| <set>} \text{]} [, \text{<tuple>} \text{| <set>}\text{]}.. \text{\}} \]
\[ \quad | <\text{set_value_expression}> \]

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MemberRange (&lt;member&gt;, &lt;member&gt;)</td>
<td>A set can be a range of members, specified using the MemberRange function.</td>
</tr>
<tr>
<td>&lt;member&gt; : &lt;member&gt;</td>
<td>Alternate syntax that has the same effect as the MemberRange function.</td>
</tr>
<tr>
<td>{ [\text{\text{&lt;tuple&gt;}\text{</td>
<td>&lt;set&gt;} \text{</td>
</tr>
</tbody>
</table>
**MDX With Section**

The WITH section is for defining referential sets or members that can be used multiple times during the life of a query.

Beginning with the keyword WITH at the very start of a query, you can define a buffer of reusable logic lasting for the length of the query execution. This can save time in lines of code written as well as in execution time.

If varying attributes are enabled, the WITH section can also be used to define perspective for each varying attribute dimension. In case of multiple varying attributes, perspective setting can be defined for each varying attribute dimension separately.

In the WITH section, you can create the following reusable elements:

- Calculated members
- Named Sets

**Syntax**

```
WITH

    SET set_name AS ' set '
    | MEMBER calculated_member_name AS ' <numeric_value_expr> ' 
    [, <solve_order_specification> ]
    | <perspective_specification>
```

**Item** | **Description**
--- | ---
*set_name* | The name of the set that will be defined after the AS keyword. Any name can be used; it should be something that helps you remember the nature of the set. For example, a set name could be *Best5Books*, which names a set of the five top-selling paperback titles in December:

```
WITH

    SET [Best5Books] AS
    'Topcount (
        [Paperbacks].members,
        5,
        ([Measures].[Sales], [Scenario].[Actual],
        [Year].[Dec])
    ' 
```

*set* | The logic of a *set specification*; this can be re-used because it is being named. Must be enclosed in single quotation marks. In the example above, the Topcount function defines the entire set.
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
</table>
| calculatedMember_name | A name for a hypothetical member existing for the duration of query execution. In its definition, you must associate the calculated member with a dimension (as [Max Qtr2 Sales] is associated with the Measures dimension, in the example that follows).

For example, the calculated member named Max Qtr2 Sales has its value calculated at execution time using the Max function:

```sql
WITH
MEMBER [Measures].[Max Qtr2 Sales] AS
'Max ( {
    [Year].[Qtr2],
    [Measures].[Sales]
 })'
```

Calculated members do not work with metadata functions such as Children, Descendants, Parent, and Siblings. For example, if there is a calculated member defined as [CM1], you cannot use it in the following way: [CM1].

| numeric_value_expr | An expression involving real members in the database outline, compared using mathematical functions. The value resulting from the expression is applied to the calculated member. By using calculated members, you can create and analyze a great many scenarios without the need to modify the database outline.

| solve_order_specification | Optional. By adding `SOLVE_ORDER = n` to the end of each calculated member, you can specify the order in which the members are calculated. For example, solve order in the following hypothetical query is indicated in bold:

```sql
WITH
MEMBER [Product].[mbr1] AS 'calculation', SOLVE_ORDER = 2
MEMBER [Product].[mbr2] AS 'calculation', SOLVE_ORDER = 1

SELECT {
    [Year].children
} on columns,
{
    [Product].[mbr1],
    [Product].[mbr2]
} on rows
```

See Usage Examples for Solve Order.

<table>
<thead>
<tr>
<th>perspective_specification</th>
<th>PERSPECTIVE REALITY</th>
<th>tuple FOR dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>When a database uses varying attributes, base members associated with the varying attributes are aggregated according to the specified perspective.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>You can set the perspective to reality (using the REALITY keyword) or to explicit (using an input tuple consisting of level 0 members).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reality-based evaluation and reporting is the default, in which independent members are determined by the current context.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>When using explicit evaluation and reporting, you specify a tuple of level 0 members from the independent dimension to be used as the context.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>For an example of a reality-based perspective, see the example for AttributeEx. For an example of an explicit perspective, see the example for WithAttrEx.</td>
<td></td>
</tr>
</tbody>
</table>
Usage Examples for Solve Order

WITH
MEMBER
  [Measures].[Profit Percent]
AS 'Profit *100 /Sales', SOLVE_ORDER=20
MEMBER
  [Year].[FirstFourMonths]
AS 'Sum(Jan:Apr)', SOLVE_ORDER=10
SELECT
  {{[Profit], [Sales], [Profit Percent]}}
ON COLUMNS,
  {{[Jan], [Feb], [Mar], [Apr], [FirstFourMonths]}}
ON ROWS
FROM Sample.Basic

The calculated member [Profit Percent], defined in the Measures dimension, calculates Profit as a percentage of Sales.

The calculated member [FirstFourMonths], defined in the Year dimension, calculates sum of data for first four months.

When data for ([Profit Percent], [FirstFourMonths]) is evaluated, SOLVE_ORDER specifies the order of evaluation, ensuring that [Profit Percent] is evaluated first, and resulting in a correct value for percentage. If you change the order of evaluation, you will see that the percentage value is not correct. In this example, SOLVE_ORDER specifies that sum should be calculated before percentage.

Tie-Case Example for Solve Order

When evaluating a cell identified by multiple calculated members, the SOLVE_ORDER value is used to determine the order in which the expressions are evaluated. The expression that is used to evaluate the cell is that of the calculated member with the highest SOLVE_ORDER value. In this case, [Profit Percent]'s expression is used to evaluate ([Profit Percent], [FirstFourMonths]).

The example above is calculated as:

\[
([\text{Profit Percent}], \text{FirstFourMonths})
= ([\text{Profit}], \text{FirstFourMonths}) \times 100 / ([\text{Sales}], \text{FirstFourMonths})
= ([\text{Profit}], \text{Jan}) + ([\text{Profit}], \text{Feb}) + ([\text{Profit}], \text{Mar}) + ([\text{Profit}], \text{Apr}) \times 100 /
   ([\text{Sales}], \text{Jan}) + ([\text{Sales}], \text{Feb}) + ([\text{Sales}], \text{Mar}) + ([\text{Sales}], \text{Apr})
\]

A tie situation is possible because calculated members may have the same SOLVE_ORDER value. The tie is broken based on the position of the dimensions to which the calculated members are attached:

- For aggregate storage outlines, the calculated member belonging to the dimension that comes later in the outline is the one that wins in this case.
- For block storage database outlines (and for pre-Release 7.1.2 aggregate storage outlines), the solve order property applies to calculated members defined in an MDX query. The calculated member belonging to the dimension that comes earlier in the outline is the one that wins in this case, and its expression is used to evaluate the cell.
Calculated Members

For examples of queries using calculated members, see examples for the following functions:

Abs
Avg
BottomPercent
Case
ClosingPeriod
Count
Exp
FirstSibling
IIF
Int
Lag
LastPeriods
Lead
Ln
Max
Min
Mod
NextMember
NonEmptyCount
Ordinal
PrevMember
Remainder
Sum
Todate

Named Sets

For examples of queries using named sets, see examples for the following functions:

BottomPercent
CurrentTuple
Filter (example 3)
Generate
Parent (example 2)
MDX Dimension Specification

A dimension is a top-level member in the hierarchy (a member with no parent). Represent a dimension using the following rules:

Syntax

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;dimension-name-specification&gt;</td>
<td>A dimension name. See Description, item 1.</td>
</tr>
<tr>
<td>&lt;member&gt;.DIMENSION</td>
<td>Dimension function with a member specification as input.</td>
</tr>
<tr>
<td>&lt;layer&gt;.DIMENSION</td>
<td>Dimension function with a layer specification as input.</td>
</tr>
<tr>
<td>DIMENSION ( &lt;member&gt;</td>
<td>Alternate syntax. Dimension ( &lt;member&gt; ) has the same effect as &lt;member&gt;.Dimension. Dimension ( &lt;layer&gt; ) has the same effect as &lt;layer&gt;.Dimension.</td>
</tr>
</tbody>
</table>

Description

A dimension can be represented in the following ways:

1. Using the dimension name (the name of the top member of a dimension.) For example, [Market].
2. Using the Dimension function with a member of a dimension as input. For example, [New York].Dimension or Dimension ( [New York] ).
3. Using the Dimension function with a layer specification as input. For example, Dimension ([Market].Generations(2).Members) or {{[Market].Generations(2).Members}}.Dimension.

MDX Layer Specification

A layer is a shared depth in the outline hierarchy. Therefore, the concept of layer includes generations and levels. Represent a layer using the following rules:
### Syntax

```xml
<layer> ::=  
  <layer-name-specification>  
  |  Levels ( <dim_hier>, <index> )  
  |  <dim_hier>.Levels ( <index> )  
  |  Generations ( <dim_hier>, <index> )  
  |  <dim_hier>.Generations ( <index> )  
  |  <member>.Generation  
  |  <member>.Level
```  

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>&lt;layer-name-</code></td>
<td>A layer name can be specified in the following ways:</td>
</tr>
<tr>
<td><code>specification&gt;</code></td>
<td>1. By specifying the generation or level names; for example, States or Regions.</td>
</tr>
<tr>
<td></td>
<td>The generation or level name can be within brackets; for example, [Regions]. Using brackets is recommended.</td>
</tr>
<tr>
<td></td>
<td>2. By specifying the dimension name along with the generation or level name; for example, Market.Regions and [Market].[States] This naming convention is recommended.</td>
</tr>
<tr>
<td><code>&lt;dimension&gt;.Levels</code></td>
<td>Levels function with the dimension specification and a level number as input. For example, [Year].Levels(0).</td>
</tr>
<tr>
<td><code>&lt;dimension&gt;</code> Levels</td>
<td>Alternate syntax for Levels function with the dimension specification and a level number as input. For example, Levels(0).</td>
</tr>
<tr>
<td><code>&lt;index&gt;</code></td>
<td>For example, [Year].</td>
</tr>
<tr>
<td><code>&lt;index&gt;</code> Generations</td>
<td>Generations function with the dimension specification and a generation number as input. For example, [Year].Generations(3).</td>
</tr>
<tr>
<td><code>&lt;dimension&gt;</code></td>
<td>Alternate syntax for Generations function with the dimension specification and a generation number as input. For example, Generations([Year], 3).</td>
</tr>
<tr>
<td><code>&lt;index&gt;</code></td>
<td>For example, Generations([Year], 3).</td>
</tr>
<tr>
<td><code>&lt;member&gt;.Generation</code></td>
<td>Generation function with a member specification as input. For example, [Year].Generation. Returns the generation of the specified member.</td>
</tr>
<tr>
<td><code>&lt;member&gt;.Level</code></td>
<td>Level function with a member specification as input. For example, [Year].Level. Returns the level of the specified member.</td>
</tr>
</tbody>
</table>

### Description

Generation numbers begin counting with 1 at the dimension name; higher generation numbers are those that are closest to leaf members in a hierarchy.

Level numbers begin with 0 at the deepest part of the hierarchy; the highest level number is a dimension name.

![Diagram](image)

[G1] Product [G2] [G3] [L2] [L1] [L0]
**Note:** In an asymmetric (or ragged) hierarchy, same level numbers does not mean that the members are at the same depth in the outline. For example, in the following diagram, member aa and member f are both level 0 members, and yet they are not at the same depth:

![Diagram showing asymmetric hierarchy]

**MDX Member Specification**

A member is a named hierarchical element in a database outline. Represent a member using the following rules:

**Syntax**

```
<member> ::=  
  <member-name-specification>  
| <member_value_expression>
```

**Member Name Specification**

A member name can be specified in the following ways:

1. By specifying the actual name or the alias; for example, *Cola, Actual, COGS,* and `[100]`. If the member name starts with number or contains spaces, it should be within brackets; for example, `[100]`. Brackets are recommended for all member names, for clarity and code readability.

   If the member name starts with an ampersand (&), it should be within quotation marks; for example, `"&xyz"`. This is because the leading ampersand is reserved for substitution variables. You can also specify it as `StrToMbr("&100")`.

   For attribute members, the long name (qualified to uniquely identify the member) should be used; for example, `[Ounces_12]` instead of `[12]`.

2. By specifying dimension name or any one of the ancestor member names as a prefix to the member name; for example, `[Product].[100-10]` and `[Diet].[100-10]` This is a recommended practice for all member names, as it eliminates ambiguity and enables you to refer accurately to shared members.
Note: Use only one ancestor in the qualification. Essbase returns an error if multiple ancestors are included. For example, [Market].[New York] is a valid name for New York, and so is [East].[New York]. However, [Market].[East].[New York] returns an error.

3. By specifying the name of a calculated member defined in the WITH section.

4. For outlines that have duplicate member names enabled, see also “MDX Syntax for Specifying Duplicate Member Names and Aliases” on page 1026.

Member Value Expression

A member value expression is output from any function that returns a member. As an alternative to referencing the member by name or alias, you can use a function that returns a member in place of <member>. For a list of functions that return a member, see “MDX Function Return Values” on page 1069.

MDX Hierarchy Specification

A hierarchy is a root member of an alternate hierarchy, which is always at generation 2 of a dimension. Member value expressions are not allowed as hierarchy arguments.

Alternate hierarchies are applicable to aggregate storage databases only.

The dimension of the hierarchy argument passed to a function must match the dimension of the other arguments passed to the function. If they do not match, an error is returned, and the query is aborted.

MDX Tuple Specification

This section shows rules for tuple specifications.

A tuple is a collection of member(s) with the restriction that no two members can be from the same dimension. For example, (Actual, Sales) is a tuple. (Actual, Budget) is not a tuple, as both members are from the same dimension.

Syntax

\[
	\text{<tuple>} ::= \\
\text{<member>} \\
\text{\text{| \ { <member> [, <member> ].. } \}} \\
\text{\text{| <tuple_value_expression>}}
\]

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;member&gt;</td>
<td>A member name. If a member name contains spaces or special characters, enclose it in brackets [ ]. It is good practice to use brackets for member names, even if they do not contain special characters. Example: [West]</td>
</tr>
<tr>
<td>( &lt;member&gt; [, &lt;member&gt; ].. )</td>
<td>One or more member names, separated by commas. The members must be from different dimensions. The list of members must be enclosed in parentheses ( ). Example: ( [West], [Feb] )</td>
</tr>
<tr>
<td>Syntax</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>&lt;tuple_value_expression&gt;</td>
<td>An instance of a function that extracts a tuple from a set. There are two such functions available:</td>
</tr>
<tr>
<td></td>
<td>• CurrentTuple</td>
</tr>
<tr>
<td></td>
<td>• Item</td>
</tr>
</tbody>
</table>

**Description**

A tuple represents a single data cell if all dimensions are represented. For example, this tuple from Sample Basic is a single data value:

( [Qtr1], [Sales], [Cola], [Florida], [Actual] )

**MDX Create Set / Delete Set**

This section shows how to create and delete a named set that persists for the duration of a login session.

A named set is a re-usable member selection that can help streamline the writing and execution of MDX queries.

**Syntax**

The syntax to create or delete session-persistsent named sets is shown below:

```plaintext
CREATE SET set name AS ' set ' [WHERE <slicer_specification>]  
|DELETE set_name
```

**Examples**

**Example 1**

The following statement creates a named set called "My Favorite Customers," which is a selection of the top three customers for sales in 2001:

```plaintext
```

The following query, issued in the same login session as the CREATE statement, references the stored named set "My Favorite Customers":

```plaintext
SELECT ( [Time].[2000], [Time].[2001] ) ON COLUMNS  
{ [My Favorite Customers] } ON ROWS  
FROM Sample.Basic  
WHERE ([Measures].[Profits])
```

**Example 2**

To provide a context, a slicer clause maybe added to the set creation statement, as shown in bold:

```plaintext
CREATE SET [My Favorite Customers] AS  
'( TopCount ([Customer].Individual).Members, 3, ([Measures].[Sales], [Time].[2001]) )'  
WHERE (East, Toys)
```
Notes
- Only 16 session-based named sets may be stored simultaneously.
- Named set definitions may not contain references to other named sets.

**MDX Operators**

This section describes operators that can be used in MDX queries as part of numeric value expressions or search conditions.

**Mathematical Operators**

<table>
<thead>
<tr>
<th>Operator</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>Adds. Also can be used as a unary operator.</td>
</tr>
<tr>
<td>-</td>
<td>Subtracts. Also can be used as a unary operator; for example, -5, -(Profit).</td>
</tr>
<tr>
<td>*</td>
<td>Multiplies.</td>
</tr>
<tr>
<td>/</td>
<td>Divides.</td>
</tr>
<tr>
<td>%</td>
<td>Evaluates percentage. For example, Member1%Member2 evaluates Member1 as a percentage of Member2. <strong>Note:</strong> Aggregate storage outline formulas cannot contain the % operator. In outline formulas, replace % with expression: ((\text{value1} / \text{value2}) \times 100))</td>
</tr>
</tbody>
</table>

**Conditional and Logical Operators**

Conditional operators take two operands and check for relationships between them, returning TRUE or FALSE.

<table>
<thead>
<tr>
<th>Operator</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;</td>
<td>Data value is greater than.</td>
</tr>
<tr>
<td>&lt;</td>
<td>Data value is less than.</td>
</tr>
<tr>
<td>=</td>
<td>Data value is equal to.</td>
</tr>
<tr>
<td>&lt;&gt;</td>
<td>Data value is not equal to.</td>
</tr>
<tr>
<td>&gt;=</td>
<td>Data value is greater than or equal to.</td>
</tr>
<tr>
<td>&lt;=</td>
<td>Data value is less than or equal to.</td>
</tr>
<tr>
<td>Operator</td>
<td>Definition</td>
</tr>
<tr>
<td>----------</td>
<td>------------</td>
</tr>
</tbody>
</table>
| **IN**  | The syntax for the IN operator is as follows:  
<property> IN <member>|<character_string_literal>  
The first argument, <property> should be an attribute property; for example, Population in the following example.  
The second argument, <member> or <character_string_literal>, should be an attribute member that is neither a level-0 member nor a generation-1 member; for example, Medium in the following example.  
**Example**  
The following filter evaluates the Population property (attribute) of the current member of Market dimension:  
Filter ([Market].Members, Market.CurrentMember.Population IN Medium)  
If the population attribute of the current member is Medium, the expression returns TRUE. |
| **IS**   | The IS operator syntax is as follows: member1 IS member2. The IS operator is equivalent to the IS function. For details and examples, see the IS function. |

**Boolean Operators**

Boolean operators can be used in the following functions to perform conditional tests: Filter, Case, IIF, Generate. Boolean operators operate on boolean operands (TRUE/FALSE values).

See also “MDX Functions that Return a Boolean” on page 1075.

<table>
<thead>
<tr>
<th>Operator</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AND</strong></td>
<td>Logical AND linking operator for multiple value tests. Result is TRUE if both conditions are TRUE. Otherwise the result is FALSE. For an example using AND, see IsValid.</td>
</tr>
<tr>
<td><strong>OR</strong></td>
<td>Logical OR linking operator for multiple value tests. Result is TRUE if either condition is TRUE. Otherwise the result is FALSE.</td>
</tr>
<tr>
<td><strong>NOT</strong></td>
<td>Logical NOT operator. Result is TRUE if condition is FALSE. Result is FALSE if condition is TRUE. For an example using NOT, see IsEmpty.</td>
</tr>
<tr>
<td><strong>XOR</strong></td>
<td>Logical XOR linking operator for multiple value tests. Result is TRUE if only one condition is TRUE. Otherwise the result is FALSE.</td>
</tr>
</tbody>
</table>

**About MDX Properties**

Properties describe certain characteristics of data and metadata. MDX enables users to write queries that use properties to retrieve and analyze data. Properties can be intrinsic or custom.

“MDX Intrinsic Properties” on page 1044  
“MDX Custom Properties” on page 1044  
“MDX Property Expressions” on page 1045  
“MDX Optimization Properties” on page 1046  
“Querying for Member Properties in MDX” on page 1048  
“The Value Type of MDX Properties” on page 1049  
“MDX NULL Property Values” on page 1050
MDX Intrinsic Properties

Intrinsic properties are defined for members in all dimensions. In Essbase, the intrinsic MDX member properties defined for all members in an Essbase database outline are MEMBER_NAME, MEMBER_ALIAS, LEVEL_NUMBER, GEN_NUMBER, IS_EXPENSE, COMMENTS, and MEMBER_UNIQUE_NAME.

The MEMBER_NAME intrinsic property returns a member name string for each member.

The MEMBER_ALIAS intrinsic property returns a member alias string for each member.

The LEVEL_NUMBER intrinsic property returns the level number of each member.

The GEN_NUMBER intrinsic property returns the generation number of each member.

The IS_EXPENSE intrinsic property returns TRUE if a member has the Expense account type, and FALSE otherwise. Example:

```
SELECT [Measures].Members
    DIMENSION PROPERTIES [Measures].[IS_EXPENSE] on columns
from Sample.Basic;
```

The COMMENTS intrinsic property returns a comment string for each member where applicable. Example:

```
SELECT [Market].Members
    DIMENSION PROPERTIES [Market].[COMMENTS] on columns
from Sample.Basic;
```

The MEMBER_UNIQUE_NAME intrinsic property is a member-name property. It returns NULL for unique members, and a system-generated key for duplicate members.

MDX Custom Properties

MDX in Essbase supports three types of custom properties: attribute properties, UDA properties, and alias-table-name properties. Attribute properties are defined by the attribute dimensions in an outline. In the Sample Basic database, the [Pkg Type] attribute dimension describes the packaging characteristics of members in the Product dimension. This information can be queried in MDX using the property name [Pkg Type].

Attribute properties are defined only for specific dimensions and only for a specific level in each dimension. For example, in the Sample Basic outline, [Ounces] is an attribute property defined only for members in the Product dimension, and this property has valid values only for the level-0 members of the Product dimension. The [Ounces] property does not exist for other dimensions, such as Market. The [Ounces] property for a non level-0 member in the Product dimension is a NULL value. The attribute properties in an outline are identified by the names of attribute dimensions in that outline.

The custom properties also include UDAs. For example, [Major Market] is a UDA property defined on Market dimension members. It returns a TRUE value if [Major Market] UDA is defined for a member, and FALSE otherwise.
Custom alias-table-name properties enable you to query for alias table names used by each member returned in the output.

**MDX Property Expressions**

In addition to querying for intrinsic and custom properties of a member, you can also query for MDX properties using the PROPERTY_EXPR function. This function enables you to query for properties of related members based on a member value expression.

**Syntax**

```
PROPERTY_EXPR (dimension name, property_name, member_value_expression, display_name)
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>dimension name</strong></td>
<td>The dimension name, or the keyword ALL. When a dimension name is specified, the property expression is evaluated for members from that dimension only. When the keyword ALL is specified, the property expression is evaluated for all members on the axis.</td>
</tr>
<tr>
<td><strong>property_name</strong></td>
<td>Property specification. One of the intrinsic properties (MEMBER_NAME, MEMBER_ALIAS, LEVEL_NUMBER, GEN_NUMBER, IS_EXPENSE, COMMENTS, or MEMBER_UNIQUE_NAME), or one of the custom properties (an attribute dimension name, alias-table name, or UDA specification).</td>
</tr>
<tr>
<td><strong>member_value_expression</strong></td>
<td>Member value expression. See <code>&lt;member_value_expression&gt; ::= in &quot;MDX Grammar Rules&quot; on page 1012.</code></td>
</tr>
<tr>
<td><strong>display_name</strong></td>
<td>Character string literal. The display name to use for the queried properties information in the query output.</td>
</tr>
</tbody>
</table>

**Description**

For every member on an axis from **dimension name**, the **member_value_expression** is evaluated with the current member from **dimension name** in the context. The **property_name** is evaluated on the output of **member_value_expression**. The specified **display_name** indicates the label to use for the queried properties output.

You can refer to the current member on the axis by using **CurrentAxisMember**.

**Example**

```sql
SELECT
  {[100]}
ON COLUMNS,
Market.Levels(0).Members
DIMENSION PROPERTIES
  PROPERTY_EXPR
  {Market,
    MEMBER_NAME,
    Ancestor
    (CurrentAxisMember(),
    CurrentAxisMember().Dimension.Levels(1)
```
which returns the following grid (truncated):

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Axis-1.properties</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>[New York]</td>
<td>Parent_level_1 = East, Parent_level_2 = market</td>
<td>3498</td>
</tr>
<tr>
<td>[Massachusetts]</td>
<td>Parent_level_1 = East, Parent_level_2 = market</td>
<td>5105</td>
</tr>
<tr>
<td>[Florida]</td>
<td>Parent_level_1 = East, Parent_level_2 = market</td>
<td>2056</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

**MDX Optimization Properties**

Optimization properties can improve the performance of formulas and calculated members, as well as the performance of queries that rely on them.

Optimization properties are applicable to outline members with formulas and calculated members only. Stored members are not associated with these properties.

The NONEMPTYMEMBER and NONEMPTYTUPLE properties enable MDX in Essbase to query on large sets of members or tuples while skipping formula execution on non-contributing values that contain only #MISSING data.

Because large sets tend to be very sparse, only a few members contribute to the input member (have non #MISSING values) and are returned. As a result, the use of NONEMPTYMEMBER and NONEMPTYTUPLE in calculated members and formulas conserves memory resources, allowing for better scalability, especially in concurrent user environments.

**NONEMPTYMEMBER**

NONEMPTYMEMBER nonempty_member_list

where nonempty_member_list is one or more comma-separated member names or calculated member names from the same dimension as the formula or calculated member.
Use a single NONEMPTYMEMBER property clause at the beginning of a calculated member or formula expression to indicate to Essbase that the value of the formula or calculated member is empty when any of the members specified in `nonempty_member_list` are empty.

**NONEMPTYTUPLE**

```
NONEMPTYTUPLE "("+nonempty_member_list")"
```

where `nonempty_member_list` is one or more comma-separated member names or calculated member names, each from different dimensions.

Use a single NONEMPTYTUPLE property clause at the beginning of a calculated member or formula expression to indicate to Essbase that the value of the formula or calculated member is empty when the cell value at the tuple given in `nonempty_member_list` is empty.

**Example**

The following query calculates a member [3 Month Units] that represents the sum of Units (items per package) for the current month and the previous two months, where Units data is not missing.

The calculated member [3 Month Units] calculates Units shipped for last three months. If the units shipped for [MTD] (units shipped in a year) is empty, it follows that Units data is empty for all months in the Year; therefore, the sum of Units shipped for last three months is also empty. Because the row axis in the query is very large and sparse, the NONEMPTYTUPLE property would significantly increase the performance of the query in this case.

```
WITH MEMBER [Measures].[3 Month Units] AS

    NONEMPTYTUPLE ([Units], [MTD])
    Sum(
        { ClosingPeriod(Time.Generations(5), Time.CurrentMember),
        Time.CurrentMember.Lag(1),
        Time.CurrentMember.Lag(2) },
        Units
    ),

SELECT {Units, [3 Month Units]} ON COLUMNS,
NON EMPTY CrossJoin(
    Stores.Levels(0).Members,
    [Store Manager].Children
) ON ROWS
FROM Asosamp.Sample
WHERE (Mar);
```

This query returns the following grid (results truncated):

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Items Per Package</th>
<th>3 Month Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>(017589, Carrie)</td>
<td>610</td>
<td>1808</td>
</tr>
</tbody>
</table>
### Querying for Member Properties in MDX

Properties can be used inside an MDX query in two ways. In the first approach, you can list the dimension and property combinations for each axis set. When a query is executed, the specified property is evaluated for all members from the specified dimension and included in the result set.

For example, on the column axis, the following query will return the GEN_NUMBER information for every Market dimension member. On the row axis, the query returns MEMBER_ALIAS information for every Product dimension member.

```mdx
SELECT [Market].Members
    DIMENSION PROPERTIES [Market].[GEN_NUMBER] on columns,
    Filter ([Product].Members, Sales > 5000)
    DIMENSION PROPERTIES [Product].[MEMBER_ALIAS] on rows
from Sample.Basic
```

When querying for member properties using the DIMENSION PROPERTIES section of an axis, a property can be identified by the dimension name and the name of the property, or just by using the property name itself. When a property name is used by itself, that property information is returned for all members from all dimensions on that axis, for which that property applies.

**Note:** When a property name is used by itself within the DIMENSION PROPERTIES section, do not use brackets [ ] around the property name.

In the following query, the MEMBER_ALIAS property is evaluated on the row axis for both Year and Product dimensions.

```mdx
SELECT [Market].Members
    DIMENSION PROPERTIES [Market].[GEN_NUMBER] on columns,
    CrossJoin([Product].Children, Year.Children)
    DIMENSION PROPERTIES MEMBER_ALIAS on rows
from Sample.Basic
```
In a second approach, properties can be used inside value expressions in an MDX query. For example you can filter a set based on a value expression that uses properties of members in input set.

The following query returns all caffeinated products that are packaged in cans.

```
Select
Filter([Product].levels(0).members,
    [Product].CurrentMember.Caffeinated and
    [Product].CurrentMember.[Pkg Type] = "Can")
Dimension Properties
    [Caffeinated], [Pkg Type] on columns
```

The following query uses the UDA [Major Market] to calculate the value [BudgetedExpenses] based on whether the current member of the Market dimension is a major market or not.

```
With
    MEMBER [Measures].[BudgetedExpenses] AS
        'IIF([Market].CurrentMember.[Major Market],
            [Marketing] * 1.2, [Marketing])'
Select
    {[Measures].[BudgetedExpenses]} on columns,
    Market.Members on rows
Where
    ([Budget])
```

The following queries use alias table names.

```
SELECT
    [Product].Members
    DIMENSION PROPERTIES [Default] on columns
from Sample.Basic;
```
```
SELECT
    [Product].Members
    DIMENSION PROPERTIES [Long Names] on columns
from Sample.Basic;
```

**The Value Type of MDX Properties**

The value of an MDX property in Essbase can be a numeric, Boolean, or string type. MEMBER_NAME and MEMBER_ALIAS properties return string values. LEVEL_NUMBER and GEN_NUMBER properties return numeric values.

The attribute properties return numeric, Boolean, or string values based on the attribute dimension type. For example, in Sample Basic, the [Ounces] attribute property is a numeric property. The [Pkg Type] attribute property is a string property. The [Caffeinated] attribute property is a Boolean property.

Essbase allows attribute dimensions with date types. The date type properties are treated as numeric properties in MDX. When comparing these property values with dates, you need to use the TODATE function to convert date strings to numeric before comparison.
The following query returns all Product dimension members that have been introduced on date 03/25/1996. Since the property [Intro Date] is a date type, the TODATE function must be used to convert the date string "03-25-1996" to a number before comparing it.

```
Select
  Filter ([Product].Members,
      [Product].CurrentMember.[Intro Date] = TODATE("mm-dd-yyyy","03-25-1996")
  ) on columns
```

When a property is used in a value expression, you must use it appropriately based on its value type: string, numeric, or Boolean.

---

**MDX NULL Property Values**

Not all members may have valid values for a given property name. For example, the MEMBER_ALIAS property returns an alternate name for a given member as defined in the outline; however, not all members may have aliases defined. In these cases A NULL value would be returned for those members that do not have aliases.

In the following query:

```
SELECT
  [Year].Members
 DIMENSION PROPERTIES MEMBER_ALIAS on columns
```

none of the members in the Year dimension have aliases defined for them. Therefore, the query returns NULL values for the MEMBER_ALIAS property for members in the Year dimension.

The attribute properties are defined for members of a specific dimension and a specific level in that dimension. In the Sample Basic database, the [Ounces] property is defined only for level-0 members of the Product dimension.

Therefore, if you query for the [Ounces] property of a member from the Market dimension, as shown in the following query, you will get a syntax error:

```
SELECT
  Filter([Market].members,
      [Market].CurrentMember.[Ounces] = 32
  ) on columns
```

Additionally, if you query for the [Ounces] property of a non level-0 member of the dimension, you will get a NULL value.

When using property values in value expressions, you can use the function IsValid() to check for NULL values. The following query returns all Product dimension members with [Ounces] property value of 12, after eliminating members with NULL values.

```
Select
  Filter ([Product].Members,
    IsValid ([Product].CurrentMember.[Ounces]) and
    [Product].CurrentMember.[Ounces] = 12
  ) on columns
```
MDX Comments

This section describes how to add comments to MDX queries.

Syntax

MDX supports two types of syntax for comments:

1. MDX supports the "C++ style" comments that are also supported by the Essbase Server calculator framework. This type of comment can cover multiple lines. Everything in between is ignored by the MDX parser.

   Example:
   
   ```
   /*
   commented text is ignored by parser
   */
   ```

2. MDX supports inline comments beginning with two hyphens. Beginning with two hyphens, the rest of the line is ignored by the MDX parser. A new line ends the span of the comment.

   Example:
   
   ```
   -- short comment can go on till line break
   ```

Example

The following example uses both styles of comments:

```
/* Query the profit figures in each market for the "100" products */
SELECT ([Market].levels(1).members) --L1 members of Market
ON COLUMNS,
--Cross of the "100" products and their profit figures:
CrossJoin ([100].children, [Profit].children)
ON ROWS
FROM Sample.Basic
```
<table>
<thead>
<tr>
<th>Concept</th>
<th>Description</th>
</tr>
</thead>
</table>
| Cluster elements / symmetric sets | Although an MDX set is a collection of tuples, internally, Essbase represents sets using clusters and tuples. A cluster is a type of set derived using the CrossJoin function, where the arguments to CrossJoin are sets from one dimension only. A cluster can also be thought of as a symmetric set. The following set is a symmetric set and can be stored as one cluster.  

\[
\text{CROSSJOIN(Products.LEVELS(0).MEMBERS, [Market].LEVELS(0).MEMBERS)}
\]

A **tuple** is a collection of members from different dimensions. The following set has one tuple.

\[
\{([Product].Product_1, [Market].Market_1)}
\]

The following set is a union of the above two sets. It is stored internally as a cluster and a tuple.

\[
\text{UNION(}
\text{CROSSJOIN(Products.LEVELS(0).MEMBERS, [Market].LEVELS(0).MEMBERS)}
\text{,}
\text{\{([Product].Product_1, [Market].Market_1)}
\text{) }
\]

<table>
<thead>
<tr>
<th>Compact set</th>
<th>A set is stored in compact form if it can be internally represented as a cluster or symmetric set.</th>
</tr>
</thead>
</table>
| Flattened set   | A set that must be internally expanded into tuples is a flattened set. Flattened sets consume more memory to be processed. Certain MDX functions, such as Order, need to flatten sets in order to process them correctly. Therefore, certain functions, as listed in the next section, have different set size or query limits. The following set is an example of a flattened set.  

\[
\{(\text{Colas, East)}
\text{(Colas, West)}
\text{(Colas, South)}
\text{(Colas, Central)}
\text{(Root Beer, East)}
\text{(Root Beer, West)}
\text{(Root Beer, South)}
\text{(Root Beer, Central)}
\text{(Cream Soda, East)}
\text{(Cream Soda, West)}
\text{(Cream Soda, South)}
\text{(Cream Soda, Central)}
\text{(Fruit Soda, East)}
\text{(Fruit Soda, West)}
\text{(Fruit Soda, South)}
\text{(Fruit Soda, Central)}\}
\]

<table>
<thead>
<tr>
<th>Asymmetric set</th>
<th>The following set is stored internally as a collection of a tuple element and a cluster element. The two elements cannot be combined into a single element. Such sets are called asymmetric sets.</th>
</tr>
</thead>
</table>
|                 | \[
\text{UNION(}\{\text{(Colas, East)}\}
\text{CROSSJOIN(}
\text{[Product].CHILDREN,}
\text{[Market].CHILDREN})
\text{)}\]                                                                                                                                 |

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MDX Query Limits

The following size limitations apply to MDX queries, sets, and certain functions.

**Note:** The following exception applies to the general query limits: If the database being queried is the target database of a partition, the maximum size of a cube region you can query using MDX is $2^{32}$ potential cells.

<table>
<thead>
<tr>
<th>Limitations</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of cells in a query region defined by all axis sets in an MDX query with NON EMPTY clause</td>
<td>$2^{64}$</td>
</tr>
<tr>
<td>Number of cells that can be returned to a client after NON EMPTY processing</td>
<td>$2^{32}$</td>
</tr>
<tr>
<td>Number of cells in a query region defined by all axis sets in an MDX query with no NON EMPTY clause</td>
<td>$2^{32}$</td>
</tr>
<tr>
<td>Number of tuples in an axis set with NON EMPTY directive after NON EMPTY processing</td>
<td>$2^{28}$</td>
</tr>
<tr>
<td>Size of a set in compact form</td>
<td>$2^{64}$</td>
</tr>
<tr>
<td>Size of a set in flattened form</td>
<td>$2^{32}$</td>
</tr>
<tr>
<td>Number of elements in a set</td>
<td>$2^{32}$</td>
</tr>
<tr>
<td>Number of members (from all dimensions) in a cluster element</td>
<td>$2^{32}$</td>
</tr>
<tr>
<td>Number of cells in a query after applying non empty cell processing</td>
<td>$2^{32}$</td>
</tr>
<tr>
<td>Size of a set that can be processed by the following functions:</td>
<td>$2^{28}$</td>
</tr>
<tr>
<td>• Distinct</td>
<td></td>
</tr>
<tr>
<td>• Except</td>
<td></td>
</tr>
<tr>
<td>• Filter</td>
<td></td>
</tr>
<tr>
<td>• Intersect</td>
<td></td>
</tr>
<tr>
<td>• Ntile</td>
<td></td>
</tr>
<tr>
<td>• Order</td>
<td></td>
</tr>
<tr>
<td>• Percentile</td>
<td></td>
</tr>
<tr>
<td>• Rank</td>
<td></td>
</tr>
<tr>
<td>• TopPercent</td>
<td></td>
</tr>
<tr>
<td>• BottomPercent</td>
<td></td>
</tr>
<tr>
<td>• TopSum</td>
<td></td>
</tr>
<tr>
<td>• BottomSum</td>
<td></td>
</tr>
<tr>
<td>• Hierarchize</td>
<td></td>
</tr>
<tr>
<td>• Union (with removal of duplicates)</td>
<td></td>
</tr>
<tr>
<td>• NonEmptySubset (output set size)</td>
<td></td>
</tr>
<tr>
<td>• TopCount (output set size)</td>
<td></td>
</tr>
<tr>
<td>• BottomCount (output set size)</td>
<td></td>
</tr>
</tbody>
</table>
### Aggregate Storage and MDX Outline Formulas

To write formulas for block storage outlines, Essbase provides a set of calculation functions and operators known as the Calculator, or Calc, language. The Calculator language cannot be used to write member formulas for aggregate storage databases. Formulas in aggregate storage outlines use the MDX language.

The following sections provide information for rewriting Calculator formulas in MDX for outlines that have been migrated from block storage to aggregate storage. Before attempting to rewrite formulas you should be familiar with the basic workings of aggregate storage outlines in Essbase. See the *Oracle Essbase Database Administrator’s Guide*, which discusses all aspects of aggregate storage.

#### Translating Calculator Functions to MDX Functions

When translating Calculator formulas to MDX, keep in mind the following differences between block storage outlines and aggregate storage outlines:

- The storage characteristics of a member and hence all its associated cells are defined in a block storage outline through Dynamic Calc (and Dynamic Calc and Store) attributes, and stored attributes. Such attributes do not exist in an aggregate storage outline. Upper level members along an explicitly tagged accounts dimension and members with formulas attached to them are always calculated dynamically in such a database.

- In block storage outlines, calculation order is dependent on the order in which members appear in the outline whereas formulas are executed in order of their dependencies in aggregate storage outlines. In addition, calculation order in the event of ambiguity in the evaluation of a cell, and two-pass calculation tags are not required in an aggregate storage outline.

- The layout of block storage outlines and the separation of dimensions into dense and sparse has an effect on the semantics of certain calculations, giving rise to concepts such as top-down calculation mode, cell and block calculation mode, and create-blocks on equations. The simplicity of the aggregate storage outlines, which do not separate dimensions into dense and sparse, do not require such concepts.
General Guidelines for Translating Calculator Formulas to MDX

This section provides some general guidelines for translating Calculator formulas to MDX.

Be certain that the application has been redesigned to use an aggregate storage outline. In this regard, make certain that formulas do not reference any block-storage specific outline constructs, such as variance functions that rely on expense tagging, or functions that operate on shared members (for example, @RDESCENDANTS). Such constructs are not valid in aggregate storage outlines.

Rewrite each function in the formulas attached to an explicitly tagged accounts dimension for which a direct counterpart in MDX exists. Table 2 provides specific information and examples. Then identify functions for which an indirect rewrite is required. Table 2 also provides information and examples for these functions.

Understand the calculation order semantics for the formulas in the block storage outline. Organize the dependent formulas in the aggregate storage outline carefully to achieve the same results as block storage.

If formulas reference custom-defined functions or macros consider rewriting them, if possible, using other MDX functions.

The following table lists all functions in the Calculator language and their analogs in MDX (and vice versa). Where a direct analog does not exist, transformation rules and examples are provided.

<table>
<thead>
<tr>
<th>Calculator</th>
<th>MDX</th>
<th>Remarks/Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>@ABS</td>
<td>Abs</td>
<td>Calculator</td>
</tr>
<tr>
<td></td>
<td></td>
<td>@ABS(Actual-Budget) MDX</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Abs([Actual]-[Budget])</td>
</tr>
<tr>
<td>@ALLANCESTORS</td>
<td>Ancestors</td>
<td>Shared members are not relevant to aggregate storage outlines.</td>
</tr>
<tr>
<td>@ALIAS</td>
<td>Not required. In MDX, the argument to @ALIAS can be passed as-is to the outer function.</td>
<td></td>
</tr>
<tr>
<td>@ANCEST</td>
<td>Ancestor with CurrentMember as input. Use a tuple to combine the result with the optional third argument to the @ANCEST function.</td>
<td>Calculator</td>
</tr>
<tr>
<td></td>
<td></td>
<td>@ANCEST(Product,2,Sales) MDX</td>
</tr>
<tr>
<td></td>
<td></td>
<td>{ Sales, Ancestor( Product.CurrentMember, Product.Generations(2) ) }</td>
</tr>
<tr>
<td>Calculator</td>
<td>MDX</td>
<td>Remarks/Examples</td>
</tr>
<tr>
<td>---------------------</td>
<td>----------------------------------------------------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>@ANCESTORS</td>
<td>Ancestors</td>
<td>Calculator</td>
</tr>
<tr>
<td></td>
<td>@ANCESTORS(&quot;New York&quot;)</td>
<td>MDX</td>
</tr>
<tr>
<td></td>
<td>Ancestors([New York].parent, [Market].levels(2))</td>
<td></td>
</tr>
<tr>
<td>@ANCESTVAL</td>
<td>Ancestor with CurrentMember as input. Use a tuple to combine the</td>
<td>Calculator</td>
</tr>
<tr>
<td></td>
<td>result with the optional third argument to the @ANCESTVAL function.</td>
<td>MDX</td>
</tr>
<tr>
<td></td>
<td>@ANCESTVAL(Product,2,Sales)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Sales, Ancestor{ Product.CurrentMember, Product.Generations(2) })</td>
<td></td>
</tr>
<tr>
<td></td>
<td>).Value</td>
<td></td>
</tr>
<tr>
<td>@ATTRIBUTE</td>
<td>Attribute</td>
<td>Calculator</td>
</tr>
<tr>
<td></td>
<td>@ATTRIBUTE(Can)</td>
<td>MDX</td>
</tr>
<tr>
<td></td>
<td>Attribute([Can])</td>
<td></td>
</tr>
<tr>
<td>@ATTRIBUTEBVAL</td>
<td>[BaseDim].CurrentMember. AttributeDim</td>
<td>See “About MDX Properties” on page 1043.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Calculator</td>
</tr>
<tr>
<td></td>
<td>@ATTRIBUTEBVAL(Caffeinated)</td>
<td>MDX</td>
</tr>
<tr>
<td></td>
<td>Product.CurrentMember.Caffeinated</td>
<td></td>
</tr>
<tr>
<td>@ATTRIBUTESVAL</td>
<td>[BaseDim].CurrentMember. AttributeDim</td>
<td>See “About MDX Properties” on page 1043.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Calculator</td>
</tr>
<tr>
<td></td>
<td>@ATTRIBUTESVAL(&quot;Pkg Type&quot;)</td>
<td>MDX</td>
</tr>
<tr>
<td></td>
<td>Product.CurrentMember.[Pkg Type]</td>
<td></td>
</tr>
<tr>
<td>@ATTRIBUTEVAL</td>
<td>[BaseDim].CurrentMember. AttributeDim</td>
<td>See “About MDX Properties” on page 1043.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Calculator</td>
</tr>
<tr>
<td></td>
<td>@ATTRIBUTEVAL(ounces)</td>
<td>MDX</td>
</tr>
<tr>
<td></td>
<td>Product.CurrentMember.[ounces]</td>
<td></td>
</tr>
<tr>
<td>Calculator</td>
<td>MDX</td>
<td>Remarks/Examples</td>
</tr>
<tr>
<td>-----------------</td>
<td>----------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| @AVG            | If the dimensionality of all elements in the input set to @AVG is the same, use Avg. Translate SKIPNONE to INCLUDEEMPTY. If the dimensionality of all elements in the input set to @AVG is not the same, then perform average by explicitly adding the tuples and dividing by the set cardinality (the number of tuples in the set). Note that the MDX Avg function skips missing cell values by default. | **Calculator**  
@AVG(SKIPMISSING, @CHILDREN(East))  
**MDX**  
Avg([East].Children)  
If SKIPMISSING is replaced by SKIPNONE, the translation changes to: Avg([East].Children, Sales, INCLUDEEMPTY)  
For SKIPZERO, the translation is: Avg([East].Children, IIF(Market.CurrentMember.Value=0, Missing, IIF(Market.CurrentMember= Missing,0, Market.CurrentMember.Value) ) )  
For SKIPBOTH, the translation is: Avg([East].Children, IIF(Market.CurrentMember=0, Missing, Market.CurrentMember.Value) ) ) |
| @AVGRANGE       | CrossJoin (first argument, set created out of second argument). The rest is similar to @AVG when the dimensionality of all elements of the input set is identical. | **Calculator**  
@AVGRANGE(SKIPMISSING, Sales, @CHILDREN(West))  
**MDX**  
Avg(CrossJoin({Sales},{[West].Children}))  
If SKIPMISSING is replaced by SKIPNONE, the translation becomes: Avg({[West].Children},Sales,INCLUDEEMPTY)  
If SKIPZERO is used, then the translation is: Avg([West].Children, IIF(Sales = 0, Missing, IIF(Sales = Missing, 0, Sales) ) ) |
| @CHILDREN       | Children                                                             | **Calculator**  
@CHILDREN(Market)  
**MDX**  
Children(Market)  
or  
Market.Children |
<table>
<thead>
<tr>
<th>Calculator</th>
<th>MDX</th>
<th>Remarks/Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>@CONCATENATE</td>
<td>Concat</td>
<td>Calculator</td>
</tr>
<tr>
<td></td>
<td>@MEMBER(@CONCATENATE(&quot;Qtr1&quot;, &quot;1&quot;));</td>
<td>MDX</td>
</tr>
<tr>
<td></td>
<td>Concat(&quot;01&quot;, &quot;01&quot;)</td>
<td></td>
</tr>
<tr>
<td>@CORRELATION</td>
<td>Not supported in MDX.</td>
<td></td>
</tr>
<tr>
<td>@COUNT</td>
<td>Use <strong>Count</strong> if SKIPNONE.</td>
<td>Calculator</td>
</tr>
<tr>
<td></td>
<td>Use <strong>NonEmptyCount</strong> if SKIPMISSING.</td>
<td>MDX</td>
</tr>
<tr>
<td></td>
<td>For SKIPZERO, see the example in the next column.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>For SKIPBOTH, use Count</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Filter(set, value &lt;&gt; 0 &amp;&amp; value &lt;&gt; MISSING))</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Use <strong>Count</strong> if SKIPNONE.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Use <strong>NonEmptyCount</strong> if SKIPMISSING.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>For SKIPZERO, see the example in the next column.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>For SKIPBOTH, use Count</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Filter(set, value &lt;&gt; 0 &amp;&amp; value &lt;&gt; MISSING))</td>
<td></td>
</tr>
<tr>
<td>@CURGEN</td>
<td><strong>Generation</strong> (CurrentMember(dimension))</td>
<td>Calculator</td>
</tr>
<tr>
<td></td>
<td>@CURGEN(Year)</td>
<td>MDX</td>
</tr>
<tr>
<td></td>
<td>Year.CurrentMember.Generation</td>
<td></td>
</tr>
<tr>
<td>@CURLEV</td>
<td><strong>Level</strong> (CurrentMember(dimension))</td>
<td>Calculator</td>
</tr>
<tr>
<td></td>
<td>@CURLEV(Year)</td>
<td>MDX</td>
</tr>
<tr>
<td></td>
<td>Year.CurrentMember.Level</td>
<td></td>
</tr>
<tr>
<td>@CURRMBR</td>
<td><strong>CurrentMember</strong></td>
<td>Calculator</td>
</tr>
<tr>
<td></td>
<td>@CURRMBR(Product)</td>
<td>MDX</td>
</tr>
<tr>
<td></td>
<td>[Product].CurrentMember</td>
<td></td>
</tr>
<tr>
<td>Calculator</td>
<td>MDX</td>
<td>Remarks/Examples</td>
</tr>
<tr>
<td>------------------</td>
<td>----------------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>@CURRMBRANGE</td>
<td>RelMemberRange</td>
<td>Calculator</td>
</tr>
<tr>
<td></td>
<td>@CURRMBRANGE(Year, LEV, 0, -1, 1)</td>
<td>MDX</td>
</tr>
<tr>
<td></td>
<td>RelMemberRange</td>
<td>(Year.CurrentMember, 1, 1, LEVEL)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>See MDX Descendants documentation for examples.</td>
</tr>
<tr>
<td>@DESCENDANTS</td>
<td>Descendants(member)</td>
<td></td>
</tr>
<tr>
<td>@EXP</td>
<td>Exp</td>
<td>Calculator</td>
</tr>
<tr>
<td></td>
<td>@EXP(&quot;Variance %&quot;/100);</td>
<td>MDX</td>
</tr>
<tr>
<td></td>
<td>Exp([Scenario].[Variance %]/100)</td>
<td></td>
</tr>
<tr>
<td>@FACTORIAL</td>
<td>Factorial</td>
<td>Calculator</td>
</tr>
<tr>
<td></td>
<td>@FACTORIAL(5)</td>
<td>MDX</td>
</tr>
<tr>
<td></td>
<td>Factorial(5)</td>
<td></td>
</tr>
<tr>
<td>@GEN, @LEV</td>
<td>Generation, Level</td>
<td></td>
</tr>
<tr>
<td>@GENMBRS, @LEVMBRS</td>
<td>layer.Members</td>
<td></td>
</tr>
<tr>
<td>@IANCESTORS</td>
<td>Ancestors</td>
<td>Shared members are not relevant to aggregate storage outlines.</td>
</tr>
<tr>
<td>@ICHILDREN</td>
<td>Union(member, member. Children)</td>
<td>Calculator</td>
</tr>
<tr>
<td></td>
<td>@ICHILDREN(Market)</td>
<td>MDX</td>
</tr>
<tr>
<td></td>
<td>Union({Market}, {Market.children})</td>
<td></td>
</tr>
<tr>
<td>@IDESCENDANTS</td>
<td>Descendants(member)</td>
<td>Calculator</td>
</tr>
<tr>
<td></td>
<td>@IDESCENDANTS(Market)</td>
<td>MDX</td>
</tr>
<tr>
<td></td>
<td>Descendants(Market)</td>
<td></td>
</tr>
<tr>
<td>@ILSIBLINGS</td>
<td>MemberRange(member. FirstSibling)member</td>
<td>Calculator</td>
</tr>
<tr>
<td></td>
<td>@ILSIBLINGS(Florida)</td>
<td>MDX</td>
</tr>
<tr>
<td></td>
<td>MemberRange(Florida.FirstSibling, Florida.Lag(1))</td>
<td></td>
</tr>
<tr>
<td>Calculator</td>
<td>MDX</td>
<td>Remarks/Examples</td>
</tr>
<tr>
<td>---------------------</td>
<td>--------------</td>
<td>------------------</td>
</tr>
<tr>
<td>@INT</td>
<td>Int</td>
<td>@INT (104.504)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MDX</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Int(104.504)</td>
</tr>
<tr>
<td>@ISACCTYPE</td>
<td>IsAccType</td>
<td>See MDX IsAccType documentation for examples.</td>
</tr>
<tr>
<td>@ISANCEST</td>
<td>IsAncestor</td>
<td>Calculator</td>
</tr>
<tr>
<td></td>
<td></td>
<td>@ISANCEST(California)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MDX</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IsAncestor(Market.CurrentMember, California)</td>
</tr>
<tr>
<td>@ISCHILD</td>
<td>IsChild</td>
<td>See MDX IsChild documentation for examples.</td>
</tr>
<tr>
<td>@ISDESC</td>
<td></td>
<td>See examples.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Calculator</td>
</tr>
<tr>
<td></td>
<td></td>
<td>@ISDESC(Market)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MDX</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IsAncestor([Market], [Market].Dimension.CurrentMember)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Count(Intersect({Member.Descendants}, {Member.dimension.CurrentMember}) = 1</td>
</tr>
<tr>
<td>@ISGEN</td>
<td>IsGeneration</td>
<td>Calculator</td>
</tr>
<tr>
<td></td>
<td></td>
<td>@ISGEN(Market, 2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MDX</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IsGeneration(</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Market.CurrentMember, 2)</td>
</tr>
<tr>
<td>@ISIANCEST</td>
<td>IIF(Is(member, ancestormember) OR IsAncestor(member, ancestormember), &lt;true-part&gt;, &lt;false-part&gt;)</td>
<td>Calculator</td>
</tr>
<tr>
<td></td>
<td></td>
<td>@ISIANCEST(California)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MDX</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IIF(</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IS(Market.CurrentMember, California)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IsAncestor(Market.CurrentMember, California), &lt;true-part&gt;, &lt;false-part&gt;</td>
</tr>
<tr>
<td>@ISIBLINGS</td>
<td>Siblings(member)</td>
<td>Returns a set that includes the specified member and its siblings.</td>
</tr>
<tr>
<td>Calculator</td>
<td>MDX</td>
<td>Remarks/Examples</td>
</tr>
<tr>
<td>-------------</td>
<td>----------------------------------------------------------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>@ISICHLD</td>
<td>IIF(Is(member, childmember) OR IsChild(member, childmember), &lt;true-part&gt;, &lt;false-part&gt;)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Calculator</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>@ISICHLD(South)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>MDX</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IIF(</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Is(Market.CurrentMember, South)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IsChild(Market.CurrentMember, South),</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt;true-part&gt;,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt;false-part&gt;)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>)</td>
<td></td>
</tr>
<tr>
<td>@ISIDESC</td>
<td>See examples.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Calculator</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>@ISIDESC(South)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>MDX</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>{Count(Intersect({[South].Descendants}, {South}) = 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Is(CurrentMember, [South]))</td>
<td></td>
</tr>
<tr>
<td>@ISIPARENT</td>
<td>IIF(Is(member, parentmember)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Calculator</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>@ISIPARENT(Qtr1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>MDX</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IIF(</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Is(Time.CurrentMember, [Qtr1])</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IsChild([Qtr1], Time.CurrentMember),</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt;true-part&gt;,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt;false-part&gt;)</td>
<td></td>
</tr>
<tr>
<td>@ISISIBLING</td>
<td>IsSibling(member, siblingmember)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Calculator</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>@ISISIBLING(Qtr2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>MDX</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IIF(</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IsSibling([Qtr2], Time.CurrentMember)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt;true-part&gt;,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt;false-part&gt;)</td>
<td></td>
</tr>
<tr>
<td>@ISLEV</td>
<td>IsLevel</td>
<td></td>
</tr>
<tr>
<td>Calculator</td>
<td>MDX</td>
<td>Remarks/Examples</td>
</tr>
<tr>
<td>-------------</td>
<td>----------------------------------------------------------------------</td>
<td>------------------</td>
</tr>
</tbody>
</table>
| @ISMBR      | IIF(Count(Intersect(member-set, member)) = 1, true-part, false-part) | Calculator allows a collection of members or cross members that do not subscribe to the rules of an MDX set to appear as the second argument. This functionality cannot be easily replicated without enumerating each element of the second set and testing for intersection. However, if the second argument subscribes to MDX set rules then the translation is easier, as shown. For example: **Calculator**  
  @ISMBR("New York":"New Hampshire")  
  **MDX**  
  IIF( 
    Count( 
      Intersect( 
        {MemberRange([New York],[New Hampshire])}, 
        {Market.CurrentMember} 
      ) 
    ) = 1, 
    <true-part>, <false-part> 
  ) |
| @ISPARENT   | Use IsChild.                                                          | Calculator       |  
  @ISPARENT("New York")  
  **MDX**  
  IsChild(Market.CurrentMember,[New York]) |
| @ISSAMEGEN, @ISSAMELEV | IIF (member.Generation - CurrentMember(dimension).Generation, <true-part>, <false-part>) | Calculator       |  
  @ISSAMEGEN(West)  
  **MDX**  
  IIF( 
    Ordinal( 
      Market.CurrentMember.Generation 
    ) 
    = Ordinal(West.Generation), 
    <true-part>, <false-part> 
  ) |
| @ISSIBLING  | IsSibling                                                             | See MDX IsSibling documentation for examples. |
| @ISUDA      | IsUda                                                                 | See MDX IsUda documentation for examples. |
| @LIST       | .                                                                     | If the member set does not subscribe to MDX set rules, then explicit enumeration is required. For rangelist use CrossJoin(member, set). |
| @LN, @LOG, @LOG10 | Ln, Log, Log10                                                      | . |

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<table>
<thead>
<tr>
<th>Calculator</th>
<th>MDX</th>
<th>Remarks/Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>@LSIBLINGS</td>
<td>MemberRange(member. FirstSibling, member. Lag(1))</td>
<td>Calculator @LSIBLINGS(Qtr4)</td>
</tr>
<tr>
<td>@RSIBLINGS</td>
<td>MemberRange(member.Lead(1), member.LastSibling)</td>
<td>MDX MemberRange([Qtr4].FirstSibling, [Qtr4].Lag(1))</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Calculator @RSIBLINGS(Qtr1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MDX MemberRange([Qtr1].Lead(1), [Qtr1].LastSibling)</td>
</tr>
<tr>
<td>@MATCH</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>@MAX</td>
<td>Max</td>
<td>Use Max if argument list is a set. Otherwise, rewrite logic using Case constructs by explicit enumeration of the argument list.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Calculator @MAX(Jan:Mar)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MDX Max(MemberRange([Jan], [Mar]))</td>
</tr>
<tr>
<td>@MAXRANGE</td>
<td>Max</td>
<td>Calculator @MAXRANGE(Sales, @CHILDREN(Qtr1))</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MDX Max(CrossJoin( {Sales}, {[Qtr1].Children} ) )</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OR Max([Qtr1].Children, Sales)</td>
</tr>
<tr>
<td>Calculator</td>
<td>MDX</td>
<td>Remarks/Examples</td>
</tr>
<tr>
<td>--------------</td>
<td>----------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| @MAXS        | Max                  | **Calculator**  
@MAXS(SKIPMISSING, Sales, @CHILDREN(Qtr1))  
**MDX**  
Max(  
Children([Qtr1]), Sales)  
)  
For SKIPZERO, the translation is:  
Max (Children ([Qtr1]), IIF (Sales = 0, MISSING, Sales))  
For SKIPBOTH, the translation is the same as for SKIPZERO, because Max skips missing values by default. |
| @MAXSRANGE   | Max                  | **Calculator**  
@MAXSRANGE(SKIPMISSING, Sales, @CHILDREN(Qtr1))  
**MDX**  
Max(  
Children([Qtr1]), Sales)  
)  
For SKIPZERO, the translation is:  
Max (Children ([Qtr1]), IIF (Sales = 0, MISSING, Sales))  
For SKIPBOTH, the translation is the same as for SKIPZERO, because Max skips missing values by default. |
| @MDANCESTVAL | Use Ancestor, Value, and Currentmember as shown in the example. | **Calculator**  
@MDANCESTVAL(2, Market, 2, Product, 2, Sales)  
**MDX**  
Construct a tuple consisting of Sales from the Measures dimension, the ancestor of the current member along the Market dimension, and the ancestor of the current member along the Product dimension. Then get the value of the tuple.  
(Sales, Ancestor(Market.CurrentMember, 2), Ancestor(Product.CurrentMember, 2)).Value |
<table>
<thead>
<tr>
<th>Calculator</th>
<th>MDX</th>
<th>Remarks/Examples</th>
</tr>
</thead>
</table>
| @MDPARENTVAL | Use `Parent, Value`, and `CurrentMember` as shown in the example. | **Calculator**
@MDPARENTVAL(2, Market, Product, Sales)

**MDX**
Construct a tuple consisting of Sales from the Measures dimension, the parent of the current member along the Market dimension, and the parent of the current member along the Product dimension. Then get the value of the tuple.

<table>
<thead>
<tr>
<th>@MDSHIFT</th>
<th>See MDX equivalent for @NEXT, and repeat it for each dimension that needs to be shifted. <code>CrossJoin</code> the results from each dimension and get the value of the final tuple. See comments for @MDANCESTVAL.</th>
<th>.</th>
</tr>
</thead>
<tbody>
<tr>
<td>@MEDIAN</td>
<td>Not supported in MDX.</td>
<td>.</td>
</tr>
<tr>
<td>@MEMBER</td>
<td>Not needed in MDX.</td>
<td>.</td>
</tr>
</tbody>
</table>
| @MERGE | `Union(set1, set2)` | **Calculator**
@MERGE(@CHILDREN(East),@CHILDREN(West))

**MDX**
{Union([East].Children, [West].Children)}

| @MIN | `Min` | **Calculator**
@MIN(Jan:Mar)

**MDX**
Min(MemberRange([Jan], [Mar]))

<p>| | | |
| | | |
| | | |</p>
<table>
<thead>
<tr>
<th>Calculator</th>
<th>MDX</th>
<th>Remarks/Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>@MINRANGE</td>
<td>Min</td>
<td>@MINRANGE(Sales, @CHILDREN(Qtr1))</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MDX</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min(</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CrossJoin(</td>
</tr>
<tr>
<td></td>
<td></td>
<td>{Sales},</td>
</tr>
<tr>
<td></td>
<td></td>
<td>([Qtr1].Children)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min([Qtr1].Children, Sales)</td>
</tr>
<tr>
<td>@MINS</td>
<td>Min</td>
<td>@MINS(SKIPMISSING, Sales, @CHILDREN(Qtr1))</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MDX</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min(</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Filter(</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Children([Qtr1]),</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sales &lt;&gt; Missing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For SKIPZERO, the translation is:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min(</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Filter(</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Children([Qtr1]),</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sales &lt;&gt; 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For SKIPBOTH, the translation is:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min(</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Filter(</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Children([Qtr1]),</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sales &lt;&gt; 0 AND</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sales &lt;&gt; Missing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>)</td>
</tr>
<tr>
<td>Calculator</td>
<td>MDX</td>
<td>Remarks/Examples</td>
</tr>
<tr>
<td>------------</td>
<td>-----</td>
<td>------------------</td>
</tr>
</tbody>
</table>
| @MINSRANGE | Min | Calculator  
@MINSRANGE(SKIPMISSING, Sales, @CHILDREN(Qtr1))  
MDX  
Min(  
Filter(Children([Qtr1]),  
Sales <> Missing  
)  
)  
For SKIPZERO, the translation is:  
Min(  
Filter(Children([Qtr1]),  
Sales <> 0  
)  
)  
For SKIPBOTH, the translation is:  
Min(  
Filter(Children([Qtr1]),  
Sales <> 0 AND  
Sales <> Missing  
)  
)  |
| @MOD | Mod | . |
| @MODE | Not supported in MDX. | . |
| @NAME | Not needed in MDX. | . |
| @NEXT | @NEXT(member,[n, range]) returns the nth cell value in the range from the supplied member. The function returns a missing value if the supplied member does not exist in the range. If range is not specified, level-0 members of the Time dimension are used.  
MDX does not have an equivalent function for an arbitrary range. However, if the range is restricted to members from a specific level or generation, then using NextMember (if n=1) or Lead/Lag will work as shown in the sample translation. This is probably the common case. | Calculator  
@Next(Cash)  
MDX  
(NextMember([Year].CurrentMember, LEVEL),  
[Cash]).Value  
Alternative:  
Calculator  
@Next(Cash, 2)  
MDX  
CrossJoin(  
Year.CurrentMember.Lead(2, LEVEL),  
Cash).Value |
<p>| @NEXTS | Not supported in MDX. | . |
| @PARENT | Parent | . |</p>
<table>
<thead>
<tr>
<th>Calculator</th>
<th>MDX</th>
<th>Remarks/Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>@PARENTVAL</td>
<td><code>Parent</code> with <code>CurrentMember</code> as input. Use a tuple to combine the result with the optional second argument to the @PARENTVAL function.</td>
<td>Calculator</td>
</tr>
<tr>
<td></td>
<td>@PARENTVAL(<code>Market</code>, <code>Sales</code>)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MDX (<code>([Sales], [Market].CurrentMember.Parent).Value</code>)</td>
<td></td>
</tr>
<tr>
<td>@POWER</td>
<td>Power</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>@PRIOR</td>
<td>@PRIOR(<code>member</code>, <code>n</code>, <code>range</code>) returns the <code>n</code>th cell value in the range from the supplied member. The function returns a missing value if the supplied member does not exist in the range. If range is not specified, level-0 members of the Time dimension are used. MDX does not have an equivalent function for an arbitrary range. However, if the range is restricted to members from a specific level or generation, then using <code>PrevMember</code> (if <code>n</code>=1) or <code>Lead</code>/<code>Lag</code> will work as shown in the sample translation. This is probably the common case.</td>
<td>Calculator</td>
</tr>
<tr>
<td></td>
<td>@Prior(<code>Cash</code>)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MDX (<code>PrevMember(Year.CurrentMember, LEVEL), [Cash]).Value</code>)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Alternative:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Calculator</td>
<td></td>
</tr>
<tr>
<td></td>
<td>@Prior(<code>Cash</code>, 2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MDX (<code>Year.CurrentMember.Lag(2, LEVEL), [Cash]).Value</code>)</td>
<td></td>
</tr>
<tr>
<td>@PRIORS</td>
<td>Not supported in MDX.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>@RANGE</td>
<td>CrossJoin(<code>member</code>, <code>rangeset</code>)</td>
<td>Calculator</td>
</tr>
<tr>
<td></td>
<td>CrossJoin({<code>Sales</code>}, {<code>[East]</code>.Children})</td>
<td></td>
</tr>
<tr>
<td>@RANK</td>
<td>Not supported in MDX. This is a vector function.</td>
<td></td>
</tr>
<tr>
<td>@REMAINDER</td>
<td>Remainder</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>@REMOVE</td>
<td>Except(<code>set1</code>, <code>set2</code>)</td>
<td>Translation will work only if <code>set1</code> and <code>set2</code> are true MDX sets.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Calculator</td>
<td></td>
</tr>
<tr>
<td></td>
<td>@REMOVE(@CHILDREN(<code>East</code>), @LIST(&quot;New York&quot;, &quot;Connecticut&quot;))</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MDX</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Except <code>([East].Children), ([New York], [Connecticut])</code></td>
<td></td>
</tr>
<tr>
<td>Calculator</td>
<td>MDX</td>
<td>Remarks/Examples</td>
</tr>
<tr>
<td>------------------</td>
<td>----------------------------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>@ROUND</td>
<td>Round</td>
<td></td>
</tr>
<tr>
<td>@SHIFT</td>
<td>See @PRIOR and @NEXT.</td>
<td></td>
</tr>
<tr>
<td>@SIBLINGS</td>
<td>Siblings</td>
<td></td>
</tr>
<tr>
<td>@STDEV, @STDEVP, @STDEVRANGE</td>
<td>Not supported in MDX.</td>
<td></td>
</tr>
<tr>
<td>@SUBSTRING</td>
<td>Not supported in MDX.</td>
<td></td>
</tr>
<tr>
<td>@SUM</td>
<td>Sum</td>
<td>Convert each element of the explist to a tuple so that collectively the tuples can form a set.</td>
</tr>
<tr>
<td>@SUMRANGE</td>
<td>Sum(CrossJoin(member, Xrangelist))</td>
<td>Calculator</td>
</tr>
<tr>
<td></td>
<td>@SUMRANGE(“New York”, Jan:Jun)</td>
<td></td>
</tr>
<tr>
<td>@TODATE</td>
<td>Todate</td>
<td></td>
</tr>
<tr>
<td>@TRUNCATE</td>
<td>Truncate</td>
<td></td>
</tr>
<tr>
<td>@UDA</td>
<td>Uda</td>
<td></td>
</tr>
<tr>
<td>@VAR, @VARPER</td>
<td>Arg1 - Arg2</td>
<td>An aggregate storage outline has no expense tags. Therefore, variance functionality defaults to subtraction.</td>
</tr>
<tr>
<td>@VARIANCE, @VARIANCEP</td>
<td>Not supported in MDX.</td>
<td></td>
</tr>
<tr>
<td>@WITHATTR</td>
<td>WithAttr</td>
<td></td>
</tr>
<tr>
<td>@XRANGE</td>
<td>Not supported in MDX.</td>
<td></td>
</tr>
<tr>
<td>@XREF</td>
<td>Not supported in MDX.</td>
<td></td>
</tr>
</tbody>
</table>

**MDX Function Return Values**

Functions can be used to generate metadata and/or value information that you need to pass to a SELECT statement. Becoming proficient with the functions reduces the need to enumerate tuples, members, numeric values, or other needed values explicitly in the set specifications of a query. More importantly, using functions allows in-depth analysis of your database.

This section contains a listing of query functions by return value. The possible return values are described in these topics:

- “MDX Functions that Return a Member” on page 1070
- “MDX Functions that Return a Set” on page 1071
- “MDX Functions that Return a Tuple” on page 1073
MDX Functions that Return a Member

The following functions return a member or a member value expression.

<table>
<thead>
<tr>
<th>Function</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ancestor</td>
<td>Returns a member that is an ancestor of the specified member, at a specified generation or level.</td>
</tr>
<tr>
<td>ClosingPeriod</td>
<td>Returns the last descendant of a layer, or the last child of the Time dimension.</td>
</tr>
<tr>
<td>Cousin</td>
<td>Returns a child member at a matching outline level and location as a member from another parent.</td>
</tr>
<tr>
<td>CurrentAxisMember</td>
<td>Returns the current axis member in the context of a member value expression argument.</td>
</tr>
<tr>
<td>CurrentMember</td>
<td>Returns the current member in the input dimension. <em>Current</em> is in the context of query execution mechanics. Use in combination with iterative functions such as Filter.</td>
</tr>
<tr>
<td>DateToMember</td>
<td>Returns the date-hierarchy member specified by the input date.</td>
</tr>
<tr>
<td>DefaultMember</td>
<td>Returns the default member in the input dimension.</td>
</tr>
<tr>
<td>FirstChild</td>
<td>Returns the first child of the input member.</td>
</tr>
<tr>
<td>FirstSibling</td>
<td>Returns the first child of the input member's parent.</td>
</tr>
<tr>
<td>Lag</td>
<td>Using the default order of members in a database outline, returns a member that is $n$ steps behind the input member.</td>
</tr>
<tr>
<td>LastChild</td>
<td>Returns the last child of the input member.</td>
</tr>
<tr>
<td>LastSibling</td>
<td>Returns the last child of the input member's parent.</td>
</tr>
<tr>
<td>Lead</td>
<td>Using the default order of members in a database outline, returns a member that is $n$ steps past the input member.</td>
</tr>
<tr>
<td>NextMember</td>
<td>Returns the member (in the same layer) that is one step past the input member.</td>
</tr>
<tr>
<td>OpeningPeriod</td>
<td>Returns the first descendant of a layer, or the first child of the Time dimension.</td>
</tr>
<tr>
<td>ParallelPeriod</td>
<td>Returns a member from a prior time period as the specified or default time member.</td>
</tr>
<tr>
<td>Parent</td>
<td>Returns a member's parent.</td>
</tr>
<tr>
<td>PrevMember</td>
<td>Returns the member (in the same layer) that is one step prior to the input member.</td>
</tr>
<tr>
<td>StrToMbr</td>
<td>Converts a string to a member name.</td>
</tr>
</tbody>
</table>
**MDX Functions that Return a Set**

The following categories of functions return a set or a set value expression.

- Pure Set Functions
- Metadata-based Set Functions
- Data-based Set Functions

### Pure Set Functions

Functions in this category derive their results without getting any further information from the cube.

<table>
<thead>
<tr>
<th>Function</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>CrossJoin</td>
<td>Returns a cross-section of two sets from different dimensions.</td>
</tr>
<tr>
<td>Distinct</td>
<td>Deletes duplicate tuples from a set.</td>
</tr>
<tr>
<td>Except</td>
<td>Returns a subset containing the differences between two sets.</td>
</tr>
<tr>
<td>Generate</td>
<td>For each tuple in set1, return set2.</td>
</tr>
<tr>
<td>Head</td>
<td>Returns the first $n$ members or tuples present in a set.</td>
</tr>
<tr>
<td>Intersect</td>
<td>Returns the intersection of two input sets.</td>
</tr>
<tr>
<td>Subset</td>
<td>Returns a subset from a set, in which the subset is a numerically specified range of tuples.</td>
</tr>
<tr>
<td>Tail</td>
<td>Returns the last $n$ members or tuples present in a set.</td>
</tr>
<tr>
<td>TupleRange</td>
<td>Returns the range of tuples between (and inclusive of) two tuples at the same level.</td>
</tr>
<tr>
<td>Union</td>
<td>Returns the union of two input sets.</td>
</tr>
</tbody>
</table>

### Metadata-based Set Functions

Functions in this category derive their results using metadata information from the cube.

<table>
<thead>
<tr>
<th>Function</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ancestors</td>
<td>Returns a set of ancestors up to a specified layer or distance.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Returns all base members that are associated with the specified attribute member.</td>
</tr>
<tr>
<td>Children</td>
<td>Returns all child members of the input member.</td>
</tr>
<tr>
<td>Descendants</td>
<td>Returns the set of descendants of a member at specified layers.</td>
</tr>
<tr>
<td>DrilldownByLayer</td>
<td>Drills down members of a set that are at a specified layer.</td>
</tr>
<tr>
<td>DrilldownMember</td>
<td>Drills down on any members or tuples of &lt;set1&gt; that are also found in &lt;set2&gt;.</td>
</tr>
<tr>
<td>DrillupByLayer</td>
<td>Drills up the members of a set that are below a specified layer.</td>
</tr>
<tr>
<td>Function</td>
<td>Result</td>
</tr>
<tr>
<td>---------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>DrillupMember</td>
<td>Tests two sets for common ancestors, and drills up members in the first set to the layer of the ancestors which are present in the second set.</td>
</tr>
<tr>
<td>Extract</td>
<td>Returns a subset containing only the tuples of a specified dimensionality.</td>
</tr>
<tr>
<td>Hierarchize</td>
<td>Sorts members according to the default member ordering as represented in the database outline.</td>
</tr>
<tr>
<td>LastPeriods</td>
<td>Returns a set of members ending either at the specified member or at the current member in the time dimension.</td>
</tr>
<tr>
<td>MemberRange</td>
<td>Returns the range of members positioned between two input members (inclusive) at the same generation or level.</td>
</tr>
<tr>
<td>Members</td>
<td>Returns a set of all members of a given dimension, hierarchy, or layer.</td>
</tr>
<tr>
<td>PeriodsToDate</td>
<td>Returns a set of dynamic-time-series members from the beginning of a given layer up to a given member in that layer (or up to the default member); or, returns members up to the current member of the Time dimension.</td>
</tr>
<tr>
<td>RelMemberRange</td>
<td>Returns a set based on the relative position of the specified member.</td>
</tr>
<tr>
<td>Siblings</td>
<td>Returns the siblings of the input member.</td>
</tr>
<tr>
<td>Uda</td>
<td>Returns all members that share a specified user-defined attribute.</td>
</tr>
<tr>
<td>WithAttr</td>
<td>Returns all base members that are associated with an attribute member of the specified type.</td>
</tr>
<tr>
<td>AttributeEx</td>
<td>Given the varying attribute member and the perspective setting, returns the associated base member list.</td>
</tr>
<tr>
<td>WithAttrEx</td>
<td>Given the varying attribute dimension, condition, predicate, and perspective setting, returns the base member list satisfying the predicate.</td>
</tr>
<tr>
<td>xTD</td>
<td>Functions returning period-to-date values.</td>
</tr>
</tbody>
</table>

Data-based Set Functions

Functions in this category derive their results using data values from the cube.

<table>
<thead>
<tr>
<th>Function</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>BottomCount</td>
<td>Returns a set of n elements ordered from smallest to largest, optionally based on an evaluation.</td>
</tr>
<tr>
<td>BottomPercent</td>
<td>Returns the smallest possible subset, with elements listed from smallest to largest, of a set for which the total results of a numeric evaluation are at least a given percentage.</td>
</tr>
<tr>
<td>BottomSum</td>
<td>Returns the smallest possible subset, with elements listed from smallest to largest, of a set for which the total results of a numeric evaluation are at least a given sum.</td>
</tr>
<tr>
<td>Case</td>
<td>Performs conditional expressions.</td>
</tr>
<tr>
<td>Filter</td>
<td>Returns those parts of a set which meet the criteria of a search condition.</td>
</tr>
<tr>
<td>IIF</td>
<td>Performs a conditional test, and returns an appropriate numeric expression or set depending on whether the test evaluates to true or false.</td>
</tr>
<tr>
<td>Leaves</td>
<td>Returns the set of level 0 (leaf) members that contribute to the value of the specified member.</td>
</tr>
<tr>
<td>Function</td>
<td>Result</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Order</td>
<td>Sorts members of a set in order based on an expression.</td>
</tr>
<tr>
<td>TopCount</td>
<td>Returns a set of n elements ordered from largest to smallest, optionally based on an evaluation.</td>
</tr>
<tr>
<td>TopPercent</td>
<td>Returns the smallest possible subset, with elements listed from largest to smallest, of a set for which the total results of a numeric evaluation are at least a given percentage.</td>
</tr>
<tr>
<td>TopSum</td>
<td>Returns the smallest possible subset, with elements listed from largest to smallest, of a set for which the total results of a numeric evaluation are at least a given sum.</td>
</tr>
</tbody>
</table>

**MDX Functions that Return a Tuple**

The following functions return a tuple.

<table>
<thead>
<tr>
<th>Function</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>CurrentTuple</td>
<td>Returns the current tuple in a set. Current is in the context of query execution mechanics. Use in combination with iterative functions such as Filter.</td>
</tr>
<tr>
<td>Item</td>
<td>Extracts a member from a tuple.</td>
</tr>
</tbody>
</table>

**MDX Functions that Return a Number**

The following functions return a value.

<table>
<thead>
<tr>
<th>Function</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abs</td>
<td>Returns absolute value of an expression.</td>
</tr>
<tr>
<td>Aggregate</td>
<td>Aggregates the Accounts member based on its Time Balance behavior.</td>
</tr>
<tr>
<td>Avg</td>
<td>Returns the average of values found in the tuples of a set.</td>
</tr>
<tr>
<td>Case</td>
<td>Performs conditional expressions.</td>
</tr>
<tr>
<td>CellValue</td>
<td>Returns the numeric value of the current cell.</td>
</tr>
<tr>
<td>CoalesceEmpty</td>
<td>Returns the first non #Missing value from the given value expressions.</td>
</tr>
<tr>
<td>Count</td>
<td>Returns the count of the number of tuples in a set.</td>
</tr>
<tr>
<td>DateDiff</td>
<td>Returns the difference between two input dates.</td>
</tr>
<tr>
<td>DatePart</td>
<td>Returns a number representing a date part (such as Week).</td>
</tr>
<tr>
<td>EnumText</td>
<td>Returns the text value corresponding to a numeric value in a text list.</td>
</tr>
<tr>
<td>EnumValue</td>
<td>Returns the internal numeric value for a text value in a text list.</td>
</tr>
<tr>
<td>Exp</td>
<td>Returns the exponent of an expression.</td>
</tr>
<tr>
<td><strong>Function</strong></td>
<td><strong>Result</strong></td>
</tr>
<tr>
<td>---------------</td>
<td>----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Factorial</td>
<td>Returns the factorial of an expression.</td>
</tr>
<tr>
<td>IIF</td>
<td>Performs a conditional test, and returns an appropriate numeric expression or set depending on whether the test evaluates to true or false.</td>
</tr>
<tr>
<td>InStr</td>
<td>Returns a number specifying the position of the first occurrence of one string within another.</td>
</tr>
<tr>
<td>Int</td>
<td>Returns the next lowest integer value of an expression.</td>
</tr>
<tr>
<td>Len</td>
<td>Returns length of a string.</td>
</tr>
<tr>
<td>Ln</td>
<td>Returns the natural logarithm of an expression.</td>
</tr>
<tr>
<td>Log</td>
<td>Returns the logarithm of an expression to a specified base.</td>
</tr>
<tr>
<td>Log10</td>
<td>Returns the base-10 logarithm of an expression.</td>
</tr>
<tr>
<td>Max</td>
<td>Returns the maximum of values found in the tuples of a set.</td>
</tr>
<tr>
<td>Median</td>
<td>Returns the value of the median tuple of a set.</td>
</tr>
<tr>
<td>Min</td>
<td>Returns the minimum of values found in the tuples of a set.</td>
</tr>
<tr>
<td>Mod</td>
<td>Returns the modulus (remainder value) of a division operation.</td>
</tr>
<tr>
<td>NonEmptyCount</td>
<td>Returns the count of the number of tuples in a set that evaluate to nonempty values.</td>
</tr>
<tr>
<td>NTile</td>
<td>Returns a division number of a tuple in a set.</td>
</tr>
<tr>
<td>Ordinal</td>
<td>Returns a number indicating depth in the hierarchy.</td>
</tr>
<tr>
<td>Percentile</td>
<td>Returns the value of the tuple that is at a given percentile of a set.</td>
</tr>
<tr>
<td>Power</td>
<td>Returns the value of the numeric value expression raised to power.</td>
</tr>
<tr>
<td>Rank</td>
<td>Returns the numeric position of a tuple in a set.</td>
</tr>
<tr>
<td>RealValue</td>
<td>Returns a value for the specified member or tuple without the inherited attribute dimension context.</td>
</tr>
<tr>
<td>Remainder</td>
<td>Returns the remainder value of the numeric value expression.</td>
</tr>
<tr>
<td>Round</td>
<td>Rounds a numeric value expression to the specified number of digits.</td>
</tr>
<tr>
<td>Stddev</td>
<td>Calculates standard deviation based on a sample.</td>
</tr>
<tr>
<td>Stddevp</td>
<td>Calculates standard deviation based on a population.</td>
</tr>
<tr>
<td>StrToNum</td>
<td>Converts a string to a number.</td>
</tr>
<tr>
<td>Sum</td>
<td>Returns the sum of values of tuples in a set.</td>
</tr>
<tr>
<td>Todate</td>
<td>Converts a date string to a value that is usable in calculations.</td>
</tr>
<tr>
<td>Truncate</td>
<td>Removes the fractional part of a numeric value expression, returning the integer.</td>
</tr>
</tbody>
</table>
**MDX Functions that Return a Dimension**

The `Dimension` function returns the dimension that contains the input element.

**MDX Functions that Return a Layer**

The following functions return a layer. A layer is used to group the members of a dimension by hierarchical depth.

In Essbase, a layer is either a generation or a level, indicated by a name or a number.

<table>
<thead>
<tr>
<th>Function</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generation</td>
<td>Returns the generation of the input member.</td>
</tr>
<tr>
<td>Generations</td>
<td>Returns the generation specified by the input numerical depth and the input dimension or hierarchy.</td>
</tr>
<tr>
<td>Level</td>
<td>Returns the level of the input member.</td>
</tr>
<tr>
<td>Levels</td>
<td>Returns the level specified by the input numerical depth and the input dimension or hierarchy.</td>
</tr>
</tbody>
</table>

**MDX Functions that Return a Boolean**

The following functions return a Boolean (TRUE or FALSE).

<table>
<thead>
<tr>
<th>Function</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is</td>
<td>Returns TRUE if two members are identical.</td>
</tr>
<tr>
<td>IsAccType</td>
<td>Returns FALSE if the current member has the associated accounts tag.</td>
</tr>
<tr>
<td>IsAncestor</td>
<td>Returns TRUE if the first member is an ancestor of the second member.</td>
</tr>
<tr>
<td>IsChild</td>
<td>Returns TRUE if the first member is a child of the second member.</td>
</tr>
<tr>
<td>IsEmpty</td>
<td>Returns True if the value of an input numeric-value-expression is #MISSING.</td>
</tr>
<tr>
<td>IsGeneration</td>
<td>Returns TRUE if the member is in a specified generation.</td>
</tr>
<tr>
<td>IsLeaf</td>
<td>Returns TRUE if the member is a level-0 member.</td>
</tr>
<tr>
<td>IsLevel</td>
<td>Returns TRUE if the member is in a specified level.</td>
</tr>
<tr>
<td>IsSibling</td>
<td>Returns TRUE if the first member is a sibling of the second member.</td>
</tr>
<tr>
<td>IsUda</td>
<td>Returns TRUE if the member has the associated UDA tag (user-defined attribute).</td>
</tr>
<tr>
<td>IsValid</td>
<td>Returns TRUE if the specified element validates successfully.</td>
</tr>
<tr>
<td>Contains</td>
<td>Returns TRUE if a tuple is found within a set.</td>
</tr>
</tbody>
</table>
MDX Functions that Return a Date

The following functions return a date.

<table>
<thead>
<tr>
<th>Function</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>DateRoll</td>
<td>To the given date, rolls (adds or subtracts) a number of specific time intervals, returning another date.</td>
</tr>
<tr>
<td>GetFirstDate</td>
<td>Returns the start date for a date-hierarchy member.</td>
</tr>
<tr>
<td>GetLastDate</td>
<td>Returns the end date for a date-hierarchy member.</td>
</tr>
<tr>
<td>GetNextDay</td>
<td>To the given date and the week day, gets the next date after input date that corresponds to the week day.</td>
</tr>
<tr>
<td>GetFirstDay</td>
<td>For a given date_part, returns the first day of the time interval for the input date.</td>
</tr>
<tr>
<td>GetLastDay</td>
<td>For a given date_part, returns the last day of the time interval for the input date.</td>
</tr>
<tr>
<td>ToDateEx</td>
<td>Converts date strings to dates.</td>
</tr>
<tr>
<td>Today</td>
<td>Returns a number representing the current date.</td>
</tr>
<tr>
<td>JulianDate</td>
<td>For the given UNIX date, gets its Julian date.</td>
</tr>
<tr>
<td>UnixDate</td>
<td>For the given Julian date, gets its UNIX date.</td>
</tr>
</tbody>
</table>

MDX Functions that Return a String

The following functions return a string.

<table>
<thead>
<tr>
<th>Function</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>FormatDate</td>
<td>Formats date strings.</td>
</tr>
<tr>
<td>Concat</td>
<td>Concatenates input strings.</td>
</tr>
<tr>
<td>Left</td>
<td>Returns a specified number of characters from the left side of the string.</td>
</tr>
<tr>
<td>Right</td>
<td>Returns a specified number of characters from the right side of the string.</td>
</tr>
<tr>
<td>LTrim</td>
<td>Trims whitespace on the left of the string.</td>
</tr>
<tr>
<td>RTrim</td>
<td>Trims whitespace on the right of the string.</td>
</tr>
<tr>
<td>Lower</td>
<td>Converts upper-case string to lower case.</td>
</tr>
<tr>
<td>Upper</td>
<td>Converts lower-case string to upper case.</td>
</tr>
<tr>
<td>Substring</td>
<td>Returns the substring between a starting and ending position.</td>
</tr>
<tr>
<td>NumToStr</td>
<td>Converts a double-precision floating-point value into a decimal string.</td>
</tr>
</tbody>
</table>
### MDX Function List

Consult the Contents pane for a list of MDX functions by return value.

<table>
<thead>
<tr>
<th>Function</th>
<th>Function</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abs</td>
<td>Generations</td>
<td>Min</td>
</tr>
<tr>
<td>Aggregate</td>
<td>GetFirstDate</td>
<td>Mod</td>
</tr>
<tr>
<td>Ancestor</td>
<td>GetFirstDay</td>
<td>NextMember</td>
</tr>
<tr>
<td>Ancestors</td>
<td>GetLastDate</td>
<td>NonEmptyCount</td>
</tr>
<tr>
<td>Attribute</td>
<td>GetLastDay</td>
<td>NonEmptySubset</td>
</tr>
<tr>
<td>AttributeEx</td>
<td>GetNextDay</td>
<td>NTile</td>
</tr>
<tr>
<td>Avg</td>
<td>GetRoundDate</td>
<td>NumToStr</td>
</tr>
<tr>
<td>BottomCount</td>
<td>Head</td>
<td>OpeningPeriod</td>
</tr>
<tr>
<td>BottomPercent</td>
<td>Hierarchize</td>
<td>Order</td>
</tr>
<tr>
<td>BottomSum</td>
<td>IIF</td>
<td>Ordinal</td>
</tr>
<tr>
<td>Case</td>
<td>InStr</td>
<td>ParallelPeriod</td>
</tr>
<tr>
<td>CellValue</td>
<td>InString</td>
<td>Parent</td>
</tr>
<tr>
<td>Children</td>
<td>Int</td>
<td>Percentile</td>
</tr>
<tr>
<td>ClosingPeriod</td>
<td>Intersect</td>
<td>PeriodsToDate</td>
</tr>
<tr>
<td>CoalesceEmpty</td>
<td>Is</td>
<td>Power</td>
</tr>
<tr>
<td>Concat</td>
<td>IsAccType</td>
<td>PrevMember</td>
</tr>
<tr>
<td>Contains</td>
<td>IsAncestor</td>
<td>Rank</td>
</tr>
<tr>
<td>Count</td>
<td>IsChild</td>
<td>RealValue</td>
</tr>
<tr>
<td>Cousin</td>
<td>IsEmpty</td>
<td>RelMemberRange</td>
</tr>
<tr>
<td>CrossJoin</td>
<td>IsGeneration</td>
<td>Remainder</td>
</tr>
<tr>
<td>CurrentAxisMember</td>
<td>IsLeaf</td>
<td>Right</td>
</tr>
<tr>
<td>CurrentMember</td>
<td>IsLevel</td>
<td>Round</td>
</tr>
<tr>
<td>CurrentTuple</td>
<td>IsMatch</td>
<td>RTrim</td>
</tr>
<tr>
<td>DateDiff</td>
<td>IsSibling</td>
<td>Siblings</td>
</tr>
<tr>
<td>DatePart</td>
<td>IsUda</td>
<td>Stddev</td>
</tr>
<tr>
<td>DateRoll</td>
<td>IsValid</td>
<td>Stddevp</td>
</tr>
<tr>
<td>DateToMember</td>
<td>Item</td>
<td>StrToMbr</td>
</tr>
<tr>
<td>DefaultMember</td>
<td>JulianDate</td>
<td>StrToNum</td>
</tr>
<tr>
<td>------------------------</td>
<td>---------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Descendants</td>
<td>Lag</td>
<td>Subset</td>
</tr>
<tr>
<td>Distinct</td>
<td>LastChild</td>
<td>Substring</td>
</tr>
<tr>
<td>Dimension</td>
<td>LastPeriods</td>
<td>Sum</td>
</tr>
<tr>
<td>DrilldownByLayer</td>
<td>LastSibling</td>
<td>Tail</td>
</tr>
<tr>
<td>DrilldownMember</td>
<td>Lead</td>
<td>Todate</td>
</tr>
<tr>
<td>DrillupByLayer</td>
<td>Leaves</td>
<td>TodateEx</td>
</tr>
<tr>
<td>DrillupMember</td>
<td>Left</td>
<td>Today</td>
</tr>
<tr>
<td>DTS</td>
<td>Len</td>
<td>TopCount</td>
</tr>
<tr>
<td>EnumText</td>
<td>Level</td>
<td>TopPercent</td>
</tr>
<tr>
<td>EnumValue</td>
<td>Levels</td>
<td>TopSum</td>
</tr>
<tr>
<td>Except</td>
<td>LinkMember</td>
<td>Truncate</td>
</tr>
<tr>
<td>Exp</td>
<td>Ln</td>
<td>TupleRange</td>
</tr>
<tr>
<td>Extract</td>
<td>Log</td>
<td>Uda</td>
</tr>
<tr>
<td>Factorial</td>
<td>Log10</td>
<td>Union</td>
</tr>
<tr>
<td>Filter</td>
<td>Lower</td>
<td>UnixDate</td>
</tr>
<tr>
<td>FirstChild</td>
<td>LTrim</td>
<td>Upper</td>
</tr>
<tr>
<td>FirstSibling</td>
<td>Max</td>
<td>Value</td>
</tr>
<tr>
<td>FormatDate</td>
<td>Median</td>
<td>WithAttr</td>
</tr>
<tr>
<td>Generate</td>
<td>MemberRange</td>
<td>WithAttrEx</td>
</tr>
<tr>
<td>Generation</td>
<td>Members</td>
<td>xTD</td>
</tr>
</tbody>
</table>

### Abs

Returns the absolute value of expression. The absolute value of a number is that number less its sign. A negative number becomes positive, while a positive number remains positive.

#### Syntax

```
Abs ( numeric_value_expression )
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>numeric_value_expression</td>
<td>Numeric value expression (see “MDX Grammar Rules” on page 1012).</td>
</tr>
</tbody>
</table>
**Example**

The following example is based on the Demo Basic database. The absolute value is taken in case Variance is a negative number. Absolute Variance is always a non-negative number.

The following query:

```sql
WITH MEMBER
    [Scenario].[Absolute Variance]
AS
    'Abs([Scenario].[Actual] - [Scenario].[Budget])'
SELECT
    { [Year].[Qtr1].children }
ON COLUMNS,
    { [Scenario].children, [Scenario].[Absolute Variance] }
ON ROWS
FROM
    Demo.Basic
WHERE
    ([Accounts].[Sales], [Product].[VCR], [Market].[San_Francisco])
```

returns the grid:

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual</td>
<td>1323</td>
<td>1290</td>
<td>1234</td>
</tr>
<tr>
<td>Budget</td>
<td>1200</td>
<td>1100</td>
<td>1100</td>
</tr>
<tr>
<td>Variance</td>
<td>123</td>
<td>190</td>
<td>134</td>
</tr>
<tr>
<td>Absolute Variance</td>
<td>123</td>
<td>190</td>
<td>134</td>
</tr>
</tbody>
</table>

**Aggregate**

Aggregates the Accounts member based on its Time Balance behavior.

**Syntax**

```sql
Aggregate ( set [, accounts_member] )
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>A set containing tuples to be aggregated. If empty, #Missing is returned.</td>
</tr>
<tr>
<td>accounts_member</td>
<td>A member from an Accounts dimension. If omitted, the current member from Accounts is used. If there is no Accounts dimension, this function behaves the same as Sum.</td>
</tr>
</tbody>
</table>

**Notes**

For optimized performance of this function on aggregate storage databases, include in your query the following kinds of sets:

- Any of the following functions, used within the named set and/or as an argument to this function: Intersect, CurrentMember, Distinct, CrossJoin, PeriodsToDate.
The Filter function, with the search condition defined as: `dimensionName.CurrentMember IS memberName`.

The IIF function, with the `true_part` and `false_part` being sets that meet the above criteria.

The use of any other functions (such as Members) disables the optimization.

The second parameter, `numeric_value_expression`, must be included for optimal performance.

Optimal query performance may require a larger formula cache size. If you get an error message similar to the following, adjust the `MAXFORMULACACHESIZE` essbase.cfg setting accordingly:

```
Not enough memory for formula execution. Set MAXFORMULACACHESIZE configuration parameter to [1072]KB and try again.
```

For each tuple in `set`, the value of `accounts_member` is evaluated.

If `accounts_member` has no time balance tag, or if `set` is one-dimensional, this function behaves the same as `Sum()`.

If `accounts_member` has a time balance tag, this function behaves as follows:

- For TB First, returns the value of `accounts_member` for the first tuple in `set`.
- For TB First with SKIP, scans tuples in `set` from first to last and returns first tuple with non-empty value for `accounts_member`.
- For TB Last, returns the value of `accounts_member` for the last tuple in `set`.
- For TB Last with SKIP, scans tuples in `set` from last to first and returns first tuple with non-empty value for `accounts_member`.
- For TB Average, returns the average of values of `accounts_member` at each tuple in `set`.
- For TB Average with SKIP, returns the average of value of `accounts_member` at each tuple in `set` without factoring empty values.

**Example**

```plaintext
WITH
    SET [T1] AS '{[Time].[1st Half]}'
    SET [GM] AS '{Children ([Geography].[South])}'
    MEMBER [Measures].[m1] as 'Aggregate(CrossJoin([T1],[Geography].CurrentMember)),
    [Measures].[Price Paid])'
SELECT
    {[Measures].[m1]}
ON COLUMNS,
    NON EMPTY {CrossJoin([T1],[GM])}
ON ROWS
FROM ASOSamp.Sample
```

returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>m1</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1st Half, DISTRICT OF COLUMBIA)</td>
<td>961107.26</td>
</tr>
<tr>
<td>(axis)</td>
<td>m1</td>
</tr>
<tr>
<td>------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>(1st Half, DELAWARE)</td>
<td>245394.68</td>
</tr>
<tr>
<td>(1st Half, FLORIDA)</td>
<td>1446868.96</td>
</tr>
<tr>
<td>(1st Half, GEORGIA)</td>
<td>4766285.74</td>
</tr>
<tr>
<td>(1st Half, MARYLAND)</td>
<td>2496467.86</td>
</tr>
<tr>
<td>(1st Half, NORTH CAROLINA)</td>
<td>4660670.94</td>
</tr>
<tr>
<td>(1st Half, SOUTH CAROLINA)</td>
<td>2524777.6</td>
</tr>
<tr>
<td>(1st Half, VIRGINIA)</td>
<td>6253779.5</td>
</tr>
<tr>
<td>(1st Half, WEST VIRGINIA)</td>
<td>5009523.72</td>
</tr>
</tbody>
</table>

See Also

- Sum

**Ancestor**

Given the input member, this function returns an ancestor at the specified layer.

**Syntax**

```
Ancestor ( member, layer | index [, hierarchy ] )
```

**Parameter Description**

- **member**: The member for which an ancestor is sought.
- **layer**: Layer specification.
- **index**: A number of hierarchical steps up from `member`, locating the ancestor you want returned.
- **hierarchy**: Optional. A specific hierarchy within the time dimension.

**Notes**

- The return value of this function is a member. If you want the return value to be a set, use `Ancestors`.
- Do not use negative numbers for `index`. If you want to return lower members, use `Descendants` instead of Ancestor. `Ancestor([Qtr1], -1)` would return an empty member, not a descendant.
- If you use `layer` to specify a level but no ancestor exists at that level, then the return value is an empty member. For example, in the Sample Basic database, consider the level numbers of the ancestors of the member [Additions] in the [Measures] dimension:
[Additions], being a leaf-level member, has level number 0.

[Inventory] has level number 1.

[Measures] has level number 3, as one of its children [Profit] has level number 2.

The level number of a member = (highest level number among its children) + 1. Therefore, Ancestor ([Measures].[Additions], [Measures].Levels(2)) returns an empty member, because [Additions] does not have an ancestor with level number 2.

**Example**

Ancestor ( [New York], [Market].levels(2) )

returns the member [Market], which is the ancestor of [New York] that is located at level 2 in the outline.

Ancestor ( [Year].[Jan], [Year].generations(2) )

returns the member [Qtr1], which is the ancestor of Jan that is located in the second generation of the Year dimension.

Ancestor ( [Feb], 2 )

returns the member [Year], which is the grandparent of Feb.

Ancestor ( [Feb], 0 )

returns the member [Feb]. An "ancestor" that is zero steps away is considered to be the member itself.

**Ancestors**

Given the input member and a layer or distance, this function returns a set of ancestors along with the input member.
When the layer specification is a level, this function returns all ancestors having a level no greater than the input level. For example, Ancestors ([Additions], [Measures].Levels(2)) returns {[Inventory], [Additions]}.

**Syntax**

Ancestors ( member, layer | index )

**Parameter Description**

- **member**: The member for which a set of ancestors is sought.
- **layer**: Layer specification.
- **index**: A number of hierarchical steps up from member, locating the highest ancestor you want returned in the result set.

**Notes**

- Do not use negative numbers for index. If you want to return lower members, use Descendants instead of Ancestors. Ancestors([Qtr1], -1) would return an empty member, not a descendant.
- If you use layer to specify a level but no ancestors exist at that level, then the return value is an empty member.

**Example**

Ancestors ( [New York], [Market].levels(2) )

returns { [Market], [East], [New York] }, the self-inclusive set of [New York] ancestors beginning with the ancestor that is located at level 2 of the Market dimension.

Ancestors ( [Feb], 1 )

returns { [Qtr1], [Feb] }, the self-inclusive set of ancestors beginning with the ancestor one step higher than Feb.

Ancestors ( [Feb], 0 )

returns { [Feb] }.

Using the ASOSamp.Sample database,

Ancestors ([94089], [Geography].generations(2))

returns { [West], [CA], [SUNNYVALE - CA], [94089] }, the self-inclusive set of 94089 ancestors beginning with the second generation of the Geography dimension.

**Attribute**

Returns all base members that are associated with a specified attribute member.

**Syntax**

Attribute ( member )
Parameter | Description
--- | ---
member | Specification of a member from an attribute dimension.

Example

The following query

```sql
SELECT {
  ([Year].Children)
ON COLUMNS,
  Attribute ([Ounces_12])
ON ROWS
FROM Sample.Basic
```

returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cola</td>
<td>5096</td>
<td>5892</td>
<td>6583</td>
<td>5206</td>
</tr>
<tr>
<td>Diet Cola</td>
<td>1359</td>
<td>1534</td>
<td>1528</td>
<td>1287</td>
</tr>
<tr>
<td>Old Fashioned</td>
<td>1697</td>
<td>1734</td>
<td>1883</td>
<td>1887</td>
</tr>
<tr>
<td>Sarsaparilla</td>
<td>1153</td>
<td>1231</td>
<td>1159</td>
<td>1093</td>
</tr>
<tr>
<td>Diet Cream</td>
<td>2695</td>
<td>2723</td>
<td>2855</td>
<td>2820</td>
</tr>
</tbody>
</table>

See Also

- WithAttr

AttributeEx

Returns the set of base members that are associated with a specified varying attribute member or dimension, given the perspective setting.

Syntax

```
AttributeEx ( member|dimension, ANY, tuple|member[,tuple|member] )
```

Parameter | Description
--- | ---
member | Specification of a member from an attribute dimension.
dimension | Specification of an attribute dimension.
ANY | The keyword ANY.
tuple | member | Level 0 start tuple (or member) of the independent dimension set. The tuple must contain all the discrete dimensions followed by the continuous dimension members, in the same order that the continuous range has been defined.
**Parameter** | **Description**
---|---
tuple | member  Optional level 0 end tuple (or member) of the independent dimension set. The tuple must contain all the discrete dimensions followed by the continuous dimension members, in the same order that the continuous range has been defined.

**Example**

Consider the following scenario: Products are packaged under different ounces over time and the market state, according to the marketing strategy of the company. Ounces is defined as a varying attribute for the Product dimension, to capture the varying attribute association over the continuous Year dimension and the discrete Market dimension.

Year and Market are the independent dimensions, and level-0 tuple months (for example, Jan) combined with a market state (for example, California) is a perspective for which the varying attribute association is defined.

The following query analyzes the Ounces_32 sales performance of products packaged as Ounces_32 any time from Jul to Dec in New York over all quarters. This is the reality view, which gives the most current view of metrics as they happened over time.

```
WITH PERSPECTIVE REALITY for Ounces
SELECT
  { Qtr1, Qtr2, Qtr3, Qtr4}
ON COLUMNS,
  (AttributeEx(Ounces_32, ANY, ([New York], Jul), ([New York], Dec)))
ON ROWS
FROM
  app.db
WHERE
  (Sales, [New York], Ounces_32);
```

**See Also**
- `WithAttrEx`

**Avg**

Returns the average of values found in the tuples of a set.

**Syntax**

```
Avg ( set [, numeric_value_expression [, IncludeEmpty ] ] )
```

**Parameter** | **Description**
---|---
set | Set specification.
numeric_value_expression | Numeric value expression (see “MDX Grammar Rules” on page 1012). `Avg()` sums the numeric value expression and then takes the average.
IncludeEmpty | Use this keyword if you want to include in the average any tuples with #MISSING values. Otherwise, they are omitted by default.
Notes

The average is calculated as $\text{sum over the tuples in the set of numeric_value_expr} / \text{count}$, where $\text{count}$ is the number of tuples in the set. Tuples with missing values are not included in count unless IncludeEmpty is specified.

The return value of Avg is #MISSING if either of the following is true:

- The input set is empty.
- All tuple evaluations result in #MISSING values.

Example

Empty Values Included in Calculation of the Average

The following query

```sql
WITH MEMBER
    [Market].[Western Avg]
AS
    'Avg ([Market].[California]:[Market].[Nevada], [Measures].[Sales], INCLUDEEMPTY)'

SELECT
    { [Product].[Colas].children }
ON COLUMNS,
    { [Market].[West].children, [Market].[Western Avg] }
ON ROWS
FROM
    Sample.Basic
WHERE
    ([Measures].[Sales], [Year].[Jan], [Scenario].[Actual])
```

returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Cola</th>
<th>Diet Cola</th>
<th>Caffeine Free Cola</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>678</td>
<td>118</td>
<td>145</td>
</tr>
<tr>
<td>Oregon</td>
<td>160</td>
<td>140</td>
<td>150</td>
</tr>
<tr>
<td>Washington</td>
<td>130</td>
<td>190</td>
<td>#Missing</td>
</tr>
<tr>
<td>Utah</td>
<td>130</td>
<td>190</td>
<td>170</td>
</tr>
<tr>
<td>Nevada</td>
<td>76</td>
<td>62</td>
<td>#Missing</td>
</tr>
<tr>
<td>Western Avg</td>
<td>234.8</td>
<td>140</td>
<td>93</td>
</tr>
</tbody>
</table>

Western Avg for Caffeine Free Cola is 93 because the sales for all Western states is divided by 5, the number of states.

Empty Values Not Included in Calculation of the Average

The following query is the same as the above query, except that it does not use IncludeEmpty:

```sql
WITH MEMBER
    [Market].[Western Avg]
AS
    'Avg ([Market].[California]:[Market].[Nevada], [Measures].[Sales])'
```
SELECT
  { [Product].[Colas].children }
ON COLUMNS,
  { [Market].[West].children, [Market].[Western Avg] }
ON ROWS
FROM
Sample.Basic
WHERE
  ([Measures].[Sales], [Year].[Jan], [Scenario].[Actual])
returning the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Cola</th>
<th>Diet Cola</th>
<th>Caffeine Free Cola</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>678</td>
<td>118</td>
<td>145</td>
</tr>
<tr>
<td>Oregon</td>
<td>160</td>
<td>140</td>
<td>150</td>
</tr>
<tr>
<td>Washington</td>
<td>130</td>
<td>190</td>
<td>#Missing</td>
</tr>
<tr>
<td>Utah</td>
<td>130</td>
<td>190</td>
<td>170</td>
</tr>
<tr>
<td>Nevada</td>
<td>76</td>
<td>62</td>
<td>#Missing</td>
</tr>
<tr>
<td>Western Avg</td>
<td>234.8</td>
<td>140</td>
<td>155</td>
</tr>
</tbody>
</table>

Western Avg for Caffeine Free Cola is 155 because the sales for all Western states is divided by 3, the number of states that do not have empty values for Caffeine Free Cola.

**BottomCount**

Returns a set of \( n \) elements ordered from smallest to largest, optionally based on an evaluation.

This function ignores tuples that resulted in missing values after evaluating numeric value expression.

**Syntax**

BottomCount ( set, index [, numeric_value_expression ] )

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>The set from which the bottom ( n ) elements are selected.</td>
</tr>
<tr>
<td>index</td>
<td>The number of elements to be included in the set (( n )).</td>
</tr>
<tr>
<td>numeric_value_expression</td>
<td>Optional. An expression further defining the selection criteria (see “MDX Grammar Rules” on page 1012).</td>
</tr>
</tbody>
</table>

**Example**

The following expression

Bottomcount ( [Product].levels(0).members, 10, ( [Sales], [Actual] ) )

returns the set:
Therefore, the following query

```
SELECT { [Year].levels(1).members } ON COLUMNS,
BottomCount ( [Product].levels(0).members, 10, ( [Sales], [Actual] ) )
ON ROWS
FROM Sample.Basic
WHERE ( [Sales], [Actual] )
```

returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
</tr>
</thead>
<tbody>
<tr>
<td>200–40</td>
<td>2807</td>
<td>2922</td>
<td>2756</td>
<td>3265</td>
</tr>
<tr>
<td>100–30</td>
<td>3187</td>
<td>3182</td>
<td>3189</td>
<td>3283</td>
</tr>
<tr>
<td>400–30</td>
<td>3763</td>
<td>3962</td>
<td>3995</td>
<td>4041</td>
</tr>
<tr>
<td>300–20</td>
<td>4248</td>
<td>4638</td>
<td>4556</td>
<td>4038</td>
</tr>
<tr>
<td>200–30</td>
<td>4440</td>
<td>4562</td>
<td>4362</td>
<td>4195</td>
</tr>
<tr>
<td>100–20</td>
<td>7276</td>
<td>7957</td>
<td>8057</td>
<td>7179</td>
</tr>
<tr>
<td>100–20</td>
<td>7276</td>
<td>7957</td>
<td>8057</td>
<td>7179</td>
</tr>
<tr>
<td>400–20</td>
<td>7771</td>
<td>8332</td>
<td>8557</td>
<td>8010</td>
</tr>
<tr>
<td>400–10</td>
<td>8614</td>
<td>9061</td>
<td>9527</td>
<td>8957</td>
</tr>
<tr>
<td>300–30</td>
<td>8969</td>
<td>9105</td>
<td>9553</td>
<td>9342</td>
</tr>
</tbody>
</table>

**See Also**

- TopCount

**BottomPercent**

Returns the smallest possible subset of a set for which the total results of a numeric evaluation are at least a given percentage. The result set is returned with elements listed from smallest to largest.

**Syntax**

```
BottomPercent ( set, percentage, numeric_value_expression )
```

**Parameter** | **Description**
--- | ---
set | The set from which the bottom-percentile elements are selected.
percentage | The percentile. This argument must be a value between 0 and 100.
Parameter | Description
--- | ---
numeric_value_expression | The expression that defines the selection criteria (see “MDX Grammar Rules” on page 1012).

Notes

This function ignores negative and missing values.

Example

The following query returns data for products making up the lowest 5th percentile of all product sales in the Sample Basic database.

WITH

```
SET [Lowest 5% products] AS 'BottomPercent {
  { [Product].members },
  5,
  {{[Measures].[Sales], [Year].[Qtr2]})
}'
```

MEMBER [Product].[Sum of all lowest prods] AS 'Sum ([Lowest 5% products] )'

MEMBER [Product].[Percent that lowest sellers hold of all product sales] AS 'Sum ([Lowest 5% products] ) / [Product] '

SELECT
```
{[Year].[Qtr2].children}
```
on columns,
```
{[Lowest 5% products],
 [Product].[Sum of all lowest prods],
 [Product],
 [Product].[Percent that lowest sellers hold of all product sales]}
on rows
FROM Sample.Basic
WHERE ([Measures].[Sales])

In the WITH section,

- The named set [Lowest 5% products] consists of those products accounting for the lowest 5 percent of sales in the second quarter. This set includes Birch Beer, Caffeine Free Cola, Strawberry, Sasparilla, and Vanilla Cream.

- The first calculated member, [Product].[Sum of all lowest prods], is used to show the sum of the sales of the products with sales in the lowest fifth percentile.

- The second calculated member, [Product].[Percent that lowest sellers hold of all product sales], is used to show, for each month, how the sales of lowest-selling products compare (as a percentage) to sales of all products in the Product dimension.

This query returns the following grid:
<table>
<thead>
<tr>
<th>Product</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birch Beer</td>
<td>954</td>
<td>917</td>
<td>1051</td>
</tr>
<tr>
<td>Caffeine Free Cola</td>
<td>1049</td>
<td>1065</td>
<td>1068</td>
</tr>
<tr>
<td>Strawberry</td>
<td>1314</td>
<td>1332</td>
<td>1316</td>
</tr>
<tr>
<td>Sarsaparilla</td>
<td>1509</td>
<td>1552</td>
<td>1501</td>
</tr>
<tr>
<td>Vanilla Cream</td>
<td>1493</td>
<td>1533</td>
<td>1612</td>
</tr>
<tr>
<td>Sum of all lowest prods</td>
<td>6319</td>
<td>6399</td>
<td>6548</td>
</tr>
<tr>
<td>Product</td>
<td>32917</td>
<td>33674</td>
<td>35088</td>
</tr>
<tr>
<td>Percent that lowest sellers hold of all product sales</td>
<td>0.192</td>
<td>0.194</td>
<td>0.187</td>
</tr>
</tbody>
</table>

**BottomSum**

Returns the smallest possible subset of a set for which the total results of a numeric evaluation are at least a given sum. Elements of the result set are listed from smallest to largest.

**Syntax**

BottomSum ( set, numeric_value_expression, numeric_value_expression )

**Parameter**

<table>
<thead>
<tr>
<th>Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>The set from which the lowest-summing elements are selected.</td>
</tr>
<tr>
<td>numeric_value_expression1</td>
<td>The given sum (see “MDX Grammar Rules” on page 1012).</td>
</tr>
<tr>
<td>numeric_value_expression2</td>
<td>The numeric evaluation (see “MDX Grammar Rules” on page 1012).</td>
</tr>
</tbody>
</table>

**Notes**

- If the total results of the numeric evaluation do not add up to the given sum, an empty set is returned.
- This function ignores negative and missing values.

**Example**

The following query selects Qtr1 and Qtr2 sales for the lowest selling products in Qtr1 (where Sales totals at least 10000).

SELECT
  {{[Year].[Qtr1], [Year].[Qtr2]}}
ON COLUMNS,
{
  BottomSum(
    [Product].Members, 10000, [Year].[Qtr1]
  )
}
ON ROWS

1090
FROM Sample.Basic
WHERE ([Measures].[Sales])

This query returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Qtr1</th>
<th>Qtr2</th>
</tr>
</thead>
<tbody>
<tr>
<td>200-40</td>
<td>2807</td>
<td>2922</td>
</tr>
<tr>
<td>100-30</td>
<td>3187</td>
<td>3182</td>
</tr>
<tr>
<td>400-30</td>
<td>3763</td>
<td>3962</td>
</tr>
<tr>
<td>300-20</td>
<td>4248</td>
<td>4638</td>
</tr>
</tbody>
</table>

**Case**

The CASE keyword begins a conditional expression. There are two types of conditional test you can perform using CASE: simple case expression and searched case expression.

**Syntax**

The simple case expression evaluates case_operand and returns a result based on its value, as specified by WHEN or ELSE clauses. The result of a case expression can be a value expression or a set. If no ELSE clause is specified, and none of the WHEN clauses is matched, an empty value/empty set is returned.

```
CASE
  case_operand
  simple_when_clause...
  [ else_clause ]
END
```

In searched case expression, each WHEN clause specifies a search condition and a result to be returned if that search condition is satisfied. The WHEN clauses are evaluated in the order specified. The result is returned from the first WHEN clause in which the search condition evaluates to TRUE. The result can be a value expression or a set. If no ELSE clause is specified, and none of the search conditions in the WHEN clauses evaluate to TRUE, an empty value/empty set is returned.

```
CASE
  searched_when_clause...
  [ else_clause ]
END
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>case_operand</td>
<td>An expression to evaluate.</td>
</tr>
<tr>
<td>simple_when_clause</td>
<td>One or more WHEN/THEN statements. Syntax: WHEN when_operand THEN result</td>
</tr>
<tr>
<td></td>
<td>* when_operand: A value expression.</td>
</tr>
<tr>
<td></td>
<td>* result: A numeric value expression, a string value expression, or a set.</td>
</tr>
</tbody>
</table>

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### Parameter Description

**else_clause**
Optional. Syntax:

```
ELSE numeric_value_expression | set | string_value_expression
```

**searched_when_clause**
One or more WHEN/THEN statements. Syntax:

```
WHEN search_condition THEN result
```

- **search_condition**: A value expression.
- **result**: A numeric value expression, a string value expression, or a set.

### Example

**Example for Simple Case Expression**

In the following query, the calculated member `[Measures].[ProductOunces]` is evaluated based on the value of the Ounce attribute for the current member of the Product dimension.

```plaintext
WITH MEMBER [Measures].[ProductOunces] AS
  'Case Product.CurrentMember.Ounces
    when 32 then 32
    when 20 then 20
    when 16 then 16
    when 12 then 12
    else 0
  end'
SELECT 
{ [Measures].[ProductOunces] } ON COLUMNS,
{ [Product].Members } ON ROWS
FROM Sample.Basic
```

This query returns the following result:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>ProductOunces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product</td>
<td>0</td>
</tr>
<tr>
<td>Colas</td>
<td>0</td>
</tr>
<tr>
<td>Cola</td>
<td>12</td>
</tr>
<tr>
<td>Diet Cola</td>
<td>12</td>
</tr>
<tr>
<td>Caffeine Free Cola</td>
<td>16</td>
</tr>
<tr>
<td>Root Beer</td>
<td>0</td>
</tr>
<tr>
<td>Old Fashioned</td>
<td>12</td>
</tr>
<tr>
<td>Diet Root Beer</td>
<td>16</td>
</tr>
<tr>
<td>Sarsaparilla</td>
<td>12</td>
</tr>
<tr>
<td>Birch Beer</td>
<td>16</td>
</tr>
<tr>
<td>Cream Soda</td>
<td>0</td>
</tr>
<tr>
<td>Product</td>
<td>Ounces</td>
</tr>
<tr>
<td>------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Dark Cream</td>
<td>20</td>
</tr>
<tr>
<td>Vanilla Cream</td>
<td>20</td>
</tr>
<tr>
<td>Diet Cream</td>
<td>12</td>
</tr>
<tr>
<td>Fruit Soda</td>
<td>0</td>
</tr>
<tr>
<td>Grape</td>
<td>32</td>
</tr>
<tr>
<td>Orange</td>
<td>32</td>
</tr>
<tr>
<td>Strawberry</td>
<td>32</td>
</tr>
<tr>
<td>Diet Drinks</td>
<td>0</td>
</tr>
<tr>
<td>Diet Cola</td>
<td>0</td>
</tr>
<tr>
<td>Diet Root Beer</td>
<td>0</td>
</tr>
<tr>
<td>Diet Cream</td>
<td>0</td>
</tr>
</tbody>
</table>

Example for Searched Case Expression

The following query divides products into different profit categories based on Profit, and returns categories for each product.

WITH MEMBER [Measures].[ProfitCategory] AS
  'Case
    when Profit > 10000 then 4
    when Profit > 5000 then 3
    when Profit > 3000 then 2
    else 1
  end'
SELECT
  { [Measures].[ProfitCategory] } ON COLUMNS,
  { [Product].Members } ON ROWS
FROM Sample.Basic

This query returns the following result:

<table>
<thead>
<tr>
<th>Product</th>
<th>ProfitCategory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product</td>
<td>4</td>
</tr>
<tr>
<td>Colas</td>
<td>4</td>
</tr>
<tr>
<td>Cola</td>
<td>4</td>
</tr>
<tr>
<td>Diet Cola</td>
<td>3</td>
</tr>
<tr>
<td>Caffeine Free Cola</td>
<td>1</td>
</tr>
<tr>
<td>Root Beer</td>
<td>4</td>
</tr>
<tr>
<td>ProfitCategory</td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Old Fashioned</td>
<td>3</td>
</tr>
<tr>
<td>Diet Root Beer</td>
<td>4</td>
</tr>
<tr>
<td>Sarsaparilla</td>
<td>2</td>
</tr>
<tr>
<td>Birch Beer</td>
<td>2</td>
</tr>
<tr>
<td>Cream Soda</td>
<td>4</td>
</tr>
<tr>
<td>Dark Cream</td>
<td>4</td>
</tr>
<tr>
<td>Vanilla Cream</td>
<td>1</td>
</tr>
<tr>
<td>Diet Cream</td>
<td>4</td>
</tr>
<tr>
<td>Fruit Soda</td>
<td>4</td>
</tr>
<tr>
<td>Grape</td>
<td>4</td>
</tr>
<tr>
<td>Orange</td>
<td>3</td>
</tr>
<tr>
<td>Strawberry</td>
<td>1</td>
</tr>
<tr>
<td>Diet Drinks</td>
<td>4</td>
</tr>
<tr>
<td>Diet Cola</td>
<td>3</td>
</tr>
<tr>
<td>Diet Root Beer</td>
<td>4</td>
</tr>
<tr>
<td>Diet Cream</td>
<td>4</td>
</tr>
</tbody>
</table>

**CellValue**

Returns the numeric value of the current cell.

**Syntax**

```
CellValue
```

**Notes**

- This function can be useful when defining format strings for a member. Most MDX expressions can be used to specify format strings; however, format strings cannot contain references to values of data cells other than the current cell value being formatted. Use this function to reference the current cell value.
- Enclose all format strings within the `MdxFormat()` directive as shown in the examples.
Example

Example 1
The following format string displays negative values for the current measure if the current [AccountTypes] member is of type “Expense”. CellValue refers to the current cell value that is being formatted. The CurrentMember function in the expression refers to the context of the cell being formatted.

/* Display negative values if current Account is an Expense type account */
MdxFormat(
  IIF(IsUda(AccountTypes.CurrentMember, "Expense"),
      NumToStr(-CellValue()),
      NumToStr(CellValue())
)

Example 2
The following format string displays negative cell values as positive values enclosed in parentheses.

MdxFormat(
  IIF(
      CellValue() < 0,
      Concat(Concat("(" , numtostr(-CellValue()) , ")" ),
      numtostr(CellValue()))
)

Example 3
This example illustrates a dynamic member [Variance %] along the [Scenario] dimension. [Variance %] has the following formula, which specifies how to calculate its value from [Actual] and [Budget].

[Variance %] Formula
IIF(Is(Measures.CurrentMember, Title) OR
   Is(Measures.CurrentMember, Performance),
   (Actual - Budget) * 10, (Actual - Budget)*100/Budget)

[Variance %] also has the following format string, which specifies how its values should be displayed. In this case, based on the percentage value computed for a [Variance %] cell, a text value is displayed which conveys the importance of the number.

[Variance %] Format String
MdxFormat(
  CASE
      WHEN CellValue() <= 5 THEN        "Low"
      WHEN CellValue() <= 10 THEN        "Medium"
      WHEN CellValue() <= 15 THEN        "High"
      ELSE                                 "Very High"
  )
Children

Returns a set of all child members of the specified member.

Syntax

\[
\text{member} . \text{Children} \\
\text{Children ( member )}
\]

Parameter Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>member</td>
<td>A member specification.</td>
</tr>
</tbody>
</table>

Notes

If the input member does not have any children (is a level-0 member), this function returns an empty set.

Example

This example uses the following parts of the Sample Basic outline:

```
West (+)
  California
  Oregon
  Washington
  Utah
  Nevada
Diet (~)
  100-20
  200-20
  300-30
```

The following expression

\[
([\text{West}] . \text{children})
\]

returns the set:

\[
\{ \text{[California]}, \text{[Oregon]}, \text{[Washington]}, \text{[Utah]}, \text{[Nevada]} \}
\]

And the following expression

\[
([\text{Diet}] . \text{children})
\]

returns the set:

\[
\{ \text{[100-20]}, \text{[200-20]}, \text{[300-30]} \}
\]

Therefore, the following query

```
SELECT 
  \{([\text{West}] . \text{children})\}
ON COLUMNS,
  \{([\text{Diet}] . \text{children})\}
ON ROWS
FROM Sample.Basic
```

returns the grid:

```
1096
```
### ClosingPeriod

Returns the last descendant of a layer, or the last child of the Time dimension.

**Syntax**

\[
\text{ClosingPeriod ( [ layer [,member ] ] )}
\]

**Parameter Description**

- **layer**: Layer specification.
- **member**: Optional member specification. If omitted, the last child of the Time dimension is assumed (for example, Qtr4 in Sample Basic).

**Notes**

The return value of this function varies depending on the input.

1. When both `layer` and `member` arguments are given as input, ClosingPeriod returns the last descendant of the input member at the input layer. For example, `ClosingPeriod(Year.generations(3), Qtr3)` returns `Sep`. If the input `member` and `layer` are the same layer, the output is the input member. For example, `ClosingPeriod(Year.generations(3), Sep)` returns `Sep`.

2. When only the `layer` argument is specified, the input member is assumed to be the current member of the dimension used in the layer argument. ClosingPeriod returns the last descendant of that dimension, at the input layer. For example, `ClosingPeriod(Year.generations(3))` returns `Dec`.

3. When no arguments are specified, the input member is assumed to be the current member of the Time dimension, and ClosingPeriod returns the last child of that member. Do not use this function without arguments if there is no dimension tagged as Time.

**Example**

The following query

```sql
WITH
MEMBER [Measures].[Starting Inventory] AS
  IIF
  (IsLeaf (Year.CurrentMember),
   [Measures].[Opening Inventory],
   ([Measures].[Opening Inventory],
   OpeningPeriod (Year.Levels(0),
   ```

<table>
<thead>
<tr>
<th>(axis)</th>
<th>California</th>
<th>Oregon</th>
<th>Washington</th>
<th>Utah</th>
<th>Nevada</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-20</td>
<td>-1587</td>
<td>338</td>
<td>231</td>
<td>398</td>
<td>86</td>
</tr>
<tr>
<td>200-20</td>
<td>2685</td>
<td>1086</td>
<td>579</td>
<td>496</td>
<td>167</td>
</tr>
<tr>
<td>300-30</td>
<td>1328</td>
<td>288</td>
<td>1217</td>
<td>413</td>
<td>362</td>
</tr>
</tbody>
</table>
MEMBER [Measures].[Closing Inventory] AS
  IIF (Isleaf(Year.CurrentMember),
       [Measures].[Ending Inventory],
       ([Measures].[Closing Inventory],
         ClosingPeriod (
           [Year].Levels(0),
           [Year].CurrentMember
         )
       )
  )
SELECT
  CrossJoin ( { [100-10] },
            { [Measures].[Starting Inventory], [Measures].[Closing Inventory] }
  )
ON COLUMNS,
  Hierarchize ( [Year].Members , POST)
ON ROWS
FROM Sample.Basic

returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>100-10</th>
<th>100-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>(axis)</td>
<td>Starting Inventory</td>
<td>Closing Inventory</td>
</tr>
<tr>
<td>Jan</td>
<td>14587</td>
<td>14039</td>
</tr>
<tr>
<td>Feb</td>
<td>14039</td>
<td>13566</td>
</tr>
<tr>
<td>Mar</td>
<td>13566</td>
<td>13660</td>
</tr>
<tr>
<td>Qtr1</td>
<td>14587</td>
<td>13660</td>
</tr>
<tr>
<td>Apr</td>
<td>13660</td>
<td>14172</td>
</tr>
<tr>
<td>May</td>
<td>14172</td>
<td>15127</td>
</tr>
<tr>
<td>Jun</td>
<td>15127</td>
<td>15580</td>
</tr>
<tr>
<td>Qtr2</td>
<td>13660</td>
<td>15580</td>
</tr>
<tr>
<td>Jul</td>
<td>15580</td>
<td>14819</td>
</tr>
<tr>
<td>Aug</td>
<td>14819</td>
<td>14055</td>
</tr>
<tr>
<td>Sep</td>
<td>14055</td>
<td>13424</td>
</tr>
<tr>
<td>Qtr3</td>
<td>15580</td>
<td>13424</td>
</tr>
<tr>
<td>(axis)</td>
<td>100-10 Starting Inventory</td>
<td>100-10 Closing Inventory</td>
</tr>
<tr>
<td>-------</td>
<td>---------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>Oct</td>
<td>13424</td>
<td>13323</td>
</tr>
<tr>
<td>Nov</td>
<td>13323</td>
<td>13460</td>
</tr>
<tr>
<td>Dec</td>
<td>13460</td>
<td>12915</td>
</tr>
<tr>
<td>Qtr4</td>
<td>13424</td>
<td>12915</td>
</tr>
<tr>
<td>Year</td>
<td>14587</td>
<td>12915</td>
</tr>
</tbody>
</table>

See Also
- OpeningPeriod
- LastPeriods
- ParallelPeriod
- PeriodsToDate

**CoalesceEmpty**

Returns the first (from the left) non # Missing value from the given value expressions.

**Syntax**

CoalesceEmpty ( numeric_value_expression1, numeric_value_expression2 )

**Parameter**

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>numeric_value_expression1</td>
</tr>
<tr>
<td>numeric_value_expression2</td>
</tr>
</tbody>
</table>

**Notes**

This function returns numeric_value_expression2 if numeric_value_expression1 is #MISSING; otherwise it returns numeric_value_expression1.

**Example**

CoalesceEmpty([Profit per Ounce], 0)

returns the [Profit per Ounce] value if it is not #MISSING; returns zero otherwise. This can be used inside the Order function to coalesce all #MISSING values to zero, as shown in the next example:

Order([Product].Members, CoalesceEmpty([Profit per Ounce], 0))

Without CoalesceEmpty in the value expression, the Order function would skip all [Product] members with MISSING values for [Profit per Ounce].

See Also
- Order
**Concat**

Returns the concatenated input strings.

**Syntax**

```plaintext
Concat ( string [, string +] )
```

**Parameter Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>string</td>
<td>A string.</td>
</tr>
<tr>
<td>string +</td>
<td>Optional. A second string, or a list of multiple additional strings. If omitted, this function returns the single input string.</td>
</tr>
</tbody>
</table>

**Example**

```plaintext
Concat("01", "01")
```

**Contains**

Returns TRUE if a tuple is found within a set; otherwise returns FALSE.

**Syntax**

```plaintext
Contains ( member_or_tuple, set )
```

**Parameter Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>member_or_tuple</td>
<td>A member or a tuple.</td>
</tr>
<tr>
<td>set</td>
<td>The set to search.</td>
</tr>
</tbody>
</table>

**Example**

The following expression returns TRUE.

```plaintext
Contains([Oregon], [{California}, [Oregon]])
```

**Count**

Returns the number of tuples in a set (the cardinality of the set). This function counts all tuples of the set regardless of empty values. If you wish to count only tuples that evaluate to nonempty values, use `NonEmptyCount`.

**Syntax**

```plaintext
Count ( set [, IncludeEmpty] )
```

**Parameter Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>The set for which a tuple count is needed.</td>
</tr>
<tr>
<td>IncludeEmpty</td>
<td>Optional and default (empty values are counted even if this keyword is omitted).</td>
</tr>
</tbody>
</table>

1100
Notes
This function returns a zero if the input set is empty.

Example
WITH MEMBER
    [Measures].[Prod Count]
AS
    'Count (Crossjoin ({[Measures].[Sales]}, {[Product].children})
    )',
SELECT
    {[Scenario].[Actual], [Scenario].[Budget] }
ON COLUMNS,
    {Crossjoin ({[Measures].[Sales]}, {[Product].children}),
    ([Measures].[Prod Count], [Product])}
ON ROWS
FROM Sample.Basic
WHERE
    ([Year].[Jan], [Market].[New York])
returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Actual</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colas</td>
<td>678</td>
<td>640</td>
</tr>
<tr>
<td>Root Beer</td>
<td>551</td>
<td>530</td>
</tr>
<tr>
<td>Cream Soda</td>
<td>663</td>
<td>510</td>
</tr>
<tr>
<td>Fruit Soda</td>
<td>587</td>
<td>620</td>
</tr>
<tr>
<td>Diet Drinks</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
<tr>
<td>Prod Count</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

The WITH section of the query calculates the count of all products for which a data value exists. The SELECT section arranges the members shown on columns and rows. The entire query is sliced by January and New York in the WHERE section; though those members are not shown in the grid, the data is applicable to those members.

Cousin
Returns a child member at the same position as a member from another ancestor.
Syntax

Cousin ( member1, member2 )

Parameter Description

member1 A child member. For example, [Year].[Qtr1].

member2 An ancestor for which Cousin() should return the child member at the same position as member1.

Notes

Assuming a symmetric hierarchy, Cousin takes as input one member (member1) from one hierarchy and an ancestor member (member2) of another hierarchy, and returns the child of member2 that is at the same position as member1.

Example

This example uses the following parts of the Sample Basic outline:

```
<table>
<thead>
<tr>
<th>Year</th>
<th>Qtr1 (+)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jan</td>
</tr>
<tr>
<td></td>
<td>Feb</td>
</tr>
<tr>
<td></td>
<td>Mar</td>
</tr>
<tr>
<td>Product</td>
<td>Qtr4 (+)</td>
</tr>
<tr>
<td></td>
<td>Oct</td>
</tr>
<tr>
<td></td>
<td>Nov</td>
</tr>
<tr>
<td></td>
<td>Dec</td>
</tr>
</tbody>
</table>
```

The following expression

{ Cousin ( [Qtr2].[Apr], [Qtr4] ) }

returns the member:

[Qtr4].[Oct]

And the following expression

[Product].generations(2).members

returns the set:

{ [100], [200], [300], [400], [Diet] }

Therefore, the following query

```
SELECT
  { Cousin ( [Qtr2].[Apr], [Qtr4] ) }
ON COLUMNS,
  [Product].generations(2).members
ON ROWS
FROM Sample.Basic
```

returns the grid:

```
1102
```
CrossJoin

Returns the cross-product of two sets from different dimensions.

Syntax

CrossJoin ( set1, set2 )

Parameter Description

| set1     | A set to cross with set2. |
| set2     | A set to cross with set1. Must not include any dimension used in set1. |

Notes

This function returns the cross-product of two sets from different dimensions. If the two sets share a common dimension, an error is returned.

If one of the input sets is empty, the output set will be empty as well. For example, the output will be empty if the input set is [Root Beer].children but [Root Beer] has no children.

The order of the sets (and their constituent tuples) provided to the CrossJoin function have an effect on the order of the tuples in the result set. For example,

CrossJoin({(a, b), (c, d)})

returns {(a, c), (a, d), (b, c), (b, d)}

CrossJoin({(a, b, c), (d, e, f)})

returns {(a, d), (a, e), (a, f), (b, d), (b, e), (b, f), (c, d), (c, e), (c, f)}

Be aware of the order of the output set when using the results of CrossJoin with other order-dependent set functions; for example, Head or Tail.

Example

Example 1

The following expression

CrossJoin({[Qtr1], [Qtr2]}, {[New York], [California]})
returns the set:

\{([\text{Qtr1}], [\text{New York}]), ([\text{Qtr1}], [\text{California}]), ([\text{Qtr2}], [\text{New York}]), ([\text{Qtr2}], [\text{California}])\}

Therefore, the following query

```
SELECT CrossJoin(([\text{Qtr1}], [\text{Qtr2}]), ([\text{New York}], [\text{California}]))
ON COLUMNS
FROM sample.basic
```

returns the grid:

<table>
<thead>
<tr>
<th>Qtr1</th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr2</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>California</td>
<td>New York</td>
<td>California</td>
</tr>
<tr>
<td>1656</td>
<td>3129</td>
<td>2363</td>
<td>3288</td>
</tr>
</tbody>
</table>

Example 2

The following expression

```
CrossJoin(([\text{Qtr1}], [\text{Qtr2}], [\text{Qtr3}]), ([\text{New York}], [\text{California}], [\text{Texas}]))
```

returns the set

\{([\text{Qtr1}], [\text{New York}]), ([\text{Qtr1}], [\text{California}]), ([\text{Qtr1}], [\text{Texas}]), ([\text{Qtr2}], [\text{New York}]), ([\text{Qtr2}], [\text{California}]), ([\text{Qtr2}], [\text{Texas}]), ([\text{Qtr3}], [\text{New York}]), ([\text{Qtr3}], [\text{California}]), ([\text{Qtr3}], [\text{Texas}])\}

Therefore, the following query

```
SELECT CrossJoin(([\text{Qtr1}], [\text{Qtr2}], [\text{Qtr3}]), ([\text{New York}], [\text{California}], [\text{Texas}]))
ON AXIS(0)
FROM Sample.Basic
```

returns the grid:

<table>
<thead>
<tr>
<th>Qtr1</th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr2</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr3</th>
<th>Qtr3</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>California</td>
<td>Texas</td>
<td>New York</td>
<td>California</td>
<td>Texas</td>
<td>New York</td>
<td>California</td>
</tr>
<tr>
<td>1656</td>
<td>3129</td>
<td>1582</td>
<td>2363</td>
<td>3288</td>
<td>1610</td>
<td>1943</td>
<td>3593</td>
</tr>
</tbody>
</table>

Example 3

The following expression

```
CrossJoin ([100].children, [Profit].children)
```

returns the set:

1104
Therefore, the following query

```
SELECT
  {([Market].levels(1).members)}
ON COLUMNS,
  CrossJoin ([100].children, [Profit].children)
ON ROWS
FROM Sample.Basic
```

returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>(axis)</th>
<th>East</th>
<th>West</th>
<th>South</th>
<th>Central</th>
</tr>
</thead>
<tbody>
<tr>
<td>100–10</td>
<td>Margin</td>
<td>15762</td>
<td>8803</td>
<td>5937</td>
<td>8124</td>
</tr>
<tr>
<td></td>
<td>Total Expenses</td>
<td>4633</td>
<td>4210</td>
<td>2361</td>
<td>4645</td>
</tr>
<tr>
<td>100–20</td>
<td>Margin</td>
<td>1785</td>
<td>3707</td>
<td>2767</td>
<td>7426</td>
</tr>
<tr>
<td></td>
<td>Total Expenses</td>
<td>671</td>
<td>4241</td>
<td>1570</td>
<td>3495</td>
</tr>
<tr>
<td>100–30</td>
<td>Margin</td>
<td>871</td>
<td>1629</td>
<td>#Missing</td>
<td>3975</td>
</tr>
<tr>
<td></td>
<td>Total Expenses</td>
<td>458</td>
<td>2139</td>
<td>#Missing</td>
<td>1895</td>
</tr>
</tbody>
</table>

**CurrentAxisMember**

Returns the current axis member in the context of a member value expression argument.

**Syntax**

```
CurrentAxisMember()
```

**Notes**

This function is intended for use only inside the member value expression argument of the PROPERTY_EXPR function. See “MDX Property Expressions” on page 1045.

**Example**

See the example provided in “MDX Property Expressions” on page 1045.

**CurrentMember**

Returns the current member in the input dimension.

The current member is evaluated in the context of query execution mechanics. Used in conjunction with iterative functions such as `Filter`, at every stage of iteration the member being operated upon is the current member.
Syntax

dimension.CurrentMember

CurrentMember ( dimension )

Parameter Description

dimension  A dimension specification.

Notes

This function returns the child of an implied shared member instead of the member itself. To avoid this behavior when using CurrentMember in MDX formulas and calculated members, tag the parent with the "Never Share" property.

An implied share occurs when a parent has only one child, or only one child that consolidates. For more information, see "Understanding Shared Members" in the Oracle Essbase Database Administrator's Guide.

Example

The following query selects the quarters during which sales growth is 3% or more compared to the previous month.

SELECT
Filter (  
[Year].Children, -- outer loop  
Max (  
Except (  
[Year].CurrentMember.Children, -- current in outer loop  
{ [Year].[Jan] }  
),  
( [Year].CurrentMember -- current in Max loop  
/ [Year].CurrentMember.PrevMember)  
) >= 1.03  
)  
ON axis(0)  
FROM Sample.Basic  
WHERE ([Measures].[Sales])

Returns the grid:

<table>
<thead>
<tr>
<th>Qtr2</th>
<th>Qtr4</th>
</tr>
</thead>
<tbody>
<tr>
<td>101679</td>
<td>98141</td>
</tr>
</tbody>
</table>

CurrentTuple

Returns the current tuple in a set. Current is in the context of query execution mechanics. Use in combination with iterative functions such as Filter.

Syntax

CurrentTuple ( set )
set.Current
set.CurrentTuple

Parameter Description

set A set specification. This argument should be a named set, defined in the WITH section.

Example

The following example finds all Product, Market combinations for which Sales data exists.

WITH SET [NewSet]
SELECT Filter([NewSet], NOT IsEmpty([NewSet].CurrentTuple))
ON COLUMNS FROM Sample.Basic
WHERE {[Sales]}

This query returns the following grid:

<table>
<thead>
<tr>
<th></th>
<th>East</th>
<th>West</th>
<th>South</th>
<th>Central</th>
<th>East</th>
<th>...</th>
<th>Central</th>
<th>East</th>
<th>West</th>
<th>South</th>
<th>Central</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>27740</td>
<td>23672</td>
<td>33808</td>
<td>33451</td>
<td>7919</td>
<td>36423</td>
<td>18676</td>
<td>42660</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200</td>
<td>28306</td>
<td>33451</td>
<td>7919</td>
<td>36423</td>
<td>18676</td>
<td>42660</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| ... | ...  | ...  | ...   | ...     | ...   | ...

DateDiff

Returns the difference (number) between two input dates in terms of the specified date-parts, following a standard Gregorian calendar.

Syntax

DateDiff ( date1, date2, date_part )

Parameter Description

date1 A number representing the input date between January 1, 1970 and Dec 31, 2037. The number is the number of seconds elapsed since midnight, January 1, 1970. To retrieve this number, use any of the following functions: Today(), TodateEx(), GetFirstDate(), GetLastDate(), DateRoll().
Date-time attribute properties of a member can also be used to retrieve this number. For example,

- Product.currentmember.[Intro Date] returns the product introduction date for the current product in context.
- [Cola].[Intro Date] returns the product introduction date for Cola.

date2 A second input date. See date1.
### Parameter Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>date_part</td>
<td>Defined time components as per the standard calendar.</td>
</tr>
<tr>
<td></td>
<td>- DP_YEAR - Year of the input date.</td>
</tr>
<tr>
<td></td>
<td>- DP_QUARTER - Quarter of the input date.</td>
</tr>
<tr>
<td></td>
<td>- DP_MONTH - Month of the input date.</td>
</tr>
<tr>
<td></td>
<td>- DP_WEEK - Week of the input date.</td>
</tr>
<tr>
<td></td>
<td>- DP_DAY - Day of the input date.</td>
</tr>
</tbody>
</table>

### Notes

Based on the input `date_part`, the difference between the two input dates is counted in terms of time component specified.

Example: For input dates June 14, 2005 and Oct 10, 2006,

- DP_YEAR returns the difference in the year component. \((2006 - 2005 = 1)\)
- DP_QUARTER returns the distance between the quarters capturing the input dates. \((\text{Quarter 4, 2006} - \text{Quarter 2, 2005} = 6)\)
- DP_MONTH returns the distance between the months capturing the input dates. \((\text{Oct 2006} - \text{June 2005} = 16)\)
- DP_WEEK returns the distance between the weeks capturing the input dates. Each Standard calendar week is defined to start on Sunday and it spans 7 days. \((\text{Oct 10, 2006} - \text{June 14, 2005} = 69)\)
- DP_DAY returns the difference between the input dates in terms of days. \((483 \text{ days})\)

### Example

The following query returns weekly sales for the last 6 months for the product Cola in the market California.

```
SELECT {sales} ON COLUMNS,
FILTER(
    [Time dimension].Weeks.members,
    Datediff(
        GetFirstDate([Time dimension].CurrentMember),
        Today(),
        DP_MONTH
    ) < 6
)
ON ROWS
FROM Mysamp.Basic
WHERE (Actual, California, Cola);
```

### DatePart

This function returns the Year/Quarter/Month/Week/Weekday/DayOfYear/Day as a number, given the input date and a date part, following the standard Gregorian calendar.
Syntax

DatePart ( date, date_part_ex )

Parameter | Description
--- | ---
date | A number representing the input date between January 1, 1970 and Dec 31, 2037. The number is the number of seconds elapsed since midnight, January 1, 1970. To retrieve this number, use any of the following functions: Today(), TodateEx(), GetFirstDate(), GetLastDate(), DateRo

Date-time attribute properties of a member can also be used to retrieve this number. For example,

- Product.currentmember.[Intro Date] returns the product introduction date for the current product in context.
- [Cola].[Intro Date] returns the product introduction date for Cola.

date_part_ex | Defined time components as per the standard calendar.
--- | ---
| | - DP_YEAR - Year of the input date, in yyyy format.
| | - DP_QUARTER - Quarter of the year (1 to 4) for the input date.
| | - DP_MONTH - Month of the year (1 to 12) for the input date.
| | - DP_WEEK - Week of the year for the input date (1 to 54).
| | - DP_WEEKDAY - Week day of the input date. (1 - Sunday, 2 - Monday, ... 7 - Saturday).
| | - DP_DAYOFYEAR - Day of the year numbering (1 to 366).
| | - DP_DAY - Day of the month for the input date (1 to 31).

Notes

Based on the requested time component, the output is as follows:

- DP_YEAR returns the year of the input date in yyyy format.
- DP_QUARTER returns the quarter of the year (1 to 4) for the input date.
- DP_MONTH returns the month of the year (1 to 12) for the input date.
- DP_WEEK returns the week of the year for the input date (1 to 54).
- DP_WEEKDAY returns the week day of the input date. (1 - Sunday, 2 - Monday, ... 7 - Saturday).
- DP_DAYOFYEAR returns the day of the year numbering (1 to 366).
- DP_DAY returns the day of the month for the input date (1 to 31).

Example: For June 14, 2005,

- DP_YEAR returns 2005 (the year member, in yyyy format).
- DP_QUARTER returns 2 (Second quarter of the year)
- DP_MONTH returns 6 (Sixth month of the year)
- DP_WEEK returns 24 (24th week of the year)
- DP_WEEKDAY returns 4 (for Wednesday. Sunday = 1)
- DP_DAYOFYEAR returns 165 (165th day of the year)
- DP_DAY returns 14 (14th day of the month)
Example

The following query returns the quarterly sales for the second quarter across all years for the product Cola in the market California.

```sql
SELECT
  {[Sales]}
ON COLUMNS,

  {
    Filter(
      [Time dimension].Quarters.members,
      Datepart(getFirstDate([Time dimension].CurrentMember), DP_QUARTER)
          = 2
    )
  }
ON ROWS,
FROM MySamp.Basic
WHERE (Actual, Cola, California);
```

DateRoll

To the given date, rolls (adds or subtracts) a number of specific time intervals, returning another date. This function assumes a standard Gregorian calendar.

Syntax

DateRoll ( date, date_part, number )

Parameter Description

date A number representing the date between January 1, 1970 and Dec 31, 2037. The number is the number of seconds elapsed since midnight, January 1, 1970. To retrieve this number, use any of the following functions: Today(), TodateEx(), GetFirstDate(), GetLastDate().

date-time attribute properties of a member can also be used to retrieve this number. For example,

- Product.currentmember.[Intro Date] returns the product introduction date for the current product in context.
- [Cola].[Intro Date] returns the product introduction date for Cola.

date_part Defined time components as per the standard calendar.

- DP_YEAR - Year of the input date.
- DP_QUARTER - Quarter of the input date.
- DP_MONTH - Month of the input date.
- DP_WEEK - Week of the input date.
- DP_DAY - Day of the input date.

number Number of time intervals to add or subtract.

Notes

Based on input date_part and dateroll number, the date is moved forward or backward in time.
Example: For input date June 14, 2005 and input dateroll number 5,

- DP_YEAR adds 5 years to the input date. (June 14, 2010)
- DP_QUARTER adds 5 quarters to the input date. (June 14, 2005 + 5 quarters = June 14, 2005 + 15 months = Sept 14, 2006)
- DP_MONTH adds 5 months to the input date (June 14, 2005 + 5 months = Nov 14, 2005)
- DP_WEEK adds 5 weeks to the input date (June 14, 2005 + 5 weeks = June 14, 2005 + 35 days = July 19, 2005)
- DP_DAY adds 5 days to the input date. (June 14, 2005 + 5 days = June 19, 2005)

Example

The following query returns actual weekly sales, rolling back for six months from Apr 2005 (inclusive), for the product Cola in the market California.

```sql
SELECT {
  {[Sales]}
ON COLUMNS,
  {DateToMember
   {
     DateRoll(
       GetFirstDate ([Apr 2005]),
       DP_MONTH,
       6
     ),
     [Time dimension].Dimension,
     [Time dimension].[WEEKS]
   )
  : ClosingPeriod([Time dimension].[Weeks], [Apr 2005])
  }
} ON ROWS
FROM MySamp.Basic
WHERE (Actual, California, Cola);
```

**DateToMember**

Returns the date-time dimension member specified by the input date and the input layer.

**Syntax**

```sql
DateToMember ( date, dimension [,layer])
```

**Parameter Description**

date A number representing the input date between January 1, 1970 and Dec 31, 2037. The number is the number of seconds elapsed since midnight, January 1, 1970. To retrieve this number, use any of the following functions: Today(), TodateEx(), GetFirstDate(), GetLastDate(), DateRoll(). Date-time attribute properties of a member can also be used to retrieve this number. For example,

- `Product.currentmember.[Intro Date]` returns the product introduction date for the current product in context.
- `[Cola].[Intro Date]` returns the product introduction date for Cola.

dimension A date-time dimension specification.
Parameter | Description
---|---
layer | Optional. A date-time dimension layer specification. If not specified, defaults to the date-time dimension’s leaf generation.

Notes
- This function is applicable only to aggregate storage databases.
- This function is only applicable if there is a date-time dimension in the outline.

Example
Consider the following Time-Date dimension hierarchy:

Time dimension (gen 1)
  Years (gen 2)
    Semesters (gen 3)
      Quarters (gen 4)
        Months (gen 5)
          Weeks (gen 6)
            Days (gen 7)

The following query returns sales for the week containing Dec 25, 2006 for the product Cola in the market California.

```
SELECT {Sales} ON COLUMNS,
{DateToMember(TodateEx("Mon dd yyyy", "December 25 2006"), [Time dimension].Dimension, [Time dimension].[Weeks])} ON ROWS
FROM MySamp.Basic
WHERE (Actual, California, Cola);
```

DefaultMember

Returns the default member in the input dimension. In Essbase, the top member of the input dimension is returned.

Syntax

```
dimension.DefaultMember
```

Parameter | Description
---|---
dimension | A dimension specification.

Example

```
DefaultMember ([Market])
```

returns the member [Market].
DefaultMember ( [Florida].Dimension )
returns the member [Market].
DefaultMember ( [Bottle] )
returns the member [Pkg Type].

**Descendants**

Returns the set of descendants of a member at a specified level or distance, optionally including or excluding descendants in other levels. The members are returned in hierarchized order; for example, parent members are followed by child members.

**Syntax**

Descendants ( member , [{ layer | index }[, Desc_flags ]])

**Parameter**  
**Description**

*member*  
The member for which descendants are sought.

*layer*  
Optional. Layer specification indicating the depth of the descendants to return.

*index*  
Optional. A number of hierarchical steps down from *member*, locating the descendants you want returned.

*Desc_flags*  
Optional. Keywords which further indicate which members to return. These keywords are available only if *layer* or *index* is specified.

See Values for *Desc_flags*

**Notes**

**Values for *Desc_flags***

For all flags, SELF refers to *layer*; therefore, BEFORE indicates "before the layer" and AFTER indicates "after the layer."

* SELF—Include only members in *layer*, including *member* only if *member* is in layer.

* AFTER—Include members below *layer*, but not the members of *layer*.
- **BEFORE**—Include *member* and all its descendants that are higher in the hierarchy than *layer*, excluding *layer* and anything below it.

- **BEFORE_AND_AFTER**—Include *member* and all its descendants, down to level 0, but excluding members in *layer*.

- **SELF_AND_AFTER**—Include members in *layer* and all descendants below *layer*.

- **SELF_AND_BEFORE**—Include *member* and all its descendants, down to and including *layer*.

- **SELF_BEFORE_AFTER**—Include *member* and all its descendants.

- **LEAVES**—Include only level-0 descendants between *member* and *layer*.

**Example**

The following query

```sql
SELECT
    Descendants ([Year])
ON COLUMNS
FROM sample.basic
```
returns the grid:

<table>
<thead>
<tr>
<th>Year</th>
<th>Qtr1</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Qtr2</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Qtr3</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Qtr4</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>12656</td>
<td>2747</td>
<td>924</td>
<td>888</td>
<td>935</td>
<td>3352</td>
<td>1011</td>
<td>1071</td>
<td>1270</td>
<td>3740</td>
<td>1334</td>
<td>1304</td>
<td>1102</td>
<td>2817</td>
<td>907</td>
<td>884</td>
<td>1026</td>
</tr>
</tbody>
</table>

The following expressions return the following sets

Descendants ( [Year], 2 )

returns {([Jan]:[Dec])}, which is the range of members found two steps below Year.

Descendants ( [Year], 2, BEFORE )

returns { [Year], [Qtr1], [Qtr2], [Qtr3], [Qtr4] }, which is the set of Year and its descendants that occur BEFORE the layer that is two steps below Year.

Descendants ( [Market], [West].level )

returns { [East], [West], [South], [Central] }, which is the set of Market’s descendants found at the level of West.

Descendants ([Market])

is equivalent to Descendants ([Market], [Market].level, SELF_BEFORE_AFTER). It returns all descendants of Market:

{ [Market],
  [East], [New York], [Massachusetts], [Florida], [Connecticut], [New Hampshire],
  [West], [California], [Oregon], [Washington], [Utah], [Nevada],
  [South], [Texas], [Oklahoma], [Louisiana], [New Mexico],
  [Central], [Illinois], [Ohio], [Wisconsin], [Missouri], [Iowa], [Colorado] } 

Descendants ([Market], [Region])

is equivalent to Descendants ([Market], [Region]), SELF), where [Region] is an alias. It returns all members at [Region] level:

{ [East], [West], [South], [Central] }

Descendants ([Market], [State], SELF)

returns all descendants of [Market] at [State] level:

{ [New York], [Massachusetts], [Florida], [Connecticut], [New Hampshire],
  [California], [Oregon], [Washington], [Utah], [Nevada], [Texas],
  [Oklahoma], [Louisiana], [New Mexico], [Illinois], [Ohio], [Wisconsin],
  [Missouri], [Iowa], [Colorado] }

Descendants ([Market], [State], BEFORE)

returns all regions and [Market]:

{ [Market], [East], [West], [South], [Central] }

Descendants ([Market], [State], AFTER)

returns an empty set, because there are no levels below [State] level in the [Market] dimension:

{ }
Descendants([Market], [Region], AFTER)
returns all states in the [Market] dimension:

{[New York], [Massachusetts], [Florida], [Connecticut], [New Hampshire], [California], [Oregon], [Washington], [Utah], [Nevada], [Texas], [Oklahoma], [Louisiana], [New Mexico], [Illinois], [Ohio], [Wisconsin], [Missouri], [Iowa], [Colorado]}

Descendants([Market], [State], LEAVES)
returns all level-0 members between [Market] level and [State] level, including both levels:

{[New York], [Massachusetts], [Florida], [Connecticut], [New Hampshire], [California], [Oregon], [Washington], [Utah], [Nevada], [Texas], [Oklahoma], [Louisiana], [New Mexico], [Illinois], [Ohio], [Wisconsin], [Missouri], [Iowa], [Colorado]}

Descendants([Market], 1)
The second argument specifies a distance of 1 from [Market] level, which is [Region] level. So this expression is equivalent to Descendants([Market], [Region]). It returns:

{[East], [West], [South], [Central]}

Descendants([Market], 2, SELF_BEFORE_AFTER)
is equivalent to Descendants([Market], [State], SELF_BEFORE_AFTER). It returns:

{[Market], [East], [New York], [Massachusetts], [Florida], [Connecticut], [New Hampshire] [West], [California], [Oregon], [Washington], [Utah], [Nevada], [South], [Texas], [Oklahoma], [Louisiana], [New Mexico], [Central], [Illinois], [Ohio], [Wisconsin], [Missouri], [Iowa], [Colorado]}

Descendants([Market], -1, SELF_BEFORE_AFTER)
prints a warning in application log, because a negative distance argument is not valid. The expression returns an empty set:

{}

Descendants([Market], 10, SELF)
returns an empty set, because there are no descendants of [Market] at a distance of 10 from [Market] level.

Descendants([Market], 10, BEFORE)
returns all descendants of [Market]:

{[Market], [East], [New York], [Massachusetts], [Florida], [Connecticut], [New Hampshire] [West], [California], [Oregon], [Washington], [Utah], [Nevada], [South], [Texas], [Oklahoma], [Louisiana], [New Mexico], [Central], [Illinois], [Ohio], [Wisconsin], [Missouri], [Iowa], [Colorado]}

Descendants([Market], 10, LEAVES)
returns all level-0 descendants of [Market]:

{[Market], [East], [New York], [Massachusetts], [Florida], [Connecticut], [New Hampshire] [West], [California], [Oregon], [Washington], [Utah], [Nevada], [South], [Texas], [Oklahoma], [Louisiana], [New Mexico], [Central], [Illinois], [Ohio], [Wisconsin], [Missouri], [Iowa], [Colorado]}
Distinct

Deletes duplicate tuples from a set.

Syntax

Distinct ( set )

Parameter Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>The set from which to remove duplicates.</td>
</tr>
</tbody>
</table>

Notes

- Duplicates are eliminated from the tail of the set.
- Distinct of an empty set returns an empty set.

Example

The expression

Distinct({[Colas], [Root Beer], [Cream Soda], [Colas]})

returns the set

{[Colas], [Root Beer], [Cream Soda]}

Note that the duplicate [Colas] is removed from the end of the set.

Dimension

Returns the dimension that contains the input element.

Syntax

member.Dimension

layer.Dimension

Dimension ( member | layer )

Parameter Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>member</td>
<td>A member specification. The dimension returned is the dimension that this member belongs to.</td>
</tr>
<tr>
<td>layer</td>
<td>A layer specification. The dimension returned is the dimension that this layer belongs to.</td>
</tr>
</tbody>
</table>

Example

[Colas].Dimension returns Product.
DrlldownByLayer

Drills down members of a set that are at a specified layer.

Syntax

DrilldownByLayer ( set [, layer | index ] )

Parameter Description

set The set in which the drilldown should occur.
layer The layer of the members that should be drilled down.
index A number of hierarchical steps representing the location of members that should be drilled down.

Notes

This function returns the members of set to one level below the optionally specified layer (or index number of the level). If layer (or index) is omitted, the lowest level of set is returned. Members are returned in their hierarchical order as represented in the database outline.

Example

The following query

SELECT
DrilldownByLayer ( 
{([Product],[California]), ([Product],[Oregon]),
 ([Product],[New York]), ([Product],[South]),
 ([Product],[Washington])}, [Market].[Region]
 )
ON COLUMNS
FROM Sample.Basic

returns the grid:

<table>
<thead>
<tr>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
</tr>
<tr>
<td>Oregon</td>
</tr>
<tr>
<td>New York</td>
</tr>
<tr>
<td>South</td>
</tr>
<tr>
<td>Texas</td>
</tr>
<tr>
<td>Oklahoma</td>
</tr>
<tr>
<td>Louisiana</td>
</tr>
<tr>
<td>New Mexico</td>
</tr>
<tr>
<td>Washington</td>
</tr>
</tbody>
</table>

| 12964  | 5062  | 8202  | 13238 | 6425  | 3491  | 2992  | 330   | 4641  |

TO use index, note that index is the index number of the dimension to drill down on. In the example below, the function drills down on Market. If you change the 1 to a 0, it drills down on Product.

SELECT
DrilldownByLayer ( 
{ 
    ([Product],[East]), ([Product],[West])
 }, 1
 )

1118
DrilldownMember

Drills down on any members or tuples of set1 that are also found in set2. The resulting set contains the drilled-down members or tuples, as well as the original members or tuples (whether they were expanded or not).

**Syntax**

\[
\text{DrilldownMember}( \text{set1, set2 \[, RECURSIVE\]} \)
\]

**Parameter**  **Description**

\[
\begin{align*}
\text{set1} & \quad \text{The set containing members or tuples to drill down on if comparison with set2 tests positive for identical members or tuples.} \\
\text{set2} & \quad \text{The set to compare with set1 before drilling down on members or tuples in set1.}
\end{align*}
\]

**RECURSIVE**  Optional. A keyword to enable repeated comparisons of the sets.

**Notes**

This function drills down on all members of set1 that are also found in set2. The two sets are compared. Then the members or tuples of the first set that are also present in the second set are expanded to include their children.

If the first set is a list of tuples, then any tuples in the first set that contain members from the second set are expanded to their children, generating more tuples.

If the RECURSIVE keyword is used, multiple passes are made on the expanded result sets. Drilldownmember repeats the set comparison and resulting drilldown until there are no more unexpanded members or tuples of set1 that are also present in set2.

**Example**

**Drilling Down on Members**

The following examples drill down on members.

**Example 1**

**Example 2**

The following expression

\[
\text{DrilldownMember}((\text{Market, [New York]}), (\text{Market, West}), \text{RECURSIVE})
\]

returns the set:

\[
(\text{Market, East, West, California, Oregon, Washington, Utah, Nevada, South, Central, [New York]})
\]

The member Market is drilled down and then the West member of the resulting set is drilled down, because the RECURSIVE parameter was specified.
Drilling Down on Tuples

This example uses the following part of the Sample Basic outline:

```
- Product
  - 100 (+)
    - 100-10
    - 100-20
    - 100-30
  - 200 (+)
```

The following example drills down on tuples.

The following expression

```clojure
DrilldownMember
  ( {([100],[California]), ([200],[Washington])},
   { [100] }
 )
```

returns the set of tuples:

```
{ ([100],California), ([100-10],California), ([100-20],California),
  ([100-30],California), ([200],Washington)}
```

Therefore, the following query

```sql
SELECT
  DrilldownMember
  ( {([100],[California]), ([200],[Washington])},
   { [100] }
 )
ON COLUMNS
FROM Sample.Basic
```

returns the grid:

<table>
<thead>
<tr>
<th></th>
<th>100-10</th>
<th>100-20</th>
<th>100-30</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>California</td>
<td>California</td>
<td>California</td>
<td>Washington</td>
</tr>
<tr>
<td>999</td>
<td>3498</td>
<td>-1587</td>
<td>-912</td>
<td>1091</td>
</tr>
</tbody>
</table>

**DrillupByLayer**

Drills up the members of a set that are below a specified layer.

**Syntax**

```
DrillupByLayer ( set [,layer] )
```

**Parameter Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>The set in which the drill-up should occur.</td>
</tr>
</tbody>
</table>
**Parameter Description**

**layer** The layer of the members that should be drilled up. If omitted, the set is drilled up to the second lowest level found in the set.

**Notes**

DrillupLevel can be used as a synonym for DrillupByLayer.

**Example**

These examples focus on the following hierarchy from the Sample Basic outline:

```
- Measures
  - Profit (+)
    - Margin (+)
      - Sales
      - COGS
  - Total Expenses
  - Inventory
  - Ratios
```

**Example 1**

The following query drills up the members of set to the second generation of the Measures dimension:

```
SELECT DrillupByLayer
  ({{Measures}, [Profit],
     [Margin], [Sales], [COGS]})
  , Generations([Measures], 2)
ON COLUMNS
FROM Sample.Basic
```

This query returns the grid:

<table>
<thead>
<tr>
<th>Measures</th>
<th>Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>105522</td>
<td>105522</td>
</tr>
</tbody>
</table>

**Example 2**

With no layer specified, the following query drills up the members of set to the second lowest level found in set:

```
SELECT DrillupByLayer
  ({{Measures}, [Profit],
     [Margin], [Sales], [COGS]})
)
ON COLUMNS
FROM Sample.Basic

This query returns the grid:

<table>
<thead>
<tr>
<th>Measures</th>
<th>Profit</th>
<th>Margin</th>
</tr>
</thead>
<tbody>
<tr>
<td>105522</td>
<td>105522</td>
<td>221519</td>
</tr>
</tbody>
</table>

**DrillupMember**

Tests two sets for common ancestors and drills up members of the first set to the level of the ancestors that are present in the second set.

**Syntax**

DrillupMember (set1, set2)

**Parameter Description**

- **set1**: The set containing members to drill up if comparison with set2 tests positive for identical members or tuples.
- **set2**: The set to compare with set1 before drilling up members in set1.

**Notes**

This function drills up any members of set1 whose ancestors are found in set2. The level to which members in set1 are drilled up depends on the level of the ancestor found in set2. The resulting set contains the ancestors of the drilled up member at the level found in set2, as well as any members of set1 that were not drilled up.

**Example**

**Example 1**

The following example

DrillupMember({East, South, West, California, Washington, Oregon},{West})

returns the set:

{East, South, West}

The following expression

DrillupMember

(  
  {East, South, West, California, Washington, Oregon, Central, Nevada},
  {West}
)

returns the set:

{East, South, West, Central, Nevada}
The member Nevada is not drilled up to member West because another member Central interrupts the chain of West descendants.

Example 2
The following examples use the following part of the Sample Basic outline:

```
  - Product
    - 100 (+)
      - 100-10
      - 100-20
      - 100-30
    - 200 (+)
```

The following expression

```plaintext
DrillupMember({Product, [100], [100-10]},
               {[Product]})
```

returns the set:

```
{Product}
```

The following expression

```plaintext
DrillupMember({Product, [100], [100-10]},
               {[100]})
```

returns the set:

```
{Product, [100]}
```

**DTS**

Calculates period-to-date values using built-in Dynamic Time Series functionality on block storage databases.

**Syntax**

```
DTS (dts-operation-specification, member)
```
**Parameter**

dts-operation-specification

**Description**

The Dynamic Time Series member for which to return values. Specify one of the following operations:

- HTD—History-to-date
- YTD—Year-to-date
- STD—Season-to-date
- PTD—Period-to-date
- QTD—Quarter-to-date
- MTD—Month-to-date
- WTD—Week-to-date
- DTD—Day-to-date

**Note:** The operation you use for this parameter must have a corresponding Dynamic Time Series member enabled in the outline.

**member**

Member specification. Must be a level-0 member from the time dimension.

**Notes**

This function is applicable only to block storage databases.

**Example**

The following query returns year to date information for Sample Basic.

```sql
WITH MEMBER [Year].[QuarterToDate_April] AS 'DTS(QTD,Apr)'
SELECT
  {[Profit], [Opening Inventory],[Ratios]}
ON COLUMNS,
  {{[Jan],[Feb],[Mar],[Apr],[QuarterToDate_April]}}
ON ROWS
FROM Sample.Basic;
```

This query returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Profit</th>
<th>Opening Inventory</th>
<th>Ratios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>8024</td>
<td>117405</td>
<td>55.1017819772972</td>
</tr>
<tr>
<td>Feb</td>
<td>8346</td>
<td>116434</td>
<td>55.3868221647073</td>
</tr>
<tr>
<td>Mar</td>
<td>8333</td>
<td>115558</td>
<td>55.2665073107131</td>
</tr>
<tr>
<td>Apr</td>
<td>8644</td>
<td>119143</td>
<td>55.4181729805268</td>
</tr>
<tr>
<td>QuarterToDate_April</td>
<td>8644</td>
<td>119143</td>
<td>55.4181729805268</td>
</tr>
</tbody>
</table>

**EnumText**

Returns the text value corresponding to a numeric value in a text list.
Syntax

EnumText (textlistname, numeric_value_expression)

Parameter Description

textlistname Name of a text list defined on the outline.

numeric_value_expression Numeric value expression (see “MDX Grammar Rules” on page 1012).

Example

EnumText(CSRatings, 1)

returns “Excellent” if there is a text list named CSRatings containing the text “Excellent” mapped to ID 1. This example returns an empty string if there is no text associated with the given numeric ID.

EnumValue

Returns the internal numeric value for a text value in a text list.

Syntax

EnumValue (enum_string)

Parameter Description

enum_string Either textlistname.string_literal or textlistmembername.string_literal, where
- textlistname is the name of a text list defined on the outline
- textlistmembername is the name of a member that has an associated text list
- string_literal is the text value stored in the text list

Example

The following expression shows how EnumValue can be used to filter employees based on their title, which is stored as a text list in [Measures].[Title].

FILTER([Employee].Levels[0].Members, [Measures].[Title] = EnumValue([Job Titles]."Manager") )

Except

Returns a subset containing the differences between two sets, optionally retaining duplicates. The two input sets must have identical dimensionality.

Syntax

Except ( set1, set2 [,ALL] )

1125
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>set1</td>
<td>A set to compare with set2.</td>
</tr>
<tr>
<td>set2</td>
<td>A set to compare with set1.</td>
</tr>
<tr>
<td>ALL</td>
<td>The optional ALL flag retains duplicates. Matching duplicates in set1 and set2 are eliminated.</td>
</tr>
</tbody>
</table>

**Example**

\[
\text{Except}( \{\text{[New York]}, \text{[California]}, \text{[Florida]}, \text{[California]}\}, \\
\{\text{[Oregon]}, \text{[Washington]}, \text{[California]}, \text{[Florida]}\})
\]

returns \{\text{[New York]}\}.

\[
\text{Except}( \{\text{[New York]}, \text{[California]}, \text{[Florida]}, \text{[California]}\}, \\
\{\text{[Oregon]}, \text{[Washington]}, \text{[California]}, \text{[Florida]}\}, \text{ALL})
\]

returns \{\text{[New York]}, \text{[California]}\}.

The following query returns Actual Sales and Profit numbers for the level-0 markets that are not defined as "Major Market."

\[
\text{SELECT} \\
\quad \{\text{[Measures].[Sales], [Measures].[Profit]}\} \\
\text{ON COLUMNS,} \\
\quad \text{Except(} \\
\quad \quad \text{[Market].Levels(0).Members,} \\
\quad \quad \text{UDA (Market, "Major Market")} \\
\quad \text{)} \text{ON ROWS} \\
\text{FROM Sample.Basic} \\
\text{WHERE } \{\text{[Year].[Qtr1], [Scenario].[Actual]}\}
\]

This query returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Sales</th>
<th>Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connecticut</td>
<td>3472</td>
<td>920</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>1652</td>
<td>202</td>
</tr>
<tr>
<td>Oregon</td>
<td>5058</td>
<td>1277</td>
</tr>
<tr>
<td>Washington</td>
<td>4835</td>
<td>1212</td>
</tr>
<tr>
<td>Utah</td>
<td>4209</td>
<td>744</td>
</tr>
<tr>
<td>Nevada</td>
<td>6516</td>
<td>775</td>
</tr>
<tr>
<td>Oklahoma</td>
<td>2961</td>
<td>718</td>
</tr>
<tr>
<td>Louisiana</td>
<td>2906</td>
<td>773</td>
</tr>
<tr>
<td>New Mexico</td>
<td>1741</td>
<td>4</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>4073</td>
<td>913</td>
</tr>
<tr>
<td>Missouri</td>
<td>3062</td>
<td>399</td>
</tr>
</tbody>
</table>

1126
Exp

Returns the exponent of an expression; that is, the value of $e$ (the base of natural logarithms) raised to the power of the expression.

Syntax

```
Exp ( numeric_value_expression )
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>numeric_value_expression</td>
<td>A numeric value (see &quot;MDX Grammar Rules&quot; on page 1012).</td>
</tr>
</tbody>
</table>

Notes

- Exp returns the inverse of Ln, the natural logarithm.
- The constant $e$ is the base of the natural logarithm. $e$ is approximately 2.71828182845904.

Example

The calculated member Index is created to represent $e$ raised to the power of $[\text{Variance %}] / 100$. In the example, $[\text{Variance %}]$ divided by 100 is the numeric value expression provided to the Exp function.

```
WITH MEMBER [Scenario].[Index] AS
  'Exp(' + [Scenario].[Variance %]/100 + ')
```

This query returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Variance %</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>East</td>
<td>10.700</td>
<td>1.113</td>
</tr>
<tr>
<td>West</td>
<td>10.914</td>
<td>1.115</td>
</tr>
<tr>
<td>South</td>
<td>3.556</td>
<td>1.036</td>
</tr>
<tr>
<td>Central</td>
<td>3.595</td>
<td>1.037</td>
</tr>
</tbody>
</table>
Extract

Returns a set of tuples with members from the specified dimensions of the input set.

Syntax

Extract ( set [, dimension ... ] )

Parameter Description

dimention The set from which to extract tuples belonging to the specified dimension.

dimension One or more dimensions from which to extract a set.

Notes

This function always removes duplicates. The dimension argument should specify dimensions present in the input set. It is an error to specify a dimension that is not present in the input set. The members in the tuples of the output set are ordered based on the dimension order specified in the input set.

Example

In the following example, Extract returns a subset of only those tuples belonging to the Year dimension.

```
SELECT
  Extract(
    { ([Year].[Qtr1], [Market].[California]),
      ([Year].[Qtr1], [Market].[Oregon]),
      ([Year].[Qtr2], [Market].[Oregon])
    ), Year
  )
ON COLUMNS
FROM Sample.basic
```

<table>
<thead>
<tr>
<th>Qtr1</th>
<th>Qtr2</th>
</tr>
</thead>
<tbody>
<tr>
<td>24703</td>
<td>27107</td>
</tr>
</tbody>
</table>

Factorial

Returns the factorial of a number.

Syntax

Factorial ( index )
Parameter Description

index A numeric value. The fractional part of index is ignored.

Example

Factorial(5) returns 120 (which is 5 * 4 * 3 * 2 * 1).
Factorial(3.5) returns 6 (which is 3 * 2 * 1). The fractional part of index is ignored.

Filter

Returns the tuples of a set that meet the criteria of a search condition.

Syntax

FILTER ( set, search_condition )

Parameter Description

set The set through which to iterate.

search_condition A Boolean expression (see “MDX Grammar Rules” on page 1012). The search condition is evaluated in the context of every tuple in the set.

Notes

This function returns the subset of tuples in set for which the value of the search condition is TRUE. The order of tuples in the returned set is the same as in the input set.

Example

Example 1

The following unfiltered query returns profit for all level-0 products:

```sql
SELECT
    ( [Profit] )
ON COLUMNS,
    [Product].levels(0).members
ON ROWS
FROM Sample.Basic
```

This query returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-10</td>
<td>22777</td>
</tr>
<tr>
<td>100-20</td>
<td>5708</td>
</tr>
<tr>
<td>100-30</td>
<td>1983</td>
</tr>
<tr>
<td>200-10</td>
<td>7201</td>
</tr>
</tbody>
</table>
To filter the above results to only show negative Profit, use the Filter function, passing it the original set and a search condition. Filter will only return the set of members for which the search condition is true (for which Profit is less than zero).

```
SELECT
  { Profit }
ON COLUMNS,
  Filter( [Product].levels(0).members, Profit < 0)
ON ROWS
FROM Sample.Basic
```

The resulting query returns only the products with negative profit:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>400-30</td>
<td>-394</td>
</tr>
</tbody>
</table>

**Example 2**

The search expression in Example 1 compared a value expression (Profit) with a value. You can also filter using a member attribute as the search condition. For example, you can use the Filter function to only select members whose Caffeinated attribute is TRUE.

```
SELECT
  { [Profit] }
ON COLUMNS,
  Filter( [Product].levels(0).members, Product.CurrentMember.[Caffeinated])
ON ROWS
FROM Sample.Basic
```

This query returns profit for the members that are caffeinated:

1130
<table>
<thead>
<tr>
<th>(axis)</th>
<th>Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-10</td>
<td>22777</td>
</tr>
<tr>
<td>100-20</td>
<td>5708</td>
</tr>
<tr>
<td>200-10</td>
<td>7201</td>
</tr>
<tr>
<td>200-20</td>
<td>12025</td>
</tr>
<tr>
<td>300-10</td>
<td>12195</td>
</tr>
<tr>
<td>300-20</td>
<td>2511</td>
</tr>
<tr>
<td>300-30</td>
<td>11093</td>
</tr>
</tbody>
</table>

To understand the search condition, `Product.CurrentMember.[Caffeinated]`, it may be helpful to read it right to left: Filter is searching for presence of the Caffeinated property on the current member, for each member in the input set, which happens to be from the Product dimension (The CurrentMember function requires the dimension name as its argument).

Filter is an iterative function, meaning that at every member or tuple in the set being evaluated, the member being operated upon is the "current member," until Filter has looped through the entire input set and evaluated the search condition for each tuple. So to see how the previous query results were generated, it would be useful to see first which members actually have the Caffeinated attribute set to true. The following unfiltered query uses a calculated member to reveal which of the level-0 product members is caffeinated. The IIF function returns a value of 1 for each member whose Caffeinated attribute is set to TRUE, and returns a value of 0 otherwise.

```
WITH MEMBER Measures.IsCaffeinated
AS 'IIF(Product.CurrentMember.[Caffeinated], 1, 0)'
SELECT
  ( IsCaffeinated )
ON COLUMNS,
  [Product].levels(0).members
ON ROWS
FROM Sample.Basic
```

This query returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>IsCaffeinated</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-10</td>
<td>1</td>
</tr>
<tr>
<td>100-20</td>
<td>1</td>
</tr>
<tr>
<td>100-30</td>
<td>0</td>
</tr>
<tr>
<td>200-10</td>
<td>1</td>
</tr>
<tr>
<td>200-20</td>
<td>1</td>
</tr>
<tr>
<td>200-30</td>
<td>0</td>
</tr>
<tr>
<td>200-40</td>
<td>0</td>
</tr>
</tbody>
</table>
Looking at the results for the second query, you can begin to see that the search condition is evaluated for each tuple in the input set, and that only the tuples meeting the search condition are returned.

Example 3

Example 2 introduced the CurrentMember function. Even when CurrentMember is not explicitly called, Filter operates in the context of "the current member" while it iterates through a set. Filter and other iterative functions are processed in a nested context.

By default, Filter operates in the current-member context of top dimension members. You make the MDX context smaller by using a slicer (the Where clause), which overrides the built-in top-dimensional context. Additionally, you can override the slicer context by specifying context in the search condition argument for Filter.

The following query returns the Profit values for Western Region, for Qtr1. Note that the MDX context is West, Qtr1.

```sql
SELECT
  { [Profit] }
ON COLUMNS,
  [Product].levels(0).members
ON ROWS
FROM Sample.Basic
Where (West, Qtr1)
```

When adding a filter to the above query, the values for Profit are still evaluated as `(Profit, West, Qtr1)`, because the sub-context for Filter is based on the main context.

```sql
SELECT
  { [Profit] }
ON COLUMNS,
  Filter( [Product].levels(0).members, Profit < 0)
ON ROWS
FROM Sample.Basic
Where (West, Qtr1)
```
In the next query, the values for Profit are evaluated as (Profit, West, Qtr1), even though the outer context is (Profit, Market, Qtr1). This is because the inner context in the Filter function overrides the outer context of the slicer (West replaces Market).

SELECT
  ( [Sales] )
ON COLUMNS,
Filter( [Product].levels(0).members, (Profit, West) < 0)
ON ROWS
FROM Sample.Basic
Where (Market, Qtr1)

The above query returns the Sales values for West, Qtr1 for members of Product whose Profit for West, Qtr1 was less than 0.

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-20</td>
<td>2153</td>
</tr>
<tr>
<td>400-30</td>
<td>1862</td>
</tr>
<tr>
<td>100-20</td>
<td>2153</td>
</tr>
</tbody>
</table>

Additional Examples

The following query on Sample Basic returns Qtr2 sales figures for products where the sales have increased by at least 10% since Qtr1.

SELECT
  {
    Filter(
      [Product].Members,
      [Measures].[Sales] > 1.1 * ([Measures].[Sales], [Year].CurrentMember.PrevMember)
    )
  }
ON COLUMNS
FROM sample.basic
WHERE ([Year].[Qtr2], [Measures].[Sales])

<table>
<thead>
<tr>
<th>Cola</th>
<th>Dark Cream</th>
</tr>
</thead>
<tbody>
<tr>
<td>16048</td>
<td>11993</td>
</tr>
</tbody>
</table>

The following query on Sample Basic returns sales figures for product family "100" where the monthly sales of that product family are greater than 8,570. The filtering logic is stored as a named set in the WITH section.

WITH SET [High-Sales Months] as
  
  Filter(
    [Year].Levels(0).members,
    [Measures].[Sales] > 8570
  )


SELECT
    ({[Measures].[Sales]}
ON COLUMNS,
    ({[High-Sales Months]}
ON ROWS
FROM sample.basic
WHERE
    ([Product].[100])

<table>
<thead>
<tr>
<th></th>
<th>Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apr</td>
<td>8685</td>
</tr>
<tr>
<td>May</td>
<td>8945</td>
</tr>
<tr>
<td>Jun</td>
<td>9557</td>
</tr>
<tr>
<td>Jul</td>
<td>9913</td>
</tr>
<tr>
<td>Aug</td>
<td>9787</td>
</tr>
<tr>
<td>Sep</td>
<td>8844</td>
</tr>
<tr>
<td>Dec</td>
<td>8772</td>
</tr>
</tbody>
</table>

**FirstChild**

Returns the first child of the input member.

**Syntax**

member.FirstChild

FirstChild ( member )

**Parameter Description**

| member | A member specification. If a level-0 member, the output of FirstChild is an empty member. |

**Example**

SELECT
    ({[Qtr1].firstchild}
ON COLUMNS,
    ({[Market].[Central].lastchild}
ON ROWS
FROM Sample.Basic

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorado</td>
<td>585</td>
</tr>
</tbody>
</table>
FirstSibling

Returns the first child of the input member’s parent.

Syntax

FirstSibling ( member [, hierarchy ])

member.FirstSibling [(hierarchy)]

Parameter Description

member A member specification.

hierarchy Optional. A specific hierarchy within the time dimension.

Notes

If member is the top member of a dimension, then member itself is returned.

Example

Example 1

Year.Firstsibling returns Year.

Qtr3.firstsibling returns Qtr1.

Example 2

For every month, the following query displays the change in inventory level since the beginning of the quarter.

WITH MEMBER [Measures].[Inventory Level since beginning of Quarter] AS
   '
   [Ending Inventory] - ([Opening Inventory], [Year].CurrentMember.FirstSibling)
   SELECT
   ([Measures].[Inventory Level since beginning of Quarter])
ON COLUMNS,
   Year.Levels(0).Members ON ROWS
FROM Sample.Basic

This query returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Inventory Level Since Beginning of Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>-971</td>
</tr>
<tr>
<td>Feb</td>
<td>-1847</td>
</tr>
</tbody>
</table>
## FormatDate

Returns a formatted date-string.

### Syntax

```
FormatDate ( date, internal-date-format )
```

### Parameter Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| date      | A number representing the input date between January 1, 1970 and Dec 31, 2037. The number is the number of seconds elapsed since midnight, January 1, 1970. To retrieve this number, use any of the following functions: Today(), TodateEx(), GetFirstDate(), GetLastDate(), DateRoll(). Date-time attribute properties of a member can also be used to retrieve this number. For example,  
  - `Product.currentmember.[Intro Date]` returns the product introduction date for the current product in context.  
  - `[Cola].[Intro Date]` returns the product introduction date for Cola. |
### Parameter Description

**internal-date-format**

One of the following literal strings (excluding ordered-list numbers and parenthetical examples) indicating a supported date format.

1. "mon dd yyyy" (Example: mon = Aug)
2. "Month dd yyyy" (Example: Month = August)
3. "mm/dd/yy"
4. "mm/dd/yyyy"
5. "yy.mm.dd"
6. "dd/mm/yy"
7. "dd.mm.yy"
8. "dd-mm-yy"
9. "dd Month yy"
10. "dd mon yy"
11. "Month dd, yy"
12. "mon dd, yy"
13. "mm-dd-yy"
14. "yy/mm/dd"
15. "yymmdd"
16. "dd Month yyyy"
17. "dd mon yyyy"
18. "yyyy-mm-dd"
19. "yyyy/mm/dd"
20. "Long format" (Example: "WeekDay, Mon dd, yyyy")
21. "Short format" (Example: "m/d/yy")

### Notes

- Using an invalid input date returns an error.
- Using extra whitespace not included in the internal format strings returns an error.
- This function interprets years in the range 1970 to 2029 for yy format. Therefore, if the function is invoked using a date format mm/dd/yy for June 20, 2006, the returned date string is "06/20/06".

### Example

The following query returns the first 10 day sales for all Colas products since their release date in the market California.

```plaintext
WITH MEMBER Measures.[first 10 days sales] AS
  SUM(
    LastPeriods(-10,
      StrToMbr(
        FormatDate("Mon dd yyyy", Product.CurrentMember.[Intro Date])
      )
    )
  )
```

1137
SELECT
    { [first 10 days sales] }
ON COLUMNS,
    { Colas.Children }
ON ROWS
FROM MySamp.basic
WHERE (California, Actual);

Generate

Returns a set formed by evaluating a set expression. For each tuple in set1, return set2.

Syntax

Generate ( set1, set2 [, [ALL]] )

Parameter Description

set1 The set to loop through.
set2 The set expression to evaluate for every tuple in set1.
ALL If the optional ALL flag is used, duplicate tuples are retained.

Notes

The set expression set2 is evaluated in the context of each of the tuples from set1. The resulting sets are combined, in the same order as of the tuples in set1, to produce the output. Duplicates are not included by default.

Example

For each region of the market, return its top-selling 3 products. Display the sales data by quarter.

WITH SET [Top3BevsPerRegion]
AS

    'Generate ( ([Market].children),
        Crossjoin
        {
            ([Market].Currentmember),
            TopCount
            {
                [Product].Members, 3, [Measures].[Sales]
            }
        }
    )'

SELECT
    { [Top3BevsPerRegion] }
ON COLUMNS,
    { [Year].children }
ON ROWS
FROM Sample.Basic
WHERE ([Scenario].[Actual], [Measures].[Sales])
### Generation

Returns the generation of the input member.

**Syntax**

\[member\].Generation

**Parameter Description**

- **member**: Member specification.

**Example**

The following query

```
SELECT [Year].[Qtr1].Generation.Members
    ON COLUMNS,
    [Product].Generations(2).Members
    ON ROWS
FROM Sample.Basic
```

returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>7048</td>
<td>7872</td>
<td>8511</td>
<td>7037</td>
</tr>
<tr>
<td>200</td>
<td>6721</td>
<td>7030</td>
<td>7005</td>
<td>7198</td>
</tr>
<tr>
<td>300</td>
<td>5929</td>
<td>6769</td>
<td>6698</td>
<td>6403</td>
</tr>
<tr>
<td>400</td>
<td>5005</td>
<td>5436</td>
<td>5698</td>
<td>5162</td>
</tr>
<tr>
<td>Diet</td>
<td>7017</td>
<td>7336</td>
<td>7532</td>
<td>6941</td>
</tr>
</tbody>
</table>

**See Also**

- Generations
- Level
- IsGeneration
Generations

Returns the generation specified by the input generation number.

**Syntax**

```
dimension.Generations ( index )
Generations ( dimension, index )
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>dimension</td>
<td>The dimension specification.</td>
</tr>
<tr>
<td>index</td>
<td>The numerical depth from the top member of the outline, where the top member is 1.</td>
</tr>
</tbody>
</table>

**Example**

The following query

```
SELECT
    [Year].[Qtr1].Generation.Members
ON COLUMNS,
    [Product].Generations(2).Members
ON ROWS
FROM Sample.Basic
```

returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>7048</td>
<td>7872</td>
<td>8511</td>
<td>7037</td>
</tr>
<tr>
<td>200</td>
<td>6721</td>
<td>7030</td>
<td>7005</td>
<td>7198</td>
</tr>
<tr>
<td>300</td>
<td>5929</td>
<td>6769</td>
<td>6698</td>
<td>6403</td>
</tr>
<tr>
<td>400</td>
<td>5005</td>
<td>5436</td>
<td>5698</td>
<td>5162</td>
</tr>
<tr>
<td>Diet</td>
<td>7017</td>
<td>7336</td>
<td>7532</td>
<td>6941</td>
</tr>
</tbody>
</table>

**See Also**

- Generation
- Levels

GetFirstDate

Returns the start date for a date-time dimension member.

**Syntax**

```
GetFirstDate ( member )
```
Parameter Description

member A member from a date-time dimension.

Notes

- This function returns #MISSING if the input member is not from a date hierarchy in a Time-Date tagged dimension.
- The return value is a number representing the input date. The number is the number of seconds elapsed since midnight, January 1, 1970.
- This function is applicable only to aggregate storage databases.

Example

The following query returns sales for the first week of April, 2004.

```sql
SELECT
  {[Sales]}
ON COLUMNS,
  (DateToMember(
    GetFirstDate ([Apr 2004]),
    [Time dimension].Dimension,
    [Time dimension].[Weeks]
  )
)
ON ROWS
FROM MySamp.basic;
```

GetFirstDay

For a given date_part, this function returns the first day of the time interval for the input date, following a standard Gregorian calendar.

Syntax

```sql
GetFirstDay ( date, date_part )
```

Parameter Description

date A number representing the input date between January 1, 1970 and Dec 31, 2037. The number is the number of seconds elapsed since midnight, January 1, 1970. To retrieve this number, use any of the following functions: Today(), TodateEx(), GetFirstDate(), GetLastDate(), DateRoll().

Date-Time type attribute properties of a member can also be used to retrieve this number. For example: Product.currentmember.[Intro Date] returns the Introduction or release date for the current product in context. [Cola].[Intro Date] returns the Introduction or release date for the “Cola” product.

date_part Defined time components of the standard calendar.

- DP_YEAR - year of the input date.
- DP_QUARTER – quarter of the input date.
- DP_MONTH - month of the input date.
- DP_WEEK - week of the input date.
Notes
This function can be used for getting the truncated date of an input date for a given date part, following a standard Gregorian calendar.

Example
Assuming today’s date is April 15 2007, consider the following scenarios.
GetFirstDay(Today(), DP_YEAR)
returns the first day of the year, Jan 1 2007
GetFirstDay(Today(), DP_QUARTER)
returns the first day of the quarter, Apr 1 2007
GetFirstDay(Today(), DP_MONTH)
returns the first day of the month, Apr 1 2007
GetFirstDay(Today(), DP_WEEK)
returns the first day of the week, Apr 15 2007

See Also
- GetNextDay
- GetLastDay
- Today

GetLastDate
Returns the end date for a date-time dimension member.

Syntax
GetLastDate ( member )

Parameter Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>member</td>
<td>A member from a date-time tagged dimension.</td>
</tr>
</tbody>
</table>

Notes
- This function returns #MISSING if the input member is not from a date hierarchy in a Time-Date tagged dimension.
- The return value is a number representing the input date. The number is the number of seconds elapsed since midnight, January 1, 1970.
- This function is applicable only to aggregate storage databases.

Example
The following query returns sales for the last week of April, 2004.
SELECT
  {{Sales}}
ON COLUMNS,
(DateToMember(
    GetLastDate ([Apr 2004]),
    [Time dimension].Dimension,
    [Time dimension].[Weeks]
  )
)
ON ROWS
FROM MySamp.basic;

GetLastDay

For a given `date_part`, this function returns the last day of the time interval for the input date, following a standard Gregorian calendar.

Syntax

GetLastDay ( date, date_part )

Parameter Description

date A number representing the input date between January 1, 1970 and Dec 31, 2037. The number is the number of seconds elapsed since midnight, January 1, 1970. To retrieve this number, use any of the following functions: Today(), TodateEx(), GetFirstDate(), GetLastDate(), DateRoll().

Date-Time type attribute properties of a member can also be used to retrieve this number. For example: `Product.currentmember.[Intro Date]` returns the Introduction or release date for the current product in context. `[Cola].[Intro Date]` returns the Introduction or release date for the “Cola” product.

date_part Defined time components of the standard calendar.
  
  - DP_YEAR - year of the input date.
  - DP_QUARTER – quarter of the input date.
  - DP_MONTH - month of the input date.
  - DP_WEEK - week of the input date.

Notes

This function can be used for getting the truncated date of an input date for a given date part, following a standard Gregorian calendar.

Example

Assuming today’s date is April 15 2007, consider the following scenarios.

GetLastDay(Today(), DP_YEAR)

returns the last day of the year, Dec 31 2007

GetLastDay(Today(), DP_QUARTER)

returns the last day of the quarter, Jun 30 2007

GetLastDay(Today(), DP_MONTH)

returns the last day of the month, Apr 30 2007

GetLastDay(Today(), DP_WEEK)
returns the last day of the week, Apr 21 2007

See Also
- GetFirstDay
- GetNextDay
- Today

GetNextDay

To the given date and the week day, get the next date after input date that corresponds to the week day.

Syntax

```
GetNextDay ( date, week_day, [0|1] )
```

Parameter Description

date A number representing the input date between January 1, 1970 and Dec 31, 2037. The number is the number of seconds elapsed since midnight, January 1, 1970. To retrieve this number, use any of the following functions: Today(), TodateEx(), GetFirstDate(), GetLastDate(), DateRoll().

Date-Time type attribute properties of a member can also be used to retrieve this number. For example: Product.currentmember.[Intro Date] returns the Introduction or release date for the current product in context. [Cola].[Intro Date] returns the Introduction or release date for the “Cola” product.

week_day A number between 1 (Sunday) and 7 (Saturday) representing the week day.

0 or 1 Optional. Indicates whether to include the date itself or not. Default behavior is 1: to include the date itself.

Example

```
GetNextDay(Today(), 2, 0)
```
returns the next Monday following today.

```
GetNextDay(Today(), 2, 1)
```
returns the next Monday following today, or today if today is Monday.

```
GetNextDay(Today(), 2)
```
returns the next Monday following today, or today if today is Monday.

See Also
- GetFirstDay
- GetLastDay
- Today

GetRoundDate

For a given date_part, this function returns the rounded date of the input date to the input time interval, following a standard Gregorian calendar.
**Syntax**

GetRoundDate (date, date_part)

---

**Parameter Description**

- **date**: A number representing the input date between January 1, 1970 and Dec 31, 2037. The number is the number of seconds elapsed since midnight, January 1, 1970. To retrieve this number, use any of the following functions: Today(), TodateEx(), GetFirstDate(), GetLastDate(), DateRoll().

  Date-Time type attribute properties of a member can also be used to retrieve this number. For example: `Product.currentmember.[Intro Date]` returns the Introduction or release date for the current product in context. `[Cola].[Intro Date]` returns the Introduction or release date for the “Cola” product.

- **date_part**: Defined time components of the standard calendar.
  - DP_YEAR - year of the input date.
  - DP_QUARTER - quarter of the input date.
  - DP_MONTH - month of the input date.
  - DP_WEEK - week of the input date.

---

**Example**

Assuming today’s date is April 15 2007, consider the following scenarios.

- GetRoundDate(Today(), DP_YEAR) returns the rounded date to the year, Jan 1 2007
- GetRoundDate(Today(), DP_QUARTER) returns the rounded date to the quarter, Apr 1 2007
- GetRoundDate(Today(), DP_MONTH) returns the rounded date to the month, Apr 1 2007
- GetRoundDate(Today(), DP_WEEK) returns the rounded date to the week, Apr 15 2007

---

**See Also**

- GetNextDay
- GetFirstDay
- GetLastDay
- Today

---

**Head**

Returns the first \( n \) members or tuples present in a set.

**Syntax**

Head (set [,numeric value expression ] )
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>The set from which to take items.</td>
</tr>
<tr>
<td>numeric value</td>
<td>The count of items to take from the beginning of the set. If omitted, the default is 1. If less than 1, an empty set is returned. If the value exceeds the number of tuples in the input set, the original set is returned.</td>
</tr>
</tbody>
</table>

**Example**

**Example 1**

This example uses the following part of the Sample Basic outline:

```
| 100 |
| 200 |
| 300 |
| 400 |
| Diet |
```

The following expression

```
[Product].children
```

returns the set:

```
{ [100], [200], [300], [400], [Diet] }
```

Therefore, the following expression

```
Head ([Product].children, 2)
```

returns the first two members of the previous result set:

```
{ [100], [200] }
```

**Example 2**

This example uses the following parts of the Sample Basic outline:

```
100 (+)
  --100-10
  --100-20
  --100-30

South (+)
  ---Texas
  ---Oklahoma
  ---Louisiana
  ---New Mexico

Year
  --Qtr1
  --Qtr2
  --Qtr3
  --Qtr4
```
The following expression

\[
\text{CrossJoin ( [100].children, [South].children )}
\]

returns the set:

\[
\{ ([100-10], \text{Texas}), ([100-10], \text{Oklahoma}), ([100-10], \text{Louisiana}), ([100-10], \text{New Mexico}),
\quad ([100-20], \text{Texas}), ([100-20], \text{Oklahoma}), ([100-20], \text{Louisiana}), ([100-20], \text{New Mexico}),
\quad ([100-30], \text{Texas}), ([100-30], \text{Oklahoma}), ([100-30], \text{Louisiana}), ([100-30], \text{New Mexico}) \}\]

And the following expression

\[
\text{Head ( CrossJoin ([100].children, [South].children), 8 )}
\]

returns the first 8 tuples of the previous result set:

\[
\{ ([100-10], \text{Texas}), ([100-10], \text{Oklahoma}), ([100-10], \text{Louisiana}), ([100-10], \text{New Mexico}),
\quad ([100-20], \text{Texas}), ([100-20], \text{Oklahoma}), ([100-20], \text{Louisiana}), ([100-20], \text{New Mexico}) \}
\]

Additionally, the following expression

\[
([\text{Year}].\text{generations(2).members})
\]

returns the set of members comprising the second generation of the Year dimension:

\[
\{ \text{[Qtr1], [Qtr2], [Qtr3], [Qtr4]} \}
\]

Therefore, the following query

\[
\text{SELECT}
\quad \{([\text{Year}.\text{generations(2).members})\}
\quad \text{ON COLUMNS,}
\quad \text{Head (}
\quad \quad \text{CrossJoin (}
\quad \quad \quad \text{[100].children, [South].children), 8}
\quad \quad \quad \})
\quad \text{ON ROWS}
\quad \text{FROM Sample.Basic}
\]

returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Texas</th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
</tr>
</thead>
<tbody>
<tr>
<td>100–10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Texas</td>
<td>489</td>
<td>536</td>
<td>653</td>
<td>547</td>
</tr>
<tr>
<td></td>
<td>Oklahoma</td>
<td>87</td>
<td>92</td>
<td>128</td>
<td>211</td>
</tr>
<tr>
<td></td>
<td>Louisiana</td>
<td>93</td>
<td>106</td>
<td>128</td>
<td>137</td>
</tr>
<tr>
<td></td>
<td>New Mexico</td>
<td>76</td>
<td>101</td>
<td>122</td>
<td>70</td>
</tr>
<tr>
<td>100–20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Texas</td>
<td>206</td>
<td>199</td>
<td>152</td>
<td>82</td>
</tr>
<tr>
<td></td>
<td>Oklahoma</td>
<td>84</td>
<td>66</td>
<td>55</td>
<td>79</td>
</tr>
</tbody>
</table>

1147
<table>
<thead>
<tr>
<th>(axis)</th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Louisiana</td>
<td>119</td>
<td>158</td>
<td>171</td>
<td>104</td>
</tr>
<tr>
<td>New Mexico</td>
<td>-103</td>
<td>-60</td>
<td>-98</td>
<td>-18</td>
</tr>
</tbody>
</table>

### See Also
- Tail

## Hierarchize

Returns members of a set in their hierarchical order as represented in the database outline.

### Syntax

Hierarchize ( set [,POST] )

### Parameter Description

- **set**: Set specification.
- **POST**: If this keyword is used, child members are returned before their parents.

### Notes

This function returns members of a set in their hierarchical order as represented in the database outline (viewed from top-down by default, meaning that parent members are returned before their children).

If POST is used, child members are returned before their parents (the view changes to bottom-up). For example,

Hierarchize({Child, Grandparent, Parent})

returns {Grandparent, Parent, Child}.

Hierarchize({Child, Grandparent, Parent}, POST)

returns {Child, Parent, Grandparent}.

### Example

#### Example 1

The following expression

Hierarchize({May, Apr, Jun})

returns the set:

{Apr, May, Jun}

Therefore, the following query

Select
Hierarchize({May, Apr, Jun})
on columns from sample.basic
returns the grid:

<table>
<thead>
<tr>
<th></th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8644</td>
<td>8929</td>
<td>9534</td>
</tr>
</tbody>
</table>

Example 2

The following expression

Hierarchize({May, Qtr2, Apr, Jun})

returns the set:

{ Qtr2 Apr May Jun }

Therefore, the following query

Select
Hierarchize({May, Qtr2, Apr, Jun})
on columns from sample.basic

returns the grid:

<table>
<thead>
<tr>
<th>Qtr2</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
</tr>
</thead>
<tbody>
<tr>
<td>27107</td>
<td>8644</td>
<td>8929</td>
<td>9534</td>
</tr>
</tbody>
</table>

Example 3

The following expression

Hierarchize({May, Qtr2, Apr, Jun}, POST)

returns the set:

{Apr, May, Jun, Qtr2}

Therefore, the following query

Select
Hierarchize({May, Qtr2, Apr, Jun}, POST)
on columns from sample.basic

returns the grid:

<table>
<thead>
<tr>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Qtr2</th>
</tr>
</thead>
<tbody>
<tr>
<td>8644</td>
<td>8929</td>
<td>9534</td>
<td>27107</td>
</tr>
</tbody>
</table>

Example 4

The following query

Select
Hierarchize({Dec, Year, Feb, Apr, Qtr1, Jun, Qtr2}, POST)
on columns, Hierarchize({Margin, Sales})

1149
on rows
from sample.basic

returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Feb</th>
<th>Qtr1</th>
<th>Apr</th>
<th>Jun</th>
<th>Qtr2</th>
<th>Dec</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Margin</td>
<td>17762</td>
<td>52943</td>
<td>18242</td>
<td>19457</td>
<td>56317</td>
<td>18435</td>
<td>221519</td>
</tr>
<tr>
<td>Sales</td>
<td>32069</td>
<td>95820</td>
<td>32917</td>
<td>35088</td>
<td>101679</td>
<td>33342</td>
<td>400855</td>
</tr>
</tbody>
</table>

IIF

Performs a conditional test, and returns an appropriate numeric expression or set depending on whether the test evaluates to true or false.

Syntax

IIF ( search_condition, true_part, false_part )

Parameter | Description
------------------
search_condition | An expression to evaluate as true or false (see “MDX Grammar Rules” on page 1012).
true_part | A value_expression or a set. IIF returns this expression if the search condition evaluates to TRUE (something other than zero).
The value_expression can be a numeric value expression or a string value expression.
false_part | A value_expression or a set. IIF returns this expression if the search condition evaluates to FALSE (zero).
The value_expression can be a numeric value expression or a string value expression.

Example

Example 1

The company plans an expensive promotion of its caffeinated drinks. For the Caffeinated products only, the following query calculates a Revised Budget that is 110% of the regular budget.

WITH MEMBER
[Scenario].[Revised Budget] AS
'
   IIF
       [Product].CurrentMember.Caffeinated,
       Budget * 1.1, Budget
   )'
SELECT
{{[Scenario].[Budget], [Scenario].[Revised Budget]}}
ON COLUMNS,
[Product].Levels(0).Members
ON ROWS
FROM Sample.Basic
WHERE ([Measures].[Sales], [Year].[Qtr3])

This query returns the grid:

1150
Example 2

The following query calculates a Revised Budget equaling Budget for caffeinated products, and Actual for non-caffeinated products.

WITH MEMBER
  [Scenario].[Revised Budget]
AS
  'StrToMbr(IIF (  
    [Product].CurrentMember.Caffeinated,  
    "Budget", "Actual")
  )'
SELECT
  {[Scenario].[Budget], [Scenario].[Revised Budget]}
ON COLUMNS,
Children([100])
ON ROWS
FROM Sample.Basic
WHERE ([Measures].[Sales], [Year].[Qtr3])

This query returns the grid:
<table>
<thead>
<tr>
<th>(axis)</th>
<th>Budget</th>
<th>Revised Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cola</td>
<td>18650</td>
<td>18650</td>
</tr>
<tr>
<td>Diet Cola</td>
<td>8910</td>
<td>8910</td>
</tr>
<tr>
<td>Caffeine Free Cola</td>
<td>3370</td>
<td>3189</td>
</tr>
</tbody>
</table>

**InStr**

Returns a number specifying the position of the first occurrence of one string within another. This function includes a required “start” parameter.

**Syntax**

InStr ( start, string1, string2 [,compare] )

**Parameter Description**

- **start**: Character position to begin search in `string1`. For example, a position value of 1 indicates that the search begins at the first character in the string. This parameter is required.
- **string1**: String expression or literal string in which to search.
- **string2**: String expression or literal string for which to search.
- **compare**: Optional search mode. Values: 0 for case sensitive, 1 for case insensitive. Default is case sensitive.

**Notes**

If a matching string is not found, the return value is 0.

If you require an optional “start” argument, then use the InString function instead.

**Example**

InStr (5, "Year2000_promotional", "promotional", 1)
returns 10

**InString**

Returns a number specifying the position of the first occurrence of one string within another.

**Syntax**

InString (string1, string2, [start] [,compare])

**Parameter Description**

- **string1**: String expression or literal string in which to search.
- **string2**: String expression or literal string for which to search.
### Parameter Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>start</td>
<td>Optional character position to begin search in string1. The default value is 1. A position value of 1 indicates the very first character in the string. If omitted, search begins at first character in string1.</td>
</tr>
<tr>
<td>compare</td>
<td>Optional search mode. Values: 0 for case sensitive, 1 for case insensitive. Default is case sensitive.</td>
</tr>
</tbody>
</table>

### Notes

If a matching string is not found, the return value is 0.

### Example

```sql
InString ("Year2000_promotional", "promotional", 5,1)
returns 10
```

If the start parameter is omitted, the comma before the compare parameter is still required:

```sql
InString ("Year2000_promotional", "promotional", ,1)
```

If the compare parameter is omitted, the comma before the start parameter is still required:

```sql
InString ("Year2000_promotional", "promotional", 5)
```

### Int

Returns the next lowest integer value of an expression.

#### Syntax

```sql
Int ( numeric_value_expression )
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>numeric_value_expression</td>
<td>A numeric value or an expression that returns a numeric value (see “MDX Grammar Rules” on page 1012).</td>
</tr>
</tbody>
</table>

#### Example

**Example 1**

```sql
Int(104.504) returns 104.
```

**Example 2**

The following query

```sql
WITH MEMBER [Market].[West_approx] AS
'Int(
    Sum(
        Children([Market].[West])
    )
)'
SELECT
  {[Year].[Qtr1].Children}
ON COLUMNS,
    
ON ROWS
FROM
    Sample.Basic
WHERE ([Measures].[Profit %], [Product].[Cola], [Scenario].[Actual])

returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>38.643</td>
<td>37.984</td>
<td>38.370</td>
</tr>
<tr>
<td>Oregon</td>
<td>17.500</td>
<td>16.129</td>
<td>16.107</td>
</tr>
<tr>
<td>Washington</td>
<td>29.231</td>
<td>30.986</td>
<td>32.000</td>
</tr>
<tr>
<td>Utah</td>
<td>23.077</td>
<td>23.077</td>
<td>20.968</td>
</tr>
<tr>
<td>Nevada</td>
<td>-3.947</td>
<td>-6.757</td>
<td>-5.333</td>
</tr>
<tr>
<td>West_approx</td>
<td>104.000</td>
<td>101.00</td>
<td>102.00</td>
</tr>
</tbody>
</table>

**Intersect**

Returns the intersection of two input sets, optionally retaining duplicates.

**Syntax**

Intersect ( set1, set2 [,ALL] )

**Parameter Description**

- **set1**: A set to intersect with set2.
- **set2**: A set to intersect with set1.
- **ALL**: The optional ALL keyword retains matching duplicates in set1 and set2.

**Notes**

Duplicates are eliminated by default from the tail of the set. The optional ALL keyword retains duplicates. The two input sets must have identical dimension signatures. For example, if set1 consists of dimensions Product and Market, in that order, then set2 should also consist of Product followed by Market.

**Example**

**Example 1**

The following expression

Intersect( ([New York], [California], [Oregon]),
            ([California], [Washington], [Oregon]))
returns the set:

{[California], [Oregon]}

Therefore, the following query

```
SELECT
Intersect({[New York], [California], [Oregon]},
          {[California], [Washington], [Oregon]})
ON COLUMNS
FROM Sample.Basic
```

returns the grid:

<table>
<thead>
<tr>
<th>California</th>
<th>Oregon</th>
</tr>
</thead>
<tbody>
<tr>
<td>12964</td>
<td>5062</td>
</tr>
</tbody>
</table>

Example 2

The following expression

```
Intersect( { [New York], [California], [Florida], [California] },
          { [Oregon], [Washington], [California], [Florida], [California] }, ALL)
```

returns the set:

{ [California], [Florida], [California] }

Therefore, the following query

```
SELECT
Intersect( { [New York], [California], [Florida], [California] },
          { [Oregon], [Washington], [California], [Florida], [California] }, ALL)
ON COLUMNS
FROM Sample.Basic
```

returns the grid:

<table>
<thead>
<tr>
<th>California</th>
<th>Florida</th>
<th>California</th>
</tr>
</thead>
<tbody>
<tr>
<td>12964</td>
<td>5029</td>
<td>12964</td>
</tr>
</tbody>
</table>

The matching duplicate element [California] is duplicated in the result.

However, the following expression

```
Intersect( { [New York], [California], [Florida], [California] },
          { [Oregon], [Washington], [California], [Florida] }, ALL)
```

would return only

{ [California], [Florida] }
because only one match exists between [California] in set1 and [California] in set2.

**Is**

Returns TRUE if two members are identical.

**Syntax**

```
IS ( member1, member2 )
```

- **member1** First member specification.
- **member2** Second member specification.

**Example**

```
IS([Year].CurrentMember.Parent, [Qtr1])
```

returns TRUE if the parent of the current member in [Year] dimension is [Qtr1].

```
Filter([Year].Levels(0).members, IS([Year].CurrentMember.Parent, [Qtr1]))
```

returns children of [Qtr1].

The following query returns all members of [Market] that have the parent [East]; in other words, children of [East].

```
SELECT
{
  Filter(
    [Market].members,
    [Market].CurrentMember.Parent IS [East]
  )
}
on columns
FROM sample.basic
```

This query returns the following grid:

<table>
<thead>
<tr>
<th>New York</th>
<th>Massachusetts</th>
<th>Florida</th>
<th>Connecticut</th>
<th>New Hampshire</th>
</tr>
</thead>
<tbody>
<tr>
<td>8202</td>
<td>6712</td>
<td>5029</td>
<td>3093</td>
<td>1125</td>
</tr>
</tbody>
</table>

**IsAccType**

Returns TRUE if the member has the associated accounts tag. Account tags apply only to dimensions marked as Accounts dimensions. A FALSE value is returned for all other dimensions.

**Syntax**

```
IsAccType ( member, AcctTag )
```
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>member</td>
<td>A member specification.</td>
</tr>
</tbody>
</table>

**AcctTag**  
Valid values (defined in the database outline):
- First
- Last
- Average
- Expense
- TwoPass

**Example**

```sql
SELECT Filter([Measures].Members, IsAccType([Measures].CurrentMember, First))
ON COLUMNS
FROM Sample.Basic
```

This query returns the following grid:

<table>
<thead>
<tr>
<th>Opening Inventory</th>
</tr>
</thead>
<tbody>
<tr>
<td>117405</td>
</tr>
</tbody>
</table>

**IsAncestor**

Returns TRUE if the first member is an ancestor of the second member and, optionally, if the first member is equal to the second member.

**Syntax**

```sql
IsAncestor ( member1 , member2 [, INCLUDEMEMBER])
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>member1</td>
<td>A member specification.</td>
</tr>
<tr>
<td>member2</td>
<td>A member specification.</td>
</tr>
</tbody>
</table>

INCLUDEMEMBER  Optional. Use this keyword if you want IsAncestor to return TRUE if the first member is equal to the second member.

**Example**

**Example 1**

The following query returns all Market dimension members for which the expression
IsAncestor([Market].CurrentMember, [Florida]) returns TRUE; in other words, the query returns all ancestors of Florida.

```sql
SELECT Filter([Market].Members, IsAncestor([Market].CurrentMember, [Florida]))
```
Example 2

The following query is the same as the above query, except that it uses INCLUDEMEMBER. It returns all Market dimension members for which the expression

IsAncestor([Market].CurrentMember, [Florida], INCLUDEMEMBER)

returns TRUE; in other words, the query returns Florida and all ancestors of Florida.

```
SELECT
  Filter([Market].Members, IsAncestor([Market].CurrentMember, [Florida], INCLUDEMEMBER))
ON COLUMNS
FROM Sample.Basic
```

<table>
<thead>
<tr>
<th>Market</th>
<th>East</th>
<th>Florida</th>
</tr>
</thead>
<tbody>
<tr>
<td>105522</td>
<td>24161</td>
<td>5029</td>
</tr>
</tbody>
</table>

**IsChild**

Returns TRUE if the first member is a child of the second member and, optionally, if the first member is equal to the second member.

**Syntax**

IsChild ( member1, member2 [, INCLUDEMEMBER])

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>member1</td>
<td>A member specification.</td>
</tr>
<tr>
<td>member2</td>
<td>A member specification.</td>
</tr>
</tbody>
</table>

INCLUDEMEMBER  Optional. Use this keyword if you want IsChild to return TRUE if the first member is equal to the second member.

**Example**

**Example 1**

The following query returns all Market dimension members for which the expression

IsChild([Market].CurrentMember, [East])

returns TRUE; in other words, the query returns all children of East.

```
SELECT
  Filter([Market].Members, IsChild([Market].CurrentMember, [East]))
```

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Example 2

The following query is the same as the above query, except that it uses INCLUDEMEMBER. It returns all Market dimension members for which the expression IsChild([Market].CurrentMember, [East]) returns TRUE; in other words, the query returns East and all children of East.

```
SELECT Filter([Market].Members, IsChild([Market].CurrentMember, [East], INCLUDEMEMBER))
ON COLUMNS FROM Sample.Basic
```

<table>
<thead>
<tr>
<th>East</th>
<th>New York</th>
<th>Massachusetts</th>
<th>Florida</th>
<th>Connecticut</th>
<th>New Hampshire</th>
</tr>
</thead>
<tbody>
<tr>
<td>24161</td>
<td>8202</td>
<td>6712</td>
<td>5029</td>
<td>3093</td>
<td>1125</td>
</tr>
</tbody>
</table>

**IsEmpty**

Returns True if the value of an input numeric-value-expression evaluates to #MISSING, and returns FALSE otherwise.

**Syntax**

```
IsEmpty ( value_expression )
```

**Parameter**

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>value_expression</td>
</tr>
</tbody>
</table>

**Notes**

Zero is not equivalent to #MISSING. IsEmpty(0) returns TRUE.

**Example**

The following example finds all Product, Market combinations for which Sales data exists.

```
SELECT Filter([NewSet], NOT IsEmpty([NewSet].CurrentTuple))
ON COLUMNS FROM Sample.Basic
WHERE ([Sales])
```

This query returns the following grid:
**IsGeneration**

Returns TRUE if the member is in a specified generation.

**Syntax**

```
IsGeneration ( member, index )
```

**Parameter Description**

- **member** A member specification.
- **index** A generation number.

**Example**

```
IsGeneration([Market].CurrentMember, 2)
```

returns TRUE if the current member of the Market dimension is at generation 2.

Therefore, the following query

```
SELECT
  Filter([Market].Members, IsGeneration([Market].CurrentMember, 2))
ON COLUMNS
FROM Sample.Basic
```

returns

<table>
<thead>
<tr>
<th>East</th>
<th>West</th>
<th>South</th>
<th>Central</th>
</tr>
</thead>
<tbody>
<tr>
<td>24161</td>
<td>29861</td>
<td>13238</td>
<td>38262</td>
</tr>
</tbody>
</table>

**See Also**

- Generation
- IsLevel

**IsLeaf**

Returns TRUE if the member is a level-0 member.

**Syntax**

```
IsLeaf ( member )
```
**Parameter Description**

**member**  
A member specification.

**Notes**

IsLeaf(member) is the same as IsLevel(member, 0).

**Example**

IsLeaf([Market].CurrentMember)

returns TRUE if the current member of the Market dimension is at level 0.

Therefore, the following query

```sql
SELECT Filter([Market].Members, IsLeaf([Market].CurrentMember))
ON COLUMNS FROM Sample.Basic
```

returns

<table>
<thead>
<tr>
<th>New York</th>
<th>Massachusetts</th>
<th>Florida</th>
<th>...</th>
<th>Missouri</th>
<th>Iowa</th>
<th>Colorado</th>
</tr>
</thead>
<tbody>
<tr>
<td>8202</td>
<td>6712</td>
<td>5029</td>
<td>...</td>
<td>1466</td>
<td>9061</td>
<td>7227</td>
</tr>
</tbody>
</table>

**IsLevel**

Returns TRUE if the member is in a specified level.

**Syntax**

IsLevel (member, index)

**Parameter Description**

**member**  
A member specification.

**index**  
A level number.

**Example**

IsLevel([Market].CurrentMember, 1)

returns TRUE if the current member of the Market dimension is at level 1.

Therefore, the following query

```sql
SELECT Filter([Market].Members, IsLevel([Market].CurrentMember, 1))
ON COLUMNS FROM Sample.Basic
```

returns
See Also

- Level
- IsGeneration

**IsMatch**

Performs wild-card search / pattern matching to check if a string matches a given pattern. The input string can be a member name, an alias, an attribute value, or any relevant string. This function searches for strings matching the pattern you specify, and returns the artifacts it finds.

**Syntax**

```
IsMatch(string, patternstring, {MATCH_CASE | IGNORE_CASE})
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>string</td>
<td>The string that should be tested against the pattern.</td>
</tr>
<tr>
<td>patternstring</td>
<td>The pattern to search for. Must be in POSIX Extended Regular Expression Syntax. See the syntax specification at The Open Group. See the Notes in this topic for additional rules regarding special characters.</td>
</tr>
</tbody>
</table>

**MATCH_CASE** Optional. Consider `patternstring` to be case sensitive. If MATCH_CASE / IGNORE_CASE are omitted, Essbase defaults to the case-sensitive setting of the outline properties.

To define database member names as case-sensitive, use Outline Editor in Administration Services (see the Oracle Essbase Administration Services Online Help).

**IGNORE_CASE** Optional. Do not consider `patternstring` to be case sensitive. If MATCH_CASE / IGNORE_CASE are omitted, Essbase defaults to the case-sensitive setting of the outline properties.

**Notes**

- To search for a member name containing $, you must precede it with three backslash (\) escape characters in the `patternstring`. For example, to search for member a$bc in Market, you must use `IsMatch(Market.CurrentMember.MEMBER_NAME, "a\\$bc")`.

- To search for a character at the end of a line, you must precede the POSIX end-of-line anchor, which is a dollar sign ($), with one backslash (\) escape character in the `patternstring`. For example, to search for a member name that ends with a c in Market, you must use `IsMatch(Market.CurrentMember.MEMBER_NAME, "c\$")`.

- To search for any other special characters besides $, you must precede them with two backslash (\) escape characters in the `patternstring`. For example, to search for member a? bc in Market, you must use `IsMatch(Market.CurrentMember.MEMBER_NAME, "a\\? bc")`.

**Example**

The following query searches for members whose names start with “new”:

```
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```
The following query searches for members whose names start with at least an “n”:

```
SELECT
    Filter(Market.Levels(0).Members,
        IsMatch(Market.CurrentMember.MEMBER_NAME, "^new")
    )
ON COLUMNS
FROM  Sample.Basic
```

The following query searches for members whose names contain an “*”:

```
SELECT
    Filter(Year.Members,
        IsMatch(Year.CurrentMember.MEMBER_NAME, "\*")
    )
ON COLUMNS
FROM  Sample.Basic
```

The following query searches for members whose names contain zero or an “a”:

```
SELECT
    Filter(Year.Members,
        IsMatch(Year.CurrentMember.MEMBER_NAME, "a?")
    )
ON COLUMNS
FROM  Sample.Basic
```

**IsSibling**

Returns TRUE if the first member is a sibling of the second member and, optionally, if the first member is equal to the second member.

**Syntax**

```
IsSibling( member1, member2 [, INCLUDEMEMBER])
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>member1</td>
<td>A member specification.</td>
</tr>
<tr>
<td>member2</td>
<td>A member specification.</td>
</tr>
<tr>
<td>INCLUDEMEMBER</td>
<td>Optional. Use this keyword if you want IsSibling to return TRUE if the first member is equal to the second member.</td>
</tr>
</tbody>
</table>
Example

Example 1

The following query returns all Market dimension members for which the expression
IsSibling([Market].CurrentMember, [California]) returns TRUE; in other words, the query returns all states that are siblings of California.

```
SELECT Filter([Market].Members, IsSibling([Market].CurrentMember, [California]))
ON COLUMNS
FROM Sample.Basic
```

<table>
<thead>
<tr>
<th>Oregon</th>
<th>Washington</th>
<th>Utah</th>
<th>Nevada</th>
</tr>
</thead>
<tbody>
<tr>
<td>5062</td>
<td>4641</td>
<td>3155</td>
<td>4039</td>
</tr>
</tbody>
</table>

Example 2

The following query is the same as the above query, except that it uses INCLUDEMEMBER. It returns all Market dimension members for which the expression
IsSibling([Market].CurrentMember, [California]) returns TRUE; in other words, the query returns all states that are siblings of California, including California itself.

```
SELECT Filter([Market].Members, IsSibling([Market].CurrentMember, [California], INCLUDEMEMBER))
ON COLUMNS
FROM Sample.Basic
```

<table>
<thead>
<tr>
<th>California</th>
<th>Oregon</th>
<th>Washington</th>
<th>Utah</th>
<th>Nevada</th>
</tr>
</thead>
<tbody>
<tr>
<td>12964</td>
<td>5062</td>
<td>4641</td>
<td>3155</td>
<td>4039</td>
</tr>
</tbody>
</table>

IsUda

Returns TRUE if the member has the associated UDA tag (user-defined attribute).

**Syntax**

```
IsUda ( member , string_value_expression )
```

**Parameter** | **Description**
--- | ---
member | A member specification.
string_value_expression | A user-defined attribute (UDA) name string, defined in the database outline.

**Example**

```
IsUda([Market].CurrentMember, "Major Market")
```

returns TRUE if the current member of the Market has the user-defined attribute "Major Market."
Therefore, the following query

```sql
SELECT
    Filter(
        [Market].Members,
        IsUda([Market].CurrentMember, "Major Market")
    )
ON COLUMNS
FROM Sample.Basic
```

returns

<table>
<thead>
<tr>
<th>East</th>
<th>New York</th>
<th>Massachusetts</th>
<th>Florida</th>
<th>California</th>
<th>Texas</th>
<th>Central</th>
<th>Illinois</th>
<th>Ohio</th>
<th>Colorado</th>
</tr>
</thead>
<tbody>
<tr>
<td>24161</td>
<td>8202</td>
<td>6712</td>
<td>5029</td>
<td>12964</td>
<td>6425</td>
<td>38262</td>
<td>12577</td>
<td>4384</td>
<td>7227</td>
</tr>
</tbody>
</table>

**IsValid**

Returns TRUE if the specified element validates successfully.

**Syntax**

```sql
IsValid ( member | tuple | set | layer | property )
```

**Parameter Description**

- **member**: A member specification.
- **tuple**: A tuple specification.
- **set**: A set specification.
- **layer**: A layer specification.
- **property**: A property specification (see “MDX Grammar Rules” on page 1012).

**Example**

**Example 1**

The following example shows how IsValid can be used to check whether a given property value is valid. It returns all Product dimension members that have an Ounces attribute value of 12.

```sql
SELECT
    Filter(
        [Product].members,
        IsValid([Product].CurrentMember.Ounces)
        AND
        [Product].CurrentMember.Ounces = 12
    )
ON COLUMNS
FROM Sample.Basic
```

The expression `IsValid([Product].CurrentMember.Ounces)` returns TRUE for only those members in the Product dimension that have a valid property value for [Ounces]. This eliminates ancestral members such as [Product] and [Colas] that do not have the [Ounces] property defined because they are not level-0 members of the Product dimension.

The second part of the AND condition in the filter selects only those members with a value of 12 for [Ounces].
This query returns the following grid:

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>100-10</td>
<td>100-20</td>
<td>200-10</td>
<td>200-30</td>
<td>300-30</td>
</tr>
<tr>
<td>22777</td>
<td>5708</td>
<td>7201</td>
<td>4636</td>
<td>11093</td>
</tr>
</tbody>
</table>

Example 2
IsValid([Jan].FirstChild)

returns FALSE, because [Jan] is a level-0 member, therefore it does not have any children.

**Item**

Extracts a member from a tuple.
Extracts a tuple from a set.

**Syntax**

Syntax that Returns a Member—one of the following:

\[
\text{tuple}[.\text{Item}] \ (\ \text{index}\ )
\]

\[
\text{Item} \ (\ \text{tuple}, \ \text{index}\ )
\]

Syntax that Returns a Tuple—one of the following:

\[
\text{set}[.\text{Item}] \ (\ \text{index}\ )
\]

\[
\text{Item} \ (\ \text{set}, \ \text{index}\ )
\]

**Parameter Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>tuple</td>
<td>The tuple from which to get a member.</td>
</tr>
<tr>
<td>index</td>
<td>The usage depends upon whether you are returning a member or a tuple:</td>
</tr>
<tr>
<td></td>
<td>● Returning a member: Numeric position (starting from 0) of the member to extract from the tuple. A valid value for index is from 0 to 1 less than the size of the input tuple. A value of less than 0, or greater than or equal to size of the input tuple, results in an empty member.</td>
</tr>
<tr>
<td></td>
<td>● Returning a tuple: Numeric position (starting from 0) of the tuple to extract from the set. A valid value for index is from 0 to 1 less than the size of the input set. A value of less than 0, or greater than or equal to size of the input set, results in an empty tuple.</td>
</tr>
<tr>
<td>set</td>
<td>The set from which to get a tuple.</td>
</tr>
</tbody>
</table>

**Example**

**Example 1, Extracting a Member from a Tuple**

```sql
SELECT
\{( [Qtr1], [Sales], [Cola], [Florida], [Actual] ).Item(3)\}
ON COLUMNS
FROM Sample.Basic
```

returns:

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Example 2, Extracting a Tuple from a Set

The following query

```
SELECT
    (CrossJoin
        {
            [Market].CHILDREN,
            [Product].CHILDREN
        })(0)
ON COLUMNS
FROM Sample.Basic
```

returns the first tuple in the set `CrossJoin([Market].CHILDREN, [Product].CHILDREN)`, which is `([East], [Colas])`.

The above query can also be written as:

```
SELECT
    (CrossJoin
        {
            [Market].CHILDREN,
            [Product].CHILDREN
        })(0)
ON COLUMNS
FROM Sample.Basic
```

because the `ITEM` keyword is optional.

Example 3, Extracting Member from a Set

Consider the following crossjoined set of Market and Product members:

```
{
    ([East],[100]),([East],[200]),([East],[300]),([East],[400]),([East],[Diet]),
    ([West],[100]),([West],[200]),([West],[300]),([West],[400]),([West],[Diet]),
    ([South],[100]),([South],[200]),([South],[300]),([South],[400]),([South],[Diet]),
    ([Central],[100]),([Central],[200]),([Central],[300]),([Central],[400]),([Central],[Diet])
}
```

The following example
CrossJoin([Market].CHILDREN, [Product].CHILDREN).item(0)

returns the first tuple of the crossjoined set, ([East], [100]), and the following example
CrossJoin([Market].CHILDREN, [Product].CHILDREN).item(0).item(1)

returns [100], the second member of the first tuple of the crossjoined set.

**JulianDate**

To the given UNIX date, get its Julian date.

**Syntax**

JulianDate (date)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>date</td>
<td>A number representing the input date between January 1, 1970 and Dec 31, 2037. The number is the number of seconds elapsed since midnight, January 1, 1970. To retrieve this number, use any of the following functions: Today(), TodateEx(), GetFirstDate(), GetLastDate(), DateRoll(). Date-Time type attribute properties of a member can also be used to retrieve this number. For example: Product.currentmember.[Intro Date] returns the Introduction or release date for the current product in context. [Cola].[Intro Date] returns the Introduction or release date for the “Cola” product.</td>
</tr>
</tbody>
</table>

**Notes**

- This function is useful in converting the UNIX date to Julian Date or the 1900 Date system recognized by Microsoft Excel.
- In the 1900 date system, the first day that is supported is January 1, 1900. When you enter a date, the date is converted into a serial number that represents the number of elapsed days since January 1, 1900. For example, if you enter July 5, 1998, Microsoft Excel converts the date to the serial number 35981. By default, Microsoft Excel for Windows uses the 1900 date system.

**Return Value**

This function returns \( \text{juliandate} \), a number representing the Julian date. This number is a continuous count of days and fractions elapsed since noon Universal Time on January 1, 4713 BC in the proleptic Julian calendar.

**Note:** For Excel workbooks using 1900 date system, \((\text{JulianDate} - 2415018.50)\) gets the sequential serial number as per 1900 date system.

**Example**

The following query returns the total monthly sales for all Colas along with their release dates as in 1900 Date system in market “California” for “March 2007.”

WITH MEMBER
Measures.[Product Intro Date]
AS
'JulianDate(Product.CurrentMember.[Intro Date]) - 2415018.50'
SELECT
(Measures.[Product Intro Date], Measures.Sales)
ON COLUMNS,
(Colas.Children)
ON ROWS
FROM Sample.Basic
WHERE
(California, [March 2007], Actual);

See Also
● UnixDate

Lag

Using the order of members existing in a database outline, returns a member that is n steps behind a given member, along the same generation or level (as defined by layertype).

Syntax
member.Lag (index [, layertype ] [, hierarchy ] )
Lag ( member, index [, hierarchy ] )

Parameter Description
member The starting member from which .LAG counts to a given number of previous members.
index A number n representing how many steps prior to <member> to count.
layertype GENERATION or LEVEL. Generation is the default.
hierarchy Optional. A specific hierarchy within the time dimension.

Notes
● If the member specified by the Lag function does not exist, the result is an empty member. For example, using Sample Basic, [Jun].lag (12) returns an empty member.
● When multiple hierarchies are enabled, this function returns NULL when the source member is in one hierarchy and the result member belongs to a different hierarchy.

Example
The following expression:
[Jun].lag (3)
returns the member that is 3 steps prior to Jun:
[Mar]
The following expression:
[Jun].lag (-3)
returns the member that is 3 steps following Jun:

[Sep]

For every month, the following query displays the sales and average over the last three months.

WITH MEMBER [Measures].[Average Sales in Last 3 months]
    AS 'Avg(
        {[Year].CurrentMember,
          [Year].CurrentMember.Lag(1),
          [Year]. CurrentMember.Lag(2)
        ),
        [Measures].[Sales]
    )',
SELECT
    {[Measures].[Sales],
     [Measures].[Average Sales in Last 3 months]}
ON COLUMNS,
    [Year].Levels(0).Members
ON ROWS
FROM Sample.Basic

This query returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Sales</th>
<th>Average Sales in Last 3 Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>31538</td>
<td>31538</td>
</tr>
<tr>
<td>Feb</td>
<td>23069</td>
<td>31803.500</td>
</tr>
<tr>
<td>March</td>
<td>32213</td>
<td>31940</td>
</tr>
<tr>
<td>April</td>
<td>32917</td>
<td>32399.667</td>
</tr>
<tr>
<td>May</td>
<td>33674</td>
<td>32934.667</td>
</tr>
<tr>
<td>Jun</td>
<td>35088</td>
<td>33893</td>
</tr>
<tr>
<td>Jul</td>
<td>36134</td>
<td>34965.333</td>
</tr>
<tr>
<td>Aug</td>
<td>36008</td>
<td>35743.333</td>
</tr>
<tr>
<td>Sep</td>
<td>33073</td>
<td>35071.667</td>
</tr>
<tr>
<td>Oct</td>
<td>32828</td>
<td>33969.667</td>
</tr>
<tr>
<td>Nov</td>
<td>31971</td>
<td>32624</td>
</tr>
<tr>
<td>Dec</td>
<td>33342</td>
<td>32713.667</td>
</tr>
</tbody>
</table>

See Also

- Lead
- PrevMember
**LastChild**

Returns the last child of the input member.

**Syntax**

`member.LastChild`

`LastChild ( member )`

**Parameter Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>member</code></td>
<td>A member specification.</td>
</tr>
</tbody>
</table>

**Example**

```mdx
SELECT
  ([Qtr1].firstchild)
ON COLUMNS,
  ([Market].[Central].lastchild)
ON ROWS
FROM Sample.Basic
```

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Jan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorado</td>
<td>585</td>
</tr>
</tbody>
</table>

**See Also**

- `FirstChild`
- `LastSibling`

**LastPeriods**

Returns a set of members ending either at the specified member or at the current member in the time dimension.

**Syntax**

`LastPeriods ( numeric value expression [, member [, hierarchy ] ] )`

**Parameter Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>numeric value expression</td>
<td>The number of members to return (see “MDX Grammar Rules” on page 1012). If negative, <code>member</code> is treated as the starting point.</td>
</tr>
<tr>
<td><code>member</code></td>
<td>Optional. A member expression.</td>
</tr>
<tr>
<td><code>hierarchy</code></td>
<td>Optional. A specific hierarchy within the time dimension.</td>
</tr>
</tbody>
</table>

**Example**

- `LastPeriods(3, Apr)` returns the set {Feb, Mar, Apr}.
- `LastPeriods(-3, Apr)` returns the set {Apr, May, Jun}.
LastPeriods(1, Apr) returns a set of one member: {Apr}.

LastPeriods(0, Apr) returns an empty set.

LastPeriods(5, Apr) returns the set {Jan, Feb, Mar, Apr}. Note that the output set has only four members.

The following query:

WITH MEMBER [Measures].[Rolling Sales] AS 'Avg ('LastPeriods (3, [Year].CurrentMember ), [Measures].[Sales])'
SELECT {[Measures].[Sales], [Measures].[Rolling Sales]} ON COLUMNS,
Descendants ([Year].[Qtr2]) ON ROWS
FROM Sample.Basic
WHERE [Product].[Root Beer]

returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Sales</th>
<th>Rolling Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qtr2</td>
<td>27401</td>
<td>27014</td>
</tr>
<tr>
<td>Apr</td>
<td>8969</td>
<td>8960</td>
</tr>
<tr>
<td>May</td>
<td>9071</td>
<td>8997</td>
</tr>
<tr>
<td>Jun</td>
<td>9361</td>
<td>9133.667</td>
</tr>
</tbody>
</table>

See Also
- PeriodsToDate
- OpeningPeriod
- ClosingPeriod
- ParallelPeriod

**LastSibling**

Returns the last child of the input member's parent.

**Syntax**

LastSibling ( member [, hierarchy ])

member.LastSibling [(hierarchy)]
**Parameter Description**

**member**  
A member specification.

**hierarchy**  
Optional. A specific hierarchy within the time dimension.

**Notes**

If *member* is the top member of a dimension, then *member* itself is returned.

**Example**

- `Year.Lastsibling` returns `Year`.
- `Qtr3.Lastsibling` returns `Qtr4`.

**See Also**

- FirstSibling
- LastChild

---

**Lead**

Using the order of members existing in a database outline, returns a member that is *n* steps past a given member, along the same generation or level (as defined by `layertype`).

**Syntax**

```
member.Lead ( index [, layertype ] [, hierarchy ] )
```

```
Lead ( member, index [, hierarchy ] )
```

**Parameter Description**

**member**  
The starting member from which .LEAD counts a given number of following members.

**index**  
A number *n* representing how many steps away from `<member>` to count.

**layertype**  
`GENERATION` or `LEVEL`.

**hierarchy**  
Optional. A specific hierarchy within the time dimension.

**Notes**

- If the member specified by the Lead function does not exist, the result is an empty member. For example, using Sample Basic, `[Jun].lead (12)` returns an empty member.
- When multiple hierarchies are enabled, this function returns NULL when the source member is in one hierarchy and the result member belongs to a different hierarchy.

**Example**

The following expression:

```
[Jan].lead (11)
```

returns the member that is 11 steps past Jan:
The following expression:

[Dec].lead (-11)

returns the member that is 11 steps prior to Dec:

[Jan]

For every month, the following query displays the marketing expenses and budgeted sales for the next month.

WITH MEMBER
   [Measures].[Expected Sales in Next month]
AS
   '([Measures].[Sales], [Year].CurrentMember.Lead(1))'
SELECT
   {
      ([Scenario].[Actual], [Measures].[Marketing]),
      ([Scenario].[Budget], [Measures].[Expected Sales in Next month])
   }
ON COLUMNS,
[Year].Levels(0).Members
ON ROWS
FROM Sample.Basic

This query returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Actual</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>(axis)</td>
<td>Marketing</td>
<td>Expected Sales in Next Month</td>
</tr>
<tr>
<td>Jan</td>
<td>5223</td>
<td>30000</td>
</tr>
<tr>
<td>Feb</td>
<td>5289</td>
<td>30200</td>
</tr>
<tr>
<td>Mar</td>
<td>5327</td>
<td>30830</td>
</tr>
<tr>
<td>Apr</td>
<td>5421</td>
<td>31510</td>
</tr>
<tr>
<td>May</td>
<td>5530</td>
<td>32900</td>
</tr>
<tr>
<td>Jun</td>
<td>5765</td>
<td>33870</td>
</tr>
<tr>
<td>Jul</td>
<td>5985</td>
<td>33820</td>
</tr>
<tr>
<td>Aug</td>
<td>6046</td>
<td>31000</td>
</tr>
<tr>
<td>Sep</td>
<td>5491</td>
<td>29110</td>
</tr>
<tr>
<td>Oct</td>
<td>5388</td>
<td>29540</td>
</tr>
<tr>
<td>Nov</td>
<td>5263</td>
<td>30820</td>
</tr>
<tr>
<td>Dec</td>
<td>5509</td>
<td>#Missing</td>
</tr>
</tbody>
</table>
See Also

- Lag
- NextMember

Leaves

Returns the set of level 0 (leaf) members that contribute to the value of the specified member.

The Leaves function compactly describes large sets of members or tuples while avoiding pre-expansion of the set before retrieval. Because large sets tend to be very sparse, only a few members contribute to the input member (have non #Missing values) and are returned. As a result, Leaves consumes less memory resources than the equivalent nonempty Descendants function call, allowing for better scalability, especially in concurrent user environments.

Members with #MISSING values are not included in the return set.

When member is on the primary hierarchy, the return set is the set of descendants at level 0 that are nonempty.

The set returned by Leaves is the set of nonempty descendants at level 0, with a few differences. For example, when member is from an alternate hierarchy, the return set contains all primary, stored, level 0 members whose values are aggregated into member's value. These contributing members may be either:

- Direct descendants of member along the alternate hierarchy
- Members that contribute value to a direct descendant of member by means of a shared member

In most cases, the Leaves function does not pre-expand the set prior to retrieval. Thus it requires less memory resources than the Descendants function, allowing for more scalability in dealing with large sets, especially in a high-concurrency user environment. Large sets tend to be very sparse; therefore, very few members are returned given the current point of view as defined by the MDX current member stack.

For example, a healthcare provider may have a database containing Doctor and Geography dimensions. While there may be hundreds of thousands, even millions, of doctors, only a fraction have data associated with them for a given geographic location. Leaves is ideal for queries where the set is large but is sparse at a given point of view:

```select {[Copayments]} on columns
crossjoin(Leaves([Doctors]), Leaves([Santa Clara County]) on rows)
```

The Leaves function is beneficial for queries on large dimensions.

In some cases, Leaves does require pre-expansion of sets, limiting the memory savings. Pre-expansion of sets likely will occur when the input member to Leaves is:

- On an Accounts dimension
- On a Time dimension
- On a dimension with fewer than 10,000 members
Syntax

Leaves ( member )

Parameter Description

member The member for which contributing leaf members are sought

Notes

- This function is applicable only to aggregate storage databases. Using Leaves() with a non aggregate-storage input member returns an error.
- Leaves() is supported only for members in stored hierarchies. Using Leaves with a member in a dynamic hierarchy returns an error.
- If you modify the return set of Leaves with a metadata function such as Head, Tail, or Subset, then the query is not optimized. For example, querying for half of the Leaves set reduces performance to about the same as for the nonempty Descendants function call.
- Leaves() is recommended for use on large, sparse dimensions. In general, use Leaves() to optimize performance when the input set contains 10,000 members or more. For smaller, denser input sets, using the NON EMPTY keyword on an axis with CrossJoin might improve performance.

Example

The following examples are based on the Asosamp.Sample database.

Example 1 (Leaves)

The following query returns the Units (items per package) for all level 0 Personal Electronics products for which the Units data is not #MISSING:

```plaintext
SELECT {Units} ON COLUMNS, Leaves([Personal Electronics]) ON ROWS FROM [Asosamp.Sample]
```

Because Leaves returns nonempty, level 0 descendants, the above query is identical to the following query:

```plaintext
SELECT {Units} ON COLUMNS, NON EMPTY Descendants([Personal Electronics], [Products].Levels(0), SELF) ON ROWS FROM [Asosamp.Sample]
```

These queries return the following grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Items Per Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital Cameras</td>
<td>3041</td>
</tr>
<tr>
<td>Camcorders</td>
<td>3830</td>
</tr>
<tr>
<td>Photo Printers</td>
<td>6002</td>
</tr>
</tbody>
</table>

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### Example 1 (Axes)

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Items Per Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memory</td>
<td>23599</td>
</tr>
<tr>
<td>Other Accessories</td>
<td>117230</td>
</tr>
<tr>
<td>Boomboxes</td>
<td>10380</td>
</tr>
<tr>
<td>Radios</td>
<td>20009</td>
</tr>
</tbody>
</table>

[Handhelds] was omitted from the result set because it has a value of #MISSING for the measure Units.

### Example 2 (Leaves)

For this example, a third hierarchy called [Small Items] was added to the Products dimension.

```
SELECT {Units} ON COLUMNS,
Leaves ([Small Items]) ON ROWS
FROM [Asosamp.Sample]
```

Returns the following grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Items Per Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital Cameras</td>
<td>3041</td>
</tr>
<tr>
<td>Camcorders</td>
<td>3830</td>
</tr>
<tr>
<td>Memory</td>
<td>23599</td>
</tr>
<tr>
<td>Other Accessories</td>
<td>117230</td>
</tr>
</tbody>
</table>

In addition to the primary members [Digital Cameras] and [Camcorders], Leaves also returned the primary members [Memory] and [Other Accessories], because these level-0 members contributed to [Small Items] via [Handhelds/PDAs].
**Left**

Returns a specified number (*length*) of characters from the left side of the string.

**Syntax**

```
Left ( string , length )
```

**Parameter Description**

- **string**  
  Input string.
- **length**  
  The number of characters to return from the left side of the input string.

**Example**

```
Left ("Northwind", 5)
```

returns North.

---

**Len**

Returns length of a string in terms of number of characters.

**Syntax**

```
Len ( string )
```

**Parameter Description**

- **string**  
  A string.

**Example**

---

**Level**

Returns the level of the input member.

**Syntax**

```
member.Level
```

**Parameter Description**

- **member**  
  A member specification.

**Example**

The following query

```
SELECT [Year].[Qtr1].Level.Members ON COLUMNS,
   [Product].Levels(0).Members
```
ON ROWS
FROM Sample.Basic

returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-10</td>
<td>5096</td>
<td>5892</td>
<td>6583</td>
<td>5206</td>
</tr>
<tr>
<td>100-20</td>
<td>1359</td>
<td>1534</td>
<td>1528</td>
<td>1287</td>
</tr>
<tr>
<td>100-30</td>
<td>593</td>
<td>446</td>
<td>400</td>
<td>544</td>
</tr>
<tr>
<td>200-10</td>
<td>1697</td>
<td>1734</td>
<td>1883</td>
<td>1887</td>
</tr>
<tr>
<td>200-20</td>
<td>2963</td>
<td>3079</td>
<td>3149</td>
<td>2834</td>
</tr>
<tr>
<td>200-30</td>
<td>1153</td>
<td>1231</td>
<td>1159</td>
<td>1093</td>
</tr>
<tr>
<td>200-40</td>
<td>908</td>
<td>986</td>
<td>814</td>
<td>1384</td>
</tr>
<tr>
<td>300-10</td>
<td>2544</td>
<td>3231</td>
<td>3355</td>
<td>3065</td>
</tr>
<tr>
<td>300-20</td>
<td>690</td>
<td>815</td>
<td>488</td>
<td>518</td>
</tr>
<tr>
<td>300-30</td>
<td>2695</td>
<td>2723</td>
<td>2855</td>
<td>2820</td>
</tr>
<tr>
<td>400-10</td>
<td>2838</td>
<td>2998</td>
<td>3201</td>
<td>2807</td>
</tr>
<tr>
<td>400-20</td>
<td>2283</td>
<td>2522</td>
<td>2642</td>
<td>2404</td>
</tr>
<tr>
<td>400-30</td>
<td>-116</td>
<td>-84</td>
<td>-145</td>
<td>-49</td>
</tr>
<tr>
<td>100-20</td>
<td>1359</td>
<td>1534</td>
<td>1528</td>
<td>1287</td>
</tr>
<tr>
<td>200-20</td>
<td>2963</td>
<td>3079</td>
<td>3149</td>
<td>2834</td>
</tr>
<tr>
<td>300-30</td>
<td>2695</td>
<td>2723</td>
<td>2855</td>
<td>2820</td>
</tr>
</tbody>
</table>

See Also
- Generation
- Levels
- IsLevel

Levels

Returns the level specified by the input level number.

Syntax

```
dimension.Levels ( index )
```

```
Levels ( dimension, index )
```
Parameter  Description

dimension  The dimension specification.

index  The number of steps up from the lowest level-0 member of the dimension. The count begins with zero at leaf members.

Example

The following query

```
SELECT  
    [Year].[Qtr1].Level.Members 
ON COLUMNS,  
    [Product].Levels(0).Members 
ON ROWS  
FROM Sample.Basic
```

returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-10</td>
<td>5096</td>
<td>5892</td>
<td>6583</td>
<td>5206</td>
</tr>
<tr>
<td>100-20</td>
<td>1359</td>
<td>1534</td>
<td>1528</td>
<td>1287</td>
</tr>
<tr>
<td>100-30</td>
<td>593</td>
<td>446</td>
<td>400</td>
<td>544</td>
</tr>
<tr>
<td>200-10</td>
<td>1697</td>
<td>1734</td>
<td>1883</td>
<td>1887</td>
</tr>
<tr>
<td>200-20</td>
<td>2963</td>
<td>3079</td>
<td>3149</td>
<td>2834</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>300-30</td>
<td>2695</td>
<td>2723</td>
<td>2855</td>
<td>2820</td>
</tr>
</tbody>
</table>

See Also

- Level
- Generations

**LinkMember**

Returns a member’s shared member along a given hierarchy.

This function can be used instead of passing hierarchy arguments to Parent, Ancestor, FirstSibling, and LastSibling functions. This function works well in conjunction with Is* functions such as IsAncestor, IsChild, IsSibling, IsLevel, IsGeneration, and IsLeaf.

**Syntax**

```
member.LinkMember(hierarchy)
```

```
LinkMember(member, hierarchy)
```
Parameter | Description
--- | ---
membre | A member specification
hierarchy | Optional. A specific hierarchy within the time dimension.

Notes
- This function is applicable only to aggregate storage databases.
- If the primary hierarchy is passed to this function, it returns the primary member.
- If there is no shared member along the given hierarchy, this function returns an empty member.
- If a calculated member is passed to this function, the calculated member itself is returned.

Example
The following examples are based on ASOSamp.Sample.
The following MDX returns the member [HDTV] along the [High End Merchandise] hierarchy. By default, the primary instance of [HDTV] is used.
```
LinkMember([HDTV], [High End Merchandise])
```
The following MDX also returns the member [HDTV] along the [High End Merchandise] hierarchy. In this example, the input member is on the input hierarchy.
```
LinkMember([High End Merchandise].[HDTV], [High End Merchandise])
```
The following MDX returns the member [HDTV] along the [All Merchandise] hierarchy.
```
LinkMember([All Merchandise].[HDTV], [All Merchandise])
```
The following MDX returns an empty member, because there is no instance of [Digital Cameras] along the [High End Merchandise] hierarchy. The empty member has a value of #MISSING.
```
LinkMember([Digital Cameras], [High End Merchandise])
```
The following MDX also returns an empty member.
```
LinkMember([All Merchandise], [High End Merchandise])
```
The following MDX also returns an empty member.
```
LinkMember([Products], [High End Merchandise])
```
The following MDX returns [High End Merchandise].
```
LinkMember([High End Merchandise], [High End Merchandise])
```

Ln
Returns the natural logarithm (base $e$) of an expression.

Syntax
```
Ln ( numeric_value_expression )
```
Parameter | Description
---|---
numeric_value_expression | A numeric value (see “MDX Grammar Rules” on page 1012).

Notes

- Ln returns the inverse of Exp.
- The constant $e$ is the base of the natural logarithm. $e$ is approximately 2.71828182845904.

Example

```mdx
WITH MEMBER [Measures].[Ln_Sales] AS
  'Ln([Measures].[Sales])'
SELECT
  {[Year].levels(0).members}
ON COLUMNS,
  {[Measures].[Sales], [Measures].[Ln_Sales]}
ON ROWS
FROM
  Sample.Basic
WHERE
  ([Market].[East], [Product].[Cola])
```

returns the following grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Jan</th>
<th>Feb</th>
<th>...</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>1812</td>
<td>1754</td>
<td>...</td>
<td>1708</td>
<td>1841</td>
</tr>
<tr>
<td>Ln_Sales</td>
<td>7.502</td>
<td>7.470</td>
<td>...</td>
<td>7.443</td>
<td>7.518</td>
</tr>
</tbody>
</table>

See Also

- Log
- Log10
- Exp

Log

Returns the logarithm of an expression to a specified base.

Syntax

```
Log ( numeric_value_expression [, base] )
```

Parameter | Description
---|---
numeric_value_expression | A numeric value or an expression that returns a numeric value (see “MDX Grammar Rules” on page 1012).
Parameter | Description
---|---
base | Optional. A number representing the base to use for the logarithm. If less than zero, zero, or close to 1, the Log function returns #MISSING. If omitted, the Log function calculates the base-10 logarithm. Log (Sales, 10) is equivalent to Log(Sales), and is also equivalent to Log10(Sales).

Example
Log(9,3) returns 2.

Log10
Returns the base-10 logarithm of an expression.

Syntax
Log10 ( numeric_value_expression )

Parameter | Description
---|---
numeric_value_expression | A numeric value or an expression that returns a numeric value (see “MDX Grammar Rules” on page 1012).

Example
Log10(1000) returns 3.

Lower
Converts upper-case string to lower-case.

Syntax
Lower ( string )

Example
Lower(STRING)
returns string

See Also
- Upper

LTrim
Trims all whitespace on the left side of the string.
Syntax
LTrim ( string )

Parameter Description
string Input string.

Example
LTrim(" STRING")
returns "STRING"

Max
Returns the maximum of values found in the tuples of a set.

Syntax
Max ( set [,numeric_value_expression ] )

Parameter Description
set The set to search for values.
numeric_value_expression Optional numeric value expression (see “MDX Grammar Rules” on page 1012).

Notes
The return value of Max is #MISSING if either of the following is true:
- The input set is empty.
- All tuple evaluations result in #MISSING values.

Example
WITH
MEMBER [Measures].[Max Qtr2 Sales] AS
'Max ( 
  {[Year].[Qtr2]},
  [Measures].[Sales]
)
',
SELECT
{ [Measures].[Max Qtr2 Sales] } on columns,
{ [Product].children } on rows
FROM Sample.Basic

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Max Qtr2 Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colas</td>
<td>27187</td>
</tr>
<tr>
<td>Root Beer</td>
<td>27401</td>
</tr>
<tr>
<td>Cream Soda</td>
<td>25736</td>
</tr>
<tr>
<td>(axis)</td>
<td>Max Qtr2 Sales</td>
</tr>
<tr>
<td>-----------</td>
<td>---------------</td>
</tr>
<tr>
<td>Fruit Soda</td>
<td>21355</td>
</tr>
<tr>
<td>Diet Drinks</td>
<td>26787</td>
</tr>
</tbody>
</table>

**Median**

Orders the set according to the numeric value expression, and then returns the value of the set's median tuple.

**Syntax**

```
Median ( set, numeric_value_expr )
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>The set from which to get a median tuple value.</td>
</tr>
<tr>
<td>numeric_value_expr</td>
<td>A numeric value or an expression that returns a numeric value.</td>
</tr>
</tbody>
</table>

**Notes**

This function is a special case of the Percentile function where n = 50.

**Example**

The following query returns the median price for radios paid in all states last year.

```
SELECT { [Geography].[Median Mkt Price]} ON COLUMNS
FROM ASOSamp.Sample
WHERE ([Products].[Radios], [Years].[Prev Year] )
```

**MemberRange**

Using the order of members existing in a database outline, returns a range of members inclusive of and between two members in the same generation or level.

**Syntax**

```
MemberRange ( member1, member2 [,layertype] [, hierarchy ] )
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>member1</td>
<td>The beginning point of the member range.</td>
</tr>
</tbody>
</table>
Parameter | Description
---|---
member2 | The endpoint of the member range.
layertype | GENERATION or LEVEL. Available only with function-style `MemberRange()` syntax. If omitted or if operator-style `member:member` syntax is used, the range of members returned is inclusive of and between two specified members of the same generation. If `MemberRange(member, member, LEVEL)` is used, the range of members returned is inclusive of and between two specified members of the same level.
hierarchy | Optional. A specific hierarchy within the time dimension.

Notes
- If the two input members are not from the same generation or level, the result is an empty set.
- If the two input members are not from the same dimension, an error is returned.
- The order of the output resembles the order of the input. See Example 2.
- If the hierarchy argument is passed, member1 and member2 should belong to the same hierarchy. Otherwise, an empty set is returned.
- When multiple hierarchies are enabled, this function returns NULL when the range begins in one hierarchy and terminates in another hierarchy.

Example

Example 1 (MemberRange)
The following set:

\{ [Year].[Qtr1], [Year].[Qtr2], [Year].[Qtr3], [Year].[Qtr4] \}

is returned by both of the following examples:

MemberRange ( [Year].[Qtr1], [Year].[Qtr4] )

( [Year].[Qtr1] : [Year].[Qtr4] )

Example 2 (MemberRange)

[Jan] : [Mar]

returns:

\{ [Jan], [Feb], [Mar] \}

[Mar] : [Jan]

returns:

\{ [Mar], [Feb], [Jan] \}

Example 3 (MemberRange)
The following query

SELECT

\{[Measures].[Sales], [Measures].[Profit]\}
ON COLUMNS,
    MemberRange(Year.Feb, Year.Nov)
ON ROWS
FROM Sample.Basic
returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Sales</th>
<th>Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feb</td>
<td>32069</td>
<td>8346</td>
</tr>
<tr>
<td>Mar</td>
<td>32213</td>
<td>8333</td>
</tr>
<tr>
<td>Apr</td>
<td>32917</td>
<td>8644</td>
</tr>
<tr>
<td>May</td>
<td>33674</td>
<td>8929</td>
</tr>
<tr>
<td>Jun</td>
<td>35088</td>
<td>9534</td>
</tr>
<tr>
<td>Jul</td>
<td>36134</td>
<td>9878</td>
</tr>
<tr>
<td>Aug</td>
<td>36008</td>
<td>9545</td>
</tr>
<tr>
<td>Sep</td>
<td>33073</td>
<td>8489</td>
</tr>
<tr>
<td>Oct</td>
<td>32828</td>
<td>8653</td>
</tr>
<tr>
<td>Nov</td>
<td>31971</td>
<td>8367</td>
</tr>
</tbody>
</table>

See Also
- RelMemberRange

**Members**

Returns all members of the specified dimension or layer.

**Syntax**

```
dimension.Members | Members ( dimension )
layer.Members | Members ( layer )
```

**Parameter Description**

- `dimension` A dimension specification.
- `layer` A layer specification.

**Example**

This example focuses on the following part of the Sample Basic outline:
The following expression:

\{([\text{Market}].\text{members})\}

returns the following set, which includes all descendant members of the Market dimension:

\{
\text{Market}, [\text{New York}], \text{Massachusetts}, \text{Florida}, \text{Connecticut},
\text{[New Hampshire]}, \text{East}, \text{California}, \text{Oregon}, \text{Washington},
\text{Utah}, \text{Nevada}, \text{West}, \text{Texas}, \text{Oklahoma}, \text{Louisiana}, [\text{New Mexico}],
\text{South}, \text{Illinois}, \text{Ohio}, \text{Wisconsin}, \text{Missouri}, \text{Iowa}, \text{Colorado}, \text{Central}
\}

The following expression:

\{([\text{Market}].\text{levels}(1).\text{members})\}

returns the following set, which includes one level of descendant members of the Market dimension:

\{\text{East}, \text{West}, \text{South}, \text{Central}\}

The following query assumes that level 1 of the Market dimension has an alias of \text{Region}:

\text{Select}
\{ ([\text{Market}].[\text{Region}].\text{members} ) \}
on \text{columns}
from \text{Sample.Basic}

This query returns the following grid:

<table>
<thead>
<tr>
<th>East</th>
<th>West</th>
<th>South</th>
<th>Central</th>
</tr>
</thead>
<tbody>
<tr>
<td>24161</td>
<td>29861</td>
<td>13238</td>
<td>38262</td>
</tr>
</tbody>
</table>

**Min**

Returns the minimum of values found in the tuples of a set.

**Syntax**

\text{Min ( set [,numeric_value_expression ] )}

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>The set to search for values.</td>
</tr>
</tbody>
</table>
**Parameter** | **Description**
---|---
numeric_value_expression | Optional numeric value expression (see “MDX Grammar Rules” on page 1012).

**Notes**

The return value of `Min` is #MISSING if either of the following is true:

- The input set is empty.
- All tuple evaluations result in #MISSING values.

**Example**

For every quarter, the following query displays the minimum monthly sales value.

```mdx
WITH MEMBER
  [Measures].[Minimum Sales in Quarter]
AS
  'Min ([Year].CurrentMember.Children, [Measures].[Sales])'
SELECT
  { [Measures].[Minimum Sales in Quarter] }
ON COLUMNS,
  [Year].Children
ON ROWS
FROM Sample.Basic
```

This query returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Minimum Sales in Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qtr1</td>
<td>31538</td>
</tr>
<tr>
<td>Qtr2</td>
<td>32917</td>
</tr>
<tr>
<td>Qtr3</td>
<td>33073</td>
</tr>
<tr>
<td>Qtr4</td>
<td>31971</td>
</tr>
</tbody>
</table>

**Mod**

Returns the modulus (remainder value) of a division operation.

**Syntax**

`Mod ( numeric_value_expr_1, numeric_value_expr_2 )`

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>numeric_value_expr_1</td>
<td>The number for which to find the remainder. Must be a numeric value or an expression that returns a numeric value (see “MDX Grammar Rules” on page 1012).</td>
</tr>
<tr>
<td>numeric_value_expr_2</td>
<td>The divisor. Must be a numeric value or an expression that returns a numeric value (see “MDX Grammar Rules” on page 1012).</td>
</tr>
</tbody>
</table>
Notes
The Essbase implementation of the function Mod returns the following values, which may be
different from other vendors' implementations:

\[ \text{Mod}(n,k) = -\text{Mod}(-n,k) \text{, where } n < 0 \]
\[ \text{Mod}(n,k) = \text{Mod}(n,-k) \text{, where } k < 0 \]

Example

WITH MEMBER [Measures].[Factor] AS
'\text{Mod} ([Measures].[Margin \%],[Measures].[Profit \%])'
SELECT
{[Measures].[Margin \%],
 [Measures].[Profit \%],
 [Measures].[Factor]}
ON COLUMNS,
{[Year].[Qtr1].Children}
ON ROWS
FROM sample.basic

returns:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Margin %</th>
<th>Profit %</th>
<th>Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>55.102</td>
<td>25.44</td>
<td>4.217</td>
</tr>
<tr>
<td>Feb</td>
<td>55.387</td>
<td>26.025</td>
<td>3.337</td>
</tr>
<tr>
<td>Mar</td>
<td>55.267</td>
<td>25.868</td>
<td>3.530</td>
</tr>
</tbody>
</table>

NextMember

Using the order of members existing in a database outline, returns the next member along the
same generation or level.

Syntax

\[ \text{member}.\text{NextMember} ([\text{layertype}]) \]
\[ \text{NextMember ( member [,layertype ] )} \]

Parameter Description

member The starting member from which .NEXTMEMBER counts one member forward.
layertype GENERATION or LEVEL. The default is Generation.

Notes

- If the next member is not found, this function returns an empty member. For example, using
  Sample Basic, these would return an empty member: \text{Qtr4.nextmember} and
  \text{Year.nextmember}.
When multiple hierarchies are enabled, this function returns NULL when the source member is in one hierarchy and the result member belongs to a different hierarchy.

Example

Example 1
The following expression:

```
[Jun].nextmember
```

returns the member that is one step further than Jun:

```
[Jul]
```

Example 2
The following query

```c
/*
For January, PrevMember doesn't exist
For December, NextMember doesn't exist
*/
WITH
MEMBER

[Measures].[Delta from Previous Month] AS

' [Measures].[Sales] - ([Measures].[Sales],[Year].CurrentMember.PrevMember) ,

MEMBER [Measures].[Delta from Next Month] AS

' [Measures].[Sales] - ([Measures].[Sales],[Year].CurrentMember.NextMember) ,

SELECT

{ [Measures].[Sales],

[Measures].[Delta from Previous Month],

[Measures].[Delta from Next Month] }

ON COLUMNS,

[Year].Levels(0).Members
ON ROWS
FROM Sample.Basic
WHERE

{ [Scenario].[Actual],

[Market].[East],

[Product].[100] }

returns the grid:
<table>
<thead>
<tr>
<th>(axis)</th>
<th>Sales</th>
<th>Delta from Previous Month</th>
<th>Delta from Next Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>2105</td>
<td>2105</td>
<td>44</td>
</tr>
<tr>
<td>Feb</td>
<td>2061</td>
<td>-44</td>
<td>-65</td>
</tr>
<tr>
<td>Mar</td>
<td>2126</td>
<td>65</td>
<td>-132</td>
</tr>
<tr>
<td>Apr</td>
<td>2258</td>
<td>132</td>
<td>-89</td>
</tr>
<tr>
<td>May</td>
<td>2347</td>
<td>89</td>
<td>-278</td>
</tr>
<tr>
<td>Jun</td>
<td>2625</td>
<td>278</td>
<td>-110</td>
</tr>
<tr>
<td>Jul</td>
<td>2735</td>
<td>110</td>
<td>62</td>
</tr>
<tr>
<td>Aug</td>
<td>2673</td>
<td>-62</td>
<td>311</td>
</tr>
<tr>
<td>Sep</td>
<td>2362</td>
<td>-311</td>
<td>268</td>
</tr>
<tr>
<td>Oct</td>
<td>2094</td>
<td>-268</td>
<td>28</td>
</tr>
<tr>
<td>Nov</td>
<td>2066</td>
<td>-28</td>
<td>-222</td>
</tr>
<tr>
<td>Dec</td>
<td>2288</td>
<td>222</td>
<td>2288</td>
</tr>
</tbody>
</table>

See Also

- PrevMember
- Lead

**NonEmptyCount**

Returns the count of the number of tuples in a set that evaluate to non-#Missing values. Each tuple is evaluated and included in the count returned by this function. If the numeric value expression is specified, it is evaluated in the context of every tuple, and the count of non-#Missing values is returned.

On aggregate storage databases, the NonEmptyCount MDX function is optimized so that the calculation of the distinct count for all cells can be performed by scanning the database only once. Without this optimization, the database is scanned as many times as the number of cells corresponding to the distinct count. The NONEMPTYCOUNT optimization is triggered when an outline member formula has the following syntax:

```
NONEMPTYCOUNT(set, measure, exclude_missing)
```

**Syntax**

```
NonEmptyCount ( set [,numeric_value_expression [, exclude_missing ]] )
```

**Parameter | Description**

- **set** | The set in which to count tuples.
- **numeric_value_expression** | Optional. (See "MDX Grammar Rules" on page 1012.)
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>exclude_missing</td>
<td>Optional. A flag that indicates that the count value returned is missing when the Measure value is missing for members in Set.</td>
</tr>
</tbody>
</table>

Where:
- Set: Is a one dimensional set from a stored dimension.
- Measure: Is a stored measure.

The exclude_missing parameter supports the NonEmptyCount optimization on aggregate databases by improving the performance of a query that queries metrics that perform a distinct count calculation. See Example 2 in this topic for more information.

By default, a value of zero is returned when the Measure value is missing for all members in the Set.

Example

Example 1

The following query

With
Member [Measures].[Number Of Markets]
as 'NonEmptyCount (Market.Levels(0).Members, Sales)'

Select
([Measures].[Number Of Markets]) on Columns,
[[100].Children, [200].Children] on Rows
FROM Sample.Basic

Returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Number of Markets</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-10</td>
<td>20</td>
</tr>
<tr>
<td>100-20</td>
<td>16</td>
</tr>
<tr>
<td>100-30</td>
<td>8</td>
</tr>
<tr>
<td>200-10</td>
<td>20</td>
</tr>
<tr>
<td>200-20</td>
<td>17</td>
</tr>
<tr>
<td>200-30</td>
<td>9</td>
</tr>
<tr>
<td>200-40</td>
<td>3</td>
</tr>
</tbody>
</table>

Example 2

In an aggregate storage database, it is common to count the distinct number of entities (such as customers and products). You can perform a distinct count by defining a formula member or a calculated member. For example, you can add a formula member, [DistinctCustomerCnt], to use with the following formula to calculate the count of distinct customers who bought a Product.
The following MDX query scans the database as many times as the number of Products, evaluating the distinct customer count for each Product separately:

```
SELECT
  {[DistinctCustomerCnt]} on COLUMNS,
  Products.Levels(0).Members on ROWS
```

### NonEmptySubset

Given an input set, `NonEmptySubset` returns a subset of that input set in which all tuples evaluate to nonempty. An optional value expression may be specified for the nonempty check.

This function can help optimize queries that are based on a large set for which the set of nonempty combinations is known to be small. `NonEmptySubset` reduces the size of the set in the presence of a metric; for example, you might request the nonempty subset of descendants for specific Units.

`NonEmptySubset` is used to reduce the size of a set before a subsequent analytical retrieval.

**Syntax**

```
NonEmptySubset (set [, value_expression [, dimension...]])
```

**Parameter**

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
</tr>
<tr>
<td>value_expression</td>
</tr>
<tr>
<td>dimension</td>
</tr>
</tbody>
</table>

**Notes**

*Value_expression*, if used, should be a stored member or simple formula. If *value_expression* is a complex formula, the retrieval of the nonempty subset is not optimized.

**Example**

The following example gets the bottom 10 products in terms of *Units* (items per package), and then returns the CrossJoin of that set and the level 0 members (zip codes) of [Albany - NY].

```
WITH SET Bottom_10 AS 'BottomCount(
  Leaves(Products),
  10,
  Units)
',
SELECT
  {Units} on COLUMNS,
  NonEmptySubset(CrossJoin(Bottom_10, Leaves([Albany - NY])))
```

1194
ON ROWS
FROM Asosamp.Sample

This query returns the following grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Items Per Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital Cameras, 12201</td>
<td>4</td>
</tr>
<tr>
<td>Camcorders, 12201</td>
<td>3</td>
</tr>
<tr>
<td>Photo Printers, 12201</td>
<td>2</td>
</tr>
<tr>
<td>Digital Recorders, 12201</td>
<td>2</td>
</tr>
<tr>
<td>Desktops, 12201</td>
<td>3</td>
</tr>
<tr>
<td>Digital Cameras, 12212</td>
<td>5</td>
</tr>
<tr>
<td>Camcorders, 12212</td>
<td>2</td>
</tr>
<tr>
<td>Photo Printers, 12212</td>
<td>3</td>
</tr>
<tr>
<td>Flat Panel, 12212</td>
<td>1</td>
</tr>
<tr>
<td>HDTV, 12212</td>
<td>1</td>
</tr>
<tr>
<td>Home Theater, 12212</td>
<td>1</td>
</tr>
<tr>
<td>Desktops, 12212</td>
<td>2</td>
</tr>
<tr>
<td>Notebooks, 12212</td>
<td>1</td>
</tr>
<tr>
<td>Digital Cameras, 12223</td>
<td>1</td>
</tr>
<tr>
<td>Camcorders, 12223</td>
<td>1</td>
</tr>
<tr>
<td>Photo Printers, 12223</td>
<td>4</td>
</tr>
<tr>
<td>HTDV, 12223</td>
<td>1</td>
</tr>
<tr>
<td>Notebooks, 12223</td>
<td>1</td>
</tr>
<tr>
<td>Camcorders, 12229</td>
<td>4</td>
</tr>
<tr>
<td>HDTV, 12229</td>
<td>1</td>
</tr>
<tr>
<td>Home Theater, 12229</td>
<td>3</td>
</tr>
<tr>
<td>Desktops, 12229</td>
<td>1</td>
</tr>
<tr>
<td>Digital Cameras, 12249</td>
<td>2</td>
</tr>
<tr>
<td>Photo Printers, 12249</td>
<td>3</td>
</tr>
<tr>
<td>Projection TVs, 12249</td>
<td>1</td>
</tr>
<tr>
<td>HDTV, 12249</td>
<td>2</td>
</tr>
<tr>
<td>(axis)</td>
<td>Items Per Package</td>
</tr>
<tr>
<td>----------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Home Theater,12249</td>
<td>1</td>
</tr>
<tr>
<td>Digital Recorders,12249</td>
<td>1</td>
</tr>
<tr>
<td>Notebooks,12249</td>
<td>1</td>
</tr>
<tr>
<td>Camcorders,12257</td>
<td>2</td>
</tr>
<tr>
<td>Photo Printers,12257</td>
<td>4</td>
</tr>
<tr>
<td>Projection TVs,12257</td>
<td>2</td>
</tr>
<tr>
<td>HDTV,12257</td>
<td>1</td>
</tr>
<tr>
<td>Home Theater,12257</td>
<td>3</td>
</tr>
<tr>
<td>Digital Recorders,12257</td>
<td>1</td>
</tr>
</tbody>
</table>

**NTile**

Returns a division number of a tuple in a set. This function only applies to aggregate storage databases.

**Syntax**

NTile ( member_or_tuple, set, number_of_divisions, numeric_value_expr )

**Parameter** | **Description**                         
--- | ---                                 
member_or_tuple | A member or a tuple.                      
set | The set to order.                    
number_of_divisions | The number of divisions to use in ordering the set.  
numeric_value_expr | A numeric value or an expression that returns a numeric value. 

**Notes**

- This function is applicable only to aggregate storage databases.
- This function orders the set by a numeric value, divides it into \( n \) equal divisions, and returns the division number that the given tuple is in.

**Example**

WITH

MEMBER [Measures].[7tile] AS

'NTile

([Measures].[Price Paid],

( [Products].Levels(0).Members ),

7,

[Measures].[Price Paid])

)'
SELECT
{ [Measures].[Price Paid], [Measures].[7tile] } on columns,
{ [Products].Levels(0).Members } on rows
FROM ASOSamp.Sample

**NumToStr**

Converts a double-precision floating-point value into a decimal string. The number is formatted according to locale-specific conventions.

**Syntax**

```
NumToStr ( numeric_value_expression )
```

**Parameter**

**Description**

numeric_value_expression  Numeric value expression (see “MDX Grammar Rules” on page 1012).

**Example**

```
NumToStr(1)
```

returns "1.00".

**OpeningPeriod**

Returns the first descendant of a layer, or the first child of the Time dimension.

**Syntax**

```
OpeningPeriod ( [ layer [, member ] ] )
```

**Parameter**

**Description**

layer  A layer specification. If omitted, the first descendant of member is used. If member is omitted, the first child of the Time dimension is assumed.

member  Optional. A member specification. If omitted, the first child of the Time dimension is assumed (for example, Qtr1 in Sample Basic).

**Notes**

The return value of this function varies depending on the input.

1. When no arguments are specified, the input member is assumed to be the current member of the Time dimension, and Openingperiod returns the first child of that member. Do not use this function without arguments if there is no dimension tagged as Time.

2. When both layer and member arguments are given as input, Openingperiod returns the first descendant of the input member at the input layer. For example, Openingperiod(Year.generations(3), Qtr3) returns Jul. If the input member and layer are the same layer, the output is the input member. For example, Openingperiod(Year.generations(3), Jul) returns Jul.
3. When only the layer argument is specified, the input member is assumed to be the current member of the dimension used in the layer argument. Openingperiod returns the first descendant of that dimension, at the input layer. For example, Openingperiod(Year.generations(3)) returns Oct.

See Also

- ClosingPeriod
- LastPeriods
- ParallelPeriod
- PeriodsToDate

**Order**

Sorts members of a set in order based on an expression.

**Syntax**

Order ( set, string_expr | numeric_value_expression [, BASC | BDESC] )

**Parameter**

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
</tr>
<tr>
<td>string_expr</td>
</tr>
<tr>
<td>numeric_value_expression</td>
</tr>
<tr>
<td>BASC</td>
</tr>
<tr>
<td>BDESC</td>
</tr>
</tbody>
</table>

**Notes**

This function ignores missing values.

**Example**

The following query displays budgeted Sales and Marketing in Qtr2, and the display of products is sorted based on ascending Actual Sales in Qtr1.

```
SELECT
  CrossJoin(
    {[Scenario].[Budget],
      [Measures].[Marketing], [Measures].[Sales]
    )
  ON COLUMNS,
  Order(
    [Product].Levels(0).Members,
    ([Year].[Qtr1], [Scenario].[Actual])
  )
ON ROWS
FROM Sample.Basic
WHERE ([Year].[Qtr2])
```
This query returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Budget</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>(axis)</td>
<td>Marketing</td>
<td>Sales</td>
</tr>
<tr>
<td>400-30</td>
<td>510</td>
<td>3240</td>
</tr>
<tr>
<td>100-30</td>
<td>450</td>
<td>3400</td>
</tr>
<tr>
<td>300-20</td>
<td>550</td>
<td>3800</td>
</tr>
<tr>
<td>200-40</td>
<td>310</td>
<td>2830</td>
</tr>
<tr>
<td>200-30</td>
<td>550</td>
<td>4060</td>
</tr>
<tr>
<td>100-20</td>
<td>1160</td>
<td>8800</td>
</tr>
<tr>
<td>100-20</td>
<td>1160</td>
<td>8800</td>
</tr>
<tr>
<td>200-10</td>
<td>2090</td>
<td>10330</td>
</tr>
<tr>
<td>400-20</td>
<td>880</td>
<td>6590</td>
</tr>
<tr>
<td>300-10</td>
<td>1450</td>
<td>10080</td>
</tr>
<tr>
<td>300-30</td>
<td>1080</td>
<td>7880</td>
</tr>
<tr>
<td>300-30</td>
<td>1080</td>
<td>7880</td>
</tr>
<tr>
<td>400-10</td>
<td>790</td>
<td>7410</td>
</tr>
<tr>
<td>200-20</td>
<td>1080</td>
<td>9590</td>
</tr>
<tr>
<td>200-20</td>
<td>1080</td>
<td>9590</td>
</tr>
<tr>
<td>100-10</td>
<td>1800</td>
<td>17230</td>
</tr>
</tbody>
</table>

**Ordinal**

Returns a generation number or level number.

**Syntax**

Ordinal ( layer )

**Parameter Description**

| layer | A layer specification for which to determine the ordinal. |

**Example**

The following example prints generation number and level number for each member in the Product dimension. The value of calculated member [ProdGen] is a generation number because the input argument to the Ordinal function is a generation. The value of calculated member [ProdLev] is a level number because the input argument to the Ordinal function is a level.
WITH
  MEMBER [Measures].[ProdGen] AS
  'Ordinal([Product].CurrentMember.Generation)'
  MEMBER [Measures].[ProdLev] AS
  'Ordinal([Product].CurrentMember.Level)'
SELECT
  {[ProdGen], [ProdLev]} ON COLUMNS,
  [Product].Members ON ROWS
FROM Sample.Basic

This query returns the following grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>ProdGen</th>
<th>ProdLev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>100</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>100-10</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>100-20</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>100-30</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>200</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>200-10</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>200-20</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>200-30</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>200-40</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>300</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>300-10</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>300-20</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>300-30</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>400</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>400-10</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>400-20</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>400-30</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Diet</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>100-20</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>200-20</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>300-30</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>
**ParallelPeriod**

Returns a member from a prior time period as the specified or default time member.

**Syntax**

ParallelPeriod ( [layer [, index [, member [, hierarchy ]]]]])

**Parameter Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>layer</td>
<td>Optional layer specification. If omitted, the same layer is assumed.</td>
</tr>
<tr>
<td>index</td>
<td>Number of time periods to count back in the specified layer.</td>
</tr>
<tr>
<td>member</td>
<td>Optional member specification. If omitted, the default member is assumed (for more information, see Defaultmember).</td>
</tr>
<tr>
<td>hierarchy</td>
<td>Optional. A specific hierarchy within the time dimension.</td>
</tr>
</tbody>
</table>

**Notes**

If layer, index, and member are present, this function determines the member ANCESTOR1, which is computed as

\[
\text{Ancestor}(\text{member}, \text{layer})
\]

The member ANCESTOR2 is then computed as

\[
\text{Lag}(\text{ANCESTOR1}, \text{index})
\]

The return value of this function is then computed as

\[
\text{Cousin}(\text{member}, \text{ANCESTOR2})
\]

If layer and index are present and member is absent, member is taken to be the current member along the dimension associated with layer. The returned value is determined as above.

If only layer is present, index is taken to be 1, and member is taken to be the current member along the dimension associated with layer. The returned value is determined as above.

If layer, index, and member are all absent, member is taken to be CurrentMember along TIME Dimension, index is taken to be 1, and layer is taken to be the generation of the parent of member. The returned value is determined as above.

**See Also**

- LastPeriods
- PeriodsToDate
- ClosingPeriod
- OpeningPeriod

**Parent**

Returns a member’s parent.
Syntax

member.Parent [(hierarchy) ]

Parent ( member [, hierarchy ] )

Parameter Description

member A member specification.

hierarchy Optional. A specific hierarchy within the time dimension.

Example

Example 1

SELECT
  {Parent ([100-10])}
ON COLUMNS
FROM
  sample.basic

returns the parent of 100-10:

<table>
<thead>
<tr>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>30468</td>
</tr>
</tbody>
</table>

Example 2

The following query uses Filter to find the months in which Sales for [Product].[100] are higher than 8,570. The Parent function is used with Generate to create a set consisting of the parents (quarters) of the high-sales months.

WITH SET [High-Sales Months] as
  
  Filter(
    [Year].Levels(0).members,
    [Measures].[Sales] > 8570
  ),

  SELECT
    {[Measures].[Sales]}
ON COLUMNS,
  Generate([High-Sales Months], { Parent([Year].CurrentMember) })
ON ROWS
FROM
  sample.basic
WHERE
  ([Product].[100])

This query returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qtr2</td>
<td>27187</td>
</tr>
</tbody>
</table>

1202
<table>
<thead>
<tr>
<th>(axis)</th>
<th>Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qtr3</td>
<td>28544</td>
</tr>
<tr>
<td>Qtr4</td>
<td>25355</td>
</tr>
</tbody>
</table>

**Percentile**

Orders the set according to the numeric value expression, and then returns the value of the tuple that is at the given percentile.

This function only applies to aggregate storage databases.

**Syntax**

```plaintext
Percentile ( set, numeric_value_expr, percentile )
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>The set from which to get a tuple value.</td>
</tr>
<tr>
<td>numeric_value_expr</td>
<td>A numeric value or an expression that returns a numeric value.</td>
</tr>
<tr>
<td>percentile</td>
<td>A percentile. Must be between 0 and 100.</td>
</tr>
</tbody>
</table>

**Notes**

- This function is applicable only to aggregate storage databases.
- The returned value is such that *n* percent of the of the set members are smaller than it.

**Example**

```plaintext
WITH MEMBER [Measures].[Perc] AS
    'Percentile(Products.Levels(0).Members, [Measures].[Price Paid], 10)'
SELECT ([Measures].[Price Paid], [Measures].[Perc] ) ON COLUMNS,
    ( Products.Levels(0).Members ) ON ROWS
FROM AsoSamp.Sample
```

**PeriodsToDate**

Returns a set of single-member tuples from a specified layer up to a given member in that layer (or up to the default member), or, returns members up to the current member of the Time dimension.

**Syntax**

```plaintext
PeriodsToDate ( [layer [, member [, hierarchy ]]] )
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>layer</td>
<td>The layer to use as a beginning point.</td>
</tr>
<tr>
<td>member</td>
<td>The member to use as an ending point.</td>
</tr>
</tbody>
</table>
Parameter Description

hierarchy  Optional. A specific hierarchy within the time dimension.

Notes

- If layer and member are present, this function determines the ANCESTOR of member, computed as Ancestor(member, layer).

  Consider the subtree rooted at the ANCESTOR. This function returns the set of all members along the same generation between the first descendant of ANCESTOR at input member's generation and the input member (inclusive of both.)

  The return value of this function is the set of single-member tuples constructed from the members in the subtree rooted at ANCESTOR which are in the same layer as member and which are at or before the position of member within its layer. The order of tuples in the returned set is the same as the order of the members included in the input layer.

- If layer is present and member is absent, member is considered to be CurrentMember of the dimension that layer is associated with.

- If layer and member are both absent, member is considered to be the current member of the Time dimension, and layer is assumed to be the generation of the member’s parent. Hence the return value is a set containing the left siblings of member and member itself.

- Using PeriodsToDate(layer, member) has the same effect as using the following nested functions:

  MemberRange(
    OpeningPeriod(
      member.GENERATION,
      Ancestor (member, layer)
    :
      member
  )

  Example

  PeriodsToDate (Year.Generations(1), May) returns the set:
  { Jan, Feb, Mar, Apr, May }

  PeriodsToDate (Year.Generations(2), May) returns the set:
  { Apr, May }

  PeriodsToDate (Year.Generations(3), May) returns the set:
  { May }

  See Also

  - OpeningPeriod
  - ClosingPeriod
  - ParallelPeriod
  - LastPeriods
**Power**

Returns the result of raising a number to a given power.

**Syntax**

```
Power ( numeric_value_expression, power )
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>numeric_value_expression</td>
<td>An expression that returns a value (see “MDX Grammar Rules” on page 1012).</td>
</tr>
<tr>
<td>power</td>
<td>The power to which the numeric value expression is raised.</td>
</tr>
</tbody>
</table>

**Example**

```
Power ( 9, 2.5 ) returns 243.
```

**PrevMember**

Using the order of members existing in a database outline, returns the previous member along the same generation or level.

**Note:** When multiple hierarchies are enabled, this function returns NULL when the source member is in one hierarchy and the result member belongs to a different hierarchy.

**Syntax**

```
member.PrevMember [ ( layertype ) ]
PrevMember ( member [, layertype ] )
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>member</td>
<td>The starting member from which PrevMember counts one member back.</td>
</tr>
<tr>
<td>layertype</td>
<td>GENERATION or LEVEL. The default is Generation.</td>
</tr>
</tbody>
</table>

**Example**

**Example 1**

The following expression

```
[Jun].prevmember
```

returns the member that is 1 step prior to Jun:

```
[May]
```

**Example 2**

The following query
For January, PrevMember doesn't exist
For December, NextMember doesn't exist

WITH

MEMBER [Measures].[Delta from Previous Month]
AS
  ' [Measures].[Sales] - ([Measures].[Sales],[Year].CurrentMember.PrevMember) ' ,

MEMBER [Measures].[Delta from Next Month]
AS
  ' [Measures].[Sales] - ([Measures].[Sales], [Year].CurrentMember.NextMember) ' ,

SELECT
  { [Measures].[Sales],
    [Measures].[Delta from Previous Month],
    [Measures].[Delta from Next Month]
  }
ON COLUMNS,

[Year].Levels(0).Members
ON ROWS

FROM Sample.Basic
WHERE
  {
    [Scenario].[Actual],
    [Market].[East],
    [Product].[100]
  }

Returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Sales</th>
<th>Delta from Previous Month</th>
<th>Delta from Next Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>2105</td>
<td>2105</td>
<td>44</td>
</tr>
<tr>
<td>Feb</td>
<td>2061</td>
<td>-44</td>
<td>-65</td>
</tr>
<tr>
<td>Mar</td>
<td>2126</td>
<td>65</td>
<td>-132</td>
</tr>
<tr>
<td>Apr</td>
<td>2258</td>
<td>132</td>
<td>-89</td>
</tr>
<tr>
<td>May</td>
<td>2347</td>
<td>89</td>
<td>-278</td>
</tr>
<tr>
<td>Jun</td>
<td>2625</td>
<td>278</td>
<td>-110</td>
</tr>
<tr>
<td>Jul</td>
<td>2735</td>
<td>110</td>
<td>62</td>
</tr>
<tr>
<td>Aug</td>
<td>2673</td>
<td>-62</td>
<td>311</td>
</tr>
<tr>
<td>(axis)</td>
<td>Sales</td>
<td>Delta from Previous Month</td>
<td>Delta from Next Month</td>
</tr>
<tr>
<td>--------</td>
<td>-------</td>
<td>--------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Sep</td>
<td>2362</td>
<td>-311</td>
<td>268</td>
</tr>
<tr>
<td>Oct</td>
<td>2094</td>
<td>-268</td>
<td>28</td>
</tr>
<tr>
<td>Nov</td>
<td>2066</td>
<td>-28</td>
<td>-222</td>
</tr>
<tr>
<td>Dec</td>
<td>2288</td>
<td>222</td>
<td>2288</td>
</tr>
</tbody>
</table>

See Also
- NextMember
- Lag

**Rank**

Returns the numeric position of a tuple in a set.

**Syntax**

```
Rank ( member_or_tuple, set [,numeric_value_expr [,ORDINALRANK | DENSERANK | PERCENTRANK ]] )
```

**Parameter**

- **member_or_tuple**: The member or tuple to rank.
- **set**: The set containing the tuple to rank. Should not have duplicate members.
- **numeric_value_expr**: Optional. Numeric sorting criteria.
- **ORDINALRANK**: Optional. Rank duplicates separately.
- **DENSERANK**: Optional. Rank with no gaps in ordinals.
- **PERCENTRANK**: Optional. Rank on a scale from 0 to 1.

**Notes**

This function is applicable only to aggregate storage databases.

If no numeric value expression is given, this function returns the 1-based position of the tuple in the set.

If a numeric value expression is given, this function sorts the set based on the numeric value and returns the 1-based position of the tuple in the sorted set.

If an optional rank flag is given, this function sorts the set based on the numeric value and returns the 1-based position of the tuple in the sorted set according to the instructions in the flag. The meanings of the flags are:

- [no flag]: Default behavior. Ties are given the same rank, and the next member is the count of members. Example: (1,1,1,4,5)
- **ORDINALRANK**: Ties are decided by Essbase. Duplicates are considered different entities. Example: (1,2,3,4,5).

- **DENSERANK**: Ties are given the same rank, but there are no gaps in ordinals. Example: (1,1,1,2,3)

- **PERCENTRANK**: Rank values are scaled by the cumulative sum up to this member. Example: (.1, .15, .34, .78, 1.0). Values range from 0.0 to 1.0.

In the cases where this function sorts the set, it sorts tuples in descending order, and assigns ranks based on that order (highest value has a rank of 1).

**Example**

**Example 1**

WITH MEMBER [Measures].[Units_Rank] AS 'Rank(Products.CurrentMember, Products.CurrentMember.Siblings)'
SELECT {Units, [Price Paid], [Units_Rank]}
ON COLUMNS,
{ Products.Members } ON ROWS
FROM ASOSamp.Sample;

**Example 2**

WITH MEMBER [Measures].[Units_Rank] AS 'Rank( Products.CurrentMember, Products.CurrentMember.Siblings)'
SELECT {Units, [Measures].[Units_Rank]}
ON COLUMNS,
Union(Children([Televisions]),
Children([Radios]))
ON ROWS
FROM ASOSamp.Sample;

**RealValue**

Returns a value for the specified member or tuple without the inherited attribute dimension context.

**Syntax**

tuple[.RealValue]

member[.RealValue]

**Parameter Description**

tuple A tuple for which to return a real value

member A member for which to return a real value
Example

The following query sorts level-0 members of the Product dimension by the real value of Sales without the attribute dimension (Ounces_12) context, in descending order, and returns their sales for Ounces_12.

```
SELECT
  {[Sales]}
ON COLUMNS,
Order([Product].Levels(0).Members,
     [Sales].REALVALUE, BDESC)
ON ROWS
FROM Sample.Basic
WHERE ([OUNCES_12]) ;
```

RelMemberRange

Returns a set that is based on the relative position of the specified member in the database outline.

Note: When multiple hierarchies are enabled, this function returns NULL when the range begins in one hierarchy and terminates in another hierarchy.

Syntax

```
RelMemberRange ( member, prevcount, nextcount [,layertype] [, hierarchy ])
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>member</td>
<td>An input member in the set you want to return.</td>
</tr>
<tr>
<td>prevcount</td>
<td>The number of members in the same layer specified by layertype prior to member to include in the return set.</td>
</tr>
<tr>
<td>nextcount</td>
<td>The number of members in the same layer specified by layertype following member to include in the return set.</td>
</tr>
<tr>
<td>layertype</td>
<td>GENERATION or LEVEL. If omitted, the default is GENERATION. Defines whether the set to be returned is based the same generation or on the same level as member.</td>
</tr>
<tr>
<td>hierarchy</td>
<td>Optional. A specific hierarchy within the time dimension.</td>
</tr>
</tbody>
</table>

Example

The following examples are based on ASOSamp.Sample.

Example 1

```
SELECT
RelMemberRange ([PORTLAND - OR],1,2)
ON COLUMNS
FROM asosamp.sample
```

This query returns the set:
Example 2
RelMemberRange(Apr, 5, 0)
returns the set \{Jan, Feb, Mar, Apr\}. Note that the output set has only four members.
RelMemberRange(Apr, 5, 10)
returns the set \{Jan, Feb, Mar, Apr, May ..., Dec\}. Note that the output set has only four previous members and seven next members of Apr.

See Also
- LastPeriods

**Remainder**
Returns the fractional part of the numeric value expression.

**Syntax**
Remainder ( numeric_value_expression )

**Parameter**
<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>numeric_value_expression  A numeric value expression (see “MDX Grammar Rules” on page 1012).</td>
</tr>
</tbody>
</table>

**Example**
Remainder([Margin %])

extracts the fractional part of the [Margin %] value.

The following query shows [Margin %] and the fractional part of it for all members of the Product dimension.

```sql
WITH
  MEMBER [Measures].[Margin % Rem] AS 'Remainder([Margin %])',
SELECT
  {[Margin %], [Margin % Rem]} ON COLUMNS,
  [Product].Members ON ROWS
FROM Sample.Basic
```

This query returns the following grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Margin %</th>
<th>Margin % Rem</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product</td>
<td>55.262</td>
<td>0.262</td>
</tr>
<tr>
<td>100</td>
<td>57.273</td>
<td>0.273</td>
</tr>
<tr>
<td>100-10</td>
<td>61.483</td>
<td>0.483</td>
</tr>
<tr>
<td>100-20</td>
<td>51.479</td>
<td>0.479</td>
</tr>
<tr>
<td>(axis)</td>
<td>Margin %</td>
<td>Margin % Rem</td>
</tr>
<tr>
<td>----------</td>
<td>----------</td>
<td>--------------</td>
</tr>
<tr>
<td>100-30</td>
<td>50.424</td>
<td>0.424</td>
</tr>
<tr>
<td>200</td>
<td>55.540</td>
<td>0.540</td>
</tr>
<tr>
<td>200-10</td>
<td>54.270</td>
<td>0.270</td>
</tr>
<tr>
<td>200-20</td>
<td>56.436</td>
<td>0.436</td>
</tr>
<tr>
<td>200-30</td>
<td>56.450</td>
<td>0.450</td>
</tr>
<tr>
<td>200-40</td>
<td>55.753</td>
<td>0.753</td>
</tr>
<tr>
<td>300</td>
<td>54.238</td>
<td>0.238</td>
</tr>
<tr>
<td>300-10</td>
<td>55.816</td>
<td>0.816</td>
</tr>
<tr>
<td>300-20</td>
<td>42.992</td>
<td>0.992</td>
</tr>
<tr>
<td>300-30</td>
<td>57.551</td>
<td>0.551</td>
</tr>
<tr>
<td>400</td>
<td>53.600</td>
<td>0.600</td>
</tr>
<tr>
<td>400-10</td>
<td>57.354</td>
<td>0.354</td>
</tr>
<tr>
<td>400-20</td>
<td>56.299</td>
<td>0.299</td>
</tr>
<tr>
<td>400-30</td>
<td>39.477</td>
<td>0.477</td>
</tr>
<tr>
<td>Diet</td>
<td>55.397</td>
<td>0.397</td>
</tr>
<tr>
<td>100-20</td>
<td>51.479</td>
<td>0.479</td>
</tr>
<tr>
<td>200-20</td>
<td>56.436</td>
<td>0.436</td>
</tr>
<tr>
<td>300-30</td>
<td>57.551</td>
<td>0.551</td>
</tr>
</tbody>
</table>

**Right**

Returns a specified number (length) of characters from the right side of the string.

**Syntax**

Right (string, length)

**Parameter Description**

- string: Input string.
- length: The number of characters to return from the right side of the input string.

**Example**

Right ("Northwind", 4)
returns wind.

Round
Rounds a numeric value expression to the specified number of digits.

Syntax
Round ( numeric_value_expression, index )

Parameter Description
numeric_value_expression A numeric value expression (see “MDX Grammar Rules” on page 1012).
index Expression yielding an integer value. numeric_value_expression is rounded to the number of digits specified by this value. The fractional part of index is ignored.

Example
Round(234.5678, 2) returns 234.57.

RTrim
Trims all whitespace on the right side of the string.

Syntax
RTrim ( string )

Parameter Description
string Input string.

Example
RTrim("STRING   ")
returns "STRING"

Siblings
Returns the siblings of the input member, optionally based on selection options.

Syntax
Siblings ( member[, selection [,include_or_exclude]] )

member.Siblings

Parameter Description
member The member for which siblings are returned.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>selection</td>
<td>Optional. This option can be one of the following:</td>
</tr>
<tr>
<td></td>
<td>- LEFT—Selects the siblings to the left of the input member</td>
</tr>
<tr>
<td></td>
<td>- RIGHT—Selects the siblings to the right of the input member</td>
</tr>
<tr>
<td></td>
<td>- ALL—Selects all the siblings of the input member</td>
</tr>
<tr>
<td></td>
<td>If no selection is made, the default is ALL.</td>
</tr>
<tr>
<td>include_or_excl</td>
<td>Optional. This option can be one of the following:</td>
</tr>
<tr>
<td></td>
<td>- INCLUDEMEMBER—Includes the input member in the siblings list</td>
</tr>
<tr>
<td></td>
<td>- EXCLUDEMEMBER—Excludes the input member from the siblings list</td>
</tr>
<tr>
<td></td>
<td>If neither is specified, the default is to include the input member.</td>
</tr>
</tbody>
</table>

**Notes**

- If the input member is the top level of the dimension, this function returns a set containing the input member.
- In aggregate storage databases, in multiple-hierarchy-enabled dimensions, if the input member is a top-level member of a hierarchy, the output is members across hierarchies that are top-level members of hierarchies.
- This function is the same as `Children(member.parent)`.
- The `member. Siblings` syntax returns the same set as `Siblings(member), Siblings(member, ALL), or Siblings(member, ALL, INCLUDEMEMBER)`.

**Example**

**Example 1**

`Siblings(Year) returns {Year}`.

The following query

```sql
SELECT
CrossJoin {
    Union {
        Siblings ([Old Fashioned]),
        {[Root Beer]}, {[Cream Soda]}
    ),
    {[Budget]}, {[Variance]}
}
ON COLUMNS
from Sample.Basic

returns the grid:
```

1213
Old Fashioned  Diet Root Beer  Sarsaparilla  Birch Beer  Root Beer  Cream Soda

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget</td>
<td>Variance</td>
<td>Budget</td>
<td>Variance</td>
<td>Budget</td>
<td>Variance</td>
<td>Budget</td>
</tr>
<tr>
<td>11640</td>
<td>-4439</td>
<td>14730</td>
<td>-2705</td>
<td>5050</td>
<td>-414</td>
<td>4530</td>
</tr>
</tbody>
</table>

Example 2

The following examples are based on a Years – Quarters – Months Time hierarchy.

Siblings([Feb 2000], LEFT, INCLUDEMEMBER)

    Returns {[Jan 2000], [Feb 2000]}.  

Siblings([Feb 2000], RIGHT, EXCLUDEMEMBER)

    Returns {[Mar 2000]}.  

Siblings([Mar 2000], LEFT)

    Returns {[Jan 2000], [Feb 2000], [Mar 2000]}.  

Siblings([May 2000], RIGHT)

    Returns {[May 2000], [Jun 2000]}.  

Siblings([Mar 2000])  

OR

[Mar 2000].Siblings

    Returns {[Jan 2000], [Feb 2000], [Mar 2000]}.  

Stddev

Calculates the standard deviation of the specified set. The calculation is based upon a sample of a population. Standard deviation is a measure of how widely values are dispersed from their mean (average).

Syntax

Stddev ( set [,numeric_value_expression [,IncludeEmpty] ] )

Parameter  Description

set  A valid MDX set specification.

numeric_value_expression  A numeric value or an expression that returns a numeric value (see “MDX Grammar Rules” on page 1012).

IncludeEmpty  Use this keyword if you want to include in the calculation any tuples with #MISSING values. Otherwise, they are omitted by default.
Example

The following example, based on Sample Basic, calculates the standard deviation (based on a sample of a population) of the January sales values for all products sold in New York.

```plaintext
WITH MEMBER [Measures].[Std Deviation]
AS
  'Stddev(
    Crossjoin(
      {[Product].Children}, {[Measures].[Sales]}
    )
  ),

SELECT
  {[Scenario].[Actual],[Scenario].[Budget]}
ON COLUMNS,
  {Crossjoin(
    {[Measures].[Sales],[Product].Children}
  ),
   Crossjoin(
    {[Measures].[Sales],[Measures].[Std Deviation]},{[Product]}
  )}
ON ROWS
FROM
  Sample.Basic
WHERE
  ([Year].[Jan], [Market].[New York])
```

This query returns the following grid:

<table>
<thead>
<tr>
<th></th>
<th>Actual</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Sales, 100)</td>
<td>678</td>
<td>640</td>
</tr>
<tr>
<td>(Sales, 200)</td>
<td>551</td>
<td>530</td>
</tr>
<tr>
<td>(Sales, 300)</td>
<td>663</td>
<td>510</td>
</tr>
<tr>
<td>(Sales, 400)</td>
<td>587</td>
<td>620</td>
</tr>
<tr>
<td>(Sales, Diet)</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
<tr>
<td>(Sales, Product)</td>
<td>2479</td>
<td>2300</td>
</tr>
<tr>
<td>(Std Deviation, Product)</td>
<td>60.723</td>
<td>64.55</td>
</tr>
</tbody>
</table>

See Also

- **Stddevp**

**Stddevp**

Calculates the standard deviation of the specified set. This function assumes that the set represents the entire population. If you want to calculate based a sample of a population, use Stddev.
Standard deviation is a measure of how widely values are dispersed from their mean (average).

**Syntax**

```
Stddevp ( set [, numeric_value_expression [, IncludeEmpty] ] )
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>A valid MDX set specification.</td>
</tr>
<tr>
<td>numeric_value_expression</td>
<td>A numeric value or an expression that returns a numeric value (see “MDX Grammar Rules” on page 1012).</td>
</tr>
<tr>
<td>IncludeEmpty</td>
<td>Use this keyword if you want to include in the calculation any tuples with #MISSING values. Otherwise, they are omitted by default.</td>
</tr>
</tbody>
</table>

**Example**

The following example, based on Sample Basic, calculates the standard deviation (based on the entire population) of the January sales values for all products sold in New York.

```
WITH MEMBER [Measures].[Std Deviation]
    AS
        'StddevP(
            Crossjoin(
                {[Product].Children}, {[Measures].[Sales]}
            )
        )

SELECT
    {[Scenario].[Actual], [Scenario].[Budget]} ON COLUMNS,
    {Crossjoin(
        {[Measures].[Sales]},{[Product].Children}
    ),
    Crossjoin(
        {[Measures].[Sales], [Measures].[Std Deviation]},
        {[Product]}
    )}
ON ROWS
FROM Sample.Basic
WHERE
    ([Year].[Jan], [Market].[New York])
```

This query returns the following grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Actual</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Sales, 100)</td>
<td>678</td>
<td>640</td>
</tr>
<tr>
<td>(Sales, 200)</td>
<td>551</td>
<td>530</td>
</tr>
<tr>
<td>(Sales, 300)</td>
<td>663</td>
<td>510</td>
</tr>
<tr>
<td>(Sales, 400)</td>
<td>587</td>
<td>620</td>
</tr>
<tr>
<td>(axis)</td>
<td>Actual</td>
<td>Budget</td>
</tr>
<tr>
<td>---------------------------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td>(Sales, Diet)</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
<tr>
<td>(Sales, Product)</td>
<td>2479</td>
<td>2300</td>
</tr>
<tr>
<td>(Std Deviation, Product)</td>
<td>52.59</td>
<td>55.9</td>
</tr>
</tbody>
</table>

See Also
- Stddev

**StrToMbr**

Converts a string to a member name.

**Syntax**

```
StrToMbr ( string [, dimension ] [, MEMBER_NAMEONLY | alias_table_name ] )
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>string</td>
<td>Input string.</td>
</tr>
<tr>
<td>dimension</td>
<td>Optional dimension specification. If used, only member names found in this dimension will be returned.</td>
</tr>
<tr>
<td>MEMBER_NAMEONLY</td>
<td>Optional. Create member name only out of member names found (not including aliases). The default is to search for member names and all aliases.</td>
</tr>
<tr>
<td>alias_table_name</td>
<td>Optional. Create member name only out of alias name strings found. The default is to search for member names and all aliases.</td>
</tr>
</tbody>
</table>

**Notes**

You can also use member properties as string input. These properties include MEMBER_NAME, MEMBER_UNIQUE_NAME, MEMBER_ALIAS, ANCESTOR_NAMES, and COMMENTS. For example:

```
SELECT { StrToMbr(Sales.MEMBER_NAME) } ON COLUMNS
FROM Sample.Basic
```

**Example**

```
SELECT
{ StrToMbr("CA", [Geography], "Default") }
ON COLUMNS,
Children([High End Merchandise])
ON ROWS
FROM Asosamp.Sample
```

returns CA.

```
SELECT
{ StrToMbr("Quarter1", [Year], MEMBER_NAMEONLY) }
DIMENSION PROPERTIES [YEAR].[MEMBER_ALIAS]
ON COLUMNS,
```

1217
Children([100])
ON ROWS
FROM Sample.Basic

returns nothing, because "Quarter1" is an alias.

SELECT
{ StrToMbr("Qtr1", [Year], MEMBER_NAMEONLY) }
DIMENSION PROPERTIES [YEAR].[MEMBER_ALIAS]
ON COLUMNS,
Children([100])
ON ROWS
FROM Sample.Basic

returns Qtr1.

SELECT
{ StrToMbr("Quarter1", [Year], "Long Names") }
DIMENSION PROPERTIES [YEAR].[MEMBER_ALIAS]
ON COLUMNS,
Children([100])
ON ROWS
FROM Sample.Basic

returns Qtr1 because "Quarter1" is in the "Long Names" alias table.

**StrToNum**

Converts a string to a number.

**Syntax**

StrToNum (string)

**Parameter Description**

| string | Input string. |

**Notes**

This function returns a numeric value after converting the string to a number. For example, string "0.9" becomes the number 0.9. StrToMbr returns zero if the string cannot be converted.

**Example**

StrToNum("0.9")

returns 0.9 as a numeric value expression.

**Subset**

Returns a subset from a set, in which the subset is a numerically specified range of tuples.

**Syntax**

Subset ( set, index1 [,index2 ] )
Parameter Description

set  The set from which to take tuples.

index1  The location of the tuple with which to begin the subset. Example: if index1 is 0, the subset begins with the first tuple of set. If a negative value, the return is an empty set.

index2  Optional. The count of tuples to include in the subset. If omitted, all tuples to the end of set are returned. If a negative value, the return is an empty set. If the count goes beyond the range of the input set, all tuples to the end of the set are returned.

Notes

The first tuple of the subset is represented by index1. If index1 is 0, then the first tuple of the returned subset will be the same as the first tuple of the input set.

Example

Example 1

The following expression

Subset {Product.Members},0

returns the set:

{ Product, [100-10], [100-20], [100-30], [100], [200-10], [200-20], [200-30], [200-40], [200], [300-10], [300-20], [300-30], [300], [400-10], [400-20], [400-30], [400], [100-20], [200-20], [300-30], Diet }

All tuples of the set {Product.Members} are returned, because the subset is told to begin with the first tuple, and no count of tuples given for index2.

Example 2

The following expression

Subset {Product.Members},0,4

returns the set:

{ Product, [100], [100-10], [100-20] }

Therefore, the following query

Select
  Subset {Product.Members},0,4
on columns
from sample.basic

returns the grid:

<table>
<thead>
<tr>
<th>Product</th>
<th>100</th>
<th>100-10</th>
<th>100-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>105522</td>
<td>30468</td>
<td>22777</td>
<td>5708</td>
</tr>
</tbody>
</table>
**Substring**

Returns the substring between a starting and ending position. Both the positional arguments are 1-based.

**Syntax**

Substring ( string, index1 [, index2 ] )

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>string</td>
<td>String to subdivide (or field containing that string).</td>
</tr>
<tr>
<td>index1</td>
<td>A number ( n ) representing a starting position within a string.</td>
</tr>
<tr>
<td>index2</td>
<td>Optional. A number ( n ) representing an ending position within a string. If omitted, the endpoint is assumed to be the end of the original string.</td>
</tr>
</tbody>
</table>

**Sum**

Returns the sum of values of tuples in a set.

**Syntax**

Sum ( set [, numeric_value_expression ] )

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>The set containing the tuples to aggregate. If empty, the return value is #MISSING.</td>
</tr>
<tr>
<td>numeric_value_expression</td>
<td>Optional. An expression that returns a value. Commonly used to restrict the aggregation to a slice from a Measures dimension (see “MDX Grammar Rules” on page 1012). In the example below, [Measures].[Total Expenses] is the numeric value expression provided to the Sum function.</td>
</tr>
</tbody>
</table>

**Notes**

For optimized performance of this function on aggregate storage databases, include in your query the following kinds of sets:

- Any of the following functions, used within the named set and/or as an argument to this function: Intersect, CurrentMember, Distinct, CrossJoin, PeriodsToDate.
- The Filter function, with the search condition defined as: `dimensionName.CurrentMember IS memberName.`
- The IIF function, with the `true_part` and `false_part` being sets that meet the above criteria.
- The use of any other functions (such as Members) disables the optimization.
- The second parameter, `numeric_value_expression`, must be included for optimal performance.

Optimal query performance may require a larger formula cache size. If you get an error message similar to the following, adjust the `MAXFORMULACACHESIZE` `essbase.cfg` setting accordingly:
Not enough memory for formula execution. Set MAXFORMULACACHESIZE configuration parameter to [1072]KB and try again.

For each tuple in set, the numeric value expression is evaluated in the context of that tuple and the resulting values are summed up.

The return value of Sum is #MISSING if either of the following is true:

- The input set is empty.
- All tuple evaluations result in #MISSING values.

**Example**

```plaintext
WITH MEMBER [Market].[Sum Expense for Main States] AS
    'Sum
    ([Market].[California], [Market].[Colorado],
     [Market].[Texas], [Market].[Illinois],
     [Market].[Ohio], [Market].[New York],
     [Market].[Massachusetts], [Market].[Florida]),
    [Measures].[Total Expenses]
    )'

SELECT
    {[Measures].[Total Expenses]}
ON COLUMNS,
    {UDA([Market], "Major Market"),
     [Market].[Sum Expense for Main States]}
ON ROWS
FROM
    Sample.Basic
WHERE ([Scenario].[Actual])
```

returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Total Expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>8914</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>3412</td>
</tr>
<tr>
<td>Florida</td>
<td>5564</td>
</tr>
<tr>
<td>East</td>
<td>25310</td>
</tr>
<tr>
<td>California</td>
<td>11737</td>
</tr>
<tr>
<td>Texas</td>
<td>4041</td>
</tr>
<tr>
<td>Illinois</td>
<td>6900</td>
</tr>
<tr>
<td>Ohio</td>
<td>5175</td>
</tr>
<tr>
<td>Colorado</td>
<td>6131</td>
</tr>
<tr>
<td>Central</td>
<td>34864</td>
</tr>
<tr>
<td>Sum Expense for Main States</td>
<td>51874</td>
</tr>
</tbody>
</table>

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See Also

- Aggregate

Tail

Returns the last \( n \) members or tuples present in a set.

Syntax

\[
\text{Tail} ( \text{set [index]} )
\]

Parameter Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>The set from which to take items.</td>
</tr>
<tr>
<td>index</td>
<td>The number of items to take from the end of the set. If omitted, the default is 1. If less than 1, an empty set is returned. If the value exceeds the number of tuples in the input set, the original set is returned.</td>
</tr>
</tbody>
</table>

Example

Example 1

This example uses the following part of the Sample Basic outline:

```
-Product
  +100
  +200
  +300
  +400
  +Diet
```

The following expression

\[
\text{[Product].children}
\]

returns the set:

\[
\{ [100], [200], [300], [400], [Diet] \}
\]

Therefore, the following expression

\[
\text{Tail (}
\text{[Product].children, 2)}
\]

returns the last two members of the previous result set:

\[
\{ [400], [Diet] \}
\]

Example 2

This example uses the following parts of the Sample Basic outline:

```
+100 (+)
  +100-10
  +100-20
  +100-30
```

1222
The following expression:
\[
\text{Crossjoin ( [100].children, [South].children )}
\]
returns the set:
\[
\{ ([100-10], Texas), ([100-10], Oklahoma), ([100-10], Louisiana), ([100-10], [New Mexico]),
\quad ([100-20], Texas), ([100-20], Oklahoma), ([100-20], Louisiana), ([100-20], [New Mexico]),
\quad ([100-30], Texas), ([100-30], Oklahoma), ([100-30], Louisiana), ([100-30], [New Mexico]) \}
\]

And the following expression:
\[
\text{Tail ( Crossjoin ([100].children, [South].children), 8 )}
\]
returns the last 8 tuples of the previous result set:
\[
\{ ([100-20], Texas), ([100-20], Oklahoma), ([100-20], Louisiana), ([100-20], [New Mexico]),
\quad ([100-30], Texas), ([100-30], Oklahoma), ([100-30], Louisiana), ([100-30], [New Mexico]) \}
\]

Additionally, the following expression:
\[
([Year].generations(2).members)
\]
returns the set of members comprising the second generation of the Year dimension:
\[
\{ [Qtr1], [Qtr2], [Qtr3], [Qtr4] \}
\]

Therefore, the following query:
\[
\text{SELECT}
\quad ([Year].generations(2).members)
\quad \text{ON COLUMNS,}
\quad \text{Tail (}
\quad \quad \text{Crossjoin ([100].children, [South].children),
\quad \quad \quad 8)
\quad \text{ON ROWS}
\quad \text{FROM Sample.Basic}
\]
returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>(axis)</th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
</tr>
</thead>
<tbody>
<tr>
<td>100–20</td>
<td>Texas</td>
<td>206</td>
<td>199</td>
<td>152</td>
<td>82</td>
</tr>
</tbody>
</table>

1223
<table>
<thead>
<tr>
<th>(axis)</th>
<th>(axis)</th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oklahoma</td>
<td></td>
<td>84</td>
<td>66</td>
<td>55</td>
<td>79</td>
</tr>
<tr>
<td>Louisiana</td>
<td></td>
<td>119</td>
<td>158</td>
<td>171</td>
<td>104</td>
</tr>
<tr>
<td>New Mexico</td>
<td></td>
<td>-103</td>
<td>-60</td>
<td>-97</td>
<td>-18</td>
</tr>
<tr>
<td>100-30</td>
<td></td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
<tr>
<td>Texas</td>
<td></td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
<tr>
<td>Oklahoma</td>
<td></td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
<tr>
<td>Louisiana</td>
<td></td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
<tr>
<td>New Mexico</td>
<td></td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
</tbody>
</table>

To suppress the missing rows, use NON EMPTY at the beginning of the row axis specification:

```
SELECT
  {([Year].generations(2).members)}
ON COLUMNS,
NON EMPTY
  Tail (Crossjoin ([100].children, [South].children), 8)
ON ROWS
FROM Sample.Basic
```

This modified query returns as many of the 8 requested tuples as it can, without returning any that have entirely #Missing data:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-20</td>
<td>Texas</td>
<td>206</td>
<td>199</td>
<td>152</td>
</tr>
<tr>
<td>100-20</td>
<td>Oklahoma</td>
<td>84</td>
<td>66</td>
<td>55</td>
</tr>
<tr>
<td>100-20</td>
<td>Louisiana</td>
<td>119</td>
<td>158</td>
<td>171</td>
</tr>
<tr>
<td>100-20</td>
<td>New Mexico</td>
<td>-103</td>
<td>-60</td>
<td>-97</td>
</tr>
</tbody>
</table>

See Also
- Head

**Todate**

Converts date strings to numbers that can be used in calculations.

**Syntax**

```
Todate ( string_value_expression_1 , string_value_expression_2 )
```
Parameter | Description
---|---
string_value_expression_1 | The format of the date string, either "mm-dd-yyyy" or "dd-mm-yyyy" (must be in lower case).

string_value_expression_2 | The date string.

Notes
- If you specify a date that is earlier than 01-01-1970, this function returns an error.
- The latest date supported by this function is 12-31-2037.

Example
For products introduced before 06.01.1996, the following query calculates a Revised Budget that is 110% of Budget.

```
WITH MEMBER [Scenario].[Revised Budget] AS
    'IIF ([Product].CurrentMember.[Intro Date] > TODATE("mm-dd-yyyy","06-01-1996"),
    Budget * 1.1, Budget )'
SELECT {[Scenario].Budget, [Scenario].[Revised Budget]} ON COLUMNS,
    [Product].[200].Children DIMENSION PROPERTIES [Intro Date] ON ROWS
FROM Sample.Basic WHERE ([Measures].[Sales], [Year].[Qtr3])
```

This query returns the grid:

<table>
<thead>
<tr>
<th>Axis-1</th>
<th>Axis-1.properties</th>
<th>Budget</th>
<th>Revised Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>200-10</td>
<td>(Intro Date = 09-27-1995, type: TIME)</td>
<td>11060</td>
<td>11060</td>
</tr>
<tr>
<td>200-20</td>
<td>(Intro Date = 07-26-1996, type: TIME)</td>
<td>9680</td>
<td>10648</td>
</tr>
<tr>
<td>200-30</td>
<td>(Intro Date = 12-10-1996, type: TIME)</td>
<td>3880</td>
<td>4268</td>
</tr>
<tr>
<td>200-40</td>
<td>(Intro Date = 12-10-1996, type: TIME)</td>
<td>2660</td>
<td>2926</td>
</tr>
</tbody>
</table>

**TodateEx**

Returns the numeric date value from input date-string according to the date-format specified. The date returned is the number of seconds elapsed since midnight, January 1, 1970.

If the date or the date format strings are invalid, an error is returned.

**Syntax**

```
TodateEx ( internal-date-format, date-string )
```
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>internal-date-format</td>
<td>One of the following literal strings (excluding ordered-list numbers and parenthetical examples) indicating a supported date format.</td>
</tr>
<tr>
<td>1. &quot;mon dd yyyy&quot;</td>
<td>(Example: mon = Aug)</td>
</tr>
<tr>
<td>2. &quot;Month dd yyyy&quot;</td>
<td>(Example: Month = August)</td>
</tr>
<tr>
<td>3. &quot;mm/dd/yyyy&quot;</td>
<td></td>
</tr>
<tr>
<td>4. &quot;mm/dd/yy&quot;</td>
<td></td>
</tr>
<tr>
<td>5. &quot;yy.mm.dd&quot;</td>
<td></td>
</tr>
<tr>
<td>6. &quot;dd/mm/yy&quot;</td>
<td></td>
</tr>
<tr>
<td>7. &quot;dd.mm.yy&quot;</td>
<td></td>
</tr>
<tr>
<td>8. &quot;dd-mm-yy&quot;</td>
<td></td>
</tr>
<tr>
<td>9. &quot;dd Month yy&quot;</td>
<td></td>
</tr>
<tr>
<td>10. &quot;dd mon yy&quot;</td>
<td></td>
</tr>
<tr>
<td>11. &quot;Month dd, yy&quot;</td>
<td></td>
</tr>
<tr>
<td>12. &quot;mon dd, yy&quot;</td>
<td></td>
</tr>
<tr>
<td>13. &quot;mm-dd-yy&quot;</td>
<td></td>
</tr>
<tr>
<td>14. &quot;yy/mm/dd&quot;</td>
<td></td>
</tr>
<tr>
<td>15. &quot;yymmdd&quot;</td>
<td></td>
</tr>
<tr>
<td>16. &quot;dd Month yyyy&quot;</td>
<td></td>
</tr>
<tr>
<td>17. &quot;dd mon yyyy&quot;</td>
<td></td>
</tr>
<tr>
<td>18. &quot;yyyy-mm-dd&quot;</td>
<td></td>
</tr>
<tr>
<td>19. &quot;yyyy/mm/dd&quot;</td>
<td></td>
</tr>
<tr>
<td>20. Long format (Example: WeekDay, Mon dd, yyyy)</td>
<td></td>
</tr>
<tr>
<td>21. Short format (Example: m/d(yy)</td>
<td></td>
</tr>
</tbody>
</table>
**Parameter**  **Description**

date-string  A date string following the rules of *internal-date-format*. The following examples correspond to the above listed internal date formats.

1. Jan 15 2006
2. January 15 2006
3. 01/15/06
4. 01/15/2006
5. 06.01.06
6. 15/01/06
7. 15.01.06
8. 15-01-06
9. 15 January 06
10. 15 Jan 06
11. January 15 06
12. Jan 15 06
13. 01-15-06
14. 06/01/15
15. 06/01/15
16. 15 January 2006
17. 15 Jan 2006
18. 2006-01-15
19. 2006/01/15
21. 1/8/06 (m/d/yy)

**Notes**

- This function is an extension of *Todate*.
- This function is case-sensitive. For example, using *apr* instead of *Apr* returns an error.
- Using extra whitespace not included in the internal format strings returns an error.
- Trailing characters after the date format has been satisfied are ignored. If you erroneously use a date string of 06/20/2006 with date format *mm/dd/yy*, the trailing 06 is ignored and the date is interpreted as June 20, 2020.
- Long Format (*Weekday, Mon dd, yyyy*) is not verified for a day-of-week match to the given date.
  
  For example: For date string *Sunday, March 13, 2007* with date format Long Format, the input date string is parsed correctly for *March 13, 2007*, although March 13, 2007 does not fall on Sunday.
- If you specify a date that is earlier than 01-01-1970, this function returns an error.
- The latest date supported by this function is 12-31-2037.
When the yy format is used, this function interprets years in the range 1970 to 2029.

**Example**

The following query returns the actual sales on May 31, 2005 for the product Cola in the market California.

`TodateEx()` returns the date May 31, 2005, corresponding to date string 05.31.2005. `StrToMbr` returns the corresponding day level member, capturing May 31, 2005.

```sql
SELECT {
  [Sales]
ON COLUMNS,
  {
    StrToMbr(
      FormatDate(
        TodateEx("mm.dd.yyyy", "05.31.2005"),
        "Mon dd yyyy"
      )
    )
  }
ON ROWS
FROM Mysamp.basic
WHERE (Actual, California, Cola);
```

**Today**

Returns a number representing the current date on the Essbase computer. The number is the number of seconds elapsed since midnight, January 1, 1970.

**Syntax**

`Today`

**Notes**

The date returned can be used as input to other functions listed in the See Also section.

**Example**

This query returns today's actual sales for the product Cola in the market California. `Today()` returns today's date. `StrToMbr` retrieves the day member represented by the date returned by `Today`.

```sql
SELECT {
  [Sales]
ON COLUMNS,
  {
    StrToMbr(
      FormatDate( Today(), "Mon dd yyyy")
    )
  }
ON ROWS
FROM Mysamp.basic;
```
See Also

- DateToMember
- DateRoll
- DateDiff
- DatePart
- FormatDate

## TopCount

Returns a set of \( n \) elements ordered from largest to smallest, optionally based on an evaluation. This function ignores missing values.

### Syntax

\[
\text{TopCount} \left( \text{set}, \text{index} [,\text{numeric\_value\_expression} ] \right)
\]

### Parameter Description

- **set**
  - The set from which the top \( n \) elements are selected.

- **index**
  - The number of elements to include in the set (\( n \)).

- **numeric\_value\_expression**
  - Optional. An expression further defining the selection criteria (see “MDX Grammar Rules” on page 1012).

### Example

The following query selects the five top-selling markets in terms of yearly Diet products sales, and displays the quarterly sales for each Diet product.

```
SELECT
    CrossJoin(
        [Product].[Diet].Children,
        [Year].Children
    ) ON COLUMNS,
    TopCount(
        [Market].Levels(0).Members,
        5,
        [Product].[Diet]
    ) ON ROWS
FROM Sample.Basic
WHERE ([Scenario].[Actual], [Measures].[Sales])
```

This query returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>100-20</th>
<th>100-20</th>
<th>100-20</th>
<th>100-20</th>
<th>200-20</th>
<th>200-20</th>
<th>200-20</th>
<th>300-30</th>
<th>300-30</th>
<th>300-30</th>
</tr>
</thead>
<tbody>
<tr>
<td>(axis)</td>
<td>Qtr1</td>
<td>Qtr2</td>
<td>Qtr3</td>
<td>Qtr4</td>
<td>Qtr1</td>
<td>Qtr2</td>
<td>Qtr3</td>
<td>Qtr4</td>
<td>Qtr1</td>
<td>Qtr2</td>
</tr>
<tr>
<td>Illinois</td>
<td>755</td>
<td>958</td>
<td>1050</td>
<td>888</td>
<td>1391</td>
<td>1520</td>
<td>1562</td>
<td>1402</td>
<td>675</td>
<td>755</td>
</tr>
</tbody>
</table>

1229
### TopPercent

Returns the smallest possible subset of a set for which the total results of a numeric evaluation are at least a given percentage. Elements in the result set are listed from largest to smallest.

**Syntax**

```
TopPercent ( set, percentage, numeric_value_expression )
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>set</td>
<td>The set from which the top-percentile elements are selected.</td>
</tr>
<tr>
<td>percentage</td>
<td>The percentile. This argument must be a value between 0 and 100.</td>
</tr>
<tr>
<td>numeric_value_expression</td>
<td>The expression that defines the selection criteria (see “MDX Grammar Rules” on page 1012).</td>
</tr>
</tbody>
</table>

**Notes**

This function ignores negative and missing values.

**Example**

The following query selects the top-selling markets that contribute 25% of the total yearly Diet products sales, and displays the quarterly sales for each Diet product.

```
SELECT
    CrossJoin(
        [Product].[Diet].Children,
        [Year].Children
    )
ON COLUMNS,
    TopPercent(
        [Market].Levels(0).Members,
        25,
        [Product].[Diet]
    )
ON ROWS
FROM Sample.Basic
WHERE ([Scenario].[Actual],
    [Measures].[Sales])
```
This query returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illinois</td>
<td>755</td>
<td>958</td>
<td>1050</td>
<td>888</td>
<td>1391</td>
<td>1520</td>
<td>1402</td>
<td>675</td>
<td>755</td>
<td>859</td>
<td>894</td>
<td></td>
</tr>
<tr>
<td>California</td>
<td>367</td>
<td>491</td>
<td>506</td>
<td>468</td>
<td>1658</td>
<td>1833</td>
<td>1954</td>
<td>700</td>
<td>802</td>
<td>880</td>
<td>673</td>
<td></td>
</tr>
<tr>
<td>Colorado</td>
<td>700</td>
<td>802</td>
<td>880</td>
<td>673</td>
<td>549</td>
<td>465</td>
<td>412</td>
<td>539</td>
<td>1006</td>
<td>921</td>
<td>892</td>
<td>991</td>
</tr>
</tbody>
</table>

**TopSum**

Returns the smallest possible subset of a set for which the total results of a numeric evaluation are at least a given sum. Elements of the result set are listed from largest to smallest.

**Syntax**

TopSum ( set, numeric_value_expression1, numeric_value_expression2 )

**Parameter**

<table>
<thead>
<tr>
<th>Description</th>
<th>set</th>
</tr>
</thead>
<tbody>
<tr>
<td>The set from which the highest-summing elements are selected.</td>
<td></td>
</tr>
<tr>
<td>numeric_value_expression1</td>
<td>The given sum (see “MDX Grammar Rules” on page 1012).</td>
</tr>
<tr>
<td>numeric_value_expression2</td>
<td>The numeric evaluation (see “MDX Grammar Rules” on page 1012).</td>
</tr>
</tbody>
</table>

**Notes**

- If the total results of the numeric evaluation do not add up to the given sum, an empty set is returned.
- This function ignores negative and missing values.

**Example**

The following query selects the top-selling markets that collectively contribute 60,000 to the total yearly Diet products sales, and displays the quarterly sales for each Diet product.

SELECT
    CrossJoin(
        [Product].[Diet].Children,
        [Year].Children
    ) ON COLUMNS,
    TopSum(
        [Market].Levels(0).Members,
        60000,
        [Product].[Diet]
    ) ON ROWS
FROM Sample.Basic
WHERE ([Scenario].[Actual],
    [Measures].[Sales])
This query returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>100-20</th>
<th>100-20</th>
<th>100-20</th>
<th>100-20</th>
<th>200-20</th>
<th>200-20</th>
<th>200-20</th>
<th>300-30</th>
<th>300-30</th>
<th>300-30</th>
<th>300-30</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Qtr1</td>
<td>Qtr2</td>
<td>Qtr3</td>
<td>Qtr4</td>
<td>Qtr1</td>
<td>Qtr2</td>
<td>Qtr3</td>
<td>Qtr4</td>
<td>Qtr1</td>
<td>Qtr2</td>
<td>Qtr3</td>
</tr>
<tr>
<td>Illinois</td>
<td>755</td>
<td>958</td>
<td>1050</td>
<td>888</td>
<td>1391</td>
<td>1520</td>
<td>1562</td>
<td>1402</td>
<td>675</td>
<td>755</td>
<td>859</td>
</tr>
<tr>
<td>California</td>
<td>367</td>
<td>491</td>
<td>506</td>
<td>468</td>
<td>1658</td>
<td>1833</td>
<td>1954</td>
<td>1706</td>
<td>700</td>
<td>802</td>
<td>880</td>
</tr>
<tr>
<td>Colorado</td>
<td>700</td>
<td>802</td>
<td>880</td>
<td>673</td>
<td>549</td>
<td>465</td>
<td>412</td>
<td>539</td>
<td>1006</td>
<td>921</td>
<td>892</td>
</tr>
<tr>
<td>Washington</td>
<td>637</td>
<td>712</td>
<td>837</td>
<td>704</td>
<td>459</td>
<td>498</td>
<td>597</td>
<td>514</td>
<td>944</td>
<td>799</td>
<td>708</td>
</tr>
<tr>
<td>Iowa</td>
<td>162</td>
<td>153</td>
<td>121</td>
<td>70</td>
<td>129</td>
<td>129</td>
<td>129</td>
<td>129</td>
<td>1658</td>
<td>1833</td>
<td>1954</td>
</tr>
<tr>
<td>Florida</td>
<td>620</td>
<td>822</td>
<td>843</td>
<td>783</td>
<td>548</td>
<td>611</td>
<td>657</td>
<td>577</td>
<td>332</td>
<td>323</td>
<td>260</td>
</tr>
<tr>
<td>Oregon</td>
<td>389</td>
<td>303</td>
<td>277</td>
<td>322</td>
<td>1006</td>
<td>921</td>
<td>892</td>
<td>991</td>
<td>263</td>
<td>231</td>
<td>197</td>
</tr>
</tbody>
</table>

**Truncate**

Returns the integral part of a number. The return value has the same sign as its argument.

**Syntax**

```
Truncate ( numeric_value_expression )
```

**Parameter Description**

- `numeric_value_expression`: Numeric value expression (see “MDX Grammar Rules” on page 1012).

**Example**

```
Truncate(2.65) returns 2.
Truncate(-8.12) returns -8.
```

**TupleRange**

Returns the range of tuples between (and inclusive of) two tuples at the same level.

The range is created by identifying the level of the arguments and pruning the result set to include only the argument tuples and the tuples that are, in terms of outline order, between them.

**Syntax**

```
TupleRange ( tuple1, tuple2 )
```

**Parameter Description**

- `tuple1`: The first input tuple, marking the beginning of the range.
- `tuple2`: The second input tuple, marking the end of the range.
Notes

- TupleRange serves the same purpose as the @XRANGE function in the Essbase calculator language.
- The two input tuples must be of the same dimensionality. See the example, wherein both input tuples are of the format ([Year],[Month]).

Example

TupleRange can be useful if you have two Time dimensions. For example, the following expression averages a value for the range of months from Mar 2005 to Feb 2006, inclusive.

\[
\text{AVG ( TUPLERANGE(}
\quad ([2005], [Mar]), ([2006], [Feb])
\quad )
\]

The values are averaged for the following range:

\{
\quad ([2005], [Mar]),
\quad ([2005], [Apr]),
\quad ([2005], [May]),
\quad ([2005], [Jun]),
\quad ([2005], [Jul]),
\quad ([2005], [Aug]),
\quad ([2005], [Sep]),
\quad ([2005], [Oct]),
\quad ([2005], [Nov]),
\quad ([2005], [Dec]),
\quad ([2006], [Jan]),
\quad ([2006], [Feb])
\}

Uda

Selects all members to which a specified user-defined attribute is associated in the entire dimension or in a subtree rooted at the input member.

Syntax

\[
\text{Uda ( dimension | member, string_value_expression )}
\]

Parameter Description

dimension The dimension in which matching UDAs are searched.

member A member to search (descendants included) for matching UDAs.

string_value_expression The name of the UDA to be selected. Can be an expression that evaluates to the UDA string, or an exact character string (not case-sensitive) enclosed in double quotation marks.

Notes

A user-defined attribute is a term associated with members of an outline to describe a characteristic. This function selects all members that have the specified UDA.
Example

Dimension Example

In the following query, the Uda function searches a dimension (top member included) for descendant members having a UDA of Major Market:

```sql
SELECT
    {[Measures].[Sales], [Measures].[Profit]} ON COLUMNS,
    {UDA([Market], "Major Market")) ON ROWS
FROM Sample.Basic
WHERE ([Year].[Jul], [Product].[Cola])
```

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Sales</th>
<th>Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>East</td>
<td>2248</td>
<td>1156</td>
</tr>
<tr>
<td>New York</td>
<td>912</td>
<td>370</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>665</td>
<td>564</td>
</tr>
<tr>
<td>Florida</td>
<td>286</td>
<td>104</td>
</tr>
<tr>
<td>California</td>
<td>912</td>
<td>370</td>
</tr>
<tr>
<td>Texas</td>
<td>567</td>
<td>206</td>
</tr>
<tr>
<td>Central</td>
<td>1392</td>
<td>369</td>
</tr>
<tr>
<td>Illinois</td>
<td>567</td>
<td>208</td>
</tr>
<tr>
<td>Ohio</td>
<td>85</td>
<td>18</td>
</tr>
<tr>
<td>Colorado</td>
<td>199</td>
<td>70</td>
</tr>
</tbody>
</table>

returning the grid:

Member Example

In the following query, the Uda function searches a member (itself included) for descendant members having a UDA of Major Market:

```sql
SELECT
    {[Measures].[Sales], [Measures].[Profit]} ON COLUMNS,
    {UDA([East], "Major Market")} ON ROWS
FROM Sample.Basic
WHERE ([Year].[Jul], [Product].[Cola])
```

returning the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Sales</th>
<th>Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>East</td>
<td>2248</td>
<td>1156</td>
</tr>
<tr>
<td>New York</td>
<td>912</td>
<td>370</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>665</td>
<td>564</td>
</tr>
</tbody>
</table>
## Union

Returns the union of two input sets, optionally retaining duplicates.

### Syntax

Union ( set1, set2 [,ALL] )

### Parameter Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>set1</td>
<td>A set to join with set2.</td>
</tr>
<tr>
<td>set2</td>
<td>A set to join with set1.</td>
</tr>
<tr>
<td>ALL</td>
<td>If the optional ALL keyword is used, duplicates are retained.</td>
</tr>
</tbody>
</table>

### Notes

Duplicates are eliminated by default from the tail of the set. The optional ALL keyword retains duplicates. The two input sets must have identical dimension signatures. For example, if set1 consists of dimensions Product and Market, in that order, then set2 should also consist of Product followed by Market.

### Example

#### Example 1

The expression

Union( Siblings([Old Fashioned]), {[Sarsaparilla], [Birch Beer]})

returns the set

{ [Old Fashioned], [Diet Root Beer], [Sarsaparilla], [Birch Beer] } 

#### Example 2

The expression

Union( Siblings([Old Fashioned]), {[Sarsaparilla], [Birch Beer]}, ALL)

returns the set

{ [Old Fashioned], [Diet Root Beer], [Sarsaparilla], [Birch Beer],
  [Sarsaparilla], [Birch Beer] } 

#### Example 3

The following query

SELECT
CrossJoin ( 

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Sales</th>
<th>Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Florida</td>
<td>286</td>
<td>104</td>
</tr>
</tbody>
</table>
Union (  
  Siblings ([Old Fashioned]),  
  ([[Root Beer]], ([Cream Soda]))  
),  
{([Budget]), ([Variance])}  
)

ON COLUMNS
from Sample.Basic

returns the grid

<table>
<thead>
<tr>
<th>Old Fashioned</th>
<th>Diet Root Beer</th>
<th>Sarsaparilla</th>
<th>Birch Beer</th>
<th>Root Beer</th>
<th>Cream Soda</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget</td>
<td>Variance</td>
<td>Budget</td>
<td>Variance</td>
<td>Budget</td>
<td>Variance</td>
</tr>
<tr>
<td>11640</td>
<td>-4439</td>
<td>14730</td>
<td>-2705</td>
<td>5050</td>
<td>-414</td>
</tr>
<tr>
<td>14730</td>
<td>11640</td>
<td>5050</td>
<td>14730</td>
<td>4530</td>
<td>11640</td>
</tr>
</tbody>
</table>

**UnixDate**

To the given Julian date, get its UNIX date.

**Syntax**

UnixDate ( juliandate )

**Parameter Description**

juliandate   A number representing the Julian date. This number is a continuous count of days and fractions elapsed since noon Universal Time on January 1, 4713 BC in the proleptic Julian calendar.

**Notes**

- This function is useful in converting the Julian date to UNIX date.
- In the 1900 date system, the first day that is supported is January 1, 1900. When you enter a date, the date is converted into a serial number that represents the number of elapsed days since January 1, 1900. For example, if you enter July 5, 1998, Microsoft Excel converts the date to the serial number 35981. By default, Microsoft Excel for Windows uses the 1900 date system.

**Return Value**

This function returns date a number representing the input date between January 1, 1970 and Dec 31, 2037. The number is the number of seconds elapsed since midnight, January 1, 1970. To retrieve this number, use any of the following functions: Today(), TodateEx(), GetFirstDate(), GetLastDate(), DateRoll().

Date-Time type attribute properties of a member can also be used to retrieve this number. For example: Product.currentmember.[Intro Date] returns the Introduction or release date for the current product in context. [Cola].[Intro Date] returns the Introduction or release date for the “Cola” product.
See Also
- JulianDate

**Upper**

Converts lower-case string to upper case.

**Syntax**

Upper ( string )

**Parameter Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>string</td>
<td>Input string.</td>
</tr>
</tbody>
</table>

**Example**

Upper(string)

returns STRING

See Also
- Lower

**Value**

Returns a value for the specified member or tuple.

**Syntax**

`tuple[.Value]`

`member[.Value]`

**Parameter Description**

- **tuple** A tuple for which to return a value.
- **member** A member for which to return a value.

**Notes**

The VALUE keyword is optional. In Example 2, the value of Sales can be represented either as `[Sales].VALUE` or `[Sales]`. Any value expression (for example, the value expressions supplied to functions such as Filter, Order, or Sum) has an implicit Value function in it. The expression `[Qtr1] <= 0.00` is a shortcut for `[Qtr1].VALUE <= 0.00.

**Example**

**Example 1**

[Sales].Value
Returns the value of the Sales measure.

\( ([\text{Product}].\text{CurrentMember}, [\text{Sales}]).\text{Value} \)

Returns the value of the Sales measure for the current member of the Product dimension.

**Note:** The Value keyword is optional. The above expressions can also be entered as:

\[ [\text{Sales}] \]

Which is equivalent to \([\text{Sales}].\text{Value} \)

\( ([\text{Product}].\text{CurrentMember}, [\text{Sales}]) \)

Which is equivalent to \( ([\text{Product}].\text{CurrentMember}, [\text{Sales}]).\text{VALUE} \)

**Example 2**

The following query sorts level-0 members of the Product dimension by the value of Sales, in descending order.

```sql
SELECT
  {{[Sales]}}
ON COLUMNS,
  Order([Product].Levels(0).Members,
       [Sales].\text{VALUE}, BDESC)
ON ROWS
FROM Sample.Basic
```

This query returns the grid:

<table>
<thead>
<tr>
<th>(axis)</th>
<th>Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-10</td>
<td>62824</td>
</tr>
<tr>
<td>300-10</td>
<td>46956</td>
</tr>
<tr>
<td>200-10</td>
<td>41537</td>
</tr>
<tr>
<td>200-20</td>
<td>38240</td>
</tr>
<tr>
<td>200-20</td>
<td>38240</td>
</tr>
<tr>
<td>300-30</td>
<td>36969</td>
</tr>
<tr>
<td>300-30</td>
<td>36969</td>
</tr>
<tr>
<td>400-10</td>
<td>35799</td>
</tr>
<tr>
<td>400-20</td>
<td>32670</td>
</tr>
<tr>
<td>100-20</td>
<td>30469</td>
</tr>
<tr>
<td>100-20</td>
<td>30469</td>
</tr>
<tr>
<td>200-30</td>
<td>17559</td>
</tr>
<tr>
<td>(axis)</td>
<td>Sales</td>
</tr>
<tr>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>300-20</td>
<td>17480</td>
</tr>
<tr>
<td>400-30</td>
<td>15761</td>
</tr>
<tr>
<td>100-30</td>
<td>12841</td>
</tr>
<tr>
<td>200-40</td>
<td>11750</td>
</tr>
</tbody>
</table>

**WithAttr**

Returns all base members that are associated with an attribute member of the specified type.

**Syntax**

WithAttr ( member, character_string_literal, value_expression )

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>member</td>
<td>The top member of an attribute dimension.</td>
</tr>
<tr>
<td>character_string_literal</td>
<td>An operator. Must be enclosed in double quotation marks.</td>
</tr>
<tr>
<td></td>
<td>The following operators are supported:</td>
</tr>
<tr>
<td></td>
<td>- &gt; Greater than</td>
</tr>
<tr>
<td></td>
<td>- &gt;= Greater than or equal to</td>
</tr>
<tr>
<td></td>
<td>- &lt; Less than</td>
</tr>
<tr>
<td></td>
<td>- &lt;= Less than or equal to</td>
</tr>
<tr>
<td></td>
<td>- = = Equal to</td>
</tr>
<tr>
<td></td>
<td>- &lt;&gt; or != Not equal to</td>
</tr>
<tr>
<td></td>
<td>- IN In</td>
</tr>
<tr>
<td>value_expression</td>
<td>An attribute value described by a value expression. The expression must evaluate to a numeric value for numeric/date attributes and must evaluate to a string for text valued attributes. Can also be an exact character string (not case-sensitive) enclosed in double quotation marks.</td>
</tr>
</tbody>
</table>

**Example**

The following query

```
SELECT
    Withattr([Pkg Type], "==", "Can")
on columns
FROM Sample.Basic
```
returns products that are packaged in a can:

<table>
<thead>
<tr>
<th>Cola</th>
<th>Diet Cola</th>
<th>Diet Cream</th>
</tr>
</thead>
<tbody>
<tr>
<td>22777</td>
<td>5708</td>
<td>11093</td>
</tr>
</tbody>
</table>
See Also

- Attribute

**WithAttrEx**

Returns the set of base members that are associated with a specified varying attribute member or dimension, given the perspective setting and the predicate.

**Syntax**

\[\text{WithAttrEx ( member, options, character_string_literal, value_expression, ANY, tuple | member[, tuple | member] )}\]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>member</td>
<td>The top member of an attribute dimension.</td>
</tr>
<tr>
<td>character_string_literal</td>
<td>An operator. Must be enclosed in double quotation marks. The following operators are supported:</td>
</tr>
<tr>
<td>value_expression</td>
<td>An attribute value described by a value expression. The expression must evaluate to a numeric value for numeric/date attributes and must evaluate to a string for text valued attributes. Can also be an exact character string (not case-sensitive) enclosed in double quotation marks.</td>
</tr>
<tr>
<td>ANY</td>
<td>The keyword ANY.</td>
</tr>
<tr>
<td>tuple</td>
<td>member</td>
</tr>
<tr>
<td>tuple</td>
<td>member</td>
</tr>
</tbody>
</table>

**Example**

Consider the following scenario: Products are packaged under different ounces over time and the market state, according to the marketing strategy of the company. Ounces is defined as a varying attribute for the Product dimension, to capture the varying attribute association over the continuous Year dimension and the discrete Market dimension.

Year and Market are the independent dimensions, and level-0 tuple months (for example, Jan) combined with a market state (for example, California) is a perspective for which the varying attribute association is defined.
The following query analyzes sales performance of products packaged in units of 20 ounces or greater any time from Jan to Dec in New York, over all quarters. This is the perspective view, which restates the sales according to the packaging strategy in July.

```sql
WITH PERSPECTIVE (Jul) FOR Ounces
SELECT
  {Qtr1, Qtr2, Qtr3, Qtr4}
ON COLUMNS,
  {WithattrEx(Ounces, ">=", 20, ANY,
    ([New York], Jan), ([New York], Dec))}
ON ROWS
FROM app.db
WHERE
  (Sales, Ounces, [New York])
;
```

See Also

- AttributeEx

**xTD**

Returns period-to-date values.

**Syntax**

```sql
xTD ( [member ] )
```

**Parameter Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>xTD</td>
<td>Values:</td>
</tr>
<tr>
<td>HTD</td>
<td>History-To-Date (H-T-D)</td>
</tr>
<tr>
<td>YTD</td>
<td>Year-To-Date</td>
</tr>
<tr>
<td>STD</td>
<td>Season-To-Date</td>
</tr>
<tr>
<td>PTD</td>
<td>Period-To-Date</td>
</tr>
<tr>
<td>QTD</td>
<td>Quarter-To-Date</td>
</tr>
<tr>
<td>MTD</td>
<td>Month-To-Date</td>
</tr>
<tr>
<td>WTD</td>
<td>Week-To-Date</td>
</tr>
<tr>
<td>DTD</td>
<td>Day-To-Date</td>
</tr>
</tbody>
</table>

**member** Member specification. Should be a member from the time dimension.
Notes

- \texttt{xTD ([member])} is equivalent to \texttt{PeriodsToDate (layer, [member])} where \texttt{layer} is assumed to be the value set in the corresponding Dynamic Time Series member in the database outline.

  For example, in Sample Basic, \texttt{QTD ([member])} is equivalent to \texttt{PeriodsToDate (Year.Generations(2) [,member])}, because Q-T-D is Generation 2 in the Year dimension.

- The \texttt{xTD} functions YTD, QTD, MTD, etc. are not relevant for use in aggregate storage databases, because the \texttt{xTD} functions assume that Dynamic Time Series members are defined in the outline. Dynamic Time Series members are not supported for aggregate storage database outlines.

  You can use the \texttt{PeriodsToDate} function with aggregate storage databases in place of the \texttt{xTD} functions.

  For example,
  \begin{align*}
  \text{YTD(May)} & \text{ is equivalent to } \text{PeriodsToDate(Year.Generations(1), May)} \\
  \text{QTD(May)} & \text{ is equivalent to } \text{PeriodsToDate(Year.Generations(2), May)}.
  \end{align*}

Example

\texttt{QTD([Feb])}

returns the set \{[Jan], [Feb]\}.

\texttt{QTD([Feb]) is equivalent to PeriodsToDate([Year].Generations(2), [Feb]), because the dynamic-time-series member Q-T-D is defined as Generation 2 of the Year dimension.}

\texttt{HTD([May])}

returns the set \{[Jan], [Feb], [Mar], [Apr], [May]\}.

\texttt{HTD([May]) is equivalent to PeriodsToDate([Year].Generations(1), [May]), because the dynamic-time-series member H-T-D is defined as Generation 1 of the Year dimension.}

Note: If a dynamic-time-series member is not defined, an empty set is returned.

\texttt{PTD([Feb])}

returns an empty set, because the dynamic-time-series member P-T-D is not enabled in the outline.
Query Logging Overview

Query logging provides a way for Essbase administrators to track query patterns of an Essbase database. The query log file tracks queries performed against the database from Smart View, Report Writer, or Grid-API clients. Query logging can track generation or level numbers of members belonging to specific generations or levels. Query logging also offers the flexibility to exclude logging of certain dimensions and members belonging to certain generations or levels. Because the query log file output is an XML document, you can import the log file to any XML-enabled tool to view the log.

**Note:** You can import the .XML file to Microsoft Access or Microsoft Excel. However, you must first shut down the database.

For details about the query log file structure, refer to `querylog.dtd` in the `ARBORPATH/bin` directory.

Query logging is available for both block storage and aggregate storage databases.

To enable query logging, create a query log file and add to the file the settings that control how query logging is performed.

You must create a query log file for each database that requires query logging. If the query log file is missing or the QUERYLOG setting is off, query logging is disabled.

Query Logging Settings Procedure

The following steps explain how to create a query log settings file. To see a sample query log file, see Query Logging Sample File.
To enable query logging:

1 In the ARBORPATH\App\appname\dbname directory of Essbase, create a query log settings file.

   The settings file must be named dbname.cfg, where dbname matches the name of the database. For example, the query log settings file for Sample Basic is basic.cfg. For databases in Unicode-mode applications, the query log file must be encoded in UTF-8 and include the UTF-8 signature.

2 In the settings file, specify required and optional elements, using the syntax from the section Query Logging Syntax:

   - The dimension for which you want to log queries (QUERYLOG [dimension_name]).
   - Optional: The setting to log generation or level numbers for members of specified generations or levels in a dimension (QUERYLOG GENERATION generation-range or QUERYLOG LEVEL level-range).
   - Optional: The setting to exclude logging of members from specified generations or levels in a dimension (QUERYLOG NONE GENERATION generation-range or QUERYLOG NONE LEVEL level-range).
   - Optional: The location where the query log file is created (QUERYLOG LOGPATH path-expression).
   - Optional: The format of the log file output (QUERYLOG LOGFORMAT CLUSTER | TUPLE).
   - Optional: The size of the log file (QUERYLOG LOGFILESIZE n)
   - Optional: The size of all log files (QUERYLOG TOTALLOGFILESIZE n).
   - A setting to enable or disable query logging the next time the application starts (QUERYLOG ON | OFF).

3 Restart the database to accept the settings.

   Note: Restart after creating a file or changing any entries in a file.

4 After query logging is enabled, review the log entries in the query log file, dbname.qlg.

   For example, you can view the output of the log file to analyze how many times a certain member has been queried. You can use a UTF-8-enabled editor to view query log files for databases in Unicode-mode applications.

Query Log Settings File Syntax

The query log settings filename must be of the form dbname.cfg, where dbname represents the name of a database. The dbname.cfg file must be located in the ARBORPATH\App\appname\dbname directory of Essbase. The dbname.cfg file consists of the following syntax:

QUERYLOG [dimension_name]
QUERYLOG NONE GENERATION generation-range
QUERYLOG NONE LEVEL level-range
QUERYLOG GENERATION generation-range
QUERYLOG LEVEL level-range
QUERYLOG LOGPATH path-expression
QUERYLOG LOGFORMAT CLUSTER | TUPLE
QUERYLOG LOGFILESIZE n
QUERYLOG TOTALLOGFILESIZE n
QUERYLOG ON | OFF

<table>
<thead>
<tr>
<th>QUERYLOG Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>[dimension_name]</td>
<td>Identifies the dimension name to be tracked. The brackets around the dimension name are required. QUERYLOG [dimension_name] logs all members of a dimension. For example, QUERYLOG [Product] tracks all members of the Product dimension. Each dimension must be specified in a separate QUERYLOG [dimension_name] setting.</td>
</tr>
<tr>
<td>NONE GENERATION generation-range</td>
<td>Prevents tracking of members from the specified generation range. For example, QUERYLOG NONE GENERATION 2 excludes tracking of all members from generation 2 of the named dimension.</td>
</tr>
<tr>
<td>NONE LEVEL level-range</td>
<td>Prevents tracking of members from the specified level range. For example, QUERYLOG NONE LEVEL 0-2 excludes tracking of all members of levels 0, 1, and 2 of the named dimension.</td>
</tr>
<tr>
<td>GENERATION generation-range</td>
<td>Tracks members of the specified generation range by generation number, rather than by member name. For example, QUERYLOG GENERATION 5-7 logs members of generations 5, 6, and 7 of the named dimension by their generation number in the log file.</td>
</tr>
<tr>
<td>LEVEL level-range</td>
<td>Tracks members of the specified level range by level number, rather than by member name. For example, QUERYLOG LEVEL -3 logs members of levels 0, 1, 2, and 3 of the named dimension by their level number in the log file.</td>
</tr>
<tr>
<td>LOGPATH path-expression</td>
<td>Specifies the location of the output log file. The log file name is dbname00001.qlg; for example, basic00001.qlg. Examples of the log path are QUERYLOG LOGPATH /usr/local/Essbaselogs/ and QUERYLOG LOGPATH d:\Essbaselogs\querylogs. You must include a backslash \ (for Windows directories) or forward slash / (for UNIX directories) at the end of the path expression; otherwise, the query log file is not created. By default, the location for the log output file is the ARBOPATH\App\appname\dbname\ directory. If the LOGPATH path-expression setting is missing, the default is used. Essbase writes log information to the query log file after an application stops running.</td>
</tr>
<tr>
<td>LOGFORMAT CLUSTER</td>
<td>Specifies the format of the log output. CLUSTER and TUPLE provide the same log information, but display the information differently. CLUSTER provides information on how many members of a dimension were queried and lists queried members within their respective dimensions. TUPLE lists each queried member combination. By default, CLUSTER is the log format. Because the TUPLE format lists each member combination queried, TUPLE may have a greater impact on query performance than CLUSTER. See Sample Cluster Output for an example of a query log in cluster format. See Sample Tuple Output for an example of a query log in tuple format.</td>
</tr>
<tr>
<td>LOGFORMAT TUPLE</td>
<td></td>
</tr>
<tr>
<td>LOGFILESIZE n</td>
<td>Specifies the maximum size of an individual query log file in megabytes (MB). The minimum value is 1 MB. The maximum value is 2048 MB (2 GB). If the LOGFILESIZE setting is missing, then, by default, the query log file size is 1 MB. If an initial query log file size exceeds the specification, log information is added to a new query log file. Each time a new file is created, the filename is incremented by one.</td>
</tr>
<tr>
<td>TOTALLOGFILESIZE n</td>
<td>Specifies the maximum size of all query log files combined in megabytes (MB). The minimum value is 512 MB (1/2 GB). The maximum value is 4095 MB. If the TOTALLOGFILESIZE setting is missing, then, by default, the total query log file size is 1024 MB (1 GB). Query log files are created until the file size total exceeds the specified maximum. When the maximum is exceeded, a message is displayed and query logging automatically turns off.</td>
</tr>
<tr>
<td>ON</td>
<td>Specifies whether the query logging feature is turned on or off. All query log settings are ignored if this setting is OFF or missing. By default, the setting is OFF.</td>
</tr>
</tbody>
</table>

Generation-range and level-range values are represented in one of the following ways:
<table>
<thead>
<tr>
<th>Generation-Range or Level-Range Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>x</strong></td>
<td>A specific generation or level number. For example, QUERYLOG NONE GENERATION 2 excludes generation 2 from query logging.</td>
</tr>
<tr>
<td><strong>x-y</strong></td>
<td>All generations or levels inclusive of number x through number y. For example, QUERYLOG GENERATION 1-3 or QUERYLOG LEVEL 1-3 includes generation or level numbers 1, 2, and 3.</td>
</tr>
<tr>
<td><strong>-x</strong></td>
<td>For generation-range, all generations within the range 1 through x. For level-range, all levels within the range 0 through x. For example, QUERYLOG GENERATION -2 includes generations 1 and 2. QUERYLOG LEVEL -3 includes levels 0, 1, 2, and 3.</td>
</tr>
<tr>
<td><strong>x-</strong></td>
<td>For generation-range, all generations within the range from number x through the highest generation. For level-range, all levels within the range from number x through the highest level. For example, QUERYLOG Level 1- includes levels 1, 2, 3 and so on up to the highest level.</td>
</tr>
</tbody>
</table>

**Notes**

- When query logging is enabled, queries to the database may be slower. Performance depends on how many members are being tracked and the size of the query.

- If the settings file name does not match the name of the database or the settings file is located in a place other than the `\ARBORPATH\App\appname\dbname` directory, Essbase ignores query logging.

- If, in the settings, QUERYLOG ON is missing or if QUERYLOG OFF is set, query logging is disabled.

- If generation and level settings cause contradictions in the settings file, the following precedence rules apply:
  - generation numbers (highest priority)
  - level numbers
  - member names (lowest priority)

  For example, if a member belongs to both level 1 and generation 2 and the settings QUERYLOG GENERATION 2 and QUERYLOG NONE LEVEL 1 are in the settings file, the generation setting takes precedence, and members of generation 2 are logged by generation number.

**Tips**

- To view query log output easily, change the file extension `.QLG` to `.XML`, and then using the Internet Explorer or Netscape browser view the `.XML` file.

  **Note:** You can import the `.XML` file to Microsoft Access or Microsoft Excel. However, you must first shut down the database.

- If Essbase is not producing a query log file as expected, view the `dbname.log` file in the `\ARBORPATH\App\appname` directory to search for query log messages.
Query Logging Sample File

Note: # indicates a comment that describes a line of the settings file. Comments are not necessary to include in the actual query log settings file.

# Log the Product dimension
QUERYLOG [Product]
# Log the Market dimension
QUERYLOG [Market]
# Log members of generation 2 of Market by generation number
QUERYLOG GENERATION 2
# Display log output in cluster format
QUERYLOG LOGFORMAT CLUSTER
# Create log file in C:\QUERYLOG\
QUERYLOG LOGPATH C:\QUERYLOG\
# Start a new log file after an individual log file size reaches 2 MB
QUERYLOG LOGFILESIZE 2
# Turn off query logging after the total size of all log files reaches 1024 MB (1 GB)
QUERYLOG TOTALLOGFILESIZE 1024
# Enable query logging
QUERYLOG ON

Query Logging Sample Output

The following sample Query Log Output shows an example of how log settings look in a log file. In the example, the log settings show that all members of Product are logged and that members of generation 2 of Market are logged by generation number. The log format is cluster and the log path is C:\QUERYLOG\.

```xml
<?xml version="1.0" encoding="UTF-8" ?>
- <root>
  - <session>
    - <logsettings>
      - <dimensions>
        - <logdim name="Product">
        - <logdim name="Market">
          <spec>GENERATION 2</spec>
        </logdim>
      </dimensions>
    </logsettings>
    - <othersettings>
      <logformat>cluster</logformat>
      <logpath>C:\QUERYLOG\</logpath>
    </othersettings>
  </session>
</root>
```

Description

A query is a unit of retrieval from the user perspective. The way a user may perceive a query is different than how the server analyzes and executes a query. Even if a user performs a single
retrieval, in order for the server to efficiently execute the logical query, the server splits the query into a number of subqueries to execute. Therefore, a single retrieval from the user perspective may actually consist of several subqueries from the server perspective. These subqueries are reflected in the query log.

Sample Cluster Output

The following segment shows an example of how queries are logged in cluster format. The username is listed along with the query execution date and the start time of the query. Each cluster contains two dimension entries. The first cluster shows that members 100 and 200 of the Product dimension were queried. The second cluster shows that member 300 of Product and Generation 2 of Market were queried. The elapsed time to perform the query is also provided.

```xml
<query>
  <user>User1</user>
  <time>Tue Aug 13 12:29:49 2002</time>
  <subquery>
    <cluster size="2">
      <dim size="2">
        <member>100</member>
        <member>200</member>
      </dim>
      <dim size="1">
        <member>Market</member>
      </dim>
    </cluster>
  </subquery>
  <subquery>
    <cluster size="2">
      <dim size="1">
        <member>300</member>
      </dim>
      <dim size="2">
        <member>Market</member>
        <generation>2</generation>
      </dim>
    </cluster>
  </subquery>
  <elapsedtime>0.016 seconds</elapsedtime>
</query>
```

Sample Tuple Output

The following segment shows an example of how queries are logged in tuple format. The username is listed along with the query execution date and the start time of the query. Note that each member of Product is displayed with Market. Each possible member combination is displayed for a given query. The elapsed time to perform the query is also provided.

```xml
<query>
  <user>User1</user>
  <time>Tue Aug 13 12:28:14 2002</time>
  <subquery>
    <tuples>
      <tuple>
        <member>100</member>
        <member>Market</member>
      </tuple>
      <tuple>
        <member>200</member>
        <member>Market</member>
      </tuple>
    </tuples>
  </subquery>
  <elapsedtime>0.016 seconds</elapsedtime>
</query>
```
<tuples>
  <tuple>
    <member>200</member>
    <member>Market</member>
  </tuple>
</tuples>
</subquery>
<elapsedtime>0.02 seconds</elapsedtime>
</query>
Report Writer Commands

## Report Writer Overview

Report Writer is a text-based script language that you can use to report on data in multidimensional databases. You can combine Report Writer’s selection, layout, and formatting commands to build a variety of reports.

With the Report Writer, you can generate reports whose length or specialized format exceed the capabilities of some grid clients. You can use the Report Writer to:

- Define formatted reports on multidimensional data
- Export data from an Essbase database
- Produce free-form reports

To produce reports, Essbase provides several options:

- Use the Report Writer option in Essbase to select commands and options.
- Create a report script using the report editor or any text editor.
- Use Smart View or another grid client such as Oracle Hyperion Web Analysis.
- Execute a report script in MaxL or ESSCMD interactive or batch mode.

For an introduction to writing reports, see the *Oracle Essbase Database Administrator’s Guide*.

**Note:** Essbase uses double-precision math as supported by the C compiler on the corresponding platform. Floating point values exceeding the number of significant digits for that platform may result in rounded numbers.
Report Writer Syntax

This topic contains the following information:

- “Report Delimiters” on page 1252
- “Syntax Guidelines” on page 1252
- “Referencing Static Members” on page 1253

Report Delimiters

The < or {} delimiters are required for most Report Writer commands. If you do not use a delimiter, Report Writer assumes that the command name is a member name.

<table>
<thead>
<tr>
<th>Delimiter</th>
<th>Use in Report Writer:</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>{}</td>
<td>Encloses report formatting commands</td>
<td>(SUPFORMATS)</td>
</tr>
<tr>
<td>&lt;</td>
<td>Precedes layout and member sorting, selection, calculation, and some formatting commands</td>
<td>&lt;PAGE</td>
</tr>
</tbody>
</table>

Syntax Guidelines

- Separate commands with at least one space, tab, or new line. Report processing is not affected by extra blank lines, spaces, or tabs.
- Enter commands in either upper or lowercase. Commands are not case sensitive. If the database outline is case-sensitive, then the member names used in the report script must match the outline.
- To start report processing, enter the ! report output command (exclamation point or "bang"), or one or more consecutive numeric values. You can place one or more report scripts, each terminated by its own ! command, in the same report file.
- You can group more than one format command within a single set of curly braces. For example, these formats are synonyms:

  {UDATA SKIP}
  {UDATA} {SKIP}

- Enclose member names that contain spaces or the member name "Default" in double quotes; for example, "Cost of Goods Sold" "Default".
- If a formatting command is preceded by three or more of the characters ",","-","_," the Report Extractor assumes that the characters are extraneous underline characters and ignores them. For example, ===[SKIP 1]
- Use // (double slash) to indicate a comment. Everything on the line following a comment is ignored by the Report Writer. Each line of a comment must start with a double slash.
Referencing Static Members

You can enter static (non-changing) member names, such as Sales and COGS, directly into the report script. For static member names, use staticMbrDefinition syntax, as described below:

Command

A staticMbrDefinition specifies the member to select.

Syntax

mbrName [ mbrName ]

mbrName

Dimension or member name of member to specify. When specifying multiple member names, separate them with spaces. Enclose member names in double quotes if they contain spaces or consist of numbers. For example: "Cost of Goods Sold" or "100-10"

Description

A static member definition specifies a database outline member in a report specification. This definition does not automatically reflect changes to the database outline. If you change a member name in the database outline, you must manually update each report script associated with that outline.

Example

Year

Selects the member Year.
Sales "Cost_of_Goods_Sold"

Selects the members Sales and Cost_of_Goods_Sold.

Report Writer Command Groups

This section lists all Report Writer commands, grouped by command type. The command groups correspond to the steps of report design:

- “Report Layout Commands” on page 1254
- “Data Range Commands” on page 1254
- “Data Ordering Commands” on page 1254
- “Member Selection and Sorting Commands” on page 1254
- “Format Commands” on page 1255
- “Column or Row Calculation Commands” on page 1258
- “Member Names and Aliases” on page 1258
For a description of the stages of report design, see the *Oracle Essbase Database Administrator's Guide*.

**Report Layout Commands**

A report layout is composed of items that make up the columns and rows of a page. Report layout commands provide column, page, and row layout, and include two commands that override the default method for interpreting column dimension member lists. Report Writer provides the following page layout commands:

- **ASYM**
- **COLUMN**
- **PAGE**
- **ROW**
- **SYM**

**Data Range Commands**

Data range commands restrict the range of data selected for your reports. Report Writer provides the following data range commands:

- **BOTTOM**
- **RESTRICT**
- **TOP**

**Data Ordering Commands**

Data ordering commands order data in your reports. Report Writer provides the following ordering command:

**ORDERBY**

**Member Selection and Sorting Commands**

Member selection commands enhance your selection options using member relationships based on the database outline. The Report Writer provides the following selection and sorting commands:

- **ALLINSAMEDIM**
- **ALLSIBLINGS**
- **ANCESTORS**
- **ATTRIBUTE**
- **CHILDREN**

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Format Commands

These commands define the appearance of your data and your report. Each format command applies only to those output lines that follow the command.

- ACCON
- ACCOFF
- AFTER
- BEFORE
● BLOCKHEADERS
● BRACKETS
● COLHEADING
● COMMAS
● CURHEADING
● DECIMAL
● ENDHEADING
● EUROPEAN
● FEEDON
● FIXCOLUMNS
● FORMATCOLUMNS
● HEADING
● IMMHEADING
● INCEMPTYROWS
● INCFORMATS
● INCMASK
● INCMISSINGROWS
● INCZEROROWS
● INDENT
● INDENTGEN
● LMARGIN
● MASK
● MISSINGTEXT
● NAMESCOL
● NAMESON
● NAMENONTH
● NEWPAGE
● NOINDENTGEN
● NOPAGEONDIMENSION
● NOROWREPEAT
● NOSKIPONDIMENSION
● NOUNAMEONDIM
● ORDER
● OUTALTNAMES
● OUTMBRNAMES

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• OUTPUT
• PAGEHEADING
• PAGELength
• PAGEnDimension
• PYRAMIDHEADERS
• QUOTEMBRNAMES
• RENAME
• ROWREPEAT
• SCALE
• SETCENTER
• SINGLECOLUMN
• SKIP
• SKIPONDIMENSION
• STARTHEADING
• SUPALL
• SUPBRACKETS
• SUPCOLHEADING
• SUPCOMMAS
• SUPCURHEADING
• SUPEMPTYROWS
• SUPEUROPEAN
• SUPFEED
• SUPFORMATS
• SUPHEADING
• SUPMASK
• SUPMISSINGROWS
• SUPNAMES
• SUPOUTPUT
• SUPPAGEHEADING
• SUPSHARE
• SUPSHAREOFF
• SUPZEROROWS
• TABDELIMIT
• TEXT
• UCHARACTERS
Column or Row Calculation Commands

These commands perform column and row calculations that let you create extra columns or rows in a report (not defined as part of the database outline) based on selected data members. Enclose all calculation commands and their arguments in curly { } braces.

- CALCULATE COLUMN
- CALCULATE ROW
- CLEARALLROWCALC
- CLEARROWCALC
- OFFCOLCALCS
- OFFROWCALCS
- ONCOLCALCS
- ONROWCALCS
- PRINTROW
- REMOVECOLCALCS
- SAVEANDOUTPUT
- SAVEROW
- SETROWOP

Member Names and Aliases

These commands allow you to set aliases or alternate names that can make reports easier to read and help your reader focus on the data values rather than the meanings of member (page, column, and row) names.

- REPALIAS
- REPLIASMBR
- REPMBR
- REPMBRALIAS
You can use aliases to display members in a report:

- By alias alone. For example, display the name as Diet Cola rather than its corresponding member name 100-20.
- As a combination of member name and alias. For example, display the name as Diet Cola 100-20.

In addition, these report commands also control the display of member names and aliases.

- `ALLINSAMEDIM`
- `CHILDREN`
- `DESCENDANTS`
- `GEN`
- `LEV`
- `SORTASC`
- `SORTALTNAMES`
- `SORTDESC`
- `SORTGEN`
- `SORTLEVEL`
- `SORTNONE`

**Examples of Report Scripts**

This section includes report scripts demonstrating report procedures and formats frequently required in business settings.

The samples use both the Demo Basic and Sample Basic databases provided with Essbase Server. The scripts for these examples are available in `\ARBORPATH\App\Demo\Basic` or `\ARBORPATH\App\Sample\Basic`. They are also displayed in Enterprise View in Administration Services, if you chose to install sample applications during installation.

The sample reports demonstrate the following techniques:

- “Sample 1: Creating a Different Format for Each Page” on page 1260
For fundamental information about reports and report scripts, see "Understanding Report Script Basics" in the Oracle Essbase Database Administrator's Guide. For detailed information about using Report Writer commands to write reports and reports scripts, see the "Developing Report Scripts" section.

**Sample 1: Creating a Different Format for Each Page**

This sample report contains data for Actual Sales. Each report page shows a different Product. The report lists products on the same page until the maximum page length is reached. To place each Product on a separate page, you must use the PAGEONDIMENSION format command, as shown in “Sample 2: Handling Missing Values” on page 1261.

Because none of the cities in South sell Stereo or Compact_Disc, the data values indicate #MISSING. You can represent missing values by suppressing the row or substituting a replacement text string, such as N/A. See “Sample 2: Handling Missing Values” on page 1261 for an example of substituting page breaks and labels for missing values.

<table>
<thead>
<tr>
<th>Sales</th>
<th>Actual</th>
<th>Stereo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qtr1</td>
<td>Qtr2</td>
<td>Qtr3</td>
</tr>
</tbody>
</table>

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### Sales Actual CompactDisc

<table>
<thead>
<tr>
<th></th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
</tr>
</thead>
<tbody>
<tr>
<td>East</td>
<td>10,293</td>
<td>9,702</td>
<td>9,965</td>
<td>11,792</td>
</tr>
<tr>
<td>West</td>
<td>14,321</td>
<td>14,016</td>
<td>14,328</td>
<td>17,247</td>
</tr>
<tr>
<td>South</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
<tr>
<td>Market</td>
<td>24,614</td>
<td>23,718</td>
<td>24,293</td>
<td>29,039</td>
</tr>
</tbody>
</table>

### Sales Actual Audio

<table>
<thead>
<tr>
<th></th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
</tr>
</thead>
<tbody>
<tr>
<td>East</td>
<td>18,132</td>
<td>17,635</td>
<td>17,638</td>
<td>21,836</td>
</tr>
<tr>
<td>West</td>
<td>25,954</td>
<td>25,207</td>
<td>25,627</td>
<td>31,265</td>
</tr>
<tr>
<td>South</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
<tr>
<td>Market</td>
<td>44,086</td>
<td>42,842</td>
<td>43,265</td>
<td>53,101</td>
</tr>
</tbody>
</table>

Use the following script to create Sample 1:

```
<PAGE (Accounts, Scenario, Product)
Sales
Actual
<IDESCENDANTS Audio

   <COLUMN (Year)
   <CHILDREN Year

<ROW(Market)
<ICHILDREN Market

! The ! report output command is required to generate the report.```

Because the IDESCENDANTS selection command is used for Audio, the report selects all three members. Only a single member is selected from the other page dimensions, Sales and Actual. As a result, the script creates three report pages. They display as one long report page unless you use the PAGEONDIMENSION format command, as shown in “Sample 2: Handling Missing Values” on page 1261.

This report script, ACTSALES.REP, is available in the `\ARBORPATH\App\Demo\Basic` directory, and is displayed in Enterprise View in Administration Services.

### Sample 2: Handling Missing Values

This report has the same layout and member selection as Sample 1, and shows you how to use page breaks and labels for missing values.
Use the following script to create Sample 2:

```plaintext
<PAGE (Accounts, Scenario, Product)
Sales
Actual
<IDESCENDANTS Product
{ PAGEONDIMENSION Product }
{ MISSINGTEXT "N/A" }

<COLUMN (Year)
<CHILDREN Year

<ROW(Market)
<ICHILDREN Market
!

The PAGEONDIMENSION format command creates a page break whenever a member from
the specified dimension changes. Because the report selects eight Product members, the report
is eight pages long.

The MISSINGTEXT format command substitutes any strings enclosed within double quotes
into the #MISSING string. To suppress missing values, use the SUPMISSINGROWS command.

You can also combine format commands within one set of braces:

{ PAGEONDIMENSION Product MISSINGTEXT "N/A" }

This report script, MISSLBL.REP, is available in the \ARBORPATH\App\Demo\Basic
directory, and is displayed in Enterprise View in Administration Services.
```
Sample 3: Nesting Columns

Each page produced by this report sample contains Sales information for a given Market. The report has two groups of columns across the page. The Actual and Budget members are the nested column group below Year members.

Note that the Actual and Budget members are on the same line in the report. You can put multiple commands on one line, but report commands are easier to read if they are spread out.

<table>
<thead>
<tr>
<th>Sales East</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Qtr1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual</td>
<td>Budget</td>
<td>Actual</td>
<td>Budget</td>
</tr>
<tr>
<td>Stereo</td>
<td>2,788</td>
<td>2,950</td>
<td>2,482</td>
<td>2,700</td>
</tr>
<tr>
<td>Audio</td>
<td>6,338</td>
<td>6,400</td>
<td>5,767</td>
<td>5,950</td>
</tr>
<tr>
<td>Television</td>
<td>5,244</td>
<td>4,800</td>
<td>4,200</td>
<td>4,300</td>
</tr>
<tr>
<td>VCR</td>
<td>4,311</td>
<td>4,200</td>
<td>3,734</td>
<td>3,700</td>
</tr>
<tr>
<td>Camera</td>
<td>2,656</td>
<td>2,850</td>
<td>2,525</td>
<td>2,670</td>
</tr>
<tr>
<td>Visual</td>
<td>12,211</td>
<td>11,850</td>
<td>10,459</td>
<td>10,670</td>
</tr>
<tr>
<td>Product</td>
<td>18,549</td>
<td>18,250</td>
<td>16,226</td>
<td>16,620</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sales West</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Qtr1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual</td>
<td>Budget</td>
<td>Actual</td>
<td>Budget</td>
</tr>
<tr>
<td>Stereo</td>
<td>4,102</td>
<td>4,000</td>
<td>3,723</td>
<td>3,600</td>
</tr>
<tr>
<td>Compact_Disc</td>
<td>4,886</td>
<td>4,700</td>
<td>4,647</td>
<td>4,400</td>
</tr>
<tr>
<td>Audio</td>
<td>8,988</td>
<td>8,700</td>
<td>8,370</td>
<td>8,000</td>
</tr>
<tr>
<td>Television</td>
<td>5,206</td>
<td>5,100</td>
<td>4,640</td>
<td>4,600</td>
</tr>
<tr>
<td>VCR</td>
<td>4,670</td>
<td>4,650</td>
<td>4,667</td>
<td>4,200</td>
</tr>
<tr>
<td>Camera</td>
<td>3,815</td>
<td>4,050</td>
<td>3,463</td>
<td>3,750</td>
</tr>
<tr>
<td>Visual</td>
<td>13,691</td>
<td>13,800</td>
<td>12,770</td>
<td>12,550</td>
</tr>
<tr>
<td>Product</td>
<td>22,679</td>
<td>22,500</td>
<td>21,140</td>
<td>20,550</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sales South</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Qtr1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual</td>
<td>Budget</td>
<td>Actual</td>
<td>Budget</td>
</tr>
<tr>
<td>Television</td>
<td>3,137</td>
<td>3,400</td>
<td>2,929</td>
<td>3,100</td>
</tr>
<tr>
<td>VCR</td>
<td>3,225</td>
<td>3,400</td>
<td>3,206</td>
<td>3,100</td>
</tr>
<tr>
<td>Camera</td>
<td>2,306</td>
<td>2,400</td>
<td>2,167</td>
<td>2,400</td>
</tr>
<tr>
<td>Visual</td>
<td>8,668</td>
<td>9,200</td>
<td>8,302</td>
<td>8,600</td>
</tr>
<tr>
<td>Product</td>
<td>8,668</td>
<td>9,200</td>
<td>8,302</td>
<td>8,600</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sales Market</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Qtr1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual</td>
<td>Budget</td>
<td>Actual</td>
<td>Budget</td>
</tr>
<tr>
<td>Television</td>
<td>3,137</td>
<td>3,400</td>
<td>2,929</td>
<td>3,100</td>
</tr>
<tr>
<td>VCR</td>
<td>3,225</td>
<td>3,400</td>
<td>3,206</td>
<td>3,100</td>
</tr>
<tr>
<td>Camera</td>
<td>2,306</td>
<td>2,400</td>
<td>2,167</td>
<td>2,400</td>
</tr>
<tr>
<td>Visual</td>
<td>8,668</td>
<td>9,200</td>
<td>8,302</td>
<td>8,600</td>
</tr>
<tr>
<td>Product</td>
<td>8,668</td>
<td>9,200</td>
<td>8,302</td>
<td>8,600</td>
</tr>
</tbody>
</table>
Use the following script to create Sample 3:

```
<PAGE (Accounts, Market)
Sales
<ICHILDREN Market
{ PAGEONDIMENSION Market }
{ SUPMISSINGROWS }
<COLUMN (Year, Scenario)
<ICHILDREN Qtr1
  Actual Budget
<ROW(Product)
<DESCENDANTS Product
```

The report selects four Markets because the `<ICHILDREN` command is applied to Market. Only Sales is selected from the other page dimension, so the report has four pages.

For the South, all the rows of Product data are not displayed. Recall that the cities in the South do not sell every Product. The report uses the SUPMISSINGROWS format command to suppress the output of any member rows with all missing values.

This report script, COLGROUP.REP, is available in the `<ARBORPATH\App\Demo\Basic` directory, and is displayed in Enterprise View in Administration Services.

**Sample 4: Grouping Rows**

Each page of this report contains Sales information for a given Market. The report page contains members for both Product and Year as groups of rows down the page. This script creates a four-page report because the page dimensions and their member selections are the same as in “Sample 3: Nesting Columns” on page 1263. The row and column layout is switched because the row and column dimensions are different. This section shows a representative part of the output.

```
<table>
<thead>
<tr>
<th>Sales East</th>
<th>Actual</th>
<th>Budget</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stereo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Qtr1</td>
<td>7,839</td>
<td>8,350</td>
<td>(511)</td>
</tr>
<tr>
<td>Qtr2</td>
<td>7,933</td>
<td>8,150</td>
<td>(217)</td>
</tr>
<tr>
<td>Qtr3</td>
<td>7,673</td>
<td>8,350</td>
<td>(677)</td>
</tr>
<tr>
<td>Qtr4</td>
<td>10,044</td>
<td>10,400</td>
<td>(356)</td>
</tr>
<tr>
<td>Year</td>
<td>33,489</td>
<td>35,250</td>
<td>(1,761)</td>
</tr>
<tr>
<td>Compact_Disc</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Qtr1</td>
<td>10,293</td>
<td>9,950</td>
<td>343</td>
</tr>
<tr>
<td>Qtr2</td>
<td>9,702</td>
<td>9,750</td>
<td>(48)</td>
</tr>
<tr>
<td>Qtr3</td>
<td>9,965</td>
<td>10,050</td>
<td>(85)</td>
</tr>
<tr>
<td>Qtr4</td>
<td>11,792</td>
<td>12,550</td>
<td>(758)</td>
</tr>
<tr>
<td>Year</td>
<td>41,752</td>
<td>42,300</td>
<td>(548)</td>
</tr>
</tbody>
</table>
```
<table>
<thead>
<tr>
<th>Product</th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio</td>
<td>18,132</td>
<td>18,300</td>
<td>(168)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>17,635</td>
<td>17,900</td>
<td>(265)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>17,638</td>
<td>18,400</td>
<td>(762)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>21,836</td>
<td>22,950</td>
<td>(1,114)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>75,241</td>
<td>77,550</td>
<td>(2,309)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Television</td>
<td>13,404</td>
<td>13,400</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>12,115</td>
<td>12,900</td>
<td>(785)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15,014</td>
<td>14,200</td>
<td>814</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>17,861</td>
<td>17,300</td>
<td>561</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>58,394</td>
<td>57,800</td>
<td>594</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VCR</td>
<td>11,721</td>
<td>11,600</td>
<td>121</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10,999</td>
<td>11,100</td>
<td>(101)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13,217</td>
<td>11,800</td>
<td>1,417</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>14,386</td>
<td>14,900</td>
<td>(514)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>50,323</td>
<td>49,400</td>
<td>923</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Camera</td>
<td>7,722</td>
<td>8,190</td>
<td>(468)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7,581</td>
<td>8,210</td>
<td>(629)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8,181</td>
<td>8,630</td>
<td>(449)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10,853</td>
<td>11,550</td>
<td>(697)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>34,337</td>
<td>36,580</td>
<td>(2,243)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visual</td>
<td>32,847</td>
<td>33,190</td>
<td>(343)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>30,695</td>
<td>32,210</td>
<td>(1,515)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>36,412</td>
<td>34,630</td>
<td>1,782</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>43,100</td>
<td>43,750</td>
<td>(650)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>143,054</td>
<td>143,780</td>
<td>(726)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product</td>
<td>50,979</td>
<td>51,490</td>
<td>(511)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>48,330</td>
<td>50,110</td>
<td>(1,780)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>54,050</td>
<td>53,030</td>
<td>1,020</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>64,936</td>
<td>66,700</td>
<td>(1,764)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>218,295</td>
<td>221,330</td>
<td>(3,035)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sales West

<table>
<thead>
<tr>
<th>Product</th>
<th>Actual</th>
<th>Budget</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stereo</td>
<td>11,633</td>
<td>11,200</td>
<td>433</td>
</tr>
<tr>
<td></td>
<td>11,191</td>
<td>11,050</td>
<td>141</td>
</tr>
<tr>
<td></td>
<td>11,299</td>
<td>11,650</td>
<td>(351)</td>
</tr>
<tr>
<td></td>
<td>14,018</td>
<td>14,500</td>
<td>(482)</td>
</tr>
<tr>
<td></td>
<td>48,141</td>
<td>48,400</td>
<td>(259)</td>
</tr>
<tr>
<td>Compact_Disc</td>
<td>14,321</td>
<td>13,500</td>
<td>821</td>
</tr>
<tr>
<td></td>
<td>14,016</td>
<td>13,500</td>
<td>516</td>
</tr>
<tr>
<td></td>
<td>14,328</td>
<td>14,300</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>17,247</td>
<td>16,700</td>
<td>547</td>
</tr>
<tr>
<td></td>
<td>59,912</td>
<td>58,000</td>
<td>1,912</td>
</tr>
<tr>
<td>Audio</td>
<td>25,954</td>
<td>24,700</td>
<td>1,254</td>
</tr>
<tr>
<td></td>
<td>25,207</td>
<td>24,550</td>
<td>657</td>
</tr>
<tr>
<td></td>
<td>25,627</td>
<td>25,950</td>
<td>(323)</td>
</tr>
<tr>
<td></td>
<td>31,265</td>
<td>31,200</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td>108,053</td>
<td>106,400</td>
<td>1,653</td>
</tr>
<tr>
<td>Television</td>
<td>14,629</td>
<td>14,300</td>
<td>329</td>
</tr>
<tr>
<td></td>
<td>14,486</td>
<td>13,800</td>
<td>686</td>
</tr>
<tr>
<td></td>
<td>14,580</td>
<td>14,000</td>
<td>580</td>
</tr>
<tr>
<td></td>
<td>20,814</td>
<td>19,400</td>
<td>1,414</td>
</tr>
<tr>
<td></td>
<td>64,509</td>
<td>61,500</td>
<td>3,009</td>
</tr>
<tr>
<td>VCR</td>
<td>13,854</td>
<td>13,050</td>
<td>804</td>
</tr>
<tr>
<td></td>
<td>13,156</td>
<td>12,600</td>
<td>556</td>
</tr>
<tr>
<td></td>
<td>15,030</td>
<td>13,750</td>
<td>1,280</td>
</tr>
<tr>
<td>Quarter</td>
<td>Actual</td>
<td>Budget</td>
<td>Variance</td>
</tr>
<tr>
<td>---------</td>
<td>--------</td>
<td>--------</td>
<td>----------</td>
</tr>
<tr>
<td>Qtr4</td>
<td>18,723</td>
<td>17,950</td>
<td>773</td>
</tr>
<tr>
<td>Year</td>
<td>60,763</td>
<td>57,350</td>
<td>3,413</td>
</tr>
</tbody>
</table>

| Camera  | Qtr1    | 10,756 | 11,550 | (794) |
|         | Qtr2    | 10,573 | 11,400 | (827) |
|         | Qtr3    | 10,735 | 11,550 | (815) |
|         | Qtr4    | 13,906 | 15,000 | (1,094) |
| Year    | 45,970  | 49,500 | (3,530) |

| Visual  | Qtr1    | 39,239 | 38,900 | 339 |
|         | Qtr2    | 38,215 | 37,800 | 415 |
|         | Qtr3    | 40,345 | 39,300 | 1,045 |
|         | Qtr4    | 53,443 | 52,350 | 1,093 |
| Year    | 171,242 | 168,350 | 2,892 |

| Product | Qtr1    | 65,193 | 63,600 | 1,593 |
|         | Qtr2    | 63,422 | 62,350 | 1,072 |
|         | Qtr3    | 65,972 | 65,250 | 722 |
|         | Qtr4    | 84,708 | 83,550 | 1,158 |
| Year    | 279,295 | 274,750 | 4,545 |

Sales South

| Vegetable  | Qtr1    | 8,881 | 9,600 | (719) |
|            | Qtr2    | 8,627 | 9,300 | (673) |
|            | Qtr3    | 8,674 | 9,300 | (626) |
|            | Qtr4    | 12,919 | 12,600 | 319 |
| Year       | 39,101  | 40,800 | (1,699) |

| VCR       | Qtr1    | 9,551 | 9,600 | (49) |
|           | Qtr2    | 9,049 | 9,300 | (251) |
|           | Qtr3    | 9,998 | 10,000 | (2) |
|           | Qtr4    | 12,923 | 13,600 | (677) |
| Year      | 41,521  | 42,500 | (979) |

| Camera    | Qtr1    | 6,641 | 7,200 | (559) |
|           | Qtr2    | 6,765 | 7,350 | (585) |
|           | Qtr3    | 6,798 | 7,500 | (702) |
|           | Qtr4    | 9,486 | 10,200 | (714) |
| Year      | 29,690  | 32,250 | (2,560) |

| Visual    | Qtr1    | 25,073 | 26,400 | (1,327) |
|           | Qtr2    | 24,441 | 25,950 | (1,509) |
|           | Qtr3    | 25,470 | 26,800 | (1,330) |
|           | Qtr4    | 35,328 | 36,400 | (1,072) |
| Year      | 110,312 | 115,550 | (5,238) |

Sales Market

<p>| Stereo    | Qtr1    | 19,472 | 19,550 | (78) |
|           | Qtr2    | 19,124 | 19,200 | (76) |
|           | Qtr3    | 18,972 | 20,000 | (1,028) |</p>
<table>
<thead>
<tr>
<th>Product</th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>24,614</td>
<td>23,718</td>
<td>24,293</td>
<td>29,039</td>
<td>101,664</td>
</tr>
<tr>
<td>Qtr1</td>
<td>24,062</td>
<td>24,900</td>
<td>24,350</td>
<td>29,250</td>
<td>183,950</td>
</tr>
<tr>
<td>Qtr2</td>
<td>23,450</td>
<td>23,250</td>
<td>24,350</td>
<td>29,250</td>
<td>183,950</td>
</tr>
<tr>
<td>Qtr3</td>
<td>23,450</td>
<td>23,250</td>
<td>24,350</td>
<td>29,250</td>
<td>183,950</td>
</tr>
<tr>
<td>Qtr4</td>
<td>23,450</td>
<td>23,250</td>
<td>24,350</td>
<td>29,250</td>
<td>183,950</td>
</tr>
</tbody>
</table>

Use the following script to create Sample 4:

```
<PAGE (Accounts, Market)
Sales
<ICHILDREN Market
{ PAGEONDIMENSION Market }
{ SUPMISSINGROWS }

  <COLUMN (Scenario)
  <CHILDREN Scenario

  <ROW(Product3, Year)
  <ICHILDREN Year
  <IDESCENDANTS Product

This report script, ROWGROUP.REP, is available in the \ARBORPATH\App\Demo\Basic directory, and is displayed in Enterprise View in Administration Services.
Sample 5: Reporting on Different Combinations of Data

Each page represents a different combination of Product, Market, and Budget data. The total number of pages is determined by the number of Market and Product members. This section shows a representative part of the output.

Some data values have four decimal places. The number of decimal places, by default, is output to the true number of decimal values of the data cell. “Sample 6: Formatting Different Combinations of Data” on page 1269 uses the DECIMAL format command to define a specific number of places.

The member selection commands select three Product members and fourteen Market members, producing a 42-page report. The number of report pages is determined by multiplying the number of members selected from each page dimension.

<table>
<thead>
<tr>
<th>Budget Audio New_York</th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>6,400</td>
<td>6,400</td>
<td>6,700</td>
<td>8,350</td>
<td>27,850</td>
</tr>
<tr>
<td>Cost_of_Goods_Sold</td>
<td>3,012</td>
<td>3,012</td>
<td>3,146</td>
<td>3,973</td>
<td>13,143</td>
</tr>
<tr>
<td>Margin</td>
<td>3,388</td>
<td>3,388</td>
<td>3,554</td>
<td>4,377</td>
<td>14,707</td>
</tr>
<tr>
<td>Marketing</td>
<td>525</td>
<td>515</td>
<td>475</td>
<td>555</td>
<td>2,070</td>
</tr>
<tr>
<td>Payroll</td>
<td>1,950</td>
<td>1,950</td>
<td>1,950</td>
<td>1,950</td>
<td>7,800</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total_Expenses</td>
<td>2,475</td>
<td>2,465</td>
<td>2,425</td>
<td>2,505</td>
<td>9,870</td>
</tr>
<tr>
<td>Profit</td>
<td>913</td>
<td>923</td>
<td>1,129</td>
<td>1,872</td>
<td>4,837</td>
</tr>
<tr>
<td>Profit_%</td>
<td>14</td>
<td>14</td>
<td>17</td>
<td>22</td>
<td>17</td>
</tr>
<tr>
<td>Margin_%</td>
<td>53</td>
<td>53</td>
<td>53</td>
<td>52</td>
<td>53</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Budget Audio Boston</th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>6,050</td>
<td>5,750</td>
<td>5,900</td>
<td>7,350</td>
<td>25,050</td>
</tr>
<tr>
<td>Cost_of_Goods_Sold</td>
<td>2,829</td>
<td>2,695</td>
<td>2,762</td>
<td>3,413</td>
<td>11,699</td>
</tr>
<tr>
<td>Margin</td>
<td>3,221</td>
<td>3,055</td>
<td>3,138</td>
<td>3,937</td>
<td>13,351</td>
</tr>
<tr>
<td>Marketing</td>
<td>410</td>
<td>400</td>
<td>400</td>
<td>520</td>
<td>1,730</td>
</tr>
<tr>
<td>Payroll</td>
<td>1,590</td>
<td>1,590</td>
<td>1,590</td>
<td>1,590</td>
<td>6,360</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total_Expenses</td>
<td>2,000</td>
<td>1,990</td>
<td>1,990</td>
<td>2,110</td>
<td>8,090</td>
</tr>
<tr>
<td>Profit</td>
<td>1,221</td>
<td>1,065</td>
<td>1,148</td>
<td>1,827</td>
<td>5,261</td>
</tr>
<tr>
<td>Profit_%</td>
<td>20</td>
<td>19</td>
<td>19</td>
<td>25</td>
<td>21</td>
</tr>
<tr>
<td>Margin_%</td>
<td>53</td>
<td>53</td>
<td>53</td>
<td>54</td>
<td>53</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Budget Product Market</th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>141,490</td>
<td>138,410</td>
<td>145,080</td>
<td>186,650</td>
<td>611,630</td>
</tr>
<tr>
<td>Cost_of_Goods_Sold</td>
<td>55,860</td>
<td>54,579</td>
<td>57,379</td>
<td>73,276</td>
<td>241,093</td>
</tr>
<tr>
<td>Margin</td>
<td>85,630</td>
<td>83,831</td>
<td>87,702</td>
<td>113,374</td>
<td>370,537</td>
</tr>
<tr>
<td>Marketing</td>
<td>10,555</td>
<td>10,680</td>
<td>10,780</td>
<td>13,915</td>
<td>45,930</td>
</tr>
<tr>
<td>Payroll</td>
<td>43,234</td>
<td>43,248</td>
<td>43,248</td>
<td>43,248</td>
<td>172,978</td>
</tr>
<tr>
<td>Accounts</td>
<td>Qtr1</td>
<td>Qtr2</td>
<td>Qtr3</td>
<td>Qtr4</td>
<td>Year</td>
</tr>
<tr>
<td>---------------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>Sales</td>
<td>6,400</td>
<td>6,400</td>
<td>6,700</td>
<td>9,870</td>
<td></td>
</tr>
<tr>
<td>Cost_of_Goods_Sold</td>
<td>3,012</td>
<td>3,012</td>
<td>3,146</td>
<td>3,973</td>
<td>13,143</td>
</tr>
<tr>
<td>Margin</td>
<td>3,388</td>
<td>3,388</td>
<td>3,554</td>
<td>4,377</td>
<td>14,707</td>
</tr>
<tr>
<td>Marketing</td>
<td>525</td>
<td>515</td>
<td>475</td>
<td>555</td>
<td>2,070</td>
</tr>
<tr>
<td>Payroll</td>
<td>1,950</td>
<td>1,950</td>
<td>1,950</td>
<td>1,950</td>
<td>7,800</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total_Expenses</td>
<td>2,475</td>
<td>2,465</td>
<td>2,425</td>
<td>2,505</td>
<td>9,870</td>
</tr>
</tbody>
</table>

**Sample 6: Formatting Different Combinations of Data**

This report uses the same layout and member selection as Sample 5, and adds more formatting in the report body. Note the use of line formatting.
Use the following script to create Sample 6:

```
<PAGE (Scenario, Product, Market)
{ PAGEONDIMENSION Product PAGEONDIMENSION Market }
Budget
<ICHILDREN Product
<IDESCENDANTS Market
  <COLUMN (Year)
   <ICHILDREN Year
   <ROW(Accounts)
   { SUPBRACKETS DECIMAL 0 }
Sales
Cost_of_Goods_Sold
{ UDATA "-" } //line formatting command
Margin
{ SKIP }
Marketing
Payroll
Miscellaneous
{ UDATA "-" } //line formatting command
Total_Expenses
{ SKIP }
Profit
{ UDATA DECIMAL 2 } //line formatting command
Profit_%
Margin_%
```

Format commands apply to members that follow the commands. The report begins each new page with the formats in place at the end of the previous report page. For example, if a report page ends with two decimal places, the following page begins with two decimal places. This report demonstrates the use of several important format commands:

- **DECIMAL**-The script for this report specifies the DECIMAL 0 format command before the Sales member.
- **SUPBRACKETS**-By default, negative numbers are enclosed in brackets, ( ). The SUPBRACKETS format command causes negative numbers to be output with a minus sign.
- **UDATA**-The UDATA command places underline characters under data columns. The character is specified within double quotes. The default is a double underline.
This report script, COMBO2.REP, is available in the `\ARBORPATH\App\Demo\Basic` directory, and is displayed in Enterprise View in Administration Services.

**Sample 7: Using Aliases**

This report outputs members in the middle of a page and uses aliases or alternate names. The default row member indentation is turned off.

### Stereo Market

<table>
<thead>
<tr>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual</td>
<td>Budget</td>
</tr>
<tr>
<td>Actual</td>
<td>Budget</td>
</tr>
<tr>
<td>=========</td>
<td>=========</td>
</tr>
<tr>
<td>24,062</td>
<td>24,900</td>
</tr>
<tr>
<td>13,937</td>
<td>14,442</td>
</tr>
<tr>
<td>10,125</td>
<td>10,458</td>
</tr>
<tr>
<td>1,438</td>
<td>1,600</td>
</tr>
<tr>
<td>7,110</td>
<td>6,840</td>
</tr>
<tr>
<td>-200</td>
<td>0</td>
</tr>
<tr>
<td>8,348</td>
<td>8,440</td>
</tr>
<tr>
<td>1,777</td>
<td>2,018</td>
</tr>
<tr>
<td>7.39</td>
<td>8.10</td>
</tr>
<tr>
<td>42.08</td>
<td>42.00</td>
</tr>
</tbody>
</table>

### CompactDisc Market

<table>
<thead>
<tr>
<th>Qtr4</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual</td>
<td>Budget</td>
</tr>
<tr>
<td>Actual</td>
<td>Budget</td>
</tr>
<tr>
<td>=========</td>
<td>=========</td>
</tr>
<tr>
<td>29,039</td>
<td>29,250</td>
</tr>
<tr>
<td>10,830</td>
<td>11,115</td>
</tr>
<tr>
<td>18,209</td>
<td>18,135</td>
</tr>
<tr>
<td>1,669</td>
<td>1,780</td>
</tr>
<tr>
<td>5,721</td>
<td>5,415</td>
</tr>
<tr>
<td>-226</td>
<td>0</td>
</tr>
<tr>
<td>7,164</td>
<td>7,195</td>
</tr>
<tr>
<td>11,045</td>
<td>10,940</td>
</tr>
<tr>
<td>38.04</td>
<td>37.40</td>
</tr>
<tr>
<td>62.71</td>
<td>62.00</td>
</tr>
</tbody>
</table>

Use the following script to create Sample 7:

```
<PAGE (Product, Market)
{ PAGEONDIMENSION Product }
{ PAGEONDIMENSION Market }
```
The SYM command forces the report to output symmetric column groups. The default is to display two columns—one for Qtr4 Actual and one for Year Budget. Because the report calls for Actual and Budget under both Qtr4 and Year, the SYM command is required. Alternatively, repeat the Actual and Budget names under Qtr4 and Year.

The OUTALTNAMES format command causes the report to use aliases or alternate names instead of member names.

The NOINDENTGEN format command causes row members to not be indented. By default, members are indented two spaces for each level.

The ORDER command moves specified output columns to new locations. The row name is considered column 0.

The FIXCOLUMNS format command restricts the number of output columns. Reports often require both ORDER and FIXCOLUMNS. You can use ORDER to remove unwanted columns, and FIXCOLUMNS to stop these columns from displaying after the report columns.

This report script, MIDDLE.REP, is available in the \ARBORPATH\App\Demo\Basic directory, and is displayed in Enterprise View in Administration Services.

Sample 8: Creating Custom Headings and % Characters

This report displays custom headings and percent sign (%) characters after each data value. This section shows a representative part of the output.

Prepared by: Admin The Electronics Club Page: 1 09/21/01

Profit_% Actual Stereo

Jan  Feb  Mar  Apr  May  Jun

1272
<table>
<thead>
<tr>
<th></th>
<th>Profit_% Actual Compact Disc</th>
<th>Profit_% Actual Audio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jan</td>
<td>Feb</td>
</tr>
<tr>
<td></td>
<td>======</td>
<td>======</td>
</tr>
<tr>
<td>New_York</td>
<td>32.51%</td>
<td>29.95%</td>
</tr>
<tr>
<td>Boston</td>
<td>33.42%</td>
<td>27.92%</td>
</tr>
<tr>
<td>Chicago</td>
<td>34.29%</td>
<td>30.48%</td>
</tr>
<tr>
<td>East</td>
<td>33.35%</td>
<td>29.50%</td>
</tr>
<tr>
<td>San_Francisco</td>
<td>37.77%</td>
<td>35.02%</td>
</tr>
<tr>
<td>Seattle</td>
<td>31.65%</td>
<td>30.22%</td>
</tr>
<tr>
<td>Denver</td>
<td>18.36%</td>
<td>17.25%</td>
</tr>
<tr>
<td>Los_Angeles</td>
<td>20.32%</td>
<td>17.38%</td>
</tr>
<tr>
<td>West</td>
<td>19.75%</td>
<td>17.53%</td>
</tr>
<tr>
<td>Dallas</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>Jan</td>
<td>Feb</td>
</tr>
<tr>
<td>---------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td>New_Year</td>
<td>22.71%</td>
<td>21.43%</td>
</tr>
<tr>
<td>Boston</td>
<td>24.98%</td>
<td>23.25%</td>
</tr>
<tr>
<td>Chicago</td>
<td>22.01%</td>
<td>17.94%</td>
</tr>
<tr>
<td>East</td>
<td>23.19%</td>
<td>20.84%</td>
</tr>
<tr>
<td>San_Francisco</td>
<td>23.71%</td>
<td>20.60%</td>
</tr>
<tr>
<td>Seattle</td>
<td>21.06%</td>
<td>21.05%</td>
</tr>
<tr>
<td>Denver</td>
<td>21.61%</td>
<td>16.01%</td>
</tr>
<tr>
<td>Los_Angeles</td>
<td>17.54%</td>
<td>15.51%</td>
</tr>
<tr>
<td>West</td>
<td>21.02%</td>
<td>18.35%</td>
</tr>
<tr>
<td>Dallas</td>
<td>15.67%</td>
<td>16.50%</td>
</tr>
<tr>
<td>Houston</td>
<td>20.01%</td>
<td>20.29%</td>
</tr>
<tr>
<td>Phoenix</td>
<td>20.01%</td>
<td>16.12%</td>
</tr>
<tr>
<td>South</td>
<td>18.39%</td>
<td>17.53%</td>
</tr>
<tr>
<td>Market</td>
<td>21.37%</td>
<td>19.09%</td>
</tr>
</tbody>
</table>

Use the following script to create Sample 8:

```xml
<PAGE (Accounts, Scenario, Product)

{ PAGEONDIMENSION Product }   // New page when Product changes
Profit_%
Actual

<COLUMN (Year)
Jan Feb Mar Apr May Jun

<ROW(Market)

{ STARTHEADING
TEXT 1 "Prepared by:
14 "*USERNAME"
C "The Electronics Club"
65 "*PAGESTRING"

TEXT 65 "*DATE"
SKIP
ENDHEADING }

{ Decimal 2 AFTER "%" SUPBRACKETS }   // Place % at end and
// suppress bracket
<IDESCENDANTS Market

Each data value in the report has a percent sign, %. This label is defined with the AFTER "%" format command. You can specify any character within quotation marks.

1274```
This report has custom headings at the top of each page. All format commands specified between the STARTHEADING and ENDHEADING format commands are displayed at the top of each report page.

TEXT format commands define text labels. The report generator provides dynamic text with *options. This report uses the following options:

- *USERNAME, which outputs the user name used when connecting to Essbase Server
- *PAGESTRING, which outputs the current page number of the report
- C, which centers the report title

This report script, HEADING1.REP, is available in the \ARBORPATH\App\Demo\Basic directory, and is displayed in Enterprise View in Administration Services.

**Sample 9: Creating Custom Page Headings**

This report builds on “Sample 8: Creating Custom Headings and % Characters” on page 1272 by adding custom page headings. By default, page dimension members are output at the top center of a report page. This section shows a representative part of the output.

Prepared by :admin The Electronics Club Page: 1
Actual Profit by Product 12/12/01

Product: Stereo

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>1.43%</td>
<td>-10.00%</td>
<td>-3.51%</td>
<td>-2.22%</td>
<td>1.14%</td>
<td>-6.18%</td>
</tr>
<tr>
<td>Boston</td>
<td>-0.34%</td>
<td>-2.51%</td>
<td>-4.44%</td>
<td>-4.89%</td>
<td>-7.02%</td>
<td>-13.15%</td>
</tr>
<tr>
<td>Chicago</td>
<td>-0.65%</td>
<td>-0.72%</td>
<td>-2.28%</td>
<td>-3.53%</td>
<td>-6.33%</td>
<td>-10.79%</td>
</tr>
<tr>
<td>San Francisco</td>
<td>1.43%</td>
<td>-1.87%</td>
<td>4.42%</td>
<td>2.15%</td>
<td>-1.26%</td>
<td>0.66%</td>
</tr>
<tr>
<td>Seattle</td>
<td>0.95%</td>
<td>-5.66%</td>
<td>1.42%</td>
<td>-6.82%</td>
<td>-11.47%</td>
<td>-12.34%</td>
</tr>
<tr>
<td>Denver</td>
<td>3.03%</td>
<td>-1.11%</td>
<td>-5.88%</td>
<td>-6.52%</td>
<td>-5.17%</td>
<td>-13.83%</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>-1.50%</td>
<td>-3.94%</td>
<td>-2.86%</td>
<td>-3.29%</td>
<td>3.12%</td>
<td>-2.51%</td>
</tr>
<tr>
<td>Dallas</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
<tr>
<td>Houston</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
<tr>
<td>Phoenix</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
<tr>
<td>East</td>
<td>0.18%</td>
<td>-4.47%</td>
<td>-3.39%</td>
<td>-3.41%</td>
<td>-3.60%</td>
<td>-9.70%</td>
</tr>
<tr>
<td>West</td>
<td>0.98%</td>
<td>-2.95%</td>
<td>-0.13%</td>
<td>-2.81%</td>
<td>-2.62%</td>
<td>-5.61%</td>
</tr>
<tr>
<td>South</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
<tr>
<td>Market</td>
<td>0.65%</td>
<td>-3.56%</td>
<td>-1.44%</td>
<td>-3.06%</td>
<td>-3.03%</td>
<td>-7.29%</td>
</tr>
</tbody>
</table>

Prepared by :admin The Electronics Club Page: 2
Actual Profit by Product 12/12/01

Product: Compact Disc

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>32.51%</td>
<td>29.95%</td>
<td>35.30%</td>
<td>32.70%</td>
<td>30.45%</td>
<td>31.73%</td>
</tr>
<tr>
<td>Boston</td>
<td>33.42%</td>
<td>27.92%</td>
<td>33.98%</td>
<td>30.74%</td>
<td>27.45%</td>
<td>30.85%</td>
</tr>
<tr>
<td>Chicago</td>
<td>34.29%</td>
<td>30.48%</td>
<td>26.33%</td>
<td>28.83%</td>
<td>28.11%</td>
<td>33.76%</td>
</tr>
<tr>
<td>San Francisco</td>
<td>37.77%</td>
<td>35.02%</td>
<td>33.41%</td>
<td>33.23%</td>
<td>35.32%</td>
<td>37.95%</td>
</tr>
<tr>
<td>Seattle</td>
<td>40.41%</td>
<td>38.33%</td>
<td>38.89%</td>
<td>37.06%</td>
<td>37.01%</td>
<td>38.29%</td>
</tr>
<tr>
<td>Denver</td>
<td>31.93%</td>
<td>32.10%</td>
<td>34.82%</td>
<td>29.15%</td>
<td>32.71%</td>
<td>30.85%</td>
</tr>
<tr>
<td>City</td>
<td>Jan</td>
<td>Feb</td>
<td>Mar</td>
<td>Apr</td>
<td>May</td>
<td>Jun</td>
</tr>
<tr>
<td>---------------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>New York</td>
<td>22.71%</td>
<td>21.43%</td>
<td>13.11%</td>
<td>10.54%</td>
<td>9.73%</td>
<td>13.16%</td>
</tr>
<tr>
<td>Boston</td>
<td>24.98%</td>
<td>23.25%</td>
<td>19.95%</td>
<td>18.00%</td>
<td>17.03%</td>
<td>18.62%</td>
</tr>
<tr>
<td>Chicago</td>
<td>22.01%</td>
<td>17.94%</td>
<td>18.14%</td>
<td>15.45%</td>
<td>18.70%</td>
<td>16.01%</td>
</tr>
<tr>
<td>San Francisco</td>
<td>23.71%</td>
<td>20.60%</td>
<td>21.93%</td>
<td>20.45%</td>
<td>21.44%</td>
<td>19.98%</td>
</tr>
<tr>
<td>Seattle</td>
<td>21.06%</td>
<td>21.05%</td>
<td>21.24%</td>
<td>19.00%</td>
<td>21.72%</td>
<td>15.13%</td>
</tr>
<tr>
<td>Denver</td>
<td>21.61%</td>
<td>16.01%</td>
<td>19.79%</td>
<td>14.81%</td>
<td>20.66%</td>
<td>13.89%</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>17.54%</td>
<td>15.51%</td>
<td>17.03%</td>
<td>14.33%</td>
<td>17.59%</td>
<td>16.09%</td>
</tr>
<tr>
<td>Dallas</td>
<td>15.67%</td>
<td>16.50%</td>
<td>15.32%</td>
<td>13.93%</td>
<td>20.36%</td>
<td>15.49%</td>
</tr>
<tr>
<td>Houston</td>
<td>20.01%</td>
<td>20.29%</td>
<td>20.62%</td>
<td>15.87%</td>
<td>23.60%</td>
<td>12.38%</td>
</tr>
<tr>
<td>Phoenix</td>
<td>20.01%</td>
<td>16.12%</td>
<td>17.18%</td>
<td>16.50%</td>
<td>21.39%</td>
<td>15.22%</td>
</tr>
<tr>
<td>East</td>
<td>23.19%</td>
<td>20.84%</td>
<td>16.89%</td>
<td>14.42%</td>
<td>14.94%</td>
<td>15.78%</td>
</tr>
<tr>
<td>West</td>
<td>21.02%</td>
<td>18.35%</td>
<td>19.99%</td>
<td>17.26%</td>
<td>20.30%</td>
<td>16.61%</td>
</tr>
<tr>
<td>South</td>
<td>18.39%</td>
<td>17.53%</td>
<td>17.59%</td>
<td>15.36%</td>
<td>21.66%</td>
<td>14.46%</td>
</tr>
<tr>
<td>Market</td>
<td>21.37%</td>
<td>19.09%</td>
<td>18.46%</td>
<td>15.92%</td>
<td>18.67%</td>
<td>15.93%</td>
</tr>
</tbody>
</table>

Use the following script to create Sample 9:

```sql
<PAGE (Accounts, Scenario, Product)
<DESCRIPTANTS Product
<SORTLEVEL
{ PAGEONDIMENSION Product } }
{ STARTHEADING
TEXT 1 "Prepared by:"
14 "**USERNAME"
C "The Electronics Club"
65 "**PAGESTRING"
SUPPAGEHEADING
UNDERLINECHAR ""
TEXT C "Actual Profit by Product"
65 "**DATE"
TEXT 1 "Product:"
10 "**PAGEHDR 3"
SKIP
ENDHEADING }
Profit_%
Actual

<COLUMN (Year)
Jan Feb Mar Apr May Jun
<ROW (Market) }
( DECIMAL 2 AFTERT "%" SUPBRACKETS UNDERSCORECHAR ""
) ( INDENTGEN 1 )
```
The SUPPAGEHEADING format command suppresses the default page headings from output. The *PAGEHDR command customizes the location of page member labels. The Sample 9 script uses page heading number 3, Product because this is the third page dimension.

You may have also noticed that member names do not have underscores. The UNDERSCORECHAR format command blanks out underscores.

Another difference is the underlining of column headings. The UNDERLINECHAR format command causes the underlining to character to change to the character in quotes.

The report rows are also sorted according to their levels in the database outline. Sort commands, such as SORTLEVEL, do not affect individual members selected in reports. Instead, these commands work in conjunction with member selection commands.

Note: You can use only one sort command in a report.

Sample 9 reverses the indentation of levels from previous reports. The INDENTGEN command indents members to the specified number of characters.

This report script, HEADING2.REP, is available in the \ARBORPATH\App\Demo\Basic directory, and is displayed in Enterprise View in Administration Services.

**Sample 10: Using Formulas**

Column calculation formulas manipulate the column value of a particular row or a constant. In this report sample, each % column represents the quarterly values as a percent of Sales for the respective quarter. In addition, the Avg column represents an average value for the two quarters.

<table>
<thead>
<tr>
<th>Actual</th>
<th>Product</th>
<th>Market</th>
<th>Qtr1</th>
<th>%</th>
<th>Qtr2</th>
<th>%</th>
<th>Avg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>141,245</td>
<td>100.00</td>
<td>136,193</td>
<td>100.00</td>
<td>138,719</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost_of_Goods_Sold</td>
<td>58,104</td>
<td>41.14</td>
<td>56,281</td>
<td>41.32</td>
<td>57,193</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Margin</td>
<td>83,141</td>
<td>58.86</td>
<td>79,912</td>
<td>58.68</td>
<td>81,527</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marketing</td>
<td>11,211</td>
<td>7.94</td>
<td>11,302</td>
<td>8.30</td>
<td>11,257</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Payroll</td>
<td>43,817</td>
<td>31.02</td>
<td>43,827</td>
<td>32.18</td>
<td>43,822</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>302</td>
<td>0.21</td>
<td>1,859</td>
<td>1.36</td>
<td>1,081</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total_Expenses</td>
<td>55,330</td>
<td>39.17</td>
<td>56,988</td>
<td>41.84</td>
<td>56,159</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Profit</td>
<td>27,811</td>
<td>19.69</td>
<td>22,924</td>
<td>16.83</td>
<td>25,368</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Profit_%</td>
<td>20</td>
<td>0.01</td>
<td>17</td>
<td>0.01</td>
<td>18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Margin_%</td>
<td>59</td>
<td>0.04</td>
<td>59</td>
<td>0.04</td>
<td>59</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Use the following script to create Sample 10:

```plaintext
// This report performs column calculations based on values in a report row.

<PAGE (Scenario, Product, Market)
```
Actual

<COLUMN (Year)
Qtr1 Qtr2
{ DECIMAL 2 3 4 }
{ NAMEWIDTH 22 WIDTH 7 3 4 }
{ ORDER 0 1 3 2 4 5 }

<ROW (Accounts)
{ SAVEROW } Sales
!

{ CALCULATE COLUMN "%" = 1 % "Sales" 1 }
{ CALCULATE COLUMN "% " = 2 % "Sales" 2 }
{ CALCULATE COLUMN "Avg" = 1 + 2 / 2. }

<DESCENDANTS Accounts
!

Note: You can include comments in the report by preceding the text with // . The Report Extractor ignores everything that follows the double slash. You can use comments to explain report processing.

The SAVEROW command reserves space for a row member that the CALCULATE COLUMN command calculates. In this case, the calculation affects SALES. The ! is required after the member name.

The CALCULATE COLUMN command allows column numbers, row names, or constants in formulas. You can read the first calculation this way: "% equals column 1 as a percent of Sales in column 1."

Each calculated column label must be unique. Note how the second calculated column label has a blank space after the % sign.

To specify a constant, define a number followed by a period. You can use a constant in either a column or row calculation. The last column calculation takes the sum of columns 1 and 2 and divides by the value 2. This formula is interpreted as (1+2)/2, not 1 + (2/2.).

As noted in "Sample 7: Using Aliases" on page 1271, the ORDER command arranges columns in the specified order. By default, calculated columns are added to the end of existing columns retrieved from the database. In this example, columns 0-2 are automatically retrieved, based on selected members. Columns 3-5 are the calculated columns. The ORDER command applies to both retrieved and calculated columns.

This report script, COLCALC1.REP, is available in the \ARBORPATH\App\Demo\Basic directory, and is displayed in Enterprise View in Administration Services.

Sample 11: Placing Two-Page Layouts on the Same Page

This sample report has two different page layouts on the same page.
### Year Profit_% Actual

<table>
<thead>
<tr>
<th></th>
<th>East</th>
<th>West</th>
<th>South</th>
<th>Market</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stereo</td>
<td>-0.52%</td>
<td>1.91%</td>
<td>0.00%</td>
<td>0.91%</td>
</tr>
<tr>
<td>Compact_Disc</td>
<td>32.60%</td>
<td>36.00%</td>
<td>0.00%</td>
<td>34.60%</td>
</tr>
<tr>
<td>Audio</td>
<td>17.86%</td>
<td>20.81%</td>
<td>0.00%</td>
<td>19.60%</td>
</tr>
<tr>
<td>Television</td>
<td>20.40%</td>
<td>16.57%</td>
<td>13.50%</td>
<td>17.21%</td>
</tr>
<tr>
<td>VCR</td>
<td>30.81%</td>
<td>32.43%</td>
<td>33.70%</td>
<td>32.24%</td>
</tr>
<tr>
<td>Camera</td>
<td>16.66%</td>
<td>21.66%</td>
<td>17.83%</td>
<td>19.07%</td>
</tr>
<tr>
<td>Visual</td>
<td>23.16%</td>
<td>23.56%</td>
<td>22.27%</td>
<td>23.09%</td>
</tr>
<tr>
<td>Product</td>
<td>21.34%</td>
<td>22.50%</td>
<td>22.27%</td>
<td>22.04%</td>
</tr>
</tbody>
</table>

### Sales Actual Product

<table>
<thead>
<tr>
<th>Product</th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>New_York</td>
<td>$18,631</td>
<td>$17,681</td>
<td>$19,923</td>
<td>$24,403</td>
<td>$80,638</td>
</tr>
<tr>
<td>Boston</td>
<td>$15,812</td>
<td>$15,050</td>
<td>$16,716</td>
<td>$19,159</td>
<td>$66,737</td>
</tr>
<tr>
<td>Chicago</td>
<td>$16,536</td>
<td>$15,599</td>
<td>$17,411</td>
<td>$21,374</td>
<td>$70,920</td>
</tr>
<tr>
<td>East</td>
<td>$50,979</td>
<td>$48,330</td>
<td>$54,050</td>
<td>$64,936</td>
<td>$218,295</td>
</tr>
<tr>
<td>San_Francisco</td>
<td>$19,761</td>
<td>$19,019</td>
<td>$20,722</td>
<td>$24,807</td>
<td>$84,309</td>
</tr>
<tr>
<td>Seattle</td>
<td>$13,766</td>
<td>$13,546</td>
<td>$14,204</td>
<td>$19,034</td>
<td>$60,550</td>
</tr>
<tr>
<td>Denver</td>
<td>$13,800</td>
<td>$13,588</td>
<td>$13,838</td>
<td>$18,232</td>
<td>$59,458</td>
</tr>
<tr>
<td>Los_Angeles</td>
<td>$17,866</td>
<td>$17,269</td>
<td>$17,208</td>
<td>$22,635</td>
<td>$74,978</td>
</tr>
<tr>
<td>West</td>
<td>$65,193</td>
<td>$63,422</td>
<td>$65,972</td>
<td>$84,708</td>
<td>$279,295</td>
</tr>
<tr>
<td>Dallas</td>
<td>$ 9,226</td>
<td>$ 9,175</td>
<td>$ 9,481</td>
<td>$12,700</td>
<td>$40,582</td>
</tr>
<tr>
<td>Houston</td>
<td>$ 7,690</td>
<td>$ 7,363</td>
<td>$ 7,646</td>
<td>$10,785</td>
<td>$33,484</td>
</tr>
<tr>
<td>Phoenix</td>
<td>$ 8,157</td>
<td>$ 7,903</td>
<td>$ 8,343</td>
<td>$11,843</td>
<td>$36,246</td>
</tr>
<tr>
<td>South</td>
<td>$25,073</td>
<td>$24,441</td>
<td>$25,470</td>
<td>$35,328</td>
<td>$110,312</td>
</tr>
<tr>
<td>Market</td>
<td>$141,245</td>
<td>$136,193</td>
<td>$145,492</td>
<td>$184,972</td>
<td>$607,902</td>
</tr>
</tbody>
</table>

Use the following script to create Sample 11:

```xml
<br /> <PAGE (Year, Accounts, Scenario)>

  <COLUMN (Market)
    <ICHILDREN Market

  <ROW(Product)
  <IDESCENDANTS Product

  Actual
  ( DECIMAL 2 WIDTH 10 SUPBRACKETS AFTER "\%" )

  Profit_\%
  
  !

<PAGE (Accounts, Scenario, Product)

  Actual
  Sales
  Product

  <COLUMN(Year)
    <ICHILDREN Year

  <ROW(Market)
```
In a single report, you can select multiple dimension layouts and members. To define a multiple layout report, define reports as you normally do. Separate the commands with exclamation marks as shown above. Whenever the column, row, or page dimensions change between ! output commands, new headings are automatically generated to match the new layout.

The BEFORE format command places a character in front of data values. The AFTER format command turns off the percent signs from the first report layout.

his report script, 2LAYOUTS.REP, is available in the \ARBORPATH\App\Demo\Basic directory, and is displayed in Enterprise View in Administration Services.

### Sample 12: Formatting for Data Export

This sample creates a report with a member name in each column. This format is required when you export Essbase data to another product, such as an SQL database, with a flat file.

<table>
<thead>
<tr>
<th>Location</th>
<th>Region</th>
<th>Category</th>
<th>Sales</th>
<th>Cost of Goods Sold</th>
<th>Margin</th>
<th>Payroll</th>
<th>Miscellaneous</th>
<th>Profit</th>
<th>Margin %</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>Stereo</td>
<td>Sales</td>
<td>1000.0</td>
<td>950.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Stereo</td>
<td>Cost of Goods Sold</td>
<td>580.0</td>
<td>551.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Stereo</td>
<td>Margin</td>
<td>420.0</td>
<td>399.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Stereo</td>
<td>Marketing</td>
<td>80.0</td>
<td>80.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Stereo</td>
<td>Payroll</td>
<td>340.0</td>
<td>340.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Stereo</td>
<td>Miscellaneous</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Stereo</td>
<td>Total Expenses</td>
<td>420.0</td>
<td>420.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Stereo</td>
<td>Profit</td>
<td>0.0</td>
<td>-21.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Stereo</td>
<td>Profit %</td>
<td>0.0</td>
<td>-2.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Stereo</td>
<td>Margin %</td>
<td>42.0</td>
<td>42.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Compact Disc</td>
<td>Sales</td>
<td>1200.0</td>
<td>1150.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Compact Disc</td>
<td>Cost of Goods Sold</td>
<td>456.0</td>
<td>437.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Compact Disc</td>
<td>Margin</td>
<td>744.0</td>
<td>713.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Compact Disc</td>
<td>Marketing</td>
<td>95.0</td>
<td>95.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Compact Disc</td>
<td>Payroll</td>
<td>310.0</td>
<td>310.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Compact Disc</td>
<td>Miscellaneous</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Compact Disc</td>
<td>Total Expenses</td>
<td>405.0</td>
<td>405.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Compact Disc</td>
<td>Profit</td>
<td>339.0</td>
<td>308.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Compact Disc</td>
<td>Profit %</td>
<td>28.3</td>
<td>26.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Compact Disc</td>
<td>Margin %</td>
<td>62.0</td>
<td>62.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Audio</td>
<td>Sales</td>
<td>2200.0</td>
<td>2100.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Audio</td>
<td>Cost of Goods Sold</td>
<td>1036.0</td>
<td>988.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Audio</td>
<td>Margin</td>
<td>1164.0</td>
<td>1112.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Audio</td>
<td>Marketing</td>
<td>175.0</td>
<td>175.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Audio</td>
<td>Payroll</td>
<td>650.0</td>
<td>650.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Audio</td>
<td>Miscellaneous</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Audio</td>
<td>Total Expenses</td>
<td>825.0</td>
<td>825.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Audio</td>
<td>Profit</td>
<td>339.0</td>
<td>287.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Audio</td>
<td>Profit %</td>
<td>15.4</td>
<td>13.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Audio</td>
<td>Margin %</td>
<td>52.9</td>
<td>53.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Television</td>
<td>Sales</td>
<td>1800.0</td>
<td>1600.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Use the following script to create Sample 12:

```xml
<PAGE{Scenario}
```
The ROWREPEAT command produces rows of data that have the member names repeated for each row dimension.

The SUPFEED command suppresses page feeds. A page feed automatically occurs when the report output reaches the default page length of 66 rows, unless you enter the PAGELENGTH command to change this setting. When a large flat file is created, you can use this command to prevent page breaks (blank rows) from being displayed in the report every time output reaches a logical page length.

This report script, FLAT2SQL.REP, is available in the \ARBORPATH\App\Demo\Basic directory, and is displayed in Enterprise View in Administration Services.

**Sample 13: Creating Asymmetric Columns**

Asymmetric columns make up this report. Typically, a report contains symmetric columns. That is, when multiple dimensions are displayed across the page as column groups, each level of nested columns has the same number of members nested below. Because Actual has only one nested column, Jan, and Budget has three nested columns, this report is considered asymmetric.

Some rows in the report use names other than the member names from the database. In addition to allowing aliases, as in “Sample 7: Using Aliases” on page 1271, you can rename a row name in the reporter.

<table>
<thead>
<tr>
<th>Product</th>
<th>Market</th>
<th>Actual Jan</th>
<th>Budget Jan</th>
<th>Budget Feb</th>
<th>Budget Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td></td>
<td>49,896</td>
<td>49,950</td>
<td>45,770</td>
<td>45,770</td>
</tr>
<tr>
<td>Cost of Goods</td>
<td></td>
<td>20,827</td>
<td>19,755</td>
<td>18,058</td>
<td>18,047</td>
</tr>
<tr>
<td>Gross Margin</td>
<td></td>
<td>29,069</td>
<td>30,196</td>
<td>27,712</td>
<td>27,723</td>
</tr>
</tbody>
</table>
Use the following script to create Sample 13:

```
<PAGE (Product, Market)
  <COLUMN (Scenario, Year)
    Actual   Budget Budget Budget
    Jan      Jan    Feb    Mar
  </COLUMN>
  <ROW (Accounts)
    { RENAME "Revenue" } Sales
    { RENAME "Cost of Goods" } Cost_of_Goods_Sold
    { RENAME "Gross Margin" } Margin

    { SKIP UNDERSCORECHAR " " }
  </CHILDREN Total_Expenses

  { SKIP }
  Profit
!
```

To create an asymmetric report, you must specify the member name of each column. Because the report output has two column groupings, Scenario and Year, you must specify a member from each dimension for each column. If you do not specify each column member, the resulting report format is symmetric.

The RENAME command redefines a member name when the report is output. Use the RENAME command when you do not want to use an alias table.

This report script, `ASYMM.REP`, is available in the `\ARBORPATH\App\Demo\Basic` directory, and is displayed in Enterprise View in Administration Services.

### Sample 14: Calculating Columns

This section contains two examples of CALCULATE COLUMN scripts and the reports they produce. CALCULATE COLUMN supports standard mathematical operations.

- “Sample 14-A: Basic Calculated Columns” on page 1282
- “Sample 14-B: Asymmetric Columns” on page 1283

### Sample 14-A: Basic Calculated Columns

```
<table>
<thead>
<tr>
<th></th>
<th>Actual</th>
<th>Budget</th>
<th>Var</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jan</td>
<td>Feb</td>
<td>Mar</td>
</tr>
<tr>
<td></td>
<td>Jan</td>
<td>Feb</td>
<td>Mar</td>
</tr>
</tbody>
</table>
```

1282
Use the following script to create Sample 14-A:

```xml
<PAGE(Market)
  East
    <COLUMN(Scenario, Year)
      Actual Budget
      Jan Feb Mar
      { CALCULATE COLUMN "Qtr1" = 2 : 4
        CALCULATE COLUMN "Q1" = 5 : 7
        CALCULATE COLUMN "Var~Q1" = 8 - 9
      }
      ORDER 2,3,4,8,0,1,5,6,7,9
      WIDTH 7 WIDTH 10 0 1
    }
    <ROW(Product, Accounts)
    <ICHILDREN Visual
    <CHILDREN Accounts
    !

This report script, COLCALC2.REP, is available in the \ARBORPATH\App\Demo\Basic directory, and is displayed in Enterprise View in Administration Services.

Sample 14-B: Asymmetric Columns

The following sample has two regular columns defined in asymmetric mode. For an explanation, including an example, of the use of asymmetric columns, see “Sample 13: Creating Asymmetric Columns” on page 1281.

<table>
<thead>
<tr>
<th>Product</th>
<th>Actual</th>
<th>Actual</th>
<th>% Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>Jan</td>
<td>% Sales</td>
<td></td>
</tr>
<tr>
<td>========</td>
<td>=======</td>
<td>=======</td>
<td></td>
</tr>
<tr>
<td>1,200 Television Payroll</td>
<td>1,236</td>
<td>25%</td>
<td></td>
</tr>
<tr>
<td>440 Marketing</td>
<td>365</td>
<td>9%</td>
<td></td>
</tr>
<tr>
<td>1,240 Profit</td>
<td>1,295</td>
<td>26%</td>
<td></td>
</tr>
<tr>
<td>4,800 Sales</td>
<td>5,244</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>1,030 VCR Payroll</td>
<td>1,044</td>
<td>25%</td>
<td></td>
</tr>
<tr>
<td>150 Marketing</td>
<td>156</td>
<td>4%</td>
<td></td>
</tr>
</tbody>
</table>
Use the following script to create Sample 14-B:

```xml
<PAGE(Market)

East

<COLUMN(Scenario, Year)
  Budget  Actual
  Jan     Jan

{ ORDER 2,0,1,3,4 WIDTH 12 0 1 NOINDENTGEN AFTER "\%" 4
  SKIPDIMENSION Product LMARGIN 10 }

<ROW(Product, Accounts)

{ CALCULATE ROW "Sales" OFF }
{ CALCULATE COLUMN "Actual-\% Sales" = 2 \% "Sales" 2 }

<ICHILDREN Visual
{ SAVEROW } Sales
  Payroll
  Marketing
  Profit
<DUPLICATE Sales

!
```

This report script, COLCALC3.REP, is available in the `\ARBORPATH\App\Demo\Basic` directory, and is displayed in Enterprise View in Administration Services.

**Sample 15: Calculating Rows**

The sample reports in this section demonstrate CALCULATE ROW scripts and the reports they produce.

- “Sample 15-A: Basic Calculated Row” on page 1284
- “Sample 15-B: Calculated Rows and Missing Relationships” on page 1285
- “Sample 15-C: Rows of Averages” on page 1286

**Sample 15-A: Basic Calculated Row**

This sample report demonstrates the basic form of the CALCULATE ROW command.
### Audio Actual Sales

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>======</td>
<td>======</td>
<td>======</td>
</tr>
<tr>
<td>Boston</td>
<td>1,985</td>
<td>1,801</td>
<td>1,954</td>
</tr>
<tr>
<td>New_York</td>
<td>2,310</td>
<td>2,082</td>
<td>2,259</td>
</tr>
<tr>
<td>Chicago</td>
<td>2,043</td>
<td>1,084</td>
<td>1,814</td>
</tr>
<tr>
<td><strong>Total Sales</strong></td>
<td><strong>6,338</strong></td>
<td><strong>5,767</strong></td>
<td><strong>6,027</strong></td>
</tr>
<tr>
<td><strong>Avg Sales</strong></td>
<td><strong>2,113</strong></td>
<td><strong>1,922</strong></td>
<td><strong>2,009</strong></td>
</tr>
</tbody>
</table>

Use the following script to create Sample 15-A:

```plaintext
{ CALCULATE ROW "Total Sales" }  //create new calculated row
Boston
New_York
Chicago

{ SKIP
  CALCULATE ROW "Avg Sales" = "Total Sales" /3
  PRINTROW "Total Sales"
  PRINTROW "Avg Sales" }
```

This report script, ROWCALC1.REP, is available in the \ARBORPATH\App\Demo\Basic directory, and is displayed in Enterprise View in Administration Services.

## Sample 15-B: Calculated Rows and Missing Relationships

This sample report is a simple summary of information in a North/South grouping, which is not part of the database outline. When relationships that you need for reporting are missing in the database outline, often the best solution is to use calculated rows (or columns).

### Budget Payroll

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>======</td>
<td>======</td>
<td>======</td>
</tr>
<tr>
<td><strong>Northern Cities</strong></td>
<td><strong>==</strong></td>
<td><strong>==</strong></td>
<td><strong>==</strong></td>
</tr>
<tr>
<td>New_York</td>
<td>1,940</td>
<td>1,930</td>
<td>1,930</td>
</tr>
<tr>
<td>Boston</td>
<td>1,610</td>
<td>1,610</td>
<td>1,610</td>
</tr>
<tr>
<td>Chicago</td>
<td>1,630</td>
<td>1,630</td>
<td>1,630</td>
</tr>
<tr>
<td>San_Francisco</td>
<td>1,815</td>
<td>1,815</td>
<td>1,815</td>
</tr>
<tr>
<td>Seattle</td>
<td>1,415</td>
<td>1,409</td>
<td>1,409</td>
</tr>
<tr>
<td><strong>Southern Cities</strong></td>
<td><strong>==</strong></td>
<td><strong>==</strong></td>
<td><strong>==</strong></td>
</tr>
<tr>
<td>Denver</td>
<td>1,499</td>
<td>1,499</td>
<td>1,499</td>
</tr>
<tr>
<td>Los_Angeles</td>
<td>1,757</td>
<td>1,787</td>
<td>1,787</td>
</tr>
<tr>
<td>Dallas</td>
<td>1,002</td>
<td>1,002</td>
<td>1,002</td>
</tr>
<tr>
<td>Phoenix</td>
<td>900</td>
<td>900</td>
<td>900</td>
</tr>
<tr>
<td>Houston</td>
<td>834</td>
<td>834</td>
<td>834</td>
</tr>
</tbody>
</table>
Use the following script to create Sample 15-B:

```
// Declare Calculated Rows to Sum Southern and Northern Cities
{ CALCULATE ROW "Total Southern" OFF

// initially, set operation to OFF
  CALCULATE ROW "Total Northern" OFF )

<PAGE(Product,Scenario,Accounts)
{ RENAME "" } Product             // all products, so blank out
    // the Product Label
Budget
Payroll
    <COLUMN(Year)
      Jan  Feb  Mar

<ROW(Market)                      // Northern Cities
{ SETROWOP "Total Northern" +   // Accumulate for Northern
  SKIP 3
  IMMHEADING  // Put out heading now so text
  // will go after it
  Text 0 "Northern Cities" UCHARACTERS
}

New_York Boston  Chicago San_Francisco Seattle

//Southern Cities

{ SETROWOP "Total Southern" + } // Accumulate for Southern
{ SETROWOP "Total Northern" OFF } // Stop Accumulation for Northern

{ SKIP Text 0 "Southern Cities" UCHARACTERS }

Denver  Los_Angeles Dallas  Phoenix Houston

{ SKIP
  PRINTROW "Total Northern"       // output calculated rows
  PRINTROW "Total Southern"
} !
```

This report script, ROWCALC2.REP, is available in the `\ARBORPATH\App\Demo\Basic` directory, and is displayed in Enterprise View in Administration Services.

**Sample 15-C: Rows of Averages**

This report sample restricts columns during calculation to average rows that contain partly numbers and percentages. The report must calculate the total regional average percentages using previously calculated rows that contain the total sales for the region. Also, the report must compute (for averaging) a count of regions. The number of regions is set as a constant in the
If this number changes, the report definition must be modified. If a count of regions is not computed, a hard-to-notice error can result.

Actual Total Sales for the 3 Video Products in Qtr1: 36,914  35,126  25,119
Budget Total Sales for the 3 Video Products in Qtr1: 37,300  34,250  26,940

<table>
<thead>
<tr>
<th>Qtr1</th>
<th>Television</th>
<th>VCR</th>
<th>Camera</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Profit</td>
<td>Profit_%</td>
<td>Profit</td>
</tr>
<tr>
<td>Budget</td>
<td>=1,020</td>
<td>20.40%</td>
<td>=1,382</td>
</tr>
<tr>
<td>Actual</td>
<td>=847</td>
<td>17.66%</td>
<td>=1,243</td>
</tr>
<tr>
<td>Boston</td>
<td>Budget</td>
<td>=1,020</td>
<td>24.88%</td>
</tr>
<tr>
<td>Actual</td>
<td>=1,405</td>
<td>33.48%</td>
<td>=1,002</td>
</tr>
<tr>
<td>Chicago</td>
<td>Budget</td>
<td>=1,100</td>
<td>25.58%</td>
</tr>
<tr>
<td>Actual</td>
<td>=728</td>
<td>16.51%</td>
<td>=1,190</td>
</tr>
<tr>
<td>San_Fran~</td>
<td>Budget</td>
<td>=930</td>
<td>21.63%</td>
</tr>
<tr>
<td>Actual</td>
<td>=674</td>
<td>15.54%</td>
<td>=1,197</td>
</tr>
<tr>
<td>Seattle</td>
<td>Budget</td>
<td>=390</td>
<td>15.60%</td>
</tr>
<tr>
<td>Actual</td>
<td>=340</td>
<td>12.20%</td>
<td>=977</td>
</tr>
<tr>
<td>Denver</td>
<td>Budget</td>
<td>=690</td>
<td>22.26%</td>
</tr>
<tr>
<td>Actual</td>
<td>=334</td>
<td>11.94%</td>
<td>=914</td>
</tr>
<tr>
<td>Los_Ange~</td>
<td>Budget</td>
<td>=810</td>
<td>18.41%</td>
</tr>
<tr>
<td>Actual</td>
<td>=429</td>
<td>9.11%</td>
<td>=1,127</td>
</tr>
<tr>
<td>Dallas</td>
<td>Budget</td>
<td>=780</td>
<td>21.08%</td>
</tr>
<tr>
<td>Actual</td>
<td>=163</td>
<td>4.69%</td>
<td>=1,055</td>
</tr>
<tr>
<td>Houston</td>
<td>Budget</td>
<td>=690</td>
<td>24.64%</td>
</tr>
<tr>
<td>Actual</td>
<td>=256</td>
<td>10.44%</td>
<td>=1,064</td>
</tr>
<tr>
<td>Phoenix</td>
<td>Budget</td>
<td>=630</td>
<td>20.32%</td>
</tr>
<tr>
<td>Actual</td>
<td>=251</td>
<td>8.49%</td>
<td>=940</td>
</tr>
</tbody>
</table>

Total Regions Averages

| Avg         | Budget | 806 | 21.61% | 1,087 | 31.74% | 512 | 19.02% |
| Avg         | Actual | 543 | 14.70% | 1,071 | 30.49% | 372 | 14.82% |

Use the following script to create Sample 15-C:

```plaintext
( // Declare some of the Calculated Rows to be used
  CALCULATE ROW "Avg~Budget" OFF
  CALCULATE ROW "Avg~Actual" OFF
  CALCULATE ROW "Tot Sales~Budget" OFF
  CALCULATE ROW "Tot Sales~Actual" OFF
)
// We need the values of Market->Visual->Qtr1->Sales->Actual and
// Market ->Visual->Qtr1->Sales ->Budget to compute some
// percentages at the bottom, so get them now

Market
<CHILDREN Visual Qtr1 Sales
( SAVEROW "Actual Sales" } Actual // stores into first 3
  // data columns
( SAVEROW "Budget Sales" } Budget // of
these rows, which
  // are cols 1-3
  // change to columns 2-4 when we
  // specify 2 row dimensions in
```
Since this is an example, not a formal report, we'll type out the values for Actual Sales and Budget Sales here so you can check the numbers:

{ SKIP 2
TEXT 0 "Actual Total Sales for the 3 Video Products in Qtr1:"
"CALC" "Actual Sales"
TEXT 0 "Budget Total Sales for the 3 Video Products in Qtr1:"
"CALC" "Budget Sales"
UCHARACTERS
SKIP 5 )

// Now we can do the main report
{ AFTER "%" 3,5,7 DECI 2 3,5,7 ZEROTEXT "--" MISSING "--"
  WIDTH 10 0 1 }

<PAGE(Year)
Qtr1

<COLUMN(Product,Accounts)
<CHILDREN Visual
  Profit  // split these 2 accounts onto
  // 2 lines to prevent default
  Profit_%  // to asymmetric mode
  // because both column
  // dimensions have the same # of
  // members selected. Could have
  // used <SYM instead.

<ROW(Market,Scenario)
<ONSAMELEVELAS New_York
{ SETROWOP "Avg~Actual" OFF
  SETROWOP "Avg~Budget" +

  CALCULATE ROW "Count" = "Count" + 1. }

Budget

{ SETROWOP "Avg~Budget" OFF
  SETROWOP "Avg~Actual" +
}

>{ SKIP }

Actual

{ UCOLUMNS SKIP 2 }

// at this point, Avg~Budget and Avg~Actual ARE NOT YET
// AVERAGES--they are the SUM of the Profit rows of each type.
// Before converting them to averages, the report computes
// Profit as a % of total sales for each type. Since we only
// have 1 value for "Budget Sales" and "Actual Sales",
// for each of the three visual products in those
// rows, the report restricts the reference to those rows to
// columns 2-4 while computing the percentage columns 3, 5, and 7,
// based on profits in columns 2, 4 and 6
// calculate the percentages for Budget
  CALCULATE ROW "Avg~Budget" 3 = "Avg~Budget" 2 % "Budget Sales" 2
  CALCULATE ROW "Avg~Budget" 5 = "Avg~Budget" 4 % "Budget Sales" 3
  CALCULATE ROW "Avg~Budget" 7 = "Avg~Budget" 6 % "Budget Sales" 4

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Now calculate the averages.

```
CALCULATE ROW "Avg~Budget" 2  = "Avg~Budget" / "Count"
CALCULATE ROW "Avg~Budget" 4  = "Avg~Budget" / "Count"
CALCULATE ROW "Avg~Budget" 6  = "Avg~Budget" / "Count"
```

Calculate the percentages for Actual.

```
CALCULATE ROW "Avg~Actual" 3  = "Avg~Actual" 2 % "Actual Sales" 2
CALCULATE ROW "Avg~Actual" 5  = "Avg~Actual" 4 % "Actual Sales" 3
CALCULATE ROW "Avg~Actual" 7  = "Avg~Actual" 6 % "Actual Sales" 4
```

Now calculate the averages.

```
CALCULATE ROW "Avg~Actual" 2  = "Avg~Actual" / "Count"
CALCULATE ROW "Avg~Actual" 4  = "Avg~Actual" / "Count"
CALCULATE ROW "Avg~Actual" 6  = "Avg~Actual" / "Count"
```

TEXT C "Total Regions Averages"

PRINTROW "Avg~Budget"
PRINTROW "Avg~Actual" }

This report script, ROWAVG.REP, is available in the \ARBORPATH\App\Demo\Basic directory, and is displayed in Enterprise View in Administration Services.

Sample 16: Sorting by Top or Bottom Data Values

The following two reports demonstrate the use of TOP and BOTTOM conditional retrieval commands in a report script. For a discussion of various issues related to use of the TOP and BOTTOM commands, see "Restricting and Ordering Data Values" in the Oracle Essbase Database Administrator's Guide.

- "Sample 16-A: Bottom Data Values" on page 1289
- "Sample 16-B: Top Data Values" on page 1290

Sample 16-A: Bottom Data Values

This sample report demonstrates the basic use of the BOTTOM command. The report is based on the Sample Basic database.

<table>
<thead>
<tr>
<th>Measures</th>
<th>Actual</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jan</td>
<td>Dec</td>
</tr>
<tr>
<td>East</td>
<td></td>
<td></td>
</tr>
<tr>
<td>200</td>
<td>158</td>
<td>233</td>
</tr>
<tr>
<td>300</td>
<td>184</td>
<td>277</td>
</tr>
<tr>
<td>Diet</td>
<td>181</td>
<td>213</td>
</tr>
<tr>
<td>West</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>378</td>
<td>223</td>
</tr>
<tr>
<td>300</td>
<td>755</td>
<td>971</td>
</tr>
<tr>
<td>400</td>
<td>454</td>
<td>434</td>
</tr>
<tr>
<td>South</td>
<td></td>
<td></td>
</tr>
<tr>
<td>200</td>
<td>480</td>
<td>496</td>
</tr>
<tr>
<td>Diet</td>
<td>355</td>
<td>404</td>
</tr>
<tr>
<td>300</td>
<td>188</td>
<td>213</td>
</tr>
<tr>
<td>Central</td>
<td></td>
<td></td>
</tr>
<tr>
<td>300</td>
<td>790</td>
<td>824</td>
</tr>
<tr>
<td>100</td>
<td>724</td>
<td>792</td>
</tr>
</tbody>
</table>

1289
Use the following script to create Sample 16-A:

```plaintext
<Sym
<Column (Scenario, Year)
Actual Budget
Jan Dec
<Row (Market, Product)
<ICHILDREN Market
<ICHILDREN Product
<Bottom (3, @DataColumn(3))
!}
```

The BOTTOM command specifies that only the three lowest data values are returned for each row grouping, based on the target data values specified in column three (Budget, Jan). Notice that no row dimension is selected here, so the report output defaults to the innermost row.

This report script, BOTTOM.REP, is available in the \ARBORPATH\App\Sample\Basic directory, and is displayed in Enterprise View in Administration Services.

**Sample 16-B: Top Data Values**

This sample report fragment demonstrates the basic use of the TOP command. The report is based on the Sample Basic database.

<table>
<thead>
<tr>
<th>Measures</th>
<th>Actual</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jan</td>
<td>Dec</td>
</tr>
<tr>
<td></td>
<td>========</td>
<td>========</td>
</tr>
<tr>
<td>New York</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-10</td>
<td>691</td>
<td>785</td>
</tr>
<tr>
<td>200</td>
<td>2,141</td>
<td>2,302</td>
</tr>
<tr>
<td>300</td>
<td>1,917</td>
<td>2,285</td>
</tr>
<tr>
<td>400</td>
<td>1,611</td>
<td>1,720</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Massachusetts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-10</td>
<td>367</td>
<td>390</td>
</tr>
<tr>
<td>200-40</td>
<td>175</td>
<td>312</td>
</tr>
<tr>
<td>400-10</td>
<td>101</td>
<td>89</td>
</tr>
<tr>
<td>400-20</td>
<td>94</td>
<td>133</td>
</tr>
<tr>
<td>300-10</td>
<td>111</td>
<td>309</td>
</tr>
<tr>
<td>400-30</td>
<td>54</td>
<td>52</td>
</tr>
<tr>
<td>300-20</td>
<td>(113)</td>
<td>(189)</td>
</tr>
<tr>
<td>200-10</td>
<td>(172)</td>
<td>(224)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Massachusetts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-10</td>
<td>367</td>
<td>390</td>
</tr>
<tr>
<td>200-40</td>
<td>175</td>
<td>312</td>
</tr>
<tr>
<td>400-10</td>
<td>101</td>
<td>89</td>
</tr>
<tr>
<td>400-20</td>
<td>94</td>
<td>133</td>
</tr>
<tr>
<td>300-10</td>
<td>111</td>
<td>309</td>
</tr>
<tr>
<td>400-30</td>
<td>54</td>
<td>52</td>
</tr>
<tr>
<td>300-20</td>
<td>(113)</td>
<td>(189)</td>
</tr>
<tr>
<td>200-10</td>
<td>(172)</td>
<td>(224)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>East</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-10</td>
<td>837</td>
<td>867</td>
</tr>
<tr>
<td>200-40</td>
<td>267</td>
<td>383</td>
</tr>
<tr>
<td>400-10</td>
<td>215</td>
<td>201</td>
</tr>
<tr>
<td>400-30</td>
<td>157</td>
<td>167</td>
</tr>
<tr>
<td>300-10</td>
<td>177</td>
<td>368</td>
</tr>
<tr>
<td>400-20</td>
<td>94</td>
<td>133</td>
</tr>
<tr>
<td>200-20</td>
<td>80</td>
<td>79</td>
</tr>
</tbody>
</table>

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Use the report script TOP.REP, reproduced here, to create Sample 16-B:

```plaintext
<Sym
//Suppress shared members from displaying
<Supshare
  <Column (Scenario, Year)
    Actual Budget
    Jan Dec
<Row (Market, Product)
<Desc Market
  //Use bottom level of products
<DimBottom Product
<Top (10, @DataColumn(3))
!
```

The TOP command specifies that only the ten highest data values are returned for each row grouping, based on the target data values specified in column three (Budget, Jan).

This report script, TOP.REP, is available in the \ARBORPATH\App\Sample\Basic directory, and is displayed in Enterprise View in Administration Services.

**Sample 17: Restricting Rows**

The following report demonstrates the use of the RESTRICT conditional retrieval command in a report script. For a discussion of various issues related to use of the RESTRICT command, see "Restricting and Ordering Data Values" in the *Oracle Essbase Database Administrator’s Guide*.

<table>
<thead>
<tr>
<th></th>
<th>Actual</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jan</td>
<td>Dec</td>
</tr>
<tr>
<td>======</td>
<td>========</td>
<td>========</td>
</tr>
<tr>
<td>East</td>
<td>200</td>
<td>158</td>
</tr>
<tr>
<td></td>
<td>300</td>
<td>184</td>
</tr>
<tr>
<td>Diet</td>
<td>181</td>
<td>213</td>
</tr>
<tr>
<td>South</td>
<td>300</td>
<td>188</td>
</tr>
<tr>
<td></td>
<td>400</td>
<td>#Missing</td>
</tr>
</tbody>
</table>

Use the following script to create Sample 17:

```plaintext
<Sym
<Column (Scenario, Year)
Actual Budget
Jan Dec
<Row (Market, Product)
<Ichildren Market
<Ichildren Product
<Restrict (@DATACOLUMN(3) < $300.00 )
!
```
The RESTRICT command specifies that only data values that are less than $300.00 are returned for each row grouping, based on the target data values specified in column three (Budget, Jan). Notice that no row dimension is selected here, so the report output defaults to the innermost row.

This report script, RESTRICT.REP, is available in the \ARBORPATH\App\Sample\Basic directory, and is displayed in Enterprise View in Administration Services.

### Sample 18: Ordering Data Values

The following report demonstrates the use of the ORDERBY conditional retrieval command in a report script. For a discussion of various issues related to use of the ORDERBY command, see "Restricting and Ordering Data Values" in the Oracle Essbase Database Administrator's Guide.

<table>
<thead>
<tr>
<th>New York</th>
<th>Product</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-20</td>
<td></td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
<tr>
<td>100-30</td>
<td></td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
<tr>
<td>200-20</td>
<td></td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
<tr>
<td>200-30</td>
<td></td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
<tr>
<td>300-30</td>
<td></td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
<tr>
<td>Diet</td>
<td></td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
<tr>
<td>200-10</td>
<td></td>
<td>61</td>
<td>61</td>
<td>63</td>
<td>66</td>
</tr>
<tr>
<td>400-30</td>
<td></td>
<td>134</td>
<td>189</td>
<td>198</td>
<td>198</td>
</tr>
<tr>
<td>300-20</td>
<td></td>
<td>180</td>
<td>180</td>
<td>182</td>
<td>189</td>
</tr>
<tr>
<td>400-20</td>
<td></td>
<td>219</td>
<td>243</td>
<td>213</td>
<td>223</td>
</tr>
<tr>
<td>400-10</td>
<td></td>
<td>234</td>
<td>232</td>
<td>234</td>
<td>245</td>
</tr>
<tr>
<td>300-10</td>
<td></td>
<td>483</td>
<td>495</td>
<td>513</td>
<td>638</td>
</tr>
<tr>
<td>200-40</td>
<td></td>
<td>490</td>
<td>580</td>
<td>523</td>
<td>564</td>
</tr>
<tr>
<td>200</td>
<td></td>
<td>551</td>
<td>641</td>
<td>586</td>
<td>630</td>
</tr>
<tr>
<td>400</td>
<td></td>
<td>587</td>
<td>664</td>
<td>645</td>
<td>666</td>
</tr>
<tr>
<td>300</td>
<td></td>
<td>663</td>
<td>675</td>
<td>695</td>
<td>827</td>
</tr>
<tr>
<td>100-10</td>
<td></td>
<td>678</td>
<td>645</td>
<td>675</td>
<td>712</td>
</tr>
<tr>
<td>100</td>
<td></td>
<td>678</td>
<td>645</td>
<td>675</td>
<td>712</td>
</tr>
<tr>
<td>Product</td>
<td></td>
<td>2,479</td>
<td>2,625</td>
<td>2,601</td>
<td>2,835</td>
</tr>
</tbody>
</table>

Use the following script to create Sample 18:

```xml
<Page ("Measures")>
<Column ("Scenario", "Year")>
<Row ("Market", "Product")>

"Sales"
"Scenario"
"Jan", "Feb", "Mar", "Apr"
"New York"
("Product" "100" "100-10" "100-20" "100-30" "200" "200-10"
"200-20" "200-30" "200-40" "300" "300-10" "300-20", "300-30" "400"
"400-10" "400-20" "400-30", "Diet"
"100-20", "200-20", "300-30")

<ORDERBY ("Product", @DATACOLUMN(1) ASC, @DATACOLUMN(2) DESC, @DATACOLUMN(3) ASC
@DATACOLUMN (4) DESC)

```
The ORDERBY command is based only on data in the data columns. If the SUPPRESSMISSING command is not used in the report, #MISSING is considered to be the lowest data value. ORDERBY compares data values in the following order:

- Two values in the same column (for example, in COL1, the value associated with 200-10 is compared with the 400-30 data value, as shown in the example below).
- Data values between two data columns (for example, the data value in COL1 is compared with the data value in COL2, as shown in the example next).

If two data values are the same, the sort proceeds to the next column to determine the order.

In the following subset of Sample 18, for Product 200-10, the data values in COL1 and COL2 are both 61; the data in COL1 should be in ascending order, the data in COL2 should be in descending order. The two values are compared, and as they are the same, COL2 and COL3 are compared. Therefore, even though COL2 is supposed to be in descending order, the comparison for the row 400-30 was determined by the values in COL3, which is in ascending order.

```
  COL 1    COL 2     COL 3    COL 4
  =====    =====     =====     =====
200-10  61       61       63       66
400-30  134      189       198      198
300-20  180      180       182      189
```

The report script for Sample 18, ORDERBY.REP, is available in the \ARBORPATH\App\Sample\Basic directory, and is displayed in Enterprise View in Administration Services.

### Sample 19: Narrowing Member Selection Criteria

The following report demonstrates the use of the LINK command to narrow the members returned in a selection in a report script. For examples of use of the LINK command, see "Selecting Members by Using Boolean Operators" in the Oracle Essbase Database Administrator's Guide.

```
Market Measures Scenario

<table>
<thead>
<tr>
<th></th>
<th>Qtr1</th>
<th>Qtr2</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-10</td>
<td>5,096</td>
<td>5,892</td>
</tr>
<tr>
<td>100-20</td>
<td>1,359</td>
<td>1,534</td>
</tr>
<tr>
<td>100-30</td>
<td>593</td>
<td>446</td>
</tr>
<tr>
<td>200-10</td>
<td>1,697</td>
<td>1,734</td>
</tr>
<tr>
<td>200-20</td>
<td>2,963</td>
<td>3,079</td>
</tr>
<tr>
<td>200-30</td>
<td>1,153</td>
<td>1,231</td>
</tr>
<tr>
<td>200-40</td>
<td>908</td>
<td>986</td>
</tr>
<tr>
<td>300-10</td>
<td>2,544</td>
<td>3,231</td>
</tr>
<tr>
<td>300-20</td>
<td>690</td>
<td>815</td>
</tr>
<tr>
<td>300-30</td>
<td>2,695</td>
<td>2,723</td>
</tr>
<tr>
<td>400-10</td>
<td>2,838</td>
<td>2,998</td>
</tr>
<tr>
<td>400-20</td>
<td>2,283</td>
<td>2,522</td>
</tr>
<tr>
<td>400-30</td>
<td>(116)</td>
<td>(84)</td>
</tr>
<tr>
<td>100-20</td>
<td>1,359</td>
<td>1,534</td>
</tr>
</tbody>
</table>
```
Use the following script to create Sample 19:

```xml
<Page (Market)
<Column (Year)
Qtr1 Qtr2
<Row (Product)
<Link (<UDA (product, naturally-flavored) OR <LEV (product, 0))
```

The LINK command uses the AND, OR, and NOT Boolean operators to refine the search. In the preceding example, the product with the "naturally-flavored" user-defined attribute (UDA), as well as all Level 0 products, are returned in the search.

Be careful how you group operators in the LINK expression. Essbase evaluates operators from left to right. Use parentheses to group the expressions. For example, A OR B AND C is the same as ((A OR B) AND C). In the first expression, Essbase evaluates the expression from left to right, evaluating A OR B before evaluating AND C. In the second expression, Essbase evaluates the subexpression in parentheses (A OR B) before the whole expression, producing the same result. However, if you use (A OR (B AND C)), Essbase evaluates the subexpression in parentheses (B AND C) before the whole expression, producing a different result.

This report script, LINK.REP, is available in the \ARBORPATH\App\Sample\Basic directory, and is displayed in Enterprise View in Administration Services.

### Sample 20: Using Attributes in Member Selection

This sample report uses members of attribute dimensions to view data on base dimensions that are associated with those attribute dimensions.

**Profit Actual Caffeinated True Qtr1 East**

<table>
<thead>
<tr>
<th>Ounces</th>
<th>Bottle</th>
<th>Can</th>
<th>Pkg Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
<tr>
<td>20</td>
<td>488</td>
<td>240</td>
<td>2,190</td>
</tr>
<tr>
<td>16</td>
<td>240</td>
<td>2,190</td>
<td>2,918</td>
</tr>
<tr>
<td>12</td>
<td>(586)</td>
<td>2,776</td>
<td>2,776</td>
</tr>
<tr>
<td></td>
<td>142</td>
<td>2,776</td>
<td>2,918</td>
</tr>
</tbody>
</table>

Use the following script to create Sample 20:

```xml
{WIDTH 12}
<Page (Measures, Scenario, Caffeinated, Year, Market)
Profit
Actual
Caffeinated True
Qtr1
East
<Column (Ounces)
<ICHILDREN Ounces
<Row ("Pkg Type")
<ICHILDREN "Pkg Type"
```
The report output reflects data on Quarter 1 profits for caffeinated products by all their available sizes and package types. The data values indicate #MISSING when there is no data for a specific size in a specific package type. Because attributes are defined only on sparse dimensions, there are several #MISSING values in the sample report. You can represent missing values by suppressing the row or substituting a replacement text string, such as N/A. See “Sample 2: Handling Missing Values” on page 1261 for an example of substituting page breaks and labels for missing values.

This report script, ATTR.REP, is available in the \ARBORPATH\App\Sample\Basic directory, and is displayed in Enterprise View in Administration Services.

Sample 21: Using the WITHATTR Command in Member Selection

This sample report uses the WITHATTR command to view information based on the attributes of the members of a base dimension.

```
Profit Actual Qtr1 East

        Bottle     Can  Pkg Type
========== =========== ===========
100-30      74          #Missing  74
200-30    #Missing    #Missing    #Missing
200-40     908          #Missing  908
400-10     645          #Missing  645
400-20     290          #Missing  290
400-30     545          #Missing  545
```

Use the following script to create Sample 21:

```
{WIDTH 12} <Page (Measures, Scenario, Year, Market) Profit Actual Qtr1 East <Column ("Pkg Type") <ICHILDREN "Pkg Type" <Row (Product) <WITHATTR(Caffeinated,"<>",True) <IDESCENDANTS Product !
```

The report output reflects data on Quarter 1 profits for caffeinated products by their package types. The data values indicate #MISSING when there is no data for a specific package type. Because attributes are defined only on sparse dimensions, there are several #MISSING values in the sample report.

This report script, WITHATTR.REP, is available in the \ARBORPATH\App\Sample\Basic directory, and is displayed in Enterprise View in Administration Services.
Report Writer List

Consult the Contents pane for a categorical list of Report Writer commands.

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&amp;</td>
<td>LINK</td>
</tr>
<tr>
<td>!</td>
<td>LMARGIN</td>
</tr>
<tr>
<td>ACCOFF</td>
<td>MASK</td>
</tr>
<tr>
<td>ACCON</td>
<td>MATCH</td>
</tr>
<tr>
<td>AFTER</td>
<td>MATCHEX</td>
</tr>
<tr>
<td>ALLINSAMEDIM</td>
<td>MEANINGLESTEXT</td>
</tr>
<tr>
<td>ALLSIBLINGS</td>
<td>MISSINGTEXT</td>
</tr>
<tr>
<td>ANCESTORS</td>
<td>NAMESCOL</td>
</tr>
<tr>
<td>ASYM</td>
<td>NAMESON</td>
</tr>
<tr>
<td>ATTRIBUTE</td>
<td>NAMEWIDTH</td>
</tr>
<tr>
<td>ATTRIBUTEVA</td>
<td>NEWPAGE</td>
</tr>
<tr>
<td>BEFORE</td>
<td>NOINDENTGEN</td>
</tr>
<tr>
<td>BLOCKHEADERS</td>
<td>NOPAGEONDIMENSION</td>
</tr>
<tr>
<td>BOTTOM</td>
<td>NOROWREPEAT</td>
</tr>
<tr>
<td>BRACKETS</td>
<td>NOSKIPONDIMENSION</td>
</tr>
<tr>
<td>CALCULATE COLUMN</td>
<td>NOUNAMEONDIM</td>
</tr>
<tr>
<td>CALCULATE ROW</td>
<td>OFFCOLCALCS</td>
</tr>
<tr>
<td>CHILDREN</td>
<td>OFFROWCALCS</td>
</tr>
<tr>
<td>CLEARALLROWCALC</td>
<td>OPSAMEGEN</td>
</tr>
<tr>
<td>CLEARROWCALC</td>
<td>ONCOLCALCS</td>
</tr>
<tr>
<td>COLHEADING</td>
<td>ONROWCALCS</td>
</tr>
<tr>
<td>COLUMN</td>
<td>ONSAMELEVELAS</td>
</tr>
<tr>
<td>COMMAS</td>
<td>ORDER</td>
</tr>
<tr>
<td>CURHEADING</td>
<td>ORDERBY</td>
</tr>
<tr>
<td>CURRENCY</td>
<td>OUTALT</td>
</tr>
<tr>
<td>DATEFORMAT</td>
<td>OUTALTMBR</td>
</tr>
<tr>
<td>DECIMAL</td>
<td>OUTALT/NAMES</td>
</tr>
</tbody>
</table>

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&

Prefaces a substitution variable in the report script.
Syntax

& variableName

Parameter   Description

variableName  The name of the substitution variable set on the database.

Notes

Any string that begins with a leading & is treated as a substitution variable; Essbase replaces these variables with their associated values prior to the parsing of the report script. Member names beginning with & are considered substitution variables by Report Writer.

Example

<iCHILDREN &CurQtr

becomes

<iCHILDREN Qtr1

if the substitution variable CurQtr has the value name "Qtr1".

See Also

- & in calculation scripts

!  

Tells Essbase to output the instructions in the report script to the current line.

Syntax

!

Notes

Each report script requires at least one ! command to produce output. Use multiple instances of the ! command to separate multiple report specifications in a report script.

Following !, the new report specification retains data format output commands from previous specifications unless you enter commands in the new report that turn them off. The new report specification does not retain data extraction command defaults.

If you omit ! at the end of the report script and run the report, the report processor does not report output or display an error message.

ACCOFF  

Turns off member accumulation.

Note:  By default, the report script uses <ACCOFF.
Syntax

<ACCOFF

Notes

<ACCOFF selects members of the same dimension only if the select commands of the dimension follow one another in the report script. If a select command containing another dimension interrupts, the report script ignores the previous select commands. <ACCOFF can be used in multiple report scripts where the script redefines only a few select statements from the previous script.

Example

In the following report script, <ACCOFF excludes the two members that precede East (100-10 and 200-10), because East is from a different dimension. The report script includes 300-10 and 400-10, which follow East.

```
<PAGE (Measures)
Sales
<ASYM
<COLUMN (Scenario, Year)
Actual Budget
Jan Feb
<ROW (Product, Market)
<ACCOFF
"100-10"
"200-10"
"East."
"300-10"
"400-10"
!
```

This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>Sales</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual</td>
<td>Feb</td>
</tr>
<tr>
<td></td>
<td>Jan</td>
<td></td>
</tr>
<tr>
<td>300-10</td>
<td>East</td>
<td>999</td>
</tr>
<tr>
<td>400-10</td>
<td>East</td>
<td>562</td>
</tr>
</tbody>
</table>

See Also

- ACCON

ACCON

Turns on member accumulation.

Note: By default, member accumulation is off.

Syntax

<ACCON
Notes

This command selects all members, regardless of the order of the select statements. Use this command to mix members from different dimensions in select statements.

Example

In the following report script, the `<ACCON` command includes all members in the report script, regardless of dimensionality.

```
<PAGE (Measures)
Sales
<ASYM
<COLUMN (Scenario, Year)
Actual Budget
Jan Feb
<ROW (Product, Market)
<ACCON
"100-10"
"200-10"
"East"
"300-10"
"400-10"
!
```

This example produces the following report:

```
<table>
<thead>
<tr>
<th></th>
<th>Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual</td>
</tr>
<tr>
<td></td>
<td>Jan</td>
</tr>
<tr>
<td>100-10</td>
<td>1,812</td>
</tr>
<tr>
<td>200-10</td>
<td>647</td>
</tr>
<tr>
<td>300-10</td>
<td>999</td>
</tr>
<tr>
<td>400-10</td>
<td>562</td>
</tr>
</tbody>
</table>
```

See Also

- `<ACCOFF`

**AFTER**

Displays a character following the data columns in the report.

This command displays only the first character of a string, even if more are specified. If you do not specify any columns in `columnList`, `char` is displayed after all data columns in the report.

**Syntax**

```
{ AFTER char [columnList] }
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>char</td>
<td>A single-byte character enclosed in quotation marks.</td>
</tr>
<tr>
<td>columnList</td>
<td>Optional list of one or more column numbers, separated by spaces. If included, AFTER affects only these columns. If you do not specify <code>columnList</code>, all data columns are affected.</td>
</tr>
</tbody>
</table>
Notes

- Double-byte characters are not supported.
- If a value is equal to #MISSING, the string inserted after it does not print, even if you replace #MISSING with some other value (such as 0).

Example

The `{AFTER "%"}` command in the following report displays the percent sign after each data value.

```xml
<PAGE (Market, Accounts, Scenario)
Chicago Sales Actual

<COLUMN (Year)
<ICHILDREN Year

<ROW (Product)
{
AFTER "%"
} Audio

This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stereo</td>
<td>2.591%</td>
<td>2.476%</td>
<td>2,567%</td>
<td>3,035%</td>
<td>10,669%</td>
</tr>
<tr>
<td>Compact_Disc</td>
<td>3,150%</td>
<td>3,021%</td>
<td>3,032%</td>
<td>3,974%</td>
<td>13,177%</td>
</tr>
<tr>
<td>Audio</td>
<td>5,741%</td>
<td>5,497%</td>
<td>5,599%</td>
<td>7,009%</td>
<td>23,846%</td>
</tr>
</tbody>
</table>

See Also

- BEFORE

**ALLINSAMEDIM**

Selects all the members from the same dimension as the specified dimension member for the report.

Syntax

```xml
<ALLINSAMEDIM mbrName
```

Parameter Description

- mbrName: Single member representing a dimension. All members from this dimension are selected.

Example

```xml
<ALLINSAMEDIM Audio
```

Selects all the members from the dimension for the following report.
<PAGE (Market, Accounts, Scenario)
Chicago Sales Actual

<COLUMN (Year)
<ICHILDREN Year

<ROW (Product)
<ALLINSAMEDIM Audio

This example produces the following report:

Chicago Sales Actual

<table>
<thead>
<tr>
<th></th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stereo</td>
<td>2,591</td>
<td>2,476</td>
<td>2,567</td>
<td>3,035</td>
<td>10,669</td>
</tr>
<tr>
<td>Compact_Disc</td>
<td>3,150</td>
<td>3,021</td>
<td>3,032</td>
<td>3,974</td>
<td>13,177</td>
</tr>
<tr>
<td>Audio</td>
<td>5,741</td>
<td>5,497</td>
<td>5,599</td>
<td>7,009</td>
<td>23,846</td>
</tr>
<tr>
<td>Television</td>
<td>4,410</td>
<td>4,001</td>
<td>4,934</td>
<td>6,261</td>
<td>19,606</td>
</tr>
<tr>
<td>VCR</td>
<td>3,879</td>
<td>3,579</td>
<td>4,276</td>
<td>4,877</td>
<td>16,611</td>
</tr>
<tr>
<td>Camera</td>
<td>2,506</td>
<td>2,522</td>
<td>2,602</td>
<td>3,227</td>
<td>10,857</td>
</tr>
<tr>
<td>Visual</td>
<td>10,795</td>
<td>10,102</td>
<td>11,812</td>
<td>14,365</td>
<td>47,074</td>
</tr>
<tr>
<td>Product</td>
<td>16,536</td>
<td>15,599</td>
<td>17,411</td>
<td>21,374</td>
<td>70,920</td>
</tr>
</tbody>
</table>

See Also

- ALLSIBLINGS
- DESCENDANTS

ALLSIBLINGS

Adds all the siblings of the specified member to the report.

Syntax

<ALLSIBLINGS mbrName

Parameter Description

mbrName Name of member whose siblings you want to add.

Example

<ALLSIBLINGS Stereo

selects the siblings of the member Stereo for the following report script:

<PAGE (Market, Accounts, Scenario)
Chicago Sales Actual

<COLUMN (Year)
<ICHILDREN Year

<ROW (Product)
This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stereo</td>
<td>2,591</td>
<td>2,476</td>
<td>2,567</td>
<td>3,035</td>
<td>10,669</td>
</tr>
<tr>
<td>Compact_Disc</td>
<td>3,150</td>
<td>3,021</td>
<td>3,032</td>
<td>3,974</td>
<td>13,177</td>
</tr>
</tbody>
</table>

See Also

- **ANCESTORS**
- **DESCENDANTS**

**ANCESTORS**

Adds all the ancestors of the specified member to the report.

**Syntax**

```
<ANCESTORS mbrName
```

**Parameter Description**

- **mbrName** Name of member whose ancestors you want to add.

**Example**

```
<ANCESTORS Stereo
```

Adds Audio and Product to the following report since Audio is the parent to Stereo and Product is the parent to Audio.

```
<PAGE (Market, Accounts, Scenario)
Chicago Sales Actual

<COLUMN (Year)
<ICHILDREN Year

<ROW (Product)
<ANCESTORS Stereo

This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio</td>
<td>5,741</td>
<td>5,497</td>
<td>5,599</td>
<td>7,009</td>
<td>23,846</td>
</tr>
<tr>
<td>Product</td>
<td>16,536</td>
<td>15,599</td>
<td>17,411</td>
<td>21,374</td>
<td>70,920</td>
</tr>
</tbody>
</table>
See Also

- IANCESTORS

**ASYM**

Causes a report to be printed in an asymmetric format.

This command reverses a previously specified SYM command in an asymmetric report.

If <SYM is used, all report headers appear in a symmetric format, even if there are equal numbers of members in each row of the column header. <ASYM turns off symmetric mode.

**Note:** Essbase prints an asymmetric report (with BLOCKHEADERS) only when all column dimensions include the same number of selected members and all members from each column dimension are on the same line. Otherwise, a symmetric report (with PYRAMIDHEADERS) is produced.

**Syntax**

<ASYM

**Notes**

If the number of members you select from one column dimension differs from the number of members you select from another column dimension, the resulting report is always symmetric.

**Example**

The following example is based on Sample Basic.

```
<PAGE (Measures, Market)
South Sales
<SYM
     <COLUMN (Scenario, Year)
          Actual Budget
          Jan Feb
<ROW (Product)
<IDESCENDANTS "100"
!
<ASYM
!
```

Which produces the following reports:

<table>
<thead>
<tr>
<th></th>
<th>Actual</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jan</td>
<td>Feb</td>
</tr>
<tr>
<td>100-10</td>
<td>452</td>
<td>465</td>
</tr>
<tr>
<td>100-20</td>
<td>190</td>
<td>190</td>
</tr>
<tr>
<td>100-30</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
<tr>
<td>100</td>
<td>642</td>
<td>655</td>
</tr>
</tbody>
</table>
### ATTRIBUTE

Returns all base-dimension members associated with a specified attribute.

**Syntax**

```plaintext
<ATTRIBUTE attrMbrName
```

**Parameter**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>attrMbrName</td>
<td>The name of a member of an attribute dimension.</td>
</tr>
</tbody>
</table>

**Notes**

- When `attrMbrName` is a non level-0 member of an attribute dimension, Essbase returns all base-dimension members associated with its children. For example, in the Sample Basic database, `<ATTRIBUTE Large` returns all base-dimension members associated with any children of the attribute parent Large.

- With Boolean attributes, if you specify a Boolean dimension name (for example, Caffeinated), Essbase returns all base-dimension members associated with either Caffeinated member (for example, True or False). To return only one or the other, specify that member name (for example, `<ATTRIBUTE Caffeinated_True`).

- Your outline may contain duplicate Boolean, date, and numeric attribute-dimension member names; for example, 12 can be the attribute value for the size (in ounces) of a product as well as the value for the number of packing units for a product. To distinguish duplicate member names with the `<ATTRIBUTE` command, specify the full name of the attribute (for example, `<ATTRIBUTE 12_Ounces`).

**Example**

```plaintext
<ATTRIBUTE Red
```

returns all base-dimension members associated with the member Red of the specified attribute dimension.

```plaintext
<PAGE (Market, Measures, Scenario)
    South Sales Actual
```

```plaintext
<COLUMN (Year)
```
returns on rows only the names of the drinks that are associated with the member Ounces_12 on the corresponding attribute dimension:

<table>
<thead>
<tr>
<th>South Sales Actual</th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cola</td>
<td>2,296</td>
<td>2,509</td>
<td>2,975</td>
<td>2,824</td>
<td>10,604</td>
</tr>
<tr>
<td>Diet Cola</td>
<td>1,436</td>
<td>1,569</td>
<td>1,482</td>
<td>1,189</td>
<td>5,676</td>
</tr>
<tr>
<td>Old Fashioned</td>
<td>1,686</td>
<td>1,625</td>
<td>1,773</td>
<td>1,840</td>
<td>6,924</td>
</tr>
<tr>
<td>Sasparilla</td>
<td>1,862</td>
<td>1,938</td>
<td>1,830</td>
<td>1,921</td>
<td>7,551</td>
</tr>
<tr>
<td>Diet Cream</td>
<td>1,241</td>
<td>1,255</td>
<td>1,378</td>
<td>1,593</td>
<td>5,467</td>
</tr>
</tbody>
</table>

**See Also**

- **WITHATTR**

**ATTRIBUTEVA**

Returns all base-dimension members associated with a specified varying attribute member. This command allows querying of the base member list given the attribute member-dimension and the perspective setting.

**Note:** For use only in applications enabled with varying attributes.

**Syntax**

<ATTRIBUTEVA (attrMbrName, options, startTuple[, endTuple])

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>attrMbrName</td>
<td>The name of a member of a varying attribute dimension.</td>
</tr>
<tr>
<td>options</td>
<td>ANY</td>
</tr>
<tr>
<td>startTuple[,</td>
<td>(m1, m2, ..., mN)</td>
</tr>
<tr>
<td>endTuple]</td>
<td>Level-0 members from one or more independent dimensions for attrMbrName may be part of the input tuple. Members from all independent dimensions should be listed. If a member is not listed, the member of the same dimension from the current query or calculation context is used.</td>
</tr>
</tbody>
</table>
Notes

- When `attrMbrName` is a non level-0 member of an attribute dimension, Essbase returns all base-dimension members associated with its children.

- With Boolean attributes, if you specify a Boolean dimension name (for example, Caffeinated), Essbase returns all base-dimension members associated with either Caffeinated member (for example, True or False). To return only one or the other, specify that member name (for example, `<ATTRIBUTEVA Caffeinated_True`).

- Your outline may contain duplicate Boolean, date, and numeric attribute-dimension member names; for example, 12 can be the attribute value for the size (in ounces) of a product as well as the value for the number of packing units for a product. To distinguish duplicate member names with the `<ATTRIBUTEVA` command, specify the full name of the attribute (for example, `<ATTRIBUTE 12_Ounces`).

Example

```xml
<AttributeVa([Ounces_12], ANY, (Jan), (Feb))
<AttributeVa([Ounces], ANY, (Jan))
```

See Also

- WITHATTR
- PERSPECTIVE

BEFORE

Displays a character string before data columns in the report.

Quotes without a character string clear the text displayed before data columns. For example, `{ BEFORE "" }` turns off previously issued BEFORE commands.

Syntax

```
{ BEFORE "char" [ columnList ] }
```

Parameter  Description

<table>
<thead>
<tr>
<th>char</th>
<th>A single-byte character enclosed in quotation marks.</th>
</tr>
</thead>
<tbody>
<tr>
<td>columnList</td>
<td>Optional. List of the column numbers, separated by spaces, that you want <code>char</code> to precede. Without <code>columnList</code>, <code>char</code> is displayed before all columns in the report.</td>
</tr>
</tbody>
</table>

Notes

Double-byte characters are not supported.

Example

```
{ BEFORE "$" } displays the dollar sign before all the data values in the following report:

<PAGE Market, Accounts, Scenario>
Chicago Sales Actual
<COLUMN Year>
<ICHILDREN Year
```
This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stereo</td>
<td>$2,591</td>
<td>$2,476</td>
<td>$2,567</td>
<td>$3,035</td>
<td>$10,669</td>
</tr>
<tr>
<td>Compact_Disc</td>
<td>$3,150</td>
<td>$3,021</td>
<td>$3,032</td>
<td>$3,974</td>
<td>$13,177</td>
</tr>
<tr>
<td>Audio</td>
<td>$5,741</td>
<td>$5,497</td>
<td>$5,599</td>
<td>$7,009</td>
<td>$23,846</td>
</tr>
</tbody>
</table>

**See Also**
- AFTER

**BLOCKHEADERS**

Displays all members that apply to a column as the column heading, in the style used by asymmetric reports.

**Note:** This is the only format that can be used with asymmetric reports. Pyramid headers are the default for symmetric reports.

**Syntax**

```plaintext
{ BLOCKHEADERS }
```

**Notes**
- BLOCKHEADERS is a setting command.
- BLOCKHEADERS can be useful when columns are reordered and previously symmetric upper-tier column headers no longer align properly.
- BLOCKHEADERS ensures right-justified alignment of all columns.

**Example**

The following example is based on Sample Basic.

```plaintext
<PAGE Measures)
Sales
{WIDTH 7}
{BLOCKHEADERS}
<SYM
  <COLUMN (Scenario, Year, Market)
  Actual Budget
  Jan Feb
  East West
<ROW (Market)
<IDESCENDANTS "400"
```

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This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>Actual Jan East</th>
<th>Actual Jan West</th>
<th>Actual Feb East</th>
<th>Actual Feb West</th>
<th>Budget Jan East</th>
<th>Budget Jan West</th>
<th>Budget Feb East</th>
<th>Budget Feb West</th>
</tr>
</thead>
<tbody>
<tr>
<td>400-10</td>
<td>562</td>
<td>1,115</td>
<td>560</td>
<td>1,122</td>
<td>580</td>
<td>740</td>
<td>580</td>
<td>740</td>
</tr>
<tr>
<td>400-20</td>
<td>219</td>
<td>1,032</td>
<td>243</td>
<td>1,065</td>
<td>230</td>
<td>690</td>
<td>260</td>
<td>700</td>
</tr>
<tr>
<td>400-30</td>
<td>432</td>
<td>625</td>
<td>469</td>
<td>618</td>
<td>440</td>
<td>410</td>
<td>490</td>
<td>400</td>
</tr>
<tr>
<td>400</td>
<td>1,213</td>
<td>2,772</td>
<td>1,272</td>
<td>2,805</td>
<td>1,250</td>
<td>1,840</td>
<td>1,330</td>
<td>1,840</td>
</tr>
</tbody>
</table>

See Also

- PYRAMIDHEADERS

**BOTTOM**

Returns rows with the lowest values of a specified data column.

**Syntax**

```<BOTTOM ([rowgroupDimension,] rows, column)```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>rowgroupDimension</td>
<td>Optional row grouping dimension that determines the rows to sort as a set. Default value: inner row.</td>
</tr>
<tr>
<td>rows</td>
<td>Number of rows to be returned; must be greater than 0.</td>
</tr>
<tr>
<td>column</td>
<td><code>@DATACOLUMN (colNumber)</code></td>
</tr>
</tbody>
</table>

**Notes**

This command sorts the result set by the value of the specified data column in descending order. Rows containing #MISSING values in the sort column are discarded from the result set before BOTTOM is applied.

You can use TOP and BOTTOM, ORDERBY and RESTRICT in the same report script, but you can use each command only once per report. If you repeat the same command in a second report in the same report script, the second command overwrites the first. Place global script formatting commands before a PAGE, COLUMN command or associated member (for example, `<ICHILDREN` or `<IDESCENDANTS`). Avoid using row formatting commands with BOTTOM.

If any of the ORDERBY, TOP, BOTTOM, or RESTRICT commands exist together in a report script, `rowgroupDimension` should be the same. Otherwise, an error is issued.

The ORDERBY, TOP, and BOTTOM commands sort a report output by its data values. The RESTRICT command restricts the number of valid rows for the report output. Their order of execution is:
1. Any sorting command that sorts on member names (for example <SORTDESC or <SORTASC)
2. RESTRICT
3. TOP and BOTTOM
4. ORDERBY

This order of execution applies regardless of the order in which the commands appear in the report script.

You can use configurable settings to specify the size of the internal buffers used for storing and sorting the extracted data. The following settings affect the way the RESTRICT, TOP, and BOTTOM commands work:

- Retrieval Buffer Size (a database setting)
- Retrieval Sort Buffer Size (a database setting)
- “NUMERICPRECISION” on page 528 (an Essbase.cfg setting)

For more information on the database settings, see the *Oracle Essbase Database Administrator's Guide*.

**Example**

**Example 1:**

```
<Page (Market, Accounts, Scenario)
   Chicago Sales Actual
<Bottom (5, @DataColumn(4))
<Column(Year)
<ichildren Year
<Row(Product)
<ichildren Product
   !
<Bottom (3, @DataColumn(1))
{Indentgen 3}
Boston Sales Actual
<ichildren Year
<ichildren Product
   !
```

Which produces the following report based on the Demo Basic sample database:

<table>
<thead>
<tr>
<th></th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chicago Sales Actual</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Television</strong></td>
<td>4,410</td>
<td>4,001</td>
<td>4,934</td>
<td>6,261</td>
<td>19,606</td>
</tr>
<tr>
<td><strong>VCR</strong></td>
<td>3,879</td>
<td>3,579</td>
<td>4,276</td>
<td>4,877</td>
<td>16,611</td>
</tr>
<tr>
<td><strong>Compact_Disc</strong></td>
<td>3,150</td>
<td>3,021</td>
<td>3,032</td>
<td>3,974</td>
<td>13,177</td>
</tr>
<tr>
<td><strong>Camera</strong></td>
<td>2,506</td>
<td>2,522</td>
<td>2,602</td>
<td>3,227</td>
<td>10,857</td>
</tr>
<tr>
<td><strong>Stereo</strong></td>
<td>2,591</td>
<td>2,476</td>
<td>2,567</td>
<td>3,035</td>
<td>10,669</td>
</tr>
</tbody>
</table>

--------------------------------------------------------------------------------

<table>
<thead>
<tr>
<th></th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Boston Sales Actual</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Qtr1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Qtr2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Qtr3</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Qtr4</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Year</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Example 2:

The following example uses the ORDERBY, TOP, BOTTOM, and RESTRICT functions:

```
<TOP ("Year", 10, @DataColumn(2))
{Width 15}
(Decimal 2)
{OutAltNames}
<BOTTOM ("Year", 5, @DataColumn(2))
<OutMBrAlt
<Column(Scenario)
{SupBrackets}
 Actual Budget "Variance %"
<RESTRICT (@DataColumn(2) > 3000 and @DataColumn(1) < 3500)
<Row(Year, Product)
<i>Descendants Product
<Children Year
<OrderBy ("Year",@DataColumn(1), @DataColumn(2) Desc)
!
```

Which produces the following report based on the Sample Basic sample database:

<table>
<thead>
<tr>
<th>Measures Market</th>
<th>Actual</th>
<th>Budget</th>
<th>Variance %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qtr3</td>
<td>100-20 Diet Root</td>
<td>3,162.00</td>
<td>3,730.00</td>
</tr>
<tr>
<td></td>
<td>200-20 Diet Root</td>
<td>3,149.00</td>
<td>3,700.00</td>
</tr>
<tr>
<td></td>
<td>200-20 Diet Root</td>
<td>3,149.00</td>
<td>3,700.00</td>
</tr>
<tr>
<td></td>
<td>400-10 Grape</td>
<td>3,201.00</td>
<td>3,090.00</td>
</tr>
<tr>
<td></td>
<td>300-10 Dark Cream</td>
<td>3,355.00</td>
<td>3,730.00</td>
</tr>
</tbody>
</table>

See Also

- RESTRICT
- TOP
**BRACKETS**
Displays parentheses around negative numbers instead of negative signs.

**Note:** Brackets are the default for negative numbers.

**Syntax**

```
{ BRACKETS }
```

**Notes**
The BRACKETS command need only be used to cancel the effect of a previously issued SUPBRACKETS command. Brackets are used by this command to mean parentheses.

**Example**

```
{BRACKETS} displays -43.243 as (43.243) in the report.
```

**See Also**

- **SUPBRACKETS**

---

**CALCULATE COLUMN**
Creates a new report column, performs on-the-fly calculations, and displays the calculation results in the newly-created column.

Each new calculated column is appended to the right of the existing columns in the order in which it is created, and is given the next available column number.

See `ORDER` for more information on column numbering and ordering.

**Syntax**

```
{ CALCULATE COLUMN "newColumn" = expression }
```

**Parameter** | **Description**
--- | ---
"newColumn" | New column name enclosed by quotation marks.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>expression</td>
<td>A column calculation expression. If an operation or equation is not specified, the default is + (add). The following mathematical operators are supported in column calculations: + Addition operator. - Subtraction operator. * Multiplication operator. %X%Y Evaluates X as a percentage of Y. / Division operator. :X:Y Performs a summation of data values from X to Y (inclusive). Must be the first operator if used with multiple operators.</td>
</tr>
</tbody>
</table>

**Notes**

- No more than 50 column calculations can be defined at any one time in the report.
- All arguments in expressions must be valid data column numbers, as determined by the original order of the columns, or constants. Floating point constants can be entered directly into an expression (for example 0.05). Integer values are designated by a decimal point following the last digit (for example, 10.; this distinguishes integer constants from column references. For example, the following command sums columns 1 through 12 and divides the total by 12:

  \[
  \{\text{CALCULATE COLUMN } "\text{New\_Col}\" = 1+3 / 6+8 \% 15 * 100.-"\text{Tot\_Row}\" 3+12\}\]

- Precede and follow all operators in an expression with a single space.
- Nested (parenthetical) expressions are not supported.
- Expressions are always evaluated left to right, regardless of operator precedence. For example, the expression 1 + 4 + 5 / 100.0 sums columns 1, 4, and 5, and divides the total by 100. To sum columns 1 and 4 and add the quotient of column 5 divided by 100, use the following expression: 5 / 100.0 + 1 + 4

- You can use the ORDER command to arrange columns in an easy-to-read fashion.
- If you use the same name for more than one column, Essbase creates only the last column specified in the CALCULATE COLUMN command. Use a leading space with the second (or two leading spaces with the third, and so on) name to create a "unique" column name.
- The SUM RANGE operator (:) can only be used as the first operation in an expression. For example, = 1 : 3 or = 1 : 3 + 7 * 9 are valid expressions, but =7* 9 : 12 is invalid because the SUM RANGE operator is not the first operator. The SUM RANGE operator (:) may not be used with a calculated row as one of the arguments. For example, = 1 : "Total\_Sales" 3 is invalid.
- A reference to a calculated row in a column calculation must include a column restriction to specify the single column whose value is to be used in the calculation.
- A column calculation cannot reference a calculated row name that has not yet been declared. Use \{ CALCULATE ROW "calcrownname" OFF \} prior to the CALCULATE COLUMN
referencing it, to declare a calculated row's name when the actual definition of the row calculation's operation cannot be done until later in the report.

- If a column calculation is attached to a member that is nested within a repeating group, it is redefined over and over. This is allowed, but very inefficient. When possible, define column calculations prior to areas of the report where members repeat. If the same name occurs later in the report with a new and different definition, the prior definition is lost.

**Example**

**Example 1 (CALCULATE COLUMN)**

The following example is based on Sample Basic.

```xml
<PAGE (Measures, Market)
Sales
<COLUMN (Scenario, Year)
  Actual Budget
  Jan Feb
{WIDTH 8 0}
{WIDTH 7}
{WIDTH 11 5 6}
(CALCULATE COLUMN "Actual YTD" = 1 + 2)
(CALCULATE COLUMN "Budget YTD" = 3 + 4)
(ORDER 0 1 2 5 3 4 6)
<ROW (Market)
<CHILD "400"
```

This example produces the following report:

<table>
<thead>
<tr>
<th>Sales</th>
<th>Market</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Jan</td>
<td>Feb</td>
</tr>
<tr>
<td>========</td>
<td>=======</td>
</tr>
<tr>
<td>400-10</td>
<td>2,839</td>
</tr>
<tr>
<td></td>
<td>2,350</td>
</tr>
<tr>
<td>400-20</td>
<td>2,562</td>
</tr>
<tr>
<td></td>
<td>2,050</td>
</tr>
<tr>
<td>400-30</td>
<td>1,233</td>
</tr>
<tr>
<td></td>
<td>1,030</td>
</tr>
</tbody>
</table>

**Example 2 (CALCULATE COLUMN)**

The following samples demonstrate additional column calculations.

To calculate a new column named "1st Qtr" equal to the sum of the first 3 columns:

```xml
(CALCULATE COLUMN "1st Qtr" = 1 : 3)
```

To calculate a new column that is equal to column 12 taken as a percentage of the value in column 12 of a calculated row called "Total Sales":

```xml
(CALCULATE COLUMN "% of Total" = 12 % "Total Sales" 12)
```

To calculate a new column equal to column 1 multiplied by the constant 35:

```xml
(CALCULATE COLUMN "Extended_Price" = 1 * 35.)
```

The following example calculates a new column, adds column 1 to column 3, divides the result by column 6, adds column 8, takes that result as a percentage of column 15, multiplies that result
by the constant number 100, subtracts the value from the 3rd column of the calculated row "Tot_Row", and adds the result to column 12.

\{(CALCULATE COLUMN "New_Col" = 1+3 / 6+8 % 15 * 100.-"Tot_Row" 3+12)\}

**See Also**

- OFFCOLCALCS
- ONCOLCALCS
- REMOVECOLCALCS
- SETROWOP

**CALCULATE ROW**

Creates a named row and associates it with a row name or label. This is similar to declaring a variable. This command can also specify an operation (+, _, *, /, or OFF) as an equation consisting of constants, other calculated rows, and operators.

Equations are evaluated at the time of declaration. If an operator is specified, subsequent output rows have the operator applied to them with the result stored in the calculated row.

This is useful for aggregating a series of rows to obtain a subtotal or total. The operator can be reset at any point with SETROWOP. If neither an equation nor an operator are specified in the CALCULATE ROW command, the + operator is assumed.

SETROWOP defines a calculation operator to be applied to all subsequent output data rows. Use PRINTROW to display the calculation results in the newly created row.

**Syntax**

1:

\{( CALCULATE ROW "newRow" [ columnNo ] = expression )\}

2:

\{( CALCULATE ROW "newRow" [ operator ]\}

**Parameter Description**

"newRow" Name of a new row, enclosed by quotation marks, that was declared with SAVEROW or SAVEANDOUTPUT.

columnNo Optional. Column numbers to which Essbase applies the expression.

expression Row calculation expression. Member names are not supported.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| operator  | One of the following mathematical operators:  
  - + Addition.  
  - − Subtraction.  
  - * Multiplication.  
  - %X%Y X as a percentage of Y.  
  - / Division.  
  - OFF Turns off the row operator.  

If omitted, the default is + (add).

**Notes**

- Row name can have multiple levels, separated by the tilde (~) character, for use when there is more than one row name column in the report. For example, the calculated row name "Actual~Sales", if output (using PRINTROW) in a report with at least two row name columns, results in Sales in the right-most row name column, and Actual in the row name column to its left. If a multiple level row-name is used in a report with only one row-name column, only the rightmost part of the name appears in the report.

- The practical length of the row name is limited by the width of the column(s) in which it is output. Characters to the right that would overwrite information in the next column are truncated.

- To store a multiple-value array into a calculated row prior to the point where you have defined your columns (with your column dimension member selections), you can use NS to pre-allocate a larger number of columns with which to work with. If you supply fewer values than there are data columns, the operation using the array stops after the last array value and there are no changes to the remaining columns based on that operator. If the extra columns are currently missing, they stay missing; if they are non-missing, they retain their current values.

- Expressions are always computed from left to right. Parentheses may not be used for grouping.

- Expressions cannot contain member names.

- Commands that designate columns must use valid data column numbers, as determined by the original order of the columns.

- All operators in an expression must be preceded and followed with a single space.

- Integer and floating point constants are supported in expressions as single entries or members of an array.

- Row calculations are created with three commands: CALCULATE ROW, SETROWOP, and PRINTROW.

**Example**

The following samples demonstrate row calculations that you can perform. Note that "Total Sales" in the examples represent a calculated row, not a member name.
To compute "Avg Sales" by dividing by the constant 2:

{ CALCULATE ROW "Avg Sales" = "Total Sales" / 2 }

To multiply the first six data columns of the calculated row "Total Sales" by the six factors and store the result in the calculated row "Factored Sales":

{ CALCULATE ROW "Factored Sales" = "Total Sales" * [1.0 1.3 1.9 2.3 3.0 3.7 ] } 

To store five factors in the first five columns of "Factors", for use in later calculated row computations and/or PRINTROW output:

{ CALCULATE ROW "Factors" = [ 1.3 2.6 3.1 2.3 5 ] }

To store the value from the seventh column of "Total Sales", multiplied by 1000, in every column of the calculated row "Ending Sales":

{ CALCULATE ROW "Ending Sales" = "Total Sales" 7 * 1000 } 

To set the value in column 7 of "Ending Sales" to the corresponding value from the row "Total Sales":

{ CALCULATE ROW "Ending Sales"7 = "Total Sales" }

"Total" refers to itself in this calculation and divides itself by 1000:

{ CALCULATE ROW "Total" = "Total" / 1000. }

To show a variety of operations used in one expression, use an expression like this:

{ CALCULATE ROW "xyz" = [11 12.3 -6] / 7 + "abc"2 % 4300. + 10 }

This expression divides the three values in the array by the constant 7 (if there are currently more than three data columns, the extra columns remain #Missing), adds the value from column 2 of "abc" to every column, and computes the resulting row's values as percentages of the constant 4300, and adds the constant 10 to all columns, storing the final result in "xyz". Note that if there are more than three data columns, the result in the extra columns is 10, since prior to the last operation, they were #Missing.

See Also

- CLEARROWCALC
- CLEARALLROWCALC
- DUPLICATE
- OFFCOLCALCS
- OFFROWCALCS
- ONCOLCALCS
- ONROWCALCS
- OUTPUT
- PRINTROW
- REMOVECOLCALCS
- RENAME
- SAVEROW
- SETROWOP
- SUPOUTPUT
**CHILDREN**

Selects all members in the level immediately below the specified member.
This command does not select the specified member.

**Syntax**

```
<CHILDREN mbrName
```

**Parameter Description**

- mbrName: Dimension or member name of the parent

**Notes**

- If member names contain spaces (for example, Cost of Goods Sold) or consist of numbers (for example, 100-10), they must be enclosed in double quotes.
- CHILDREN lists members in their outline order. The parent, specified by `mbrName`, is not included.
- The ICHILDREN command includes the specified member.

**Example**

```
<CHILDREN Year

Selects members Qtr1, Qtr2, Qtr3, and Qtr4, in that order (see the Notes for this command).
```

```
<CHILD Qtr1

Selects members Jan, Feb, and Mar, in that order.
```

**See Also**

- DESCENDANTS
- ICHILDREN
- IDESCENDANTS

---

**CLEARALLROWCALC**

Resets the value of all calculated rows to #MISSING.

**Syntax**

```
{ CLEARALLROWCALC }
```

**See Also**

- CALCULATE ROW
- CLEARROWCALC
- OFFCOLCALCS
- OFFROWCALCS
- ONCOLCALCS
- ONROWCALCS
- PRINTROW

1318
- REMOVECOLCALCS
- SETROWOP
- SUPOUTPUT

### CLEARROWCALC

Resets the value of the row calculation `name` to #MISSING.

**Syntax**

```
{ CLEARROWCALC name }
```

**Parameter Description**

- `name` Name of a calculated row from a CALCULATE ROW command.

**See Also**

- CALCULATE ROW
- CLEARALLROWCALC
- OFFCOLCALCS
- OFFROWCALCS
- ONCOLCALCS
- ONROWCALCS
- PRINTROW
- REMOVECOLCALCS
- RENAME
- SAVEANDOUTPUT
- SAVEROW
- SETROWOP
- SUPOUTPUT

### COLHEADING

Turns on automatic display of the column header, and sets it to be output prior to display of the next non-suppressed output data row.

**Syntax**

```
{ COLHEADING }
```

**Notes**

- The purpose of delaying the header output is to ensure that when no data follows a heading (due to suppression with a SUPMISSING or at the end of a report, for instance, a meaningless header is not generated.
- IMMHEADING produces a new page and column heading immediately, without waiting for the next non-suppressed output line.
- COLHEADING can be specified between the STARTHEADING and ENDHEADING commands to position the heading relative to other outputs defined in the custom heading.
When COLHEADING is used, the column members are displayed at the time the heading is generated, rather than immediately. Thus, if this command was issued at the start of the report script, it would still generate column headings only as part of the regular heading, and not as the first item on the page.

COLHEADING also displays column headings after they have been suppressed with either a SUPCOLHEADING, SUPHEADING, or SUPALL command.

By default, page and column headers (together called the HEADING) are turned on. This means they are displayed prior to the first actual output row in a report, and are reset to display again whenever:
1. A new page is generated.
2. Any member in the page or column dimensions changes.

A specific COLHEADING, PAGEHEADING, or IMMHEADING dictates a new heading. Once they are reset to "display", they are output just prior to the new non-suppressed output row.

Example

The command COLHEADING displays the column heading members for a second time in the following report after displaying a blank line with the SKIP command.

```
<PAGE (Market, Accounts, Scenario)
Chicago Sales Actual
<COLUMN (Year)
    <ICHILDREN Year
<ROW (Product)
    <ICHILDREN Audio
    { SKIP COLHEADING }
    <ICHILDREN Visual

This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stereo</td>
<td>2,591</td>
<td>2,476</td>
<td>2,567</td>
<td>3,035</td>
<td>10,669</td>
</tr>
<tr>
<td>Compact_Disc</td>
<td>3,150</td>
<td>3,021</td>
<td>3,032</td>
<td>3,974</td>
<td>13,177</td>
</tr>
<tr>
<td>Audio</td>
<td>5,741</td>
<td>5,497</td>
<td>5,599</td>
<td>7,009</td>
<td>23,846</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Qtr1</td>
<td>4,410</td>
<td>4,001</td>
<td>4,934</td>
<td>6,261</td>
<td>19,606</td>
</tr>
<tr>
<td>Qtr2</td>
<td>3,879</td>
<td>3,579</td>
<td>4,276</td>
<td>4,877</td>
<td>16,611</td>
</tr>
<tr>
<td>Qtr3</td>
<td>2,506</td>
<td>2,522</td>
<td>2,602</td>
<td>3,227</td>
<td>10,857</td>
</tr>
<tr>
<td>Qtr4</td>
<td>10,795</td>
<td>10,102</td>
<td>11,812</td>
<td>14,365</td>
<td>47,074</td>
</tr>
<tr>
<td>Year</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

See Also

- HEADING
- SUPCOLHEADING
- IMMHEADING
- SUPPAGEHEADING
- PAGEHEADING
COLUMN

Defines the dimensions displayed as column members. Column members are displayed above data columns.

The order of the members in the command determines the order of the column headers in the report. The first header line of column members are from the same dimension as the first member in the \textit{dimList}. The second line members are from the dimension of the second member, and so on. \textit{dimList} can contain a maximum of one member from each dimension.

Once you have identified the column dimensions using this command, any members from those dimensions that are a part of the report are defined as the data columns. If a member is not selected from a column dimension, then the highest member in that dimension is used.

\textbf{Syntax}

\begin{verbatim}
<COLUMN ( dimList )
\end{verbatim}

\textbf{Parameter Description}

\begin{itemize}
  \item \textbf{dimList}  Dimension name or a comma-delimited list of dimensions
\end{itemize}

\textbf{Notes}

\begin{itemize}
  \item If dimension names contain spaces or consist of numbers, they must be enclosed in double quotes.
  \item When more than one dimension is specified, the first dimension in the list appears at the top of each column, the next dimension in the list appears lower on the page, nested below the first dimension, and so on.
\end{itemize}

\textbf{Example}

\begin{verbatim}
<COLUMN (Year, Scenario)
\end{verbatim}

Creates a report with Year members at the head of each column. Nested below each Year member are columns headed by members of Scenario.

\textbf{See Also}

\begin{itemize}
  \item \texttt{PAGE}
  \item \texttt{ROW}
\end{itemize}

COMMAS

Displays commas for numbers greater than 999 after commas have been suppressed with either a \texttt{SUPCOMMAS} or \texttt{SUPALL} command.

\textbf{Syntax}

\begin{verbatim}
{ COMMAS }
\end{verbatim}
**Example**

```
{ COMMAS }
```

displays the number 1345 as 1,345 in the report.

**See Also**

- **BRACKETS**
- **DECIMAL**
- **SUPALL**
- **SUPCOMMAS**

---

**CURHEADING**

Enables the display of the currency conversion heading.

**Syntax**

```
{ CURHEADING }
```

**Notes**

This command turns on the display of the currency conversion heading, if it was suppressed with **SUPCURHEADING**. The currency conversion heading is displayed along with each page heading as it is displayed.

**Example**

See the example for the **CURRENCY** command.

**See Also**

- **IMMHEADING**
- **CURRENCY**
- **SUPCURHEADING**
- **TEXT**

---

**CURRENCY**

Converts data values in the report to the `targetCurrency`, and causes the currency heading to be displayed with the page heading. This does not convert the data in the database: only in the report.

If the `<CURRENCY` command is not used, the data is reported as it is currently stored in the database. Typically, the database is set up with currency conversions, requiring no additional conversion.

**Syntax**

```
<CURRENCY  targetCurrency
```
**Parameter**  **Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>targetCurrency</td>
<td>Currency and currency type to display in the report. Currency type is optional. Up to four members (at most one from each currency database dimension) in a cross-dimensional member (-&gt;). For example: USD, or USD-&gt;Actual-&gt;Jun99</td>
</tr>
</tbody>
</table>

**Notes**

- The currency conversion label, which identifies the currency used in the report, appears at the top of each page. See the TEXT command for custom placement of the currency label.
- For information on creating and maintaining currency databases, see the Oracle Essbase Database Administrator’s Guide.

**Example**

```plaintext
<PAGE (Market, Measures, Scenario)
Illinois Sales Budget
<COLUMN (Year)
<CCHILDREN Qtr1
<CURRENCY USD
<ICHILDREN Colas
!

This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See Also

- CURHEADING
- SUPCURHEADING
- TEXT

### DATEFORMAT

Report Writer can be used prepare reports based on Date type members. Report writer display format directives that apply to numeric values apply to Date type values also. The following format directive formats all the output cells based on the outline’s date format string:

```plaintext
{OUTFORMATTEDVALUES}
```
Parameter | Description
---|---
“string” | A string in one of the date format string supported by Essbase

**Example**

**See Also**

- WITHATTR

**DECIMAL**

Determines the number of decimal places to display in the report.

**Syntax**

```
{ DECIMAL decPlaces | VARIABLE [ columnN [columnN] ] }
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
decPlaces | Number of decimal places to display. Positive integer from 0 (the default) to 40. Specify either VARIABLE or `decPlaces`.

VARIABLE Allows the decimal to float; may switch to scientific notation (E+00 format) if necessary to display the significant digits of a number in the given column width.

columnN | Optional. Space-separated list of columns to be affected. If omitted, all columns are affected.

**Notes**

If you specify columns in the DECIMAL command before designating them with a member selection, the column numbers apply to all selected columns with a number that is a multiple of the specified column number.

The total number of specified column numbers should not exceed the value of `columnN`.

**Default Value**

Positive integer from 0 (the default) to 40.

**Example**

```
{DECIMAL 2}
```

Displays the number 65.4365 as 65.44 in the final report.

**See Also**

- BRACKETS
- COMMAS
- SUPBRACKETS
- SUPCOMMAS
**DESCENDANTS**

Adds the descendants of *mbrName* to the report, excluding *mbrName*.

Adding the descendants of the top of the dimension adds all the members in the dimension to the report, except the dimension top.

When a generation or level name is provided, this command returns all descendants at (or up to) the specified generation or level below *mbrName*.

**Syntax**

```
<DESCENDANTS mbrName
```

When used as an extraction command in conjunction with the `<LINK` command, the syntax is:

```
<DESCENDANTS (mbrName [, gen/levelName [, AT|UPTO]])
```

**Parameter** | **Description**
--- | ---
*mbrName* | Name of parent of descendants.
*gen/levelName* | Optional. Generation or level name.
**AT** | Optional. Keyword indicating that all descendants at the specified generation or level should be returned. If AT or UPTO are omitted, this behavior is the default.
**UPTO** | Optional. Keyword indicating that all descendants between the root member and up to the specified generation or level should be returned. The root member is also returned.

**Notes**

- The IDESCENDANTS command includes the specified member.
- The DESCENDANTS command, when used with UPTO keyword, includes the specified member.
- Syntax specifying generation or level is available only when this command is used as an extraction command in conjunction with the `<LINK` command.

**Example**

**Example 1 (DESCENDANTS)**

```
<DESCENDANTS Year
```

Selects members Jan, Feb, Mar, Q1, Apr, May, June, Q2, Jul, Aug, Sep, Q3, Oct, Nov, Dec, Q4.

**Example 2 (DESCENDANTS)**

```
<LINK(<DESCENDANTS (Market,"Lev0,Market"))
OR
<LINK(<DESCENDANTS (Market,State))
```

This example produces the following report:
Example 3 (DESCENDANTS)

<LINK(<DESCENDANTS(Market,"Lev0,Market",UPTO))
OR
<LINK(<DESCENDANTS(Market,State,UPTO))
>

This example produces the following report:

<table>
<thead>
<tr>
<th>State</th>
<th>#Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>#Missing</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>#Missing</td>
</tr>
<tr>
<td>Florida</td>
<td>#Missing</td>
</tr>
<tr>
<td>Connecticut</td>
<td>#Missing</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>#Missing</td>
</tr>
<tr>
<td>California</td>
<td>#Missing</td>
</tr>
<tr>
<td>Oregon</td>
<td>#Missing</td>
</tr>
<tr>
<td>Washington</td>
<td>#Missing</td>
</tr>
<tr>
<td>Utah</td>
<td>#Missing</td>
</tr>
<tr>
<td>Nevada</td>
<td>#Missing</td>
</tr>
<tr>
<td>Texas</td>
<td>#Missing</td>
</tr>
<tr>
<td>Oklahoma</td>
<td>#Missing</td>
</tr>
<tr>
<td>Louisiana</td>
<td>#Missing</td>
</tr>
<tr>
<td>New Mexico</td>
<td>#Missing</td>
</tr>
<tr>
<td>Illinois</td>
<td>#Missing</td>
</tr>
<tr>
<td>Ohio</td>
<td>#Missing</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>#Missing</td>
</tr>
<tr>
<td>Missouri</td>
<td>#Missing</td>
</tr>
<tr>
<td>Iowa</td>
<td>#Missing</td>
</tr>
<tr>
<td>Colorado</td>
<td>#Missing</td>
</tr>
<tr>
<td>Central</td>
<td>#Missing</td>
</tr>
</tbody>
</table>
DIMBOTTOM

Adds all level-0 dimension members to the report.

Syntax

```<DIMBOTTOM mbrName>```

Parameter Description

- `mbrName`: A member from the dimension.

Notes

This command adds all level 0 members to the report. `mbrName` is from the dimension whose level 0 members you want to select. Regardless of the member you specify, Essbase retrieves all level 0 members of that dimension. For example, if you specify Audio in the Demo Basic database, Essbase retrieves all the level 0 members under Audio and under Visual, because they are all level 0 members of the Product dimension.

Example

The command `<DIMBOTTOM Audio` adds all the members from the bottom of the Product dimension:

```<PAGE (Market, Accounts, Scenario)
Chicago Sales Actual
  <COLUMN (Year)
  <ICHILDREN Year
<ROW (Product)
<DIMBOTTOM Audio```

This example produces the following report:

<table>
<thead>
<tr>
<th>Product</th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stereo</td>
<td>2,591</td>
<td>2,476</td>
<td>2,567</td>
<td>3,035</td>
<td>10,669</td>
</tr>
<tr>
<td>Compact_Disc</td>
<td>3,150</td>
<td>3,021</td>
<td>3,032</td>
<td>3,974</td>
<td>13,177</td>
</tr>
<tr>
<td>Television</td>
<td>4,410</td>
<td>4,001</td>
<td>4,934</td>
<td>6,261</td>
<td>19,606</td>
</tr>
<tr>
<td>VCR</td>
<td>3,879</td>
<td>3,579</td>
<td>4,276</td>
<td>4,877</td>
<td>16,611</td>
</tr>
<tr>
<td>Camera</td>
<td>2,506</td>
<td>2,522</td>
<td>2,602</td>
<td>3,227</td>
<td>10,857</td>
</tr>
</tbody>
</table>

See Also

- DIMTOP
**DIMEND**

Specifies a dimension format to be processed after cycling through all members in the dimension.

Any formatting commands in the report script encountered immediately before the DIMEND command become formats for all dimensions in `dimList`.

When the report is produced, after processing all members from the specified dimension(s) associated with the format, including the processing of any groups of members from other dimensions which are nested inside the specified dimension(s), the DIMEND format is then processed.

**Syntax**

```<DIMEND dimList>```

**Parameter Description**

dimList List of members, separated by commas, that represents the dimensions for which the format is intended.

**Notes**

Formats are associated with the subsequent member, and are processed just prior to any output of that member. Therefore, without this command, in some situations it would be impossible to define a format to process after a member, especially if it was the last in a group.

**Example**

The UCOLUMNS format command underlines the columns in the report after every cycle through the Market dimension. In the report, you see children of Qtr1 for East followed by children of Qtr1 for West. After West, before starting over with East again, the processing of UCOLUMNS displays the underlines in the report.

```<PAGE (Accounts, Scenario)>
Sales Actual
<COLUMN (Product)
  /* Applied after dimension processing*/
  <ICHILDREN Audio
  <ROW (Market,Year)
  East West
  <CHILDREN Qtr1
  { UCOLUMNS }
  <DIMEND(Market)
  /* Puts underline after Market */
  ```

This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>Sales Actual</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Stereo</td>
<td>Compact</td>
</tr>
<tr>
<td>-------</td>
<td>--------------</td>
<td>--------</td>
</tr>
<tr>
<td>East</td>
<td>Jan</td>
<td>2,788</td>
</tr>
<tr>
<td></td>
<td>Feb</td>
<td>2,482</td>
</tr>
<tr>
<td></td>
<td>Mar</td>
<td>2,569</td>
</tr>
<tr>
<td>West</td>
<td>Jan</td>
<td>4,102</td>
</tr>
</tbody>
</table>

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DIMTOP

Adds the top of the dimension for the member to the report.

Syntax

```
<DIMTOP mbrName
```

Parameter Description

mbrName  Single member from the dimension to designate.

Notes

You can specify any member from the dimension, including the top member.

Example

```
<DIMTOP Stereo
```

Adds the top of the Product dimension to the report.

```
<PAGE (Market, Accounts, Scenario)
Chicago Sales Actual
<COLUMN (Year)
<ICHILDREN Year
<ROW (Product)
<DIMTOP Stereo
```

This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>Chicago</th>
<th>Sales</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qtr1</td>
<td>16,536</td>
<td>15,599</td>
<td>17,411</td>
</tr>
<tr>
<td>Qtr2</td>
<td></td>
<td></td>
<td>21,374</td>
</tr>
<tr>
<td>Qtr3</td>
<td></td>
<td></td>
<td>70,920</td>
</tr>
<tr>
<td>Qtr4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See Also

- DIMBOTTOM
- DIMEND

DUPLICATE

Enables a member name to occur more than once in a dimension group selection.

This command is useful either (a) in a multi-section report when the same row name appears more than once in each section or (b) when the row must be captured (without printing) once
at the top of each section for calculation purposes, and included again later in the section for output.

Syntax

\(<\text{DUPLICATE} \ \text{mbrRange}\>

Parameter Description

mbrRange  A single member name or selection command.

- Single member: A member already selected for the dimension can be selected again.
- Selection command: \(<\text{DUPLICATE} \ \text{applies to all members selected by mbrRange}. \text{For example,} \ <\text{CHILDREN Accounts}.\>

Notes

- If the DUPLICATE command is not used, by default the data extraction operation ignores duplicates in a group of members in the same dimension up to the point where a "!" is encountered.
- \(<\text{DUPLICATE} \text{is not restricted to row dimensions. It can also be used to allow a repeat of a column or page dimension member.}\>

Example

The following example is based on Sample Demo.

\(<\text{PAGE}(\text{Market})\>

\<\text{East}\>

\<\text{COLUMN}(\text{Scenario, Year})\>

\<\text{Sales} \ \text{Actual}\>

\<\text{Jan} \ \text{Jan}\>

\{ ORDER 2,0,1,3,4 WIDTH 12 0 1 NOINDENTGEN AFTER "%" 4

\<\text{SKIPONDIM Product LMARGIN 10}\>

\} \ <\text{ROW}(\text{Product, Accounts})\>

\{ \text{CALC ROW "Sales" OFF } \}
\{ \text{CALC COL "Actual~% Sales" = 2 % "Sales" 2 } \}

\<\text{ICHILDREN Visual}\>

\{ \text{SAVEROW } \} \text{ Sales}

\text{Payroll}

\text{Marketing}

\text{Profit}

\<\text{DUPLICATE Sales}\>

\!

This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>East</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget</td>
<td></td>
<td>Actual</td>
<td>Actual</td>
</tr>
<tr>
<td>Jan</td>
<td>Jan</td>
<td>% Sales</td>
<td></td>
</tr>
<tr>
<td>-----</td>
<td>-----</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td>=====</td>
<td>=====</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td>1,200 Television</td>
<td>Payroll</td>
<td>1,236</td>
<td>25%</td>
</tr>
<tr>
<td>440</td>
<td>Marketing</td>
<td>365</td>
<td>9%</td>
</tr>
<tr>
<td>1,240</td>
<td>Profit</td>
<td>1,295</td>
<td>26%</td>
</tr>
<tr>
<td>4,800</td>
<td>Sales</td>
<td>5,244</td>
<td>100%</td>
</tr>
<tr>
<td>1,030 VCR</td>
<td>Payroll</td>
<td>1,044</td>
<td>25%</td>
</tr>
<tr>
<td>150</td>
<td>Marketing</td>
<td>156</td>
<td>4%</td>
</tr>
<tr>
<td>1,466</td>
<td>Profit</td>
<td>1,417</td>
<td>35%</td>
</tr>
<tr>
<td>4,200</td>
<td>Sales</td>
<td>4,311</td>
<td>100%</td>
</tr>
<tr>
<td>1,195 Camera</td>
<td>Payroll</td>
<td>1,167</td>
<td>42%</td>
</tr>
<tr>
<td>300</td>
<td>Marketing</td>
<td>288</td>
<td>11%</td>
</tr>
<tr>
<td>528</td>
<td>Profit</td>
<td>400</td>
<td>19%</td>
</tr>
<tr>
<td>2,850</td>
<td>Sales</td>
<td>2,656</td>
<td>100%</td>
</tr>
<tr>
<td>3,425 Visual</td>
<td>Payroll</td>
<td>3,447</td>
<td>29%</td>
</tr>
<tr>
<td>890</td>
<td>Marketing</td>
<td>809</td>
<td>8%</td>
</tr>
<tr>
<td>3,234</td>
<td>Profit</td>
<td>3,112</td>
<td>27%</td>
</tr>
<tr>
<td>11,850</td>
<td>Sales</td>
<td>12,211</td>
<td>100%</td>
</tr>
</tbody>
</table>

See Also
- PAGE
- COLUMN
- ROW

**ENDHEADING**

Ends the definition of the custom page heading displayed at the top of each page.

**Syntax**

```
{ ENDHEADING }
```

**Notes**

This command ends the definition of the custom page heading displayed at the top of each page in the report and in certain other situations. The STARTHEADING command begins the heading, and all commands encountered between the STARTHEADING and ENDHEADING are part of the heading definition.

**Example**

See example for the STARTHEADING command.

See Also
- HEADING
- IMMHEADING
- STARTHEADING
- SUPHEADING
EUROPEAN

Enables non-US number formatting by switching commas and decimal points in report data values.

Syntax

\{ EUROPEAN \}

Notes

In non-US number formatting, decimal points are used as the thousands separator, while commas separate the decimal from the integer.

Example

The following example is based on Sample Demo.

This report displays an example of the \{ EUROPEAN \} command for the report based on Chicago followed by the \{ SUPEUROPEAN \} command for the Boston report.

\<PAGE(Market, Accounts, Scenario)\>
Chicago Sales Actual
  \<COLUMN (Year)\>
  \<CHILDREN Year\>

\<ROW (Product)\>
\<CHILDREN Audio\>
  !
\{EUROPEAN\}

Chicago Sales Actual

  \<CHILDREN Year\>
  \<CHILDREN Audio\>
  !

This example produces the following report:

<table>
<thead>
<tr>
<th>Product</th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stereo</td>
<td>2,591</td>
<td>2,476</td>
<td>2,567</td>
<td>3,035</td>
</tr>
<tr>
<td>Compact_Disc</td>
<td>3,150</td>
<td>3,021</td>
<td>3,032</td>
<td>3,974</td>
</tr>
</tbody>
</table>

See Also

- BRACKETS
- COMMAS
- DECIMAL
**FEEDON**

Enables page break insertion when the number of output lines on a page is greater than the PAGELENGTH setting.

**Syntax**

```
{ FEEDON }
```

**Notes**

This command enables page breaks (and, by default, a new page header) in a report when the number of output lines on a page is greater than the PAGELENGTH setting. Use after a SUPFEED command has disabled page breaks.

**Default Value**

The defaults are FEEDON and PAGELENGTH of 66 lines.

**See Also**

- PAGELENGTH
- SUPFEED

**FIXCOLUMNS**

Fixes the number of columns in the report regardless of how many columns are originally selected.

**Syntax**

```
{ FIXCOLUMNS number }
```

**Parameter Description**

- `number`: Number of columns that you want to be displayed in your final report.

**Notes**

This command fixes the number of columns in the final report regardless of how many columns are originally selected. Only the first `number` of columns, which includes row name columns and data columns, are displayed.

This command is often used in conjunction with the ORDER command to select and reorder a subset of columns, cutting off excess columns.

**Example**

The following examples are based on Sample Demo.
The command \{ FIXCOLUMNS 3 \} causes only 3 columns, the row name column and two data columns, to be displayed even though there are additional columns for the data values of Qtr3, Qtr4 and Year.

\begin{verbatim}
<PAGE (Market, Accounts, Scenario)
Chicago Sales Actual

    <COLUMN (Year)
    <ICHILDREN Year

<ROW (Product)

{FIXCOLUMNS 3}
<ICHILDREN Audio
!
\end{verbatim}

This example produces the following report:

\begin{verbatim}
Chicago Sales Actual

\begin{tabular}{lcc}
  & Qtr1 & Qtr2 \\
\hline
Stereo & 2,591 & 2,476 \\
Compact_Disc & 3,150 & 3,021 \\
Audio & 5,741 & 5,497 \\
\end{tabular}
\end{verbatim}

This example used FIXCOLUMNS and ORDER to create a non-symmetric report.

\begin{verbatim}
<PAGE (Market, Accounts)
<COLUMN (Year, Scenario)
<ROW (Product)
\{ ORDER 0,1,3,5,6 FIXCOLUMNS 5 \}

Chicago Sales

    Jan Feb Mar
    Actual Budget

<ICHILDREN Audio
!
\end{verbatim}

\begin{verbatim}
Chicago Sales

\begin{tabular}{lcccc}
  & Jan & Feb & Mar & Mar \\
\hline
  & Actual & Actual & Actual & Budget \\
\hline
Stereo & 923 & 834 & 834 & 900 \\
Compact_Disc & 1,120 & 1,050 & 980 & 1,000 \\
Audio & 2,043 & 1,884 & 1,814 & 1,900 \\
\end{tabular}
\end{verbatim}

If the command \{ BLOCKHEADERS \} had also been used, the output would be:
Chicago Sales

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual</td>
<td>Actual</td>
<td>Actual</td>
<td>Budget</td>
</tr>
<tr>
<td>-------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td>Stereo</td>
<td>2,591</td>
<td>2,476</td>
<td>2,348</td>
<td>2,438</td>
</tr>
<tr>
<td>Compact_Disc</td>
<td>3,150</td>
<td>3,021</td>
<td>3,115</td>
<td>3,028</td>
</tr>
<tr>
<td>Audio</td>
<td>5,741</td>
<td>5,497</td>
<td>5,825</td>
<td>5,003</td>
</tr>
</tbody>
</table>

Note that without the FIXCOLUMNS, the column headers would have been:

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual</td>
<td>Budget</td>
<td>Actual</td>
</tr>
</tbody>
</table>

See Also

- ORDER

**FORMATCOLUMNS**

Expands the number of data columns when processed.

**Syntax**

```
{ FORMATCOLUMNS number }
```

**Parameter Description**

- `number` Expected number of columns that are encountered for formatting purposes.

**Notes**

Before any data column members are added, the report assumes only one data column. FORMATCOLUMNS (and other commands that reference column numbers) expands the number of data columns. FORMATCOLUMNS formats the report layout for a predetermined number of data columns for text and headings.

This command does not limit the number of output columns, as FIXCOLUMNS does. For example, a TEXT command used to center text can be issued before the addition of members that define the data columns, so centering would be off unless FORMATCOLUMNS is used to indicate the expected number of columns.

**Example**

```
| FORMATCOLUMNS 10 |
```

sets up an expected report size of 10 columns for formatting purposes.

See Also

- COLUMN
- NAMESCOL
GEN

Returns all members in a dimension with the specified generation name.

Syntax

GEN name, dimension

When used as an extraction command in conjunction with the <LINK command, the syntax is:
<GEN(dimension, genNumber)

Parameter Description
name Generation name
dimension Dimension name
genNumber Generation number

Notes

- The report script can use either default generation names or user-defined generation names. Examples of default generation names are GEN1, GEN2, and so on.
- Use quotes around the GEN command if the dimension name contains spaces.

Example

GEN3,Year

Selects members of generation 3 from the Year dimension.

CityGen,State

Selects members of the user-defined generation name CityGen from the State dimension.

"GEN2,All Markets"

Selects members of generation 2 from the All Markets dimension.

<LINK (<GEN(Product,3) AND <LEV(Product,0))

Selects members with generation 3 and level 0 from the Product dimension.

See Also

- LEV
- LINK

HEADING

Displays the page heading: either the default heading or the heading as defined with the STARTHEADING and ENDHEADING commands.

If the SUPHEADING command has been used to turn off the display of the heading, this command also turns it back on, printing it just before the next non-suppressed output row, and thereafter at the top of every new page (unless SUPHEADING is used again). The heading
automatically adjusts to any change in column or page selection members and is generated prior to the next output data row without the need for a further HEADING command.

**Note:** The default heading includes the page member heading, the column member heading, and, if applicable, the currency heading.

**Syntax**

```
{ HEADING }
```

**Notes**

- By default, page and column headers (together called the HEADING) are turned on. This means they are displayed prior to the first actual output row in a report, and are reset to display again whenever:
  - A new page is generated.
  - Any member in the page or column dimensions changes.
  - A specific COLHEADING, PAGEHEADING, or IMMHEADING dictates a new heading. Once they are reset to "display", they are output just prior to the new non-suppressed output row.
- To produce a new page and column heading immediately, without waiting for the next non-suppressed output line, use IMMHEADING.
- A heading normally comprises the page heading (members of the PAGE dimension) and the column heading (the current members of the column dimensions). The last line of the column header is also underlined.
- If STARTHEADING/ENDHEADING is used, the HEADING command redefines the makeup of the report heading.
- If SUPHEADING is used, the page heading and column heading can still be independently turned back on by the commands: PAGEHEADING and COLHEADING.

**Example**

See the example for the STARTHEADING command for an example of a heading.

**See Also**

- COLHEADING
- ENDHEADING
- IMMHEADING
- PAGEHEADING
- STARTHEADING
- SUPHEADING

**ANCESTORS**

Adds a member and its ancestors to the report.
**Syntax**

```
<ANCESTORS mbrName
```

**Parameter Description**

- **mbrName**: Single member whose ancestors you want to include.

**Notes**

The ancestors of a member consists of its parent, that parent’s parent, and so on, all the way to the top member of the dimension, including the specified member.

**See Also**

- CHILDREN
- DESCENDANTS
- PARENT

---

**ICHILDREN**

Selects the specified member and all members in the level immediately below it.

**Syntax**

```
<ICHILDREN mbrName
```

**Parameter Description**

- **mbrName**: Dimension or member name of the parent

**Notes**

- If member names contain spaces (for example, Cost of Goods Sold or consist of numbers (for example, 100-10), they must be enclosed in double quotes.
- ICHILDREN lists members in their defined order, according to the database outline. The parent, which is the member specified as the parameter in the ICHILDREN command, is listed last.

**Example**

```
<ICHILDREN Year
```

Selects members Qtr1, Qtr2, Qtr3, Qtr4, and Year, in that order.

```
<ICHILDREN Qtr1
```

Selects members Jan, Feb, Mar, and Qtr1, in that order.

**See Also**

- ANCESTORS
- CHILDREN
- DESCENDANTS
- PARENT

---

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**IDESCENDANTS**

Adds the specified member and its descendants to the report.

**Syntax**

```xml
<IDESCENDANTS mbrName>
```

When used as an extraction command in conjunction with the `<LINK` command, the syntax is:

```xml
<IDESCENDANTS (mbrName [, gen/levelName [, AT|UPTO]])>
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>mbrName</td>
<td>Name of single member and descendants to add to the report.</td>
</tr>
<tr>
<td>gen/levelName</td>
<td>Optional. Generation or level name.</td>
</tr>
<tr>
<td>AT</td>
<td>Optional. Keyword indicating that all descendants at the specified generation or level should be returned. If AT or UPTO are omitted, this behavior is the default.</td>
</tr>
<tr>
<td>UPTO</td>
<td>Optional. Keyword indicating that all descendants between the root member and up to the specified generation or level should be returned. The root member is also returned.</td>
</tr>
</tbody>
</table>

**Notes**

Adding the descendants of the top of the dimension adds all the members in the dimension to the report, including the dimension top.

**Example**

**Example 1**

```xml
<IDESCENDANTS Product>
```

Adds all the members from the Product dimension to the report since all the members are descendants of the member Product which is the top of the dimension. Audio and Visual are the children of Product. Stereo and Compact_Disc are the children of Audio while Television, VCR, and Camera are the children of Visual.

```xml
<PAGE (Market, Accounts, Scenario)
Chicago Sales Actual
<COLUMN (Year)
<ICHILDREN Year
<ROW (Product)
<IDESCENDANTS Product
```

This example produces the following report:

```
Chicago Sales Actual

Qtr1   Qtr2   Qtr3   Qtr4   Year
======= ====== ====== ====== =======
Stereo  2,591  2,476  2,567  3,035  10,669
Compact_Disc  3,150  3,021  3,032  3,974  13,177
```
Audio         5,741  5,497  5,599  7,009 23,846
Television     4,410  4,001  4,934  6,261 19,606
VCR            3,879  3,579  4,276  4,877 16,611
Camera          2,506  2,522  2,602  3,227 10,857
Visual         10,795 10,102 11,812 14,365 47,074
Product        16,536 15,599 17,411 21,374 70,920

Example 2

<LINK(<IDESCENDANTS(Market,"Lev0,Market")))

OR

<LINK(<IDESCENDANTS(Market,State)))

!

This example produces the following report:

New York      #Missing
Massachusetts #Missing
Florida       #Missing
Connecticut   #Missing
New Hampshire #Missing
California    #Missing
Oregon        #Missing
Washington    #Missing
Utah          #Missing
Nevada        #Missing
Texas         #Missing
Oklahoma      #Missing
Louisiana     #Missing
New Mexico    #Missing
Iowa          #Missing
Colorado      #Missing
Market        #Missing

Example 3

<LINK(<IDESCENDANTS(Market,"Lev0,Market",UPTO)))

OR

<LINK(<IDESCENDANTS(Market,State,UPTO)))

!

This example produces the following report:

Market        #Missing
New York      #Missing
Massachusetts #Missing
Florida       #Missing
Connecticut   #Missing
New Hampshire #Missing
East          #Missing
California   #Missing
Oregon        #Missing
Washington   #Missing
Forces the immediate display of the heading without waiting for the next non-suppressed data row.

Syntax

{(IMMHEADING)}

Notes

Under normal circumstances, the heading only appears when at least one non-suppressed row is ready to be output on the current page. For this reason, when any suppression commands are turned on (such as SUPMISSING or SUPZEROS), and an entire page is suppressed, those page headers are normally skipped entirely.

An occurrence of the IMMHEADING command prints the header immediately, even if there is no current row to print. This command does not unsuppress data, but simply prints its headings.

This command is useful for inserting special formatting between the heading and the first output record. This is usually impossible because the header does not print until it is ready to output data immediately, that is, after any formats associated with the row have been processed.

Example

See the example for STARTHEADING for an example of a heading.

See Also

- ANCESTORS
- CHILDREN
- DESCENDANTS
- PARENT
- LINK
**INCEMPTYROWS**

Displays empty rows of data, or rows that contain only zeros or #MISSING data values, in the final report.

**Syntax**

```plaintext
{ INCEMPTYROWS }
```

**Notes**

This command displays empty rows of data, or rows that contain only zeros or #MISSING data values, in the final report. This command is used to cancel the effects of SUPEMPTYROWS, SUPMISSINGROWS or SUPZEROROWS.

**See Also**

- INCMISSINGROWS
- INCZEROROWS
- SUPALL
- SUPEMPTYROWS
- SUPMISSINGROWS
- SUPZEROROWS

**INCFORMATS**

Controls the formats affected by the following commands: SUPMASK, SUPMISSING, and SUPZERO.

**Syntax**

```plaintext
{ INCFORMATS }
```

**Notes**

INCFORMATS prints out the format associated with a particular data row even when that row is suppressed. This means that line formatting, TEXT and MASK commands, and headers do not print unless their associated data rows print (or are not suppressed).

**Default Value**

Whenever the SUPMASK, SUPMISSING, or SUPZERO commands are used, by default SUPFORMATS is also set on, unless it has been specifically turned off.

**See Also**

- SUPFORMATS
**INCMASK**

Re-includes (turns back on) the mask that has been suppressed by the command SUPMASK.

Syntax

```
{ INCMASK }
```

See Also

- MASK

---

**INCMISSINGROWS**

Displays missing rows of data, or rows that contain all #MISSING data values, in the final report.

Syntax

```
{ INCMISSINGROWS }
```

Notes

This command displays missing rows of data, or rows that contain all #MISSING data values, in the final report. This command is used after a SUPMISSINGROWS or SUPEMPTYROWS command has been used to remove the missing rows from the final report.

See Also

- INCEMPTYROWS
- INCZEROROWS
- SUPALL
- SUPEMPTYROWS
- SUPMISSINGROWS
- SUPZEROROWS

---

**INCZEROROWS**

Includes rows that contain only data values of zero in the final report.

Syntax

```
{ INCZEROROWS }
```

Notes

This command displays zero rows of data, or rows that contain only data values of zero, in the final report. This command is used after a SUPZEROROWS or SUPEMPTYROWS command has been used to remove the zero rows from the final report.

See Also

- INCEMPTYROWS
- INCMISSINGROWS
- SUPALL
**INDENT**

Shifts the first row names column in column-output order by the specified number of characters.

**Note:** Default (No value): Indents columns by 2.

**Syntax**

\{ INDENT [ offset ] \}

**Parameter**  **Description**

offset  **Optional.** Number of spaces to indent column 0 from the left boundary of the name column. Values:
- Positive number (up to 100): Shifts column 0 to the right.
- Negative number: Shifts column left, but cannot indent to the left of the start of the name column.
- 0: Returns column to original position.
- Default (no value): Indents columns by 2.

**Notes**

- \{ INDENT \} shifts column 0 two characters to the right (the default) and decreases the size of column 1 by two.
- \{ INDENT 0 \} resets the indent position to the original position regardless of the current position.
- When a member is indented, the width of the names column for that member is decreased to offset the indent. This does not shift the remaining columns in the report.
- Once the indented names column has been declared, you can use the ORDER command to moved it within the final output format or precede it with regular or calculated columns.
- Hierarchical relationships between row members are, by default, indicated by indentation. Indentation only applies to a group of rows generated together, such as when a single ! is used. If each consecutive row is generated independently, using its own !, then no indentation occurs.

**Example**

In the following example, the first report for Chicago shows the default indentation while the second report for Boston uses the \{ INDENT 10\} command to shift the row names column 10 places to the right.

```
<PAGE (Market, Accounts, Scenario)
Chicago Sales Actual

<COLUMN (Year)
<ICHILDREN Year
```

1344
This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stereo</strong></td>
<td>2,591</td>
<td>2,476</td>
<td>2,567</td>
<td>3,035</td>
<td>10,669</td>
</tr>
<tr>
<td><strong>Compact_Disc</strong></td>
<td>3,150</td>
<td>3,021</td>
<td>3,032</td>
<td>3,974</td>
<td>13,177</td>
</tr>
<tr>
<td><strong>Audio</strong></td>
<td>5,741</td>
<td>5,497</td>
<td>5,599</td>
<td>7,009</td>
<td>23,846</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stereo</strong></td>
<td>2,450</td>
<td>2,341</td>
<td>2,377</td>
<td>2,917</td>
<td>10,085</td>
</tr>
<tr>
<td><strong>Compact_~</strong></td>
<td>3,290</td>
<td>3,034</td>
<td>3,132</td>
<td>3,571</td>
<td>13,027</td>
</tr>
<tr>
<td><strong>Audio</strong></td>
<td>5,740</td>
<td>5,375</td>
<td>5,509</td>
<td>6,488</td>
<td>23,112</td>
</tr>
</tbody>
</table>

**INDENTGEN**

Indents subsequent row members in the row names column based on the generation in the database outline.

**Syntax**

```
{ INDENTGEN [ offset ] }
```

**Parameter Description**

- **offset**: Optional. Number that determines the amount to indent each succeeding generation from the previous generation. Default: INDENTGEN -2.

**Notes**

This command indents row members in the row names column based on the generation in the Database Outline. Generations are counted starting at the top of the dimension.
The top of the dimension is the first generation of the dimension. The children of the top are
the second generation and so on. The offset determines how many characters each successive
generation is indented. A positive number places the first generation at the leftmost position
and indents each successive generation to the right. A negative number places the last generation
on the left.

By default, all generations in a row group are indented by -2 for each relative generation
difference. A row group is the group of row members selected before a an exclamation point (!)
is encountered. If every row is generated separately (a ! after every row member) all the "groups"
are one row only, and thus are not indented because there is no relative generation difference.

The indentation is based on relative rather than absolute generation differences so that if a report
is working with only the lower levels of a many-level tree, all the row names do not start heavily
indented, wasting column space. If offset is not given, it does not have a default value of -2.

Default Value

-2 is the default at the start of each report. {INDENTGEN}

Example

The following example shows the default generation indentation for the Chicago report followed
by the {INDENTGEN 3} command in the Boston report.

```
<PAGE (Market, Accounts, Scenario)
Chicago Sales Actual
    <COLUMN (Year)
    <ICHILDREN Year

<ROW (Product)
<IDESCENDANTS Product
    
{ INDENTGEN 3 }
Boston Sales Actual
    <ICHILDREN Year
    <IDESCENDANTS Product
```

This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stereo</td>
<td>2,591</td>
<td>2,476</td>
<td>2,567</td>
<td>3,035</td>
<td>10,669</td>
</tr>
<tr>
<td>Compact_Disc</td>
<td>3,150</td>
<td>3,021</td>
<td>3,032</td>
<td>3,974</td>
<td>13,177</td>
</tr>
<tr>
<td>Audio</td>
<td>5,741</td>
<td>5,497</td>
<td>5,599</td>
<td>7,009</td>
<td>23,846</td>
</tr>
<tr>
<td>Television</td>
<td>4,410</td>
<td>4,001</td>
<td>4,934</td>
<td>6,261</td>
<td>19,606</td>
</tr>
<tr>
<td>VCR</td>
<td>3,879</td>
<td>3,579</td>
<td>4,276</td>
<td>4,877</td>
<td>16,611</td>
</tr>
<tr>
<td>Camera</td>
<td>2,506</td>
<td>2,522</td>
<td>2,602</td>
<td>3,227</td>
<td>10,857</td>
</tr>
<tr>
<td>Visual</td>
<td>10,795</td>
<td>10,102</td>
<td>11,812</td>
<td>14,365</td>
<td>47,074</td>
</tr>
</tbody>
</table>

1346
<table>
<thead>
<tr>
<th>Product</th>
<th>16,536</th>
<th>15,599</th>
<th>17,411</th>
<th>21,374</th>
<th>70,920</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boston Sales Actual</td>
<td>Qtr1</td>
<td>Qtr2</td>
<td>Qtr3</td>
<td>Qtr4</td>
<td>Year</td>
</tr>
<tr>
<td>=========</td>
<td>=========</td>
<td>=========</td>
<td>=========</td>
<td>=========</td>
<td>=========</td>
</tr>
<tr>
<td>Stereo</td>
<td>2,450</td>
<td>2,341</td>
<td>2,377</td>
<td>2,917</td>
<td>10,085</td>
</tr>
<tr>
<td>Compact_Disc</td>
<td>3,290</td>
<td>3,034</td>
<td>3,132</td>
<td>3,571</td>
<td>13,027</td>
</tr>
<tr>
<td>Audio</td>
<td>5,740</td>
<td>5,375</td>
<td>5,509</td>
<td>6,488</td>
<td>23,112</td>
</tr>
<tr>
<td>Television</td>
<td>4,197</td>
<td>3,757</td>
<td>4,740</td>
<td>5,000</td>
<td>17,694</td>
</tr>
<tr>
<td>VCR</td>
<td>3,645</td>
<td>3,663</td>
<td>4,201</td>
<td>4,509</td>
<td>16,018</td>
</tr>
<tr>
<td>Camera</td>
<td>2,230</td>
<td>2,255</td>
<td>2,266</td>
<td>3,162</td>
<td>9,913</td>
</tr>
<tr>
<td>Visual</td>
<td>10,072</td>
<td>9,675</td>
<td>11,207</td>
<td>12,671</td>
<td>43,625</td>
</tr>
<tr>
<td>Product</td>
<td>15,812</td>
<td>15,050</td>
<td>16,716</td>
<td>19,159</td>
<td>66,737</td>
</tr>
</tbody>
</table>

See Also

- INDENT
- NOINDENTGEN

**IPARENT**

Adds the specified member and its parent to the report.

**Syntax**

IPARENT mbrName

**Parameter Description**

- mbrName: A single member, which must not be the top member of the dimension.

**Notes**

This command selects the current member and its parent, as defined in the database outline.

**Example**

<IPARENT Jan

Selects the member Jan and its parent member, Qtr1, in that order.

See Also

- PARENT

**LATEST**

Specifies a Dynamic Time Series member in a report script, which has reserved generation names that are defined in the database outline alias table (You must create a Dynamic Time Series member in the database outline before you use it in a report script.)

If you use the < LATEST syntax, the command is applied globally in the report script. If you use the reservedName (mbrName) syntax, Essbase applies the command only to the member listed in the syntax argument.
Syntax

1:
<LATEST mbrName
2:
<LATEST reservedName (mbrName)

Parameter   Description

reservedName  One of the following pre-defined generation names:
              History-To-Date (H-T-D)
              Year-To-Date (Y-T-D)
              Season-To-Date (S-T-D)
              Period-To-Date (P-T-D)
              Quarter-To-Date (Q-T-D)
              Month-To-Date (M-T-D)
              Week-To-Date (W-T-D)
              Day-To-Date (D-T-D)

mbrName      The name of the level 0 member in the Time dimension.

Notes

- You can create an alias table in the database and replace the predefined generation names with alias names.
- The "latest" period must be a level 0 member in the time dimension.
- Sparse retrieval optimization eliminates requested sparse members that do not have any data blocks in the database.
- You cannot use attributes as arguments.

Example

<LATEST May

or

Q-T-D (May)

LEAVES

Adds level 0 contributing descendants (descendants with non #MISSING data) for the specified member to the report. This command is equivalent to getting DESCENDANTS of mbrName at level 0 (for primary hierarchy) with SUPMISSINGROWS enabled for the dimension.

The Leaves command compactly describes large dimensions correlated with another dimension (many-to-many relationship) while avoiding internal expansion of members before retrieval.

Because large sets tend to be very sparse, only a few members contribute to the input member (have non #Missing values) and are returned. As a result, LEAVES consumes less memory resources than the equivalent nonempty Descendants function call, allowing for better scalability, especially in concurrent user environments.
Syntax

<LEAVES mbrName

Parameter Description

mbrName  Single member whose level 0 contributing descendants should be added to the report

Notes

- This command only applies to aggregate storage databases.
- This command can only be used on rows or pages; if used on columns, an error is returned.
- This command is not supported in combination with name and alias sorting commands.
- Members will be returned in outline order.
- This command is not supported in combination with other selection commands for the same dimension.
- This command is not supported in combination with row and column calculation commands.

Example

<LEAVES("Personal Electronics")

This example produces the following report:

Digital Cameras  1,344,844
Camcorders       2,747,641
Photo Printers   1,325,536
Memory           2,607,186
Other Accessories 6,475,762
Boomboxes        1,720,446
Radios           1,657,511

"Handhelds" was omitted from the result set because it has a value of #MISSING, so it does not contribute to "Personal Electronics".

See Also

- DESCENDANTS

LEV

Returns all members in a dimension with the specified level name.

Syntax

LEV name,dimension

When used as an extraction command in conjunction with the <LINK command, the syntax is:

<LEV(dimention, levNumber)
Parameter | Description
---|---
name | Level name

dimension | Dimension name

levNumber | Level number

Notes
- The report script can use either default level names or user-defined level names. Examples of default level names are LEV0, LEV1, and so on.
- Use quotes around the LEV command if the dimension name contains spaces.

Example
LEV0,Product

Selects members of level 0 from the Product dimension.

ZipCodeLev,State

Selects members of the user-defined generation name ZipCodeLev from the State dimension.

"LEV1,All Regions"

Selects members of level 1 from the All Regions dimension.

<LINK (<GEN(Market,2) AND NOT <LEV(Market,0))

Selects members of generation 2, but not level 0 from the Market dimension.

See Also
- GEN
- LINK

**LINK**

Uses the AND, OR, and NOT Boolean operators, combined with extraction commands, to refine member selections.

Syntax

<LINK (extractionCommand [operator extractionCommand])
**Parameter** | **Description**
--- | ---
extractionCommand | Any of the following extraction commands or another AND/OR expression:

- `<ALLINSAMEDIM (member)`
- `<ALLSIBLINGS (member)`
- `<ANCESTORS (member)`
- `<CHILDREN (member)`
- `<DESCENDANTS (member[, gen/levelName[, AT|UPTO]])`
- `<DIMBOTTOM (member)`
- `<DIMTOP (member)`
- `<IANCESTORS (member)`
- `<ICHILDREN (member)`
- `<IDESCENDANTS (member[, gen/levelName[, AT|UPTO]])`
- `<IPARENT (member)`
- `<MATCH (Dimension, match_string)`
- `<MEMBER (member)`
- `<OFSAMEGEN (member)`
- `<ONSAMELEVELAS (member)`
- `<PARENT (member)`
- `<UDA (Dimension, UDA_name)`

Operator | Any of the following Boolean operators:
--- | ---
- Use the AND operator when all conditions must be met.
- Use the OR operator when either one condition or another must be met.
- Use the NOT operator to choose the inverse of the selected condition.

Notes
---
- NOT can only be associated with an extraction command, and does not apply to the entire expression. You must use NOT in conjunction with either the AND or OR operators.
- The MEMBER extraction command is only used within a LINK expression; you can use the MEMBER selection to select a single member. Do not use the MEMBER command outside of a LINK expression.
- You must select members from the same dimension, and all extraction command arguments must be enclosed in parentheses, as in the example above.
- Essbase evaluates operators from left to right. Use parentheses to group the expressions. For example: A OR B AND C is the same as ((A OR B) AND C). In the first expression Essbase evaluates the expression from left to right, evaluating A OR B before evaluating AND C. In the second expression, Essbase evaluates the sub-expression in parentheses (A OR B) before the whole expression, producing the same result. However, if you use (A OR (B AND C)), Essbase evaluates the sub-expression in parentheses (B AND C) before the whole expression, producing a different result.
- You can include up to 50 arguments in a LINK statement. For example, `<LINK (A OR B OR (C AND D))` counts as four separate arguments.
- All extraction commands within a LINK statement need to select from the same dimensions; a command such as LINK (<ICHILDREN (east) AND <LEV (product,0)) causes a syntax error.
- If the LINK command returns an empty set of members, nothing is returned.
Example

\(<\text{LINK}\ (\langle\text{UDA}\text{product,Sweet}\rangle\ \text{AND}\ \langle\text{LEV}\text{product,0}\rangle)}\>

Selects all level 0 products that are sweet.

\(<\text{LINK}\ (\langle\text{IDESCENDANTS}\text{"100"}\rangle\ \text{AND}\ \langle\text{UDA}\text{product,Sweet}\rangle)\ \text{OR}\ \langle\text{LEV}\text{product,0}\rangle)}\>

Selects sweet products from the "100" sub-tree plus all level 0 products.

\(<\text{LINK}\ (\langle\text{IDESCENDANTS}\text{"100"}\rangle\ \text{AND}\ \text{NOT}\ \langle\text{UDA}\text{product,Sweet}\rangle)\ \text{OR}\ \langle\text{LEV}\text{product,0}\rangle)}\>

Selects non sweet products from the "100" sub-tree plus all level 0 products.

See Also

- ALLINSAMEDIM
- ALLSIBLINGS
- ANCESTORS
- CHILDREN
- DESCENDANTS
- DIMBOTTOM
- DIMTOP
- IANCESTORS
- ICHILDREN
- IDESCENDANTS
- IPARENT
- MATCH
- OFSAMEGEN
- ONSAMELEVELAS
- PARENT
- UDA

**LMARGIN**

Sets the left margin for the report to `marginSize` characters.

**Syntax**

```
{ LMARGIN [ marginSize ] }
```

**Parameter Description**

- `marginSize` Optional numeric value: number of character spaces for left margin.

**Notes**

This command sets the left margin for the report to `marginSize` characters. In most cases the value of `marginSize` should be 2 or greater when printing on a laser printer.

**Default Value**

If the LMARGIN command is not used, the default is 0. If `marginSize` is omitted, it assumes a default value of 0.
Example

[LMARGIN 10] sets the left margin to 10 characters.

See Also

- INDENT
- PAGELENGTH

MASK

Overwrites the text in each output row with the specified characters at the specified position. All non-blank characters in the text overwrite appear in the output line.

To create a mask of a blank character that overwrites output, enter ~ (the tilde character), rather than a blank space. The ~ is output as a blank space mask.

In addition to constant text, this command can use keywords to insert special strings into the report. These keywords begin with a "*" and must be entered. These are identical to the * keywords under the TEXT command, and are listed here for convenience. For a more complete discussion of * keywords, see the TEXT command.

You may include multiple sets of positions and text in a single MASK command.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>*APPNAME</td>
<td>Name of the application as set in the application definition.</td>
</tr>
<tr>
<td>*ARBOR</td>
<td>Version information from the Essbase Server.</td>
</tr>
<tr>
<td>*COLHDR number1 number2</td>
<td>Column heading members from the report, usually used with SUPCOLHEADING.</td>
</tr>
<tr>
<td>*COLHDRFULL</td>
<td>Full column heading, along with underlines of the column headings and a 1-line skip.</td>
</tr>
<tr>
<td>*CURRENCY</td>
<td>Currency conversion label that indicates to which currency the data values have been converted at report time with the CURRENCY command.</td>
</tr>
<tr>
<td>*DATE</td>
<td>Date the report was generated.</td>
</tr>
<tr>
<td>*DATETIME</td>
<td>Date and time the report was generated.</td>
</tr>
<tr>
<td>*DBNAME</td>
<td>Name of the database within the application.</td>
</tr>
<tr>
<td>*EDATE</td>
<td>Date in European (dd/mm/yy) format.</td>
</tr>
<tr>
<td>*EDATETIME</td>
<td>European format date (dd/mm/yy) and time.</td>
</tr>
<tr>
<td>*MACHINE</td>
<td>Network name for the computer that is running the Essbase Server.</td>
</tr>
<tr>
<td>*PAGEHDR number</td>
<td>Page member heading for the report, usually used with SUPPAGEHEADING.</td>
</tr>
<tr>
<td>*PAGENO</td>
<td>Page number for the current page.</td>
</tr>
<tr>
<td>*PAGESTRING</td>
<td>Page number preceded by the text &quot;Page:&quot;</td>
</tr>
<tr>
<td>Keyword</td>
<td>Description</td>
</tr>
<tr>
<td>----------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>*TIME</td>
<td>Time the report was generated.</td>
</tr>
<tr>
<td>*TIMEDATE</td>
<td>Time and date the report was generated.</td>
</tr>
<tr>
<td>*TIMEEDATE</td>
<td>Time and European format (dd/mm/yy) date.</td>
</tr>
<tr>
<td>*USERNAME</td>
<td>Name of the user generating the report.</td>
</tr>
</tbody>
</table>

**Syntax**

```
{ MASK charPosition "replacement" [ charPosition "replacement" ] }
```

**Parameter**

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>charPosition</td>
</tr>
<tr>
<td>&quot;replacement&quot;</td>
</tr>
</tbody>
</table>

**Notes**

- MASK is a setting command.
- To replace a space, use a ~ (the tilde character).
- If you want to produce an output file in comma-delimited format, use the SUPCOMMAS command, as in the example, to suppress the commas in numeric values. You can also use the SUPPAGEHEADERING command to suppress page headings in the comma-delimited file.

**Example**

The following example is based on Sample Basic.

```
<ROW (Year, Measures, Product, Market, Scenario)
{SUPPAGEHEADERING}
{ROWREPEAT}
{DECIMAL 2}
{SUPCOMMAS}
{MASK 3"," 22 "," 40 "," 55 "," 74 ","}
<CHILDREN Qtr1
Sales
<CHILDREN Colas
East
Budget
!
```

This example produces the following report:

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>Sales</td>
<td>100-10</td>
<td>East</td>
<td>Budget</td>
<td>1690.00</td>
</tr>
<tr>
<td>Jan</td>
<td>Sales</td>
<td>100-20</td>
<td>East</td>
<td>Budget</td>
<td>190.00</td>
</tr>
<tr>
<td>Jan</td>
<td>Sales</td>
<td>100-30</td>
<td>East</td>
<td>Budget</td>
<td>80.00</td>
</tr>
<tr>
<td>Feb</td>
<td>Sales</td>
<td>100-10</td>
<td>East</td>
<td>Budget</td>
<td>1640.00</td>
</tr>
<tr>
<td>Feb</td>
<td>Sales</td>
<td>100-20</td>
<td>East</td>
<td>Budget</td>
<td>190.00</td>
</tr>
<tr>
<td>Feb</td>
<td>Sales</td>
<td>100-30</td>
<td>East</td>
<td>Budget</td>
<td>90.00</td>
</tr>
<tr>
<td>Mar</td>
<td>Sales</td>
<td>100-10</td>
<td>East</td>
<td>Budget</td>
<td>1690.00</td>
</tr>
</tbody>
</table>
See Also

- INCMASK
- SUPMASK
- TEXT

MATCH

Performs wildcard member selection. Essbase searches for member names that match the pattern you specify, and returns the member names it finds.

If you defined the members names in the database you are searching as case-sensitive, the search is case-sensitive. Otherwise, the search is not case-sensitive. To define database member names as case-sensitive, use Outline Editor in Administration Services (see the Oracle Essbase Administration Services Online Help).

You can use more than one MATCH command in your report.

If Essbase does not find any members that match the chosen character pattern, it returns no member names and continues with the other report commands in your report.

Syntax

```xml
<MATCH ("Member" | "Gen" | "Level", "Pattern")
```

Parameter Description

- **"Member"** Member name at the top of the member hierarchy you want to search. Essbase searches the member name and its descendants.
  
  If the client is set to use aliases in place of member names, the MATCH command searches for alias names.

- **"Gen"** Default or user-defined name of the generation you want to search.

- **"Level"** Default or user-defined name of the level you want to search.

- **"Pattern"** The character pattern you want to search for, including a wildcard character (* or ?).
  
  - ? Substitutes one occurrence of any character; can be placed anywhere in the string.
  
  - * Substitutes any number of characters; must be used at the end of the string.
  
  - You can include spaces in the character pattern. Ensure that you enclose the pattern in quotation marks (" ").

Example

The following report is based on the Sample Basic database, and uses a * wildcard pattern search.

```xml
<PAGE (Measures, Market, Scenario)
Sales East Actual
<COLUMN (Year)
<MATCH (Year, J*)
<ROW (Product)
```
Essbase searches the Year dimension and finds 3 months beginning with the letter "J": Jan, Jun, and Jul. The report returns the following data:

<table>
<thead>
<tr>
<th>Sales East Actual</th>
<th>Jan</th>
<th>Jun</th>
<th>Jul</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>2,105</td>
<td>2,625</td>
<td>2,735</td>
</tr>
<tr>
<td>200</td>
<td>1,853</td>
<td>2,071</td>
<td>1,992</td>
</tr>
<tr>
<td>300</td>
<td>1,609</td>
<td>1,795</td>
<td>1,926</td>
</tr>
<tr>
<td>400</td>
<td>1,213</td>
<td>1,404</td>
<td>1,395</td>
</tr>
<tr>
<td>Diet</td>
<td>620</td>
<td>712</td>
<td>778</td>
</tr>
</tbody>
</table>

The following report is based on the Sample Basic database, and uses a ? wildcard pattern search.

```xml
<PAGE (Measures, Market, Scenario)
Sales East Actual
<COLUMN (Year)
<ROW (Product)
<MATCH (Product, "???-10")
```

Essbase searches the Product dimension and finds all instances of products ending in "-10", and preceded by three characters. The report returns the following data:

<table>
<thead>
<tr>
<th>Sales East Actual Year</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>100-10</td>
<td>23,205</td>
</tr>
<tr>
<td>200-10</td>
<td>8,145</td>
</tr>
<tr>
<td>300-10</td>
<td>13,302</td>
</tr>
<tr>
<td>400-10</td>
<td>6,898</td>
</tr>
</tbody>
</table>

**MATCHEX**

Performs wildcard member selection. Essbase searches for member names that match the pattern you specify, and returns the member names it finds.

Provides an optional parameter to specify if the search should be performed on member names or aliases, regardless of whether the query output in the report script uses members or aliases.

If you defined the members names in the database you are searching as case-sensitive, the search is case-sensitive. Otherwise, the search is not case-sensitive. To define database member names as case-sensitive, use Outline Editor in Administration Services (see the Oracle Essbase Administration Services Online Help).

You can use more than one MATCHEX command in your report.

If Essbase does not find any members that match the chosen character pattern, it returns no member names and continues with the other report commands in your report.

**Syntax**

```xml
<MATCH ("Member" | "Gen" | "Level", "Pattern", ALT|MBR|BOTH)
```
**Parameter** | **Description**
--- | ---
"Member" | Member name at the top of the member hierarchy you want to search. Essbase searches the member name and its descendants.
"Gen" | Default or user-defined name of the generation you want to search.
"Level" | Default or user-defined name of the level you want to search.
"Pattern" | The character pattern you want to search for, including a wildcard character (* or ?).
  - ? Substitutes one occurrence of any character; can be placed anywhere in the string.
  - * Substitutes any number of characters; must be used at the end of the string.
  - You can include spaces in the character pattern. Ensure that you enclose the pattern in quotation marks ("").

ALT|MBR|BOTH | Optional—The ALT | MBR | BOTH option overrides default pattern matching specifications. The default pattern matching uses aliases for pattern matching if aliases are to be displayed in report output, but uses names otherwise.
  - ALT
    Filter using aliases of selected members from selected alias table for pattern matching. The alias table is set by outaltselect, otherwise default alias table.
  - MBR
    Filters using member names of selected members for pattern matching.
  - BOTH
    Filters using member names as well as aliases for selected members from selected alias table for pattern matching. The alias table is set by outaltselect, otherwise default alias table.

**Example**

```xml
<NewAlt ""
<matchex(product,100,MBR)
!

<outaltselect default
<nmatchex(product,Caff*,ALT)
!

<OUTALTSELECT "Default"
<NewAlt "Product"
<OUTMBRNAME
<LINK( (<MATCHEX("Product", "100", MBR) AND <IDECENDANTS("Product")))
!
```

**MEANINGLESSTEXT**

Displays #ME in place of a specified text string. Used with OUTMEANINGLESS.

**Syntax**

```xml
{ MEANINGLESSTEXT "string" }
```
Parameter Description

“string”  The specified string to be replaced with #ME in cells.

Example

See Also

- WITHATTR

MISSINGTEXT

Replaces the #MISSING with text when a missing data value is generated on a line in the report. If you do not specify text, the default #MISSING is restored.

Syntax

{MISSINGTEXT [ "text" ] }

Parameter Description

text  Optional text to use for missing values.

Notes

- MISSINGTEXT is a setting command.
- The label must be enclosed in double quotes.

Example

{MISSINGTEXT "Not Applicable."}

See Also

- SUPEMPTYROWS
- SUPMISSINGROWS
- SUPZEROROWS
- TEXT

NAMESCOL

Determines the location of the row names columns in the report.

Use the NAMESCOL command after entering the column members in the report. You can get the same result with the ORDER command, but NAMESCOL is more convenient for moving just the names columns and when the number of data columns can vary.

Syntax

{ NAMESCOL [ columnList | CENTERED ] }
Parameter | Description
--- | ---
columnList | Optional list, separated by spaces, of the locations for each row name. List position corresponds to the number of the affected column. NAMESCOL shifts the remaining columns left or right to make room for the columns of row member names.
CENTERED (or C) | Key word that centers the column of row member names in the report. Before using this parameter:
- Define all columns in the report.
- Use the FORMATCOLUMNS command to set the number of columns.

Notes

{ NAMESCOL c c 10 } places the first two row name columns in the center of the report, and the third row name column in column 10.

Example

The command { NAMESCOL c} places the row names column in the following report in the center of the report.

```plaintext
<PAGE (Market, Accounts, Scenario)
Chicago Sales Actual

COLUMN (Year)
<ICHILDREN Year

ROW (Product)
{ NAMESCOL c }
<ICHILDREN Audio

!```

This example produces the following report:

```
Chicago Sales Actual

<table>
<thead>
<tr>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,591</td>
<td>2,476</td>
<td>2,567</td>
<td>3,035</td>
<td>10,669</td>
</tr>
<tr>
<td>3,150</td>
<td>3,021</td>
<td>3,032</td>
<td>3,974</td>
<td>13,177</td>
</tr>
<tr>
<td>5,741</td>
<td>5,497</td>
<td>5,599</td>
<td>7,009</td>
<td>23,846</td>
</tr>
</tbody>
</table>
```

See Also

- FIXCOLUMNS
- FORMATCOLUMNS
- NAMEWIDTH
- ORDER
**NAMESON**

Turns on the display of column(s) of row member names.

**Syntax**

```plaintext
{ NAMESON }
```

**Notes**

This command reverses the effect of a SUPALL or SUPNAMES command. These commands turn off the display of column(s) of row member names in the final report.

**See Also**

- **SUPALL**
- **SUPNAMES**

**NAMEWIDTH**

Determines the width of all row name columns in the report.

**Syntax**

```plaintext
{ NAMEWIDTH [ width ] }
```

**Parameter Description**

- **width**
  - Optional. Specifies the total number of characters displayed for each column.

**Notes**

This command determines the width of the column for all row member names in the report. Member names are truncated when necessary to fit in the column and the tilde character (~) signifies that there are letters not visible in the report. If each names column needs a different width, use the WIDTH command.

**Default Value**

If `width` is not given, then a default value of 17 is assumed.

**Example**

In the following example, the first report for Chicago displays the default width for the row names column while the `{ NAMEWIDTH 25 }` command in the Boston report increases the width of the row names column to 25.

```plaintext
<PAGE (Market, Accounts, Scenario)
Chicago Sales Actual
  <COLUMN (Year)
  <ICHILDREN Year

<ROW (Product)
<CHILDREN Audio
```

1360
This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stereo</td>
<td>2,591</td>
<td>2,476</td>
<td>2,567</td>
<td>3,035</td>
<td>10,669</td>
</tr>
<tr>
<td>Compact_Disc</td>
<td>3,150</td>
<td>3,021</td>
<td>3,032</td>
<td>3,974</td>
<td>13,177</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stereo</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compact_Disc</td>
<td>2,450</td>
<td>2,341</td>
<td>2,377</td>
<td>2,917</td>
<td>10,085</td>
</tr>
<tr>
<td></td>
<td>3,290</td>
<td>3,034</td>
<td>3,132</td>
<td>3,571</td>
<td>13,027</td>
</tr>
</tbody>
</table>

**NEWPAGE**

Inserts a new page in the report regardless of how many lines have been generated for the current page.

**Syntax**

```
{ NEWPAGE }
```

**Notes**

This command inserts a new page in the report regardless of how many lines have been generated for the current page. The report continues with a new page for the next row. A new heading is displayed at the top of the new page, assuming the page has at least one non-suppressed output data row, unless SUPHEADING is used.

**See Also**

- NAMESCOL
- WIDTH
NOINDENTGEN
Displays all row member names left-aligned in the row names column without indenting members based on generation in the database outline.

Syntax
{ NOINDENTGEN }

Notes
This command displays all row member names left-justified in the row names column without indenting members based on generation in the Database Outline. Indenting generations is generally not useful if you sort member names alphabetically by name in a report.

Default Value
By default, each generation is indented unless NOINDENTGEN is used.

See Also
- INDENT
- INDENTGEN

NOPAGEONDIMENSION
Turns off insertion of a new page when the member in the report from the same dimension as mbrName changes in a row of the report.

Syntax
{ NOPAGEONDIMENSION mbrName }

Parameter Description
mbrName Single member whose dimension is part of the PAGEONDIMENSION declaration.

Notes
This command turns off insertion of a new page when the member in the report from the same dimension as mbrName changes in a row of the report. It is needed only after the PAGEONDIMENSION command has been used.

Example
{NOPAGEONDIMENSION Year} prevents a new page from being inserted when a member in the dimension Year changes, after PAGEONDIMENSION Year has been set.

See Also
- NOSKIPONDIMENSION
- PAGEONDIMENSION
- SKIPONDIMENSION
NOROWREPEAT

Prevents row member names from being repeated on each line of the report if the row member name does not change on the next line. This is the default.

Syntax

( NOROWREPEAT )

Notes

This command prevents row member names from being repeated on each line of the report if the row member name does not change on the next line. NOROWREPEAT is only used to cancel the effects of the ROWREPEAT command. The ROWREPEAT command causes all row member names to be displayed on every line of the report even if the names for some members are the same.

Default Value

NOROWREPEAT is the default; you need only use this command after using ROWREPEAT.

Example

The following example is based on the Sample Demo database.

The following report is an example of the default behavior for row names not repeating. The names only print when they change.

```
<PAGE (Market, Accounts)
Chicago Sales

<COLUMN (Scenario)
  Actual

<ROW (Year, Product)
( NOROWREPEAT )
<ICHILDREN Qtr1
<ICHILDREN Audio!
( ROWREPEAT )
<ICHILDREN Qtr2 !
```

Which produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>Chicago Sales Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stereo</td>
</tr>
<tr>
<td></td>
<td>Compact_Disc</td>
</tr>
<tr>
<td></td>
<td>Audio</td>
</tr>
<tr>
<td>Feb</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stereo</td>
</tr>
<tr>
<td></td>
<td>Compact_Disc</td>
</tr>
<tr>
<td></td>
<td>Audio</td>
</tr>
<tr>
<td>Mar</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stereo</td>
</tr>
<tr>
<td></td>
<td>Compact_Disc</td>
</tr>
<tr>
<td></td>
<td>Audio</td>
</tr>
<tr>
<td>Qtr1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stereo</td>
</tr>
<tr>
<td></td>
<td>Compact_Disc</td>
</tr>
<tr>
<td></td>
<td>Audio</td>
</tr>
</tbody>
</table>
Chicago Sales Actual

<table>
<thead>
<tr>
<th>Month</th>
<th>Category</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apr</td>
<td>Stereo</td>
<td>821</td>
</tr>
<tr>
<td>Apr</td>
<td>Compact_Disc</td>
<td>985</td>
</tr>
<tr>
<td>Apr</td>
<td>Audio</td>
<td>1,806</td>
</tr>
<tr>
<td>May</td>
<td>Stereo</td>
<td>821</td>
</tr>
<tr>
<td>May</td>
<td>Compact_Disc</td>
<td>1,014</td>
</tr>
<tr>
<td>May</td>
<td>Audio</td>
<td>1,835</td>
</tr>
<tr>
<td>Jun</td>
<td>Stereo</td>
<td>834</td>
</tr>
<tr>
<td>Jun</td>
<td>Compact_Disc</td>
<td>1,022</td>
</tr>
<tr>
<td>Jun</td>
<td>Audio</td>
<td>1,856</td>
</tr>
<tr>
<td>Qtr2</td>
<td>Stereo</td>
<td>2,476</td>
</tr>
<tr>
<td>Qtr2</td>
<td>Compact_Disc</td>
<td>3,021</td>
</tr>
<tr>
<td>Qtr2</td>
<td>Audio</td>
<td>5,497</td>
</tr>
</tbody>
</table>

See Also

- ROWREPEAT

**NOSKIPONDIMENSION**

Prevents insertion of a new line when a member from the same dimension as `mbrName` changes in a row of the report.

**Syntax**

```
{ NOSKIPONDIMENSION mbrName }
```

**Parameter Description**

- `mbrName`: Single member that defines a dimension for which to halt line-skipping.

**Notes**

This command turns off insertion of a new line when the member in the report from the same dimension as `mbrName` in the command changes in a row of the report.

This command is required only after the SKIPONDIMENSION command.

**Example**

```
{NOSKIPONDIMENSION Year}
```

prevents the insertion of a new line when a member in the dimension Year changes after an occurrence of SKIPONDIMENSION Year.

See Also

- NOPAGEONDIMENSION
- PAGEONDIMENSION
- SKIPONDIMENSION
NOUNAMEONDIM

Turns off underlining for the new member name when the member in the report from the same
dimension as the specified member changes in a row of the report.

Syntax

{ NOUNAMEONDIM mbrName }

Parameter Description

mbrName  Member whose dimension is part of the UNAMEONDIM declaration.

Notes

This command turns off underlining for a new row when the member in the report from the
same dimension as mbrName changes. It is needed only after the UNAMEONDIM command
has been used.

See Also

- NOPAGEONDIMENSION
- NOSKIPONDIMENSION
- PAGEONDIMENSION
- SKIPONDIMENSION
- UNAMEONDIMENSION

OFFCOLCALCS

Disables all column calculations within the report.

Syntax

{ OFFCOLCALCS }

Notes

This command disables all column calculations within the report, for example, those calculations
set by CALCULATE COLUMN. The column(s) defined for the calculation(s) display the value
#MISSING to indicate no value was calculated for the column. This command temporarily turns
off the calculations but does not remove them.

Example

See the example for the CALCULATE COLUMN command.

See Also

- CALCULATE COLUMN
- CLEARROWCALC
- CLEARALLROWCALC
- OFFROWCALCS
- ONCOLCALCS
- ONROWCALCS
OFFROWCALCS
Temporarily disables all row calculations.

Syntax
{ OFFROWCALCS }

Notes
This command temporarily disables all row calculations, for example, those calculations set by CALCULATE ROW. Subsequent rows of data do not contribute to a calculated row with an active SETROWOP until ONROWCALCS is issued. Disabling the calculations does not reset the values of the rows to zero. Instead, rows of data in the report after the command are ignored in the calculations.

Example
See the examples for the CALCULATE ROW command.

See Also
- CALCULATE ROW
- CLEARROWCALC
- CLEARALLROWCALC
- OFFCOLCALCS
- ONCOLCALCS
- ONROWCALCS
- PRINTROW
- REMOVECOLCALCS
- SETROWOP

OFSAMEGEN
Adds to the report the members from the same dimension and generation as the specified member.

Syntax
<OFSAMEGEN mbrName

Parameter  Description
mbrName  Single member that designates the dimension and generation to retrieve.
Notes
Generations are counted starting at the top of the dimension. The top of the dimension is generation 1; its children are generation 2. Each child's generation number is one greater than its parent's.

Example

```<PAGE (Market, Accounts, Scenario)
Chicago Sales Actual

<COLUMN (Year)
<ICHILDREN Year

<ROW (Product)
<OFSAMEGEN VCR

This example produces the following report:

<table>
<thead>
<tr>
<th>Product</th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stereo</td>
<td>2,591</td>
<td>2,476</td>
<td>2,567</td>
<td>3,035</td>
<td>10,669</td>
</tr>
<tr>
<td>Compact_Disc</td>
<td>3,150</td>
<td>3,021</td>
<td>3,032</td>
<td>3,974</td>
<td>13,177</td>
</tr>
<tr>
<td>Television</td>
<td>4,410</td>
<td>4,001</td>
<td>4,934</td>
<td>6,261</td>
<td>19,606</td>
</tr>
<tr>
<td>VCR</td>
<td>3,879</td>
<td>3,579</td>
<td>4,276</td>
<td>4,877</td>
<td>16,611</td>
</tr>
<tr>
<td>Camera</td>
<td>2,506</td>
<td>2,522</td>
<td>2,602</td>
<td>3,227</td>
<td>10,857</td>
</tr>
</tbody>
</table>

See Also
- ALLINSAMEDIM
- CHILDREN
- DESCENDANTS
- ONSAMELEVELAS

ONCOLCALCS

Re-enables column calculations in the report after they have been disabled by OFFCOLCALCS.

Syntax

```
{ ONCOLCALCS }
```

Notes
This command is required after the OFFCOLCALCS command, which disables column calculations.

Example

See the example for the CALCULATE COLUMN command.

See Also
- CALCULATE COLUMN
ONROWCALCS

Re-enables all row calculations after they have been disabled by OFFROWCALCS. Each subsequent row of data after using the command is calculated.

Syntax

{ ONROWCALCS }  

Notes

This command is required after the OFFROWCALCS command, which disables the row calculation(s).

Example

See the example for the CALCULATE ROW command.

See Also

- CALCULATE ROW
- CLEARROWCALC
- CLEARALLROWCALC
- OFFCOLCALCS
- ONCOLCALCS
- REMOVECOLCALCS
- SETROWOP

ONSAMELEVELAS

Adds to the report all members on the same level as the specified member.

Syntax

<ONSAMELEVELAS mbrName

Parameter Description

mbrName Single member that designates the dimension and generation to retrieve.
Notes

Levels are counted up from the bottom of the dimension. Members in the database outline with no children are level 0; their parents are level 1, and so on. The level for a child is always 1 lower than its parent.

Example

<PAGE (Market, Accounts, Scenario)
Chicago Sales Actual

    <COLUMN (Year)
    <ICLHDREN Year

<ROW (Product)
<ONSAMELEVELAS Audio

This example produces the following report:

Chicago Sales Actual

<table>
<thead>
<tr>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio</td>
<td>5,741</td>
<td>5,497</td>
<td>5,599</td>
<td>7,009</td>
</tr>
<tr>
<td>Video</td>
<td>10,795</td>
<td>10,102</td>
<td>11,812</td>
<td>14,365</td>
</tr>
</tbody>
</table>

See Also

- ALLINSAMEDIM
- CHILDREN
- DESCENDANTS
- OFSAMEGEN

ORDER

Specifies the order of columns in a report, based on the original ordering of the columns.

Make sure you specify all the report columns in the ORDER command unless you use FIXCOLUMNNS. ORDER simply moves the listed columns to locations in the final report but does not shift the unlisted columns to make room for the columns moved. If you have a five column report and you specify the command {ORDER 2 3 4}, you see columns 2, 3 and 4 in the report followed again by columns 3 and 4. If you really want a 3 column report, use {FIXCOLUMNNS 3}.

Calculated data columns have column numbers which begin after the last regular data column. In other words, if each output data row had:

- 2 row names;
- 3 regular data columns; and
- 2 calculated data columns
then columns 0 and 1 are the row name column numbers; 2, 3, and 4 are the regular data column numbers; and 5 and 6 are the calculated-data column members.

**Syntax**

```
{ ORDER columnList }
```

**Parameter Description**

<table>
<thead>
<tr>
<th>columnList</th>
<th>Numeric designations of the columns to rearrange, separated by a space between each column number.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Each column number represents the initial positions of each column (from 0 to ( n ) where ( n ) is the last column, counting names, data, and calculated columns, respectively).</td>
</tr>
<tr>
<td></td>
<td>The position of each number in the <code>columnList</code> represents the new order in which you want the columns to be displayed.</td>
</tr>
</tbody>
</table>

**Note:** Using the ORDER command without a `columnList` resets the column order to the default setting (that is, 0, 1, 2, 3, 4, and so on).

**Notes**

- ORDER is a setting command.
- The first name column is designated as column 0. Column numbers then increment, starting with any additional row name columns, then the data columns, followed by calculated data columns.

**Example**

The following example is based on the Sample Basic database.

```
<PAGE (Measures, Market)
Texas Sales
{ORDER 0 1 4 2 5 3 6 BLOCKHEADERS)
  <COLUMN (Scenario, Year)
    Actual       Budget
    Jan          Feb          Mar
  <ROW (Product)
  <DESCENDANTS *100"
    !
```

This script arranges the Jan, Feb, and Mar columns side-by-side.

<table>
<thead>
<tr>
<th>Sales Texas</th>
<th>Actual</th>
<th>Budget</th>
<th>Actual</th>
<th>Budget</th>
<th>Actual</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jan</td>
<td>Jan</td>
<td>Feb</td>
<td>Feb</td>
<td>Mar</td>
<td>Mar</td>
</tr>
<tr>
<td>100-10</td>
<td>452</td>
<td>560</td>
<td>465</td>
<td>580</td>
<td>467</td>
<td>580</td>
</tr>
<tr>
<td>100-20</td>
<td>190</td>
<td>230</td>
<td>190</td>
<td>230</td>
<td>193</td>
<td>240</td>
</tr>
<tr>
<td>100-30</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
</tbody>
</table>

**See Also**

- FIXCOLUMNS
- NAMESCOL
ORDERBY

Orders the rows in a report according to data values in the specified columns.

**Syntax**

```
<ORDERBY ( [<rowgroupDimension>,] <column> [direction]{,<column> [<direction>]}))
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;Optional rowgroup Dimension&gt;</td>
<td>Row grouping dimension that determines the rows to sort as a set.</td>
</tr>
<tr>
<td>&lt;column&gt;</td>
<td>@DATACOLUMN (&lt;colnumber&gt;)</td>
</tr>
<tr>
<td>&lt;direction&gt;</td>
<td>You can specify multiple columns with different sorting directions where: ASC is the ascending sort DESC is the descending sort</td>
</tr>
</tbody>
</table>

**Notes**

You can use ORDERBY, TOP, BOTTOM, and RESTRICT in the same report script, but you can use each command only once per report. If you repeat the same command in a second report in the same report script, the second command overwrites the first. Place global script formatting commands, for example, SAVEROW, before a PAGE, COLUMN command or associated member (for example, <ICHILDREN or <IDESCENDANTS).

If any of the ORDERBY, TOP, BOTTOM, or RESTRICT commands exist together in a report script, the row group dimension `<rowgroupDimension>` should be the same. This restriction removes any confusion about the sorting and ordering of rows within a row group. Otherwise, an error is issued.

If TOP or BOTTOM commands exist in the same report with ORDERBY, the ordering column of ORDERBY need not be the same as that of TOP or BOTTOM.

The ORDERBY, TOP and BOTTOM commands sort a report output by its data values. The RESTRICT command restricts the number of valid rows for the report output. Their order of execution is:

1. Any sorting command that sorts on member names (for example `<SORTDESC` or `<SORTASC`)
2. RESTRICT
3. TOP and BOTTOM
4. ORDERBY

This order of execution applies irrespective of the order in which the commands appear in the report script.
For an example that uses TOP, BOTTOM, ORDERBY, and RESTRICT together, see the entry for the BOTTOM command.

**Default Value**

The innermost row grouping is the default row group dimension. Default direction is ascending.

**Example**

```
// Page dimension
<PAGE("Measures")

// Column dimensions
<COLUMN("Scenario", "Year")

// Row dimensions
<ROW("Market", "Product")

// Page Members
"Sales"

// Column Members
"Scenario"
"Jan" "Feb" "Mar"

// Row Members
"New York"

"Product" "100" "100-10" "100-20" "100-30" "200" "200-10" "200-20" "200-30" "200-40" "300" "300-10" "300-20" "300-30" "400" "400-10" "400-20" "400-30" "Diet" "100-20" "200-20" "300-30"

// Data sorting
<ORDERBY ("Product", @DATACOLUMN(1) ASC, @DATACOLUMN(2) DESC, @DATACOLUMN(3) ASC)
```

Which produces the following report based on the Sample Basic sample database:

```
Sales Scenario

<table>
<thead>
<tr>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-20</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
<tr>
<td>100-30</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
<tr>
<td>200-20</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
<tr>
<td>200-30</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
<tr>
<td>300-30</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
<tr>
<td>Diet</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
<tr>
<td>200-10</td>
<td>61</td>
<td>61</td>
</tr>
<tr>
<td>400-30</td>
<td>134</td>
<td>189</td>
</tr>
<tr>
<td>300-20</td>
<td>180</td>
<td>180</td>
</tr>
<tr>
<td>400-20</td>
<td>219</td>
<td>243</td>
</tr>
<tr>
<td>400-10</td>
<td>234</td>
<td>232</td>
</tr>
<tr>
<td>300-10</td>
<td>481</td>
<td>495</td>
</tr>
<tr>
<td>200-40</td>
<td>490</td>
<td>580</td>
</tr>
</tbody>
</table>
```
OUTALT

Sets the output alias to the database outline alias name, as defined in the current alias table.

Syntax

<OUTALT

Notes

- OUTALT cannot be used on duplicate member outlines. See REPALIAS.
- OUTALT is used to reset the output alias to the Database Outline alias name. Use this command to restore the default alias after OUTALTMBR or OUTMBRALT have been used to redefine the alternate name.
- You must precede the OUTALT command with OUTALTNAMES to display the alias (rather than the member name).

Example

The following example is based on the Sample Basic database.

```
<PAGE (Product, Measures)
<COLUMN (Scenario, Year)
(OUTALTNAMES)
<OUTMBRALT Actual
<CHILDREN Qtr1
<ROW Market)
<IDESCENDANTS "300"
<OUTALT
<IDESCENDANTS "300"
!
<OUTALT
<IDESCENDANTS "300"
!
```

This example produces the following report:

```
300-10 Measures Actual

<table>
<thead>
<tr>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td>800</td>
<td>864</td>
<td>880</td>
</tr>
</tbody>
</table>
```
### OutAltMbr

Sets the output alias to the database outline alias name (as defined in the current alias table) followed by the database outline member name.

#### Syntax

```
<outaltmbr
```

#### Notes

- Separate the alias and member name with a single space.
To produce reports that display the alternate name for a member, you must also use the { OUTALTNAMES } command. If no alternate name exists, only the member name is displayed.

OUTALTMBR cannot be used on duplicate member outlines. See REPALIASMBR.

Example
The following example is based on Sample Basic.

```
<PAGE (Product, Measures)
<COLUMN (Scenario, Year)
(OUTALTNAMES)
<OUTALTMBR
Actual
<CHILDREN Qtr1
<ROW (Market)
<IDESCENDANTS "300"

This example produces the following report:

<table>
<thead>
<tr>
<th>Market</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td>300-10</td>
<td>800</td>
<td>864</td>
<td>880</td>
</tr>
<tr>
<td>Vanilla</td>
<td>220</td>
<td>231</td>
<td>239</td>
</tr>
<tr>
<td>Diet</td>
<td>897</td>
<td>902</td>
<td>896</td>
</tr>
<tr>
<td>Cream Soda</td>
<td>1,917</td>
<td>1,997</td>
<td>2,015</td>
</tr>
</tbody>
</table>
```

See Also

- OUTALT
- OUTALTNAMES
- OUTMBRALT
- REPALIASMBR

OUTALTNAMES
Displays alias names for members in a report.
May be used in conjunction with OUTMBRNAME to switch between member names and alias names in report rows.
The member name, not the alias name, is the default for reporting.
Syntax

{ OUTALTNAMES }

Notes

- OUTALTNAMES cannot be used on duplicate member outlines. See REPALIAS.
- OUTALTNAMES is a setting command.
- The OUTALTMBR or OUTMBRALT commands may be used to redefine the alternate names definition.

Example

The following example is based on Sample Basic.

{WIDTH 15}
{OUTALTNAMES} If used (commented out), displays alias names for column headers
<PAGE (Measures)
Sales
<COL (Year, Market, Scenario)
Jan Feb Mar
East Actual
<ROW (Measures)
{OUTALTNAMES}
// These members display with aliases.
<IDESCENDANTS "100"
{OUTMBRNAMES}
// These members display their member names as defined in the outline.
<IDESCENDANTS "200"
{OUTALTNAMES}
// Switches back to alias names, as defined in the current alias table.
<IDESCENDANTS "400"
!

This example produces the following report:

<table>
<thead>
<tr>
<th>Sales</th>
<th>East Actual</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jan</td>
<td>Feb</td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Cola</td>
<td>1,812</td>
<td>1,754</td>
</tr>
<tr>
<td>Diet Cola</td>
<td>200</td>
<td>206</td>
</tr>
<tr>
<td>Caffeine Free Cola</td>
<td>93</td>
<td>101</td>
</tr>
<tr>
<td>Colas</td>
<td>2,105</td>
<td>2,061</td>
</tr>
<tr>
<td>200-10</td>
<td>647</td>
<td>668</td>
</tr>
<tr>
<td>200-20</td>
<td>310</td>
<td>310</td>
</tr>
<tr>
<td>200-30</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
<tr>
<td>200-40</td>
<td>896</td>
<td>988</td>
</tr>
<tr>
<td>200</td>
<td>1,853</td>
<td>1,966</td>
</tr>
<tr>
<td>Grape</td>
<td>562</td>
<td>560</td>
</tr>
<tr>
<td>Orange</td>
<td>219</td>
<td>243</td>
</tr>
<tr>
<td>Strawberry</td>
<td>432</td>
<td>469</td>
</tr>
<tr>
<td>Fruit Soda</td>
<td>1,213</td>
<td>1,272</td>
</tr>
</tbody>
</table>

See Also

- OUTALT
- OUTALTMBR
- OUTMBRALT
OUTALTSELECT

Selects an alias table in a report script.

The table remains in effect until another <OUTALTSELECT command executes. This lets you use different alias tables for different dimensions in a report script.

Syntax

<OUTALTSELECT AliasTableName

Parameter Description

AliasTableName The name of the selected alias table associated with the database outline.

Notes

OUTALTSELECT can be used on unique member outlines or duplicate member outlines.

Example

The following example is based on Sample Basic, using two different alias tables: Long Names and Default.

```xml
<PAGE("Scenario")
<COLUMN("Year", "Market")
<ROW("Measures", "Product")
<LINK( <CHILDREN("Qtr"))
<LINK( <CHILDREN("South"))
<OUTALTSELECT "Long Names"
(OUTALTNAMES)
"100-10"
"100-20"
"100-30"
<OUTALTSELECT Default
(OUTALTNAMES)
"200-10"
"200-20"
"200-30"
```

See Also

- REPALIAS
- REPALIASMBR
- REPMBR
- REPMBRALIAS
- OUTALTMBR
- OUTALTNAMES
- OUTMBRALT
- OUTMBRNAMES
OUTFORMATTEDMISSING
Formats missing values in reports instead of the missing alias. By default, missing values are not formatted. Only cells with non-numeric type are formatted.

Syntax
{ OUTFORMATTEDMISSING }

See Also
● WITHATTR

OUTFORMATTEDVALUES
Generates formatted cell values in the report instead of cell values. By default cell values are reported. Cells with missing values will not be formatted.

Syntax
{ OUTFORMATTEDVALUES }

See Also
● WITHATTR

OUTMBRALT
Sets the output name to the database outline member name followed by the outline alias, as defined in the current alias table.

The member name and alias are separated by a single space.

Syntax
<OUTMBRALT

Notes
● OUTMBRALT cannot be used on duplicate member outlines. See REPMBRALIAS.
● You must precede the OUTMBRALT command with OUTALTNAMES to display the alias, followed by the member name (rather than the member name alone).
● OUTMBRALT cannot be used on duplicate member name outlines.
● REPMBRALIAS can be used on both unique and duplicate member name outlines. REPMBRALIAS supercedes OUTMBRALT.

Example
The following example is based on Sample Basic.

<PAGE (Product, Measures)
<COLUMN (Scenario, Year)
{OUTALTNAMES}
<OUTMBRALT

1378
This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Market</strong></td>
<td>800</td>
<td>864</td>
<td>880</td>
</tr>
<tr>
<td><strong>300-10 Measures Actual</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Market</strong></td>
<td>220</td>
<td>231</td>
<td>239</td>
</tr>
<tr>
<td><strong>300-20 Vanilla Cream Measures Actual</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Market</strong></td>
<td>897</td>
<td>902</td>
<td>896</td>
</tr>
<tr>
<td><strong>300-30 Diet Cream Measures Actual</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Market</strong></td>
<td>1,917</td>
<td>1,997</td>
<td>2,015</td>
</tr>
<tr>
<td><strong>300 Cream Soda Measures Actual</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**See Also**

- OUTALT
- OUTALTMBR
- OUTALTNAMES
- OUTMBRNAMES
- REPMBRALIAS

**OUTMBRNAMES**

Reverts to the default member name display after the OUTALTNAMES command has been used to display alternate names.

The member name is the default for reporting.

**Syntax**

```
{ OUTMBRNAMES }
```

**Notes**

OUTMBRNAMES cannot be used on duplicate member outlines. See REPMBR.

**See Also**

- OUTALT
- OUTALTMBR
- OUTALTNAMES
OUTMBRALT

OUTMEANINGLESS
Displays #ME in reports for cells that are meaningless because no base member-attribute member combination exists.

Syntax
{ OUTMEANINGLESS }

See Also
- WITHATTR

OUTPUT
Resumes output, reversing the action of SUPOUTPUT.

Syntax
{ OUTPUT }

Notes
This command causes Report Writer to resume output with the member specifications in effect when the OUTPUT command was issued. It will not "remember" where it was when the SUPOUTPUT command was issued. Further, any formatting commands that were issued in the interim will also be in effect. Thus, you can use the SUPOUTPUT command to suppress all output from a portion of the report script.

See Also
- SUPOUTPUT

OUTPUTMEMBERKEY
Displays a member identifier (in addition to the member or alias name) for any duplicate member names. OUTPUTMEMBERKEY applies to duplicate member outlines only.

Syntax
<OUTPUTMEMBERKEY

Notes
- OUTPUTMEMBERKEY is primarily for use in programing applications.
- OUTPUTMEMBERKEY cannot be used in combination with the existing commands OUTMBRALT, OUTALTMBR, OUTALT, OUTALTNAMES, OR OUTMBRNAMES.
- SORTMBRNAMES does not sort by member identifier.
PAGE

Defines which dimensions are displayed as page members in the final report.

This command specifies the dimension or dimensions to be used such that each member or combination of members of these dimensions is an attribute of all data cells on a page.

Page members are displayed at the top of the report above the column members. Any member in the report specification from the same dimension as a member in the PAGE command is a page member. Only one member at a time from each page dimension is displayed in the page heading at the top of each page.

Each time any member from one of the dimensions in the page heading changes, it creates a new page heading. The order of the dimensions in the PAGE command determines the order in which members occur in the page heading. The member from the first dimension is displayed first, followed by the second and so on.

On any single report page, the current page members are representative of (are attributes of) all the data cells on the page.

Syntax

<PAGE ( dimList )

Parameter Description

dimList  Dimension name or a comma-delimited list of dimensions.

Notes

- If dimension names contain spaces or consist of numbers, they must be enclosed in double quotes.
- Essbase automatically generates new page headings when dimensions change. Essbase does not, however, automatically generate page breaks. To specify page breaks when dimensions change, use the PAGEONDIMENSION format command, described in the Data Formatting Commands section later in this chapter.
- When more than one dimension is specified, the last dimension in the list changes most frequently. For example, <PAGE (Measures, Market) lists all values for Sales East (New York, Massachusetts, Florida, etc.), then lists all values for Sales West. After all Markets have been cycled, the next Measure will replace Sales, and then Markets will cycle through again.

Example

<PAGE (Measures, Market)
Creates a report based on member combinations of dimensions Measures and Market. The first page of the report lists all values for Sales, East; the next page lists all values for Sales, West; When all children of Market have been extracted, the report continues with Cost of Goods Sold, East followed by Cost of Goods Sold, West, and so on.

See Also

- COLUMN
- ROW

**PAGEHEADING**

Displays the page heading before the next data-output row.

Otherwise, a new page heading occurs only if the page or column members change, a page is generated (for example, page length is exceeded or a NEWPAGE command is issued), or a page header has not been done for this page and the first output row on the page is ready to print.

If PAGEHEADING is specified between the STARTHEADING and ENDHEADING commands, however, the page heading is displayed with the heading and not immediately. This command also permanently nullifies the effect of a previously issued SUPPAGEHEADING command.

The page heading is the default heading, which contains the current page members.

Syntax

```
{ PAGEHEADING }
```

Notes

- The TEXT and SUPPRESSHEADING command can be used to customize page heading text and placement.

- By default, page and column headers (together called the HEADING) are turned on. This means they are displayed prior to the first actual output row in a report, and are reset to display again whenever:
  1. A new page is generated.
  2. Any member in the page or column dimensions changes.
  3. A specific COLHEADING, PAGEHEADING, or IMMHEADING dictates a new heading. Once they are reset to display, they are output just prior to the new non-suppressed output row.

- IMMHEADING produces a new page and column heading immediately, without waiting for the next non-suppressed output line.

Example

The PAGEHEADING command in the following report inserts the page heading members in the report for a second time.

```
<PAGE (Market, Accounts, Scenario)
Chicago Sales Actual
  <COLUMN (Year)
  <ICHILDREN (Year)
```

1382
This example produces the following report:

<table>
<thead>
<tr>
<th>Product</th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Television</td>
<td>4,410</td>
<td>4,001</td>
<td>4,934</td>
<td>6,261</td>
<td>19,606</td>
</tr>
<tr>
<td>VCR</td>
<td>3,879</td>
<td>3,579</td>
<td>4,276</td>
<td>4,877</td>
<td>16,611</td>
</tr>
<tr>
<td>Compact_Disc</td>
<td>3,150</td>
<td>3,021</td>
<td>3,032</td>
<td>3,974</td>
<td>13,177</td>
</tr>
<tr>
<td>Stereo</td>
<td>2,591</td>
<td>2,476</td>
<td>2,567</td>
<td>3,035</td>
<td>10,669</td>
</tr>
</tbody>
</table>

See Also

- COLHEADING
- HEADING
- PAGE
- SUPALL
- SUPCOLHEADING
- SUPHEADING
- SUPPAGEHEADING
- TEXT

### PAGELENGTH

Sets the maximum number of lines for one page in the report.

**Syntax**

```
{ PAGELENGTH [ lines ] }
```

**Parameter Description**

- `lines` Optional total number of output lines for the size of paper you are using. Because the Report Writer does not recognize any of the font characteristics of the output report, it operates based on lines rather than inches.

**Notes**

**Default Value**

The defaults are FEEDON and a PAGELENGTH of 66 lines, which normally translates to an 11-inch-long page. This value is assumed if `lines` is not given.
This command sets the maximum number of lines for one page in the report. After displaying the number of lines, a page break is inserted, followed by the heading. The page break is not inserted if a SUPFEED command has been used. The heading is displayed at the start of the new page unless SUPHEADING has been used.

If you are using legal size paper, the value should be 84 lines. If you are using A4 paper, the value should be 70 lines.

**Example**

```
{ PAGELENGTH 50 } sets the maximum number of lines for one page to 50.
```

**See Also**

- LMARGIN
- WIDTH

---

**PAGEONDIMENSION**

Performs a page break whenever a member from the same dimension as the specified member changes from one line in the report to the next.

**Syntax**

```
{ PAGEONDIMENSION mbrName }
```

**Parameter Description**

- `mbrName`: Single member. If any member of the same dimension increments, a new page is started.

**Notes**

This command performs a page break whenever a member from the same dimension as the member in the command changes from one line in the report to the next.

With the ROW command, you can display members from several dimensions in columns on the side of the report. At least one member changes from one of these dimensions for each row of the report.

PAGEONDIMENSION causes a new page to begin when the member from the selected dimension changes. A single report can have several PAGEONDIMENSION commands to page on different dimensions which change.

When combined with UNAMEONDIMENSION and SKIPONDIMENSION, UNAMEONDIMENSION is processed first followed by SKIPONDIMENSION and PAGEONDIMENSION in order.

**Example**

The command `{ PAGEONDIMENSION Year }` inserts a page break before displaying the members Qtr2, Qtr3, and Qtr4 in the following report below. On each new page, the heading members Chicago, Sales and Actual are displayed at the top of the page.

```
<PAGE (Market, Accounts)
Chicago Sales Actual
```

1384
This example produces the following report:

Chicago Sales Actual

Qtr1  Stereo     2,591
      Compact_Disc 3,150
      Audio        5,741

Chicago Sales Actual

Qtr2  Stereo     2,476
      Compact_Disc 3,021
      Audio        5,497

Chicago Sales Actual

Qtr3  Stereo     2,567
      Compact_Disc 3,032
      Audio        5,599

Chicago Sales Actual

Qtr4  Stereo     3,035
      Compact_Disc 3,974
      Audio        7,009

See Also
- NOPAGEONDIMENSION
- NOSKIPONDIMENSION
- SKIPONDIMENSION

**PARENT**

Adds the parent of the member to the report.

**Syntax**

```
<PARENT mbrName
```

**Parameter Description**

mbrName  Single member, which must not be the dimension (top) member.
Example

<PARENT Jan

adds Qtr1 to the report.

See Also

- ANCESTORS
- CHILDREN
- DESCENDANTS

**PERSPECTIVE**

Sets the perspective, a tuple or REALITY, for a varying attribute dimension for a report.

**Syntax**

```xml
<PERSPECTIVE(tuple, attrDim)
```

**Parameter Description**

- `tuple`  
  - `(m1, m2, ..., mX) | REALITY`  
  - This is the perspective tuple to be applied for the given attribute dimension.  
    - `(m1, m2, ..., mN)`  
      - Level-0 members from one or more independent dimensions for `attrDim` may be part of the input tuple.  
    - `REALITY`  
      - The `REALITY` keyword indicates using independent members from the current query-calculation context. When explicit perspectives are missing for an attribute dimension, the default usage for the perspective is `REALITY`.

- `attrDim`  
  - The varying attribute dimension to which the perspective applies. May be any member from attribute dimension hierarchy.

**Notes**

- Without the use of the perspective command, the default perspective will be used.
- The perspective specified for an attribute dimension influences the attribute calculations in the query. The following Report Writer commands involving attributes honor the prevailing perspective:
  - `<Attribute attMbrName`
  - `<WithAttr(dimName,"operator",value)`
- Only the first the perspective command in a report is honored. Any other perspective commands are ignored.

**Example**

```xml
<PERSPECTIVE((Jan), Ounces)
<PERSPECTIVE((Jan, California), Ounces)
```
PRINTROW
Displays the calculated rowName with its current values.

Syntax
{ PRINTROW "rowName" }

Parameter Description
"rowName" Character string, enclosed by quotation marks, which designates a previously declared calculated row. When the command is issued, the designated row is printed immediately in the report.

Example
See the examples for the CALCULATE COLUMN command.

See Also
- WITHATTREX
- ATTRIBUTEVA
- CALCULATE COLUMN
- CLEARROWCALC
- CLEARALLROWCALC
- OFFCOLCALCS
- OFFROWCALCS
- ONCOLCALCS
- ONROWCALCS
- REMOVECOLCALCS
- RENAME
- SAVEANDOUTPUT
- SAVEROW
- SETROWOP

PYRAMIDHEADERS
Displays column members in centered, pyramid-shaped levels above columns (the default style used by symmetric reports).

Syntax
{ PYRAMIDHEADERS }

Notes
This command displays column members in centered, pyramid-shaped levels over the columns in the report. Pyramid display of column members is the default method for displaying column members.
Pyramid headers cannot be used with asymmetric reports unless the report is extracted as a symmetric report and reordered or truncated to make it asymmetric.

**Default Value**

Default for symmetric reports. Also resets the default column display following a BLOCKHEADERS command.

**Example**

The following example is based on Sample Basic.

```<PAGE (Measures, Market)
Sales
(WIDTH 7)
{ BLOCKHEADERS }
  <COLUMN (Scenario, Year)
    Actual Budget
    Jan Feb Mar
<ROW (Market)
<CHILD "200"
  !
{PYRAMIDHEADERS}
<CHILD "300"
  !
```

This example produces the following report:

```
Sales Market
Actual Actual Actual Budget Budget Budget
Jan Feb Mar Jan Feb Mar
====== ====== ====== ====== ====== ======
200-10    3,220  3,348  3,326  3,230  3,370  3,370
200-20    3,122  3,161  3,203  3,090  3,120  3,190
200-30    1,478  1,463  1,499  1,310  1,290  1,330
200-40    896    988    923    870    950    890
```

```
Sales Market
Actual Budget
Jan Feb Mar Jan Feb Mar
====== ====== ====== ====== ====== ======
300-10    3,517  3,613  3,650  2,950  3,050  3,080
300-20    1,397  1,417  1,434  1,140  1,160  1,170
300-30    2,960  3,016  2,993  2,560  2,590  2,580
```

**See Also**

- **BLOCKHEADERS**

**QUOTEMBRNAMES**

Displays all the member names within quotation marks in the report script output when run through interfaces such as Administration Services, ESSCMD, and MaxL. Note that when the report script is run through Oracle Smart View for Office or another Grid API client, the members are not returned within quotation marks.
**Syntax**

<QUOTEMBRNAMES

**Notes**

QUOTEMBRNAMES can occur anywhere in a report script. This command is useful when using the Report Writer to export data intended for reloading a database without the use of a data load rule file.

**Note:** When used in a report script that also uses the RENAME report command, names substituted using the RENAME command are not enclosed in quotation marks.

**Example**

<PAGE (Scenario)
<COLUMN (Year)
<ROW (Product, Market, Measures)
<QUOTEMBRNAMES
(ROWREPEAT)

<ICHILDREN Year
<DIMBOTTOM Product
<DIMBOTTOM Market
<CHILDREN Profit
!

**REMOVECOLCALCS**

Removes all column calculation definitions from the report.

**Syntax**

{ REMOVECOLCALCS }

**Notes**

This command removes all column calculation definitions from the report. The data values for any calculated columns are no longer calculated or displayed. This may be used if the limit of declared column calcs (50) is a problem. If the previous column calcs are no longer needed, they can be freed, creating room for up to 50 more.

**See Also**

- CALCULATE COLUMN
- CLEARROWCALC
- CLEARALLROWCALC
- OFFCOLCALCS
- OFFROWCALCS
- ONCOLCALCS
- ONROWCALCS
- PRINTROW
## RENAME

Renames a member within the report.

**Syntax**

```
{ RENAME "newMbrName" } mbrName
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;newMbrName&quot;</td>
<td>Valid member name, enclosed in quotation marks, to be used as the replacement name.</td>
</tr>
<tr>
<td>mbrName</td>
<td>Name of the member that you want to rename temporarily.</td>
</tr>
</tbody>
</table>

**Notes**

This command renames a member within the report. This is a way of creating a temporary alias that applies to a single member, and it applies only within the report. Note that when you assign a temporary name to a member name, you do not have to state the member name again before or on the following line after the RENAME command. However, if you do state the member name later in the report, but not immediately on the next line after the RENAME command, the temporary name will be reset to its original member name.

**Example**

```
{RENAME "Video"} Visual
```

renames the Visual member to "Video" in the report.

## REPALIAS

Displays alias names for members of the dimension specified.

If no alias exists for a member, the member name only is displayed. The current alias table is used unless OUTALTSELECT is used to specify an alternative alias table.

**Syntax**

```
<REPALIAS dimensionname
```

**Notes**

- `<REPALIAS ""` specifies the command for all dimensions.
- REPALIAS can be used on unique member outlines or duplicate member outlines.
- Some formatting commands (for example, RENAME) do not work with REPALIAS.
- REPALIAS cannot be used in combination with the existing commands OUTMBRALT, OUTALTMBR, OUTALT, OUTALTNAMES, OR OUTMBRNAMES.

**Example**

The following example is based on Sample Basic.
This example produces the following report:

<table>
<thead>
<tr>
<th>Product</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td>--------------------</td>
<td>------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>Cola</td>
<td>1,812</td>
<td>1,754</td>
<td>1,805</td>
</tr>
<tr>
<td>Diet Cola</td>
<td>200</td>
<td>206</td>
<td>214</td>
</tr>
<tr>
<td>Caffeine Free Cola</td>
<td>93</td>
<td>101</td>
<td>107</td>
</tr>
<tr>
<td>Colas</td>
<td>2,105</td>
<td>2,061</td>
<td>2,126</td>
</tr>
<tr>
<td>Old Fashioned</td>
<td>647</td>
<td>668</td>
<td>672</td>
</tr>
<tr>
<td>Diet Root Beer</td>
<td>310</td>
<td>310</td>
<td>312</td>
</tr>
<tr>
<td>Sasparilla</td>
<td>#Missing</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
<tr>
<td>Birch Beer</td>
<td>896</td>
<td>988</td>
<td>923</td>
</tr>
<tr>
<td>Root Beer</td>
<td>1,853</td>
<td>1,966</td>
<td>1,907</td>
</tr>
<tr>
<td>Grape</td>
<td>562</td>
<td>560</td>
<td>560</td>
</tr>
<tr>
<td>Orange</td>
<td>219</td>
<td>243</td>
<td>213</td>
</tr>
<tr>
<td>Strawberry</td>
<td>432</td>
<td>469</td>
<td>477</td>
</tr>
<tr>
<td>Fruit Soda</td>
<td>1,213</td>
<td>1,272</td>
<td>1,250</td>
</tr>
</tbody>
</table>

See Also

- OUTALTSELECT
- OUTPUTMEMBERKEY
- REPALIASMBR
- REPMBR
- REPMBRALIAS
- REPQUALMBR

**REPALIASMBR**

Displays alias names followed by member names for members of the dimension specified in the report output.

The alias and member name are separated by a single space. If no alias exists for a member, the member name only is displayed. The current alias table is used unless OUTALTSELECT is used to specify an alternative alias table.

**Syntax**

<REPALIASMBR dimensionname>
Notes

- `<REPALIASMBR ""` specifies the command for all dimensions.
- REPALIASMBR can be used on unique member outlines or duplicate member outlines.
- Some formatting commands (for example, `RENAME`) do not work with REPALIASMBR.
- REPALIASMBR cannot be used in combination with the existing commands OUTMBRALT, OUTALTMBR, OUTALT, OUTALTNAMES, OR OUTMBRNAMES.

Example

The following example is based on Sample Basic.

```<PAGE (Product, Measures)
<COLUMN (Scenario, Year)
<REPALIASMBR Product Actual
<CHILDREN Qtr1
<ROW (Market)
<IDESCEDANTS "300"
```

This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Market</strong></td>
<td>800</td>
<td>864</td>
<td>880</td>
</tr>
<tr>
<td><strong>Vanilla Cream 300-20 Measures Actual</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Market</strong></td>
<td>220</td>
<td>231</td>
<td>239</td>
</tr>
<tr>
<td><strong>Diet Cream 300-30 Measures Actual</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Market</strong></td>
<td>897</td>
<td>902</td>
<td>896</td>
</tr>
<tr>
<td><strong>Cream Soda 300 Measures Actual</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Market</strong></td>
<td>1,917</td>
<td>1,997</td>
<td>2,015</td>
</tr>
</tbody>
</table>

See Also

- OUTALTSELECT
- OUTPUTMEMBERKEY
- REPALIAS
• **REPMBR**
• **REPMBRALIAS**
• **REPQUALMBR**

## REPMBR

Displays member names only for members of the dimension specified.

Used with the commands **REPALIAS**, **REPMBRALIAS**, and **REPALIASMBR**.

### Syntax

```<REPMBR dimensionname>```

### Notes

- `<REPMBR ""` specifies the command for all dimensions.
- **REPMBR** can be used on unique member outlines or duplicate member outlines.
- Some formatting commands (for example, **RENAME**) do not work with **REPMBR**.
- **REPMBR** cannot be used in combination with the existing commands **OUTMBRALT**, **OUTALTMBR**, **OUTALT**, **OUTALTNAMES**, or **OUTMBRNAMES**.

### Example

The following example is based on Sample Basic.

```<PAGE (Product, Measures)>
<COLUMN (Scenario, Year)>
//Displays aliases for all dimensions except the Product dimension. Displays member names for the Product dimension.
<REPALIAS ""
<REPMBR Product
Actual
<CHILDREN Qtr1
<ROW (Market)
<IDESCENDANTS "300"
!```

This example produces the following report:

300-10 Measures Actual

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market</td>
<td>800</td>
<td>864</td>
<td>880</td>
</tr>
</tbody>
</table>

300-20 Measures Actual

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market</td>
<td>220</td>
<td>231</td>
<td>239</td>
</tr>
</tbody>
</table>
300-30 Measures Actual

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market</td>
<td>897</td>
<td>902</td>
<td>896</td>
</tr>
</tbody>
</table>

300 Measures Actual

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market</td>
<td>1,917</td>
<td>1,997</td>
<td>2,015</td>
</tr>
</tbody>
</table>

See Also

- OUTPUTMEMBERKEY
- REPALIAS
- REPALIASMBR
- REPMBRALIAS
- REPQUALMBR

**REPMBRALIAS**

Displays member names followed by aliases for members of the dimension specified. The member name and alias are separated by a single space. If no alias exists for a member, the member name only is displayed. The current alias table is used unless OUTALTSELECT is used to specify an alternative alias table.

**Syntax**

```
<REPMBRALIAS dimensionname
```

**Notes**

- `<REPMBRALIAS ""` specifies the command for all dimensions.
- REPMBRALIAS can be used on unique member outlines or duplicate member outlines.
- Some formatting commands (for example, RENAME) do not work with REPMBRALIAS.
- REPMBRALIAS cannot be used in combination with the existing commands OUTMBRALT, OUTALTMBR, OUTALT, OUTALTNAMES, OR OUTMBRNAMES.

**Example**

The following example is based on Sample Basic.

```
<PAGE (Product, Measures)
<COLUMN (Scenario, Year)
<REPMBRALIAS Product Actual
<CHILDREN Qtr1
<ROW (Market)
<IDESCENDANTS "300"
```
This example produces the following report:

| 300-10 Dark Cream Measures Actual |
| Jan | Feb | Mar |
| 800 | 864 | 880 |

| 300-20 Vanilla Cream Measures Actual |
| Jan | Feb | Mar |
| 220 | 231 | 239 |

| 300-30 Diet Cream Measures Actual |
| Jan | Feb | Mar |
| 897 | 902 | 896 |

| 300 Cream Soda Measures Actual |
| Jan | Feb | Mar |
| 1,917 | 1,997 | 2,015 |

See Also
- OUTALTSELECT
- OUTPUTMEMBERKEY
- REPALIAS
- REPALIASMBR
- REPMBR
- REPQUALMBR

**REPQUALMBR**

Displays member names for any unique member names and a system generated identifier (for example, a qualified name) for any duplicate member names for the dimension specified. REPQUALMBR applies to duplicate member outlines only.

**Syntax**

<REPQUALMBR dimensionname>

**Notes**

- <REPQUALMBR > specifies the command for all dimensions.
- Some formatting commands (for example, RENAME) do not work with REPQUALMBR.
- REPQUALMBR cannot be used in combination with the existing commands OUTMBRALT, OUTALTMBR, OUTALT, OUTALTNAMES, OR OUTMBRNAMES.

See Also
- OUTPUTMEMBERKEY
- REPALIAS
- REPALIASMBR
- REPMBR
- REPMBRALIAS

RESTRICT

The RESTRICT command specifies the conditions that the row must satisfy before it becomes part of a result set.

Syntax

```
<RESTRICT (<column | value> <operator> <column | value> (<logicalOperator> <column | value> <operator> <column | value>))
```

Parameter Description

- `<column>` @DATACOLUMN (<`colNumber`>) | @DATACOLUMN (<`colNumber`>)
  where `<colNumber>` is the target column number; must be between 1 and the maximum number of columns in the report.
- `<value>` Cell data type (real number) | #MISSING
- `<operator>` >, >= greater than, greater or equal
  <, <= less than, less than or equal
  = equal
  !=, <> not equal
- `<logicalOperator>` Report Writer processes logical operations from left to right without exception. Parentheses are not supported. The supported logical operators are AND and OR.

Notes

Restrictions set by this command are processed from left to right.

You can use only one RESTRICT command per report, with a maximum of nine operators included in the command. RESTRICT persists to the end of the report script unless overwritten. You can use RESTRICT, TOP, BOTTOM, and ORDERBY in the same report script, but you can use each command only once per report. If you repeat the same command in a second report in the same report script, the second command overwrites the first. Place global script formatting commands, for example, SAVEROW, before a PAGE, COLUMN command or associated member (for example, <ICHILDREN or <IDESCENDANTS).

The RESTRICT command can appear anywhere in a script. If sorting commands, including TOP, BOTTOM, or ORDERBY occur in the same report, the order of execution is:

1. Any sorting command that sorts on member names (for example <SORTDESC or <SORTASC)
2. RESTRICT
3. TOP and BOTTOM
4. ORDERBY

This order of execution applies irrespective of the order in which the commands appear in the report script.

For an example that uses TOP, BOTTOM, ORDERBY, and RESTRICT together, see the entry for the BOTTOM command.

You can use configurable variables to specify the size of the internal buffers used for storing and sorting the extracted data. The following settings affect the way the RESTRICT, TOP, and BOTTOM commands work:

- Retrieval Buffer Size (a database setting)
- Retrieval Sort Buffer Size (a database setting)
- “NUMERICPRECISION” on page 528 (an essbase.cfg setting)

For more information on the database settings, see the Oracle Essbase Database Administrator’s Guide.

Example

```
( StartHeading
  SupPageHeading
  Skip
  Text C "Annual Report" 70 **PageString
  Skip
  Endheading )

// Display the rows where the value of column 3 is greater than 1,300
<RESTRICT (@DATACOLUMN(3) > +1300 )

// Page and column dimensions
<Page (Accounts, Scenario)
<Column (Scenario, Year)

// Scenario members
  Actual Budget Scenario

// Row dimensions
  <Row (Market, Product)

// Market members
  <Ichildren Market

// Product members
  <Idescendants Product

!
// End report
```

Which produces the following report based on the Demo Basic sample database:
<table>
<thead>
<tr>
<th></th>
<th>Actual</th>
<th>Budget</th>
<th>Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>East</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compact_Disc</td>
<td>13,612</td>
<td>13,616</td>
<td>13,612</td>
</tr>
<tr>
<td>Audio</td>
<td>13,438</td>
<td>14,551</td>
<td>13,438</td>
</tr>
<tr>
<td>Television</td>
<td>11,911</td>
<td>14,780</td>
<td>11,911</td>
</tr>
<tr>
<td>VCR</td>
<td>15,506</td>
<td>16,772</td>
<td>15,506</td>
</tr>
<tr>
<td>Camera</td>
<td>5,721</td>
<td>7,079</td>
<td>5,721</td>
</tr>
<tr>
<td>Visual</td>
<td>33,138</td>
<td>38,631</td>
<td>33,138</td>
</tr>
<tr>
<td>Product</td>
<td>46,576</td>
<td>53,182</td>
<td>46,576</td>
</tr>
<tr>
<td><strong>West</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compact_Disc</td>
<td>21,568</td>
<td>20,935</td>
<td>21,568</td>
</tr>
<tr>
<td>Audio</td>
<td>22,488</td>
<td>22,308</td>
<td>22,488</td>
</tr>
<tr>
<td>Television</td>
<td>10,688</td>
<td>13,535</td>
<td>10,688</td>
</tr>
<tr>
<td>VCR</td>
<td>19,706</td>
<td>17,782</td>
<td>19,706</td>
</tr>
<tr>
<td>Camera</td>
<td>9,957</td>
<td>12,397</td>
<td>9,957</td>
</tr>
<tr>
<td>Visual</td>
<td>40,351</td>
<td>43,714</td>
<td>40,351</td>
</tr>
<tr>
<td>Product</td>
<td>62,839</td>
<td>66,022</td>
<td>62,839</td>
</tr>
<tr>
<td><strong>South</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Television</td>
<td>5,278</td>
<td>9,395</td>
<td>5,278</td>
</tr>
<tr>
<td>VCR</td>
<td>13,994</td>
<td>15,810</td>
<td>13,994</td>
</tr>
<tr>
<td>Camera</td>
<td>5,293</td>
<td>7,220</td>
<td>5,293</td>
</tr>
<tr>
<td>Visual</td>
<td>24,565</td>
<td>32,425</td>
<td>24,565</td>
</tr>
<tr>
<td>Product</td>
<td>24,565</td>
<td>32,425</td>
<td>24,565</td>
</tr>
<tr>
<td><strong>Market</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compact_Disc</td>
<td>35,180</td>
<td>34,551</td>
<td>35,180</td>
</tr>
<tr>
<td>Audio</td>
<td>35,926</td>
<td>36,859</td>
<td>35,926</td>
</tr>
<tr>
<td>Television</td>
<td>27,877</td>
<td>37,710</td>
<td>27,877</td>
</tr>
<tr>
<td>VCR</td>
<td>49,206</td>
<td>50,364</td>
<td>49,206</td>
</tr>
<tr>
<td>Camera</td>
<td>20,971</td>
<td>26,696</td>
<td>20,971</td>
</tr>
<tr>
<td>Visual</td>
<td>98,054</td>
<td>114,770</td>
<td>98,054</td>
</tr>
<tr>
<td>Product</td>
<td>133,980</td>
<td>151,629</td>
<td>133,980</td>
</tr>
</tbody>
</table>

**See Also**

- TOP
- BOTTOM
- ORDERBY

**ROW**

Determines the row dimensions for a report whose member names appear in the data rows of the report.

The member(s) in the command determine which dimensions from the Database Outline are displayed in the rows.

`dimList` is a list of members or dimension members that specifies the order, from left to right, in which the row headers are listed unless subsequently moved by ORDER or NAMESCOL. Each dimension may be represented only once in `dimList`.

**Syntax**

```plaintext
<ROW ( dimList )
```
Parameter Description

dimList  Dimension name or a comma-delimited list of dimensions.

Notes
- If dimension names contain spaces or consist of numbers, they must be enclosed in double quotes.
- When more than one dimension is specified the first dimension in the list appears in the leftmost row Name column, the next dimension in the list appears nested to the right of the first, and so on.
- By default attribute calculation dimension members (for example, SUM, AVG) are displayed as columns. To display them in rows, you must include them in the ROW command.

Example

<ROW (Product)

creates a report with each member of Product as a row in the report.

See Also
- COLUMN
- PAGE

ROWREPEAT

Displays all applicable row members on each row of the report even if a member describing a row is the same as in the previous row.

Syntax

{ ROWREPEAT }

Notes

This command returns the report to displaying members that change from one line to the next.

Default Value

Default is NOROWREPEAT.

Example

The following example is based on Demo Basic.

The command { ROWREPEAT } causes the row member names Qtr1 through Qtr4 to repeat for each line showing Compact_Disc in the report where the duplications would normally be suppressed.

<PAGE Market, Accounts)
Chicago Sales

  <COLUMN Scenario)
  Actual Budget
This example produces the following report:

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Product</th>
<th>Actual</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qtr1</td>
<td>Stereo</td>
<td>2,591</td>
<td>2,800</td>
</tr>
<tr>
<td>Qtr1</td>
<td>Compact_Disc</td>
<td>3,150</td>
<td>3,050</td>
</tr>
<tr>
<td>Qtr2</td>
<td>Stereo</td>
<td>2,476</td>
<td>2,700</td>
</tr>
<tr>
<td>Qtr2</td>
<td>Compact_Disc</td>
<td>3,021</td>
<td>3,050</td>
</tr>
<tr>
<td>Qtr3</td>
<td>Stereo</td>
<td>2,567</td>
<td>2,750</td>
</tr>
<tr>
<td>Qtr3</td>
<td>Compact_Disc</td>
<td>3,032</td>
<td>3,050</td>
</tr>
<tr>
<td>Qtr4</td>
<td>Stereo</td>
<td>3,035</td>
<td>3,300</td>
</tr>
<tr>
<td>Qtr4</td>
<td>Compact_Disc</td>
<td>3,974</td>
<td>3,950</td>
</tr>
</tbody>
</table>

See Also

- NOROWREPEAT
- ROW

**SAVEANDOUTPUT**

Adds `rowMbr` to the report and creates a new calculated row whose default name is `rowMbr`, but which may be renamed with an optional name, `rowCalcName`, enclosed in quotation marks.

The command automatically stores the data associated with `rowMbr`, and this data can be referenced by CALC ROW, CALC COLUMN, PRINTROW, or any other command that can reference a calculated row.

When this command is used, the calculation operator for that command is set to OFF, so that its contents are not be affected unless the user explicitly turns the operator back on.

SAVEANDOUTPUT both captures data and outputs the result, whereas SAVEROW captures the output but suppress it.

**Syntax**

```
{ SAVEANDOUTPUT [ "rowCalcName" ] } rowMbr
```

**Parameter**

- `"rowCalcName"` Optional. Name, enclosed by quotation marks, for the calculated data row created by the SAVEROW command.

  `rowCalcName` can be multi-part, separated by a tilde (~), as in the CALCULATE ROW and CALCULATE COLUMN syntax.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>rowMbr</td>
<td>Row member that determines the row name for the calculated data row.</td>
</tr>
</tbody>
</table>

**Notes**

A member and a calculated row can have the same name. Report Writer considers them separate entities even though they have the same name.

**Example**

The following example is based on Demo Basic.

```
{ TEXT 18 "Expenses as % of Sales for January" }

Jan Boston Audio

    Actual   Budget

{ SAVEANDOUTPUT } Sales !

{ CALCULATE COLUMN " Actual%" = 1 % "Sales" 1
CALCULATE COLUMN "Budget%" = 2 % "Sales" 2 }

COGS  Misc
Payroll
Marketing

This example produces the following report:

```
Expenses as % of Sales for January

     Jan Boston Audio
    Actual   Budget
   ========= ========
Sales     1,985    2,150

COGS  Misc
Payroll
Marketing

```

**See Also**

- CALCULATE COLUMN
- CALCULATE ROW
- CLEARROWCALC
- CLEARALLROWCALC
- OFFCOLCALCS
- OFFROWCALCS
- ONCOLCALCS
SAVEROW

Creates a new calculated row whose default name is *rowMbr*, but which may be renamed with an optional name enclosed in quotation marks.

The command automatically stores the data associated with *rowMbr*, and this data can be referenced by any CALC ROW, CALC COLUMN, PRINTROW command, or any other that can reference a calculated row.

When the command is used, the calculation operator for that command is set to OFF, so that its contents are not affected unless the user explicitly turns the operator back on. SAVEROW captures the data, but suppresses its output.

**Syntax**

```
{ SAVEROW ["newRowCalcName"] } rowMbr
```

**Parameter**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>newRowCalcName</td>
<td>Optional. Name, enclosed in quotation marks, for the data row created by the SAVEROW command. The name can be multi-part, separated by a tilde (~), as in the CALCULATE ROW and CALCULATE COLUMN syntax.</td>
</tr>
<tr>
<td>rowMbr</td>
<td>Default row member used to determine the row name for the calculated data row. <em>rowMbr</em> is the next member encountered after the { SAVEROW } command, so other intervening { } format commands or non-member-selecting &lt; commands are allowed and do not affect which member is saved.</td>
</tr>
</tbody>
</table>

**Notes**

There is no conflict with a member and a calculated row having the same name. They are separate entities even though they have the same name.

**Example**

The following example is based on Demo Basic.

```
{TEXT 18 "Expenses as % of Sales for January"}
Jan Boston Audio

Actual Budget

{SAVEROW} Sales !
{CALCULATE COLUMN " Actual\%" = 1 % "Sales" 1
   CALCULATE COLUMN "Budget\%" = 2 % "Sales" 2}
COGS  Misc
```

1402
Payroll
Marketing
Sales

Which produces the following report:

```
Expenses as % of Sales for January

<table>
<thead>
<tr>
<th>Actual</th>
<th>Jan</th>
<th>Boston</th>
<th>Audio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost_of_Goods_Sold</td>
<td>941</td>
<td>1,007</td>
<td>47</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Payroll</td>
<td>542</td>
<td>530</td>
<td>27</td>
</tr>
<tr>
<td>Marketing</td>
<td>134</td>
<td>130</td>
<td>7</td>
</tr>
<tr>
<td>Sales</td>
<td>1,985</td>
<td>2,150</td>
<td>100</td>
</tr>
</tbody>
</table>
```

See Also
- SAVEANDOUTPUT

**SCALE**

Scales the data in the report by multiplying it by a numeric value.

**Syntax**

```
{ SCALE [ factor ] [ columnList ] }
```

**Parameter**

- `factor`: Numeric value by which all output values are multiplied. The result is a scaled value.
- `columnList`: Optional. List of column numbers that this command affects.

**Notes**

This command affects only the columns specified in the command or all columns if none are specified. Stored data is not affected by this command.

**Example**

The command `{SCALE .01}` multiplies the data values in the second report by .01.

```
<PAGE (Market, Accounts, Scenario)
Chicago Sales Actual
  <COLUMN (Year)
    <CHILDREN Year
  <ROW (Product)
  <CHILDREN Audio
    !

{SCALE 2}
Chicago Sales Actual
  <CHILDREN Year
```
This example produces the following report:

Chicago Sales Actual

<table>
<thead>
<tr>
<th></th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stereo</td>
<td>2,591</td>
<td>2,476</td>
<td>2,567</td>
<td>3,035</td>
</tr>
<tr>
<td>Compact_Disc</td>
<td>3,150</td>
<td>3,021</td>
<td>3,032</td>
<td>3,974</td>
</tr>
</tbody>
</table>

Chicago Sales Actual

<table>
<thead>
<tr>
<th></th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stereo</td>
<td>5,182</td>
<td>4,952</td>
<td>5,134</td>
<td>6,070</td>
</tr>
<tr>
<td>Compact_Disc</td>
<td>6,300</td>
<td>6,042</td>
<td>6,064</td>
<td>7,948</td>
</tr>
</tbody>
</table>

See Also

- BRACKETS
- COMMAS
- DECIMAL
- SUPBRACKETS
- SUPCOMMAS

**SETCENTER**

Sets a new centerline position on the page.

**Syntax**

```
{ SETCENTER charPosition }
```

**Parameter**  
**Description**

charPosition  Integer representing a character position on your page. Character position is counted from the left edge of the page and is not affected by the left margin setting.

**Notes**

This command sets a new centerline position on the page. Under normal circumstances, the center of the page is calculated based on the default page width and the left margin position until column members have been encountered, after which it defaults to the center of the data column area.

The SETCENTER command allows you to issue an arbitrary centerline position, which is then used for all centered text, including page headers. This can be helpful to center text before all the members defining the columns (and thus, the page width). It can also be used to reset the center in cases where the centering is not appealing when based on the exact center of the data columns.
SETROWOP

Defines on-the-fly calculations for a named row created with CALCULATE ROW.

This command determines the calculation for the calculated row specified in rowCalcName.
The following table lists the operators you use for the operation in the command:

<table>
<thead>
<tr>
<th>Operator</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>Addition</td>
</tr>
<tr>
<td>-</td>
<td>Subtraction</td>
</tr>
<tr>
<td>*</td>
<td>Multiplication</td>
</tr>
<tr>
<td>/</td>
<td>Division</td>
</tr>
<tr>
<td>%</td>
<td>Percentages</td>
</tr>
<tr>
<td>OFF</td>
<td>Turns off the calculation</td>
</tr>
</tbody>
</table>

The addition operator, for example, sums all values in all rows output while the operation is on.
The result in the calculated row may be printed with PRINTROW at any time. You may only
use a single operator per calculated row. Before using the SETROWOP command, you must
define the row name with the CALCULATE ROW command, or with SAVEROW or
SAVEANDOUTPUT. Refer to the CALCULATE ROW command for more information on its
ability to set the row operator.

If an operation is not specified, the default is + (add).

Syntax

{ SETROWOP "rowCalcName" [ operation ] }

Parameter Description

rowCalcName  Named row, in double quotes, to which SETROWOP applies.

operation  You can use any valid row calculation expression.

SETROWOP accepts the same mathematical operators as CALCULATE ROW. In addition,
SETROWOP accepts the OFF operator, which turns off row operations for rows that follow.

Notes

SETROWOP performs unary operations on the row or rows that follow.
SETROWOP "rowCalcName" OFF turns off operations on subsequent rows.

Example

See the examples for CALCULATE ROW.

See Also

- CALCULATE ROW
- CLEARROWCALC
SINGLECOLUMN
Displays a column heading when there is only one column member extracted in the report.

Syntax
<SINGLECOLUMN

Notes
This formatting command displays a column heading when there is only one column member selected in the report.

Example
<singlecolumn
{suppagehead}
<column(year)
<row(measures)
Profit Inventory Ratios
Qtr1!

This examples produces the following report:

Qtr1
========
Profit             24,703
Inventory         117,405
Ratios                 55

See Also
- COLHEADING
- PAGEHEADING
- SUPCOLHEADING
- SUPPAGEHEADER
**SKIP**

Outputs a number of blank lines in the report or a single line if \( n \) is omitted from the command. The default value is single skip.

**Syntax**

\[
\{ \text{SKIP } n \}
\]

**Parameter Description**

\( n \) Positive integer representing the number of lines to skip.

**Notes**

- SKIP is an output command.
- The value of \( n \) must be a positive integer.
- If you do not specify a value for \( n \), \{SKIP\} defaults to 1.

**Example**

```
<PAGE (Measures, Market)
Texas Sales
     <COLUMN (Scenario, Year)
         Actual Budget
             Jan Feb
<ROW (Market)
<DESCENDANTS "100"
    <INCLUDE/>
    <DESCENDANTS "200"
    <DESCENDANTS "300"  

```

Which inserts two blank lines between the rows containing descendants of member 100 and descendants of members 200 and 300.

**See Also**

- NEWPAGE
- NOSKIPONDIMENSION
- SKIPONDIMENSION

**SKIPONDIMENSION**

Inserts a blank line when a member from the same dimension as the specified member changes on the next line in the report.

**Syntax**

\[
\{ \text{SKIPONDIMENSION } mbrName \}
\]
Parameter  Description

mbrName  Name of single member. When a member from this dimension changes during report processing, a blank line is inserted before the member change.

Notes

This command outputs a blank line when a member from the same dimension as mbrName in the command changes on the next line in the report. With the ROW command, you can display members from several dimensions in columns on the side of the report. At least one member changes from one of these dimensions for each row of the report. The SKIPONDIMENSION displays a blank line before the member from the dimension changes. When combined with UNAMEONDIMENSION and/or PAGEONDIMENSION, UNAMEONDIMENSION is processed first followed by SKIPONDIMENSION and PAGEONDIMENSION in order.

Example

The command {SKIPONDIMENSION Year} in the following report inserts a blank line before the row members Qtr2, Qtr3, and Qtr4 in the report.

<PAGE (Market, Accounts)
Chicago Sales
  <COLUMN (Scenario)
  Actual
<ROW (Year, Product)
{ SKIPONDIMENSION Year }
<CHILDREN Year
<ICHILDREN Audio
!

Chicago Sales Actual

Qtr1  Stereo        2,591
      Compact_Disc  3,150
      Audio         5,741
Qtr2  Stereo        2,476
      Compact_Disc  3,021
      Audio         5,497
Qtr3  Stereo        2,567
      Compact_Disc  3,032
      Audio         5,599
Qtr4  Stereo        3,035
      Compact_Disc  3,974
      Audio         7,009

See Also

- NOPAGEONDIMENSION
- NOSKIPONDIMENSION
- PAGEONDIMENSION
SORTALTNAMES

Alphabetically sorts members by their alternate names within a member selection command (for example, <CHILDREN>).

Syntax

<SORTALTNAMES

Notes

This command sorts alphabetically all members added with a member command (for example, <CHILDREN) by their alternate name. Members entered directly in the report specification without a member command, calculated rows and column names, or member commands encountered in the specification prior to the SORTALTNAMES command, are not affected by the command.

This command must precede the selection commands, for example, CHILDREN or DESCENDANTS. If no sorting commands are used, members are output in hierarchical order based on the member outline. Any sort command remains in effect until another sort command is issued.

Example

The following example is based on Demo Basic.

The command <SORTALTNAMES sorts the members added to the report with the <IDESCENDANTS Product command by the alternate name of each member. The command {OUTALTNAMES} causes alternate member names to be displayed in the report. {NOINDENTGEN} turns off hierarchical indenting so the row names line up. Indented row names are not particularly useful when the output is sorted on any criteria other than generation.

<table>
<thead>
<tr>
<th>Chicago Sales Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qtr1</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>Audio</td>
</tr>
<tr>
<td>Camera</td>
</tr>
<tr>
<td>Compact_Disc</td>
</tr>
<tr>
<td>Product</td>
</tr>
<tr>
<td>Stereo</td>
</tr>
<tr>
<td>Television</td>
</tr>
<tr>
<td>VCR</td>
</tr>
<tr>
<td>Visual</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chicago Sales Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qtr1</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>Audio</td>
</tr>
<tr>
<td>CD</td>
</tr>
<tr>
<td>Camera</td>
</tr>
<tr>
<td>Items</td>
</tr>
<tr>
<td>Media</td>
</tr>
<tr>
<td>Radio</td>
</tr>
</tbody>
</table>
SORTASC

Specifies an ascending sort order.

**Syntax**

```
SORTASC
```

**Notes**

This command determines the order in which members are sorted in member commands in the report specification. You use this command prior to the other sort commands including SORTALTNAMES, SORTGEN, SORTLEVEL and SORTMBRNAMES. With the SORTASC command, all following members selected are sorted into ascending order starting with either the letter "a" or the lowest generation and moving toward the letter "z" or the highest generation. Sorting in ascending order is the default sort order and is only changed with the SORTDESC command.

This command must precede the selection commands, or example, CHILDREN or DESCENDANTS. If no sorting commands are used, members are output in hierarchical order based on the member outline. Any sort command remains in effect until reset by another sort command.

The SORTASC command can be used to restore the default (ascending) sort order. It reverses the effects of a previously-specified SORTDESC command.

**See Also**

- ALLINSAMEDIM
- CHILDREN
- DESCENDANTS
- SORTASC
- SORTDESC
- SORTGEN
- SORTLEVEL
- SORTMBRNAMES
- SORTNONE
**SORTDESC**

Specifies a descending, hierarchical sort order.

**Syntax**

```<SORTDESC>```

**Notes**

This command determines the order in which items are sorted in member commands in the report specification. You use this command prior to the other sort commands including SORTALTNAMES, SORTGEN, SORTLEVEL and SORTMBRNAMES. With the SORTDESC command, all members are sorted in descending order starting with either the letter "z" or the highest generation and moving toward the letter "a" or the lowest generation.

This command must precede the selection commands, for example CHILDREN or DESCENDANTS. If no sorting commands are used, members are output in hierarchical order based on the member outline. Any sort command remains in effect until another sort command is issued.

**Example**

The following example is based on Sample Basic.

```
<PAGE (Market, Measures)
Massachusetts Sales
<COLUMN (Scenario, Year)
Actual Budget
Jan Feb Mar
<ROW (Product)
<SORTDESC
<ICHILDREN Product
```

This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>Massachusetts Sales</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual Budget</td>
<td>Budget</td>
</tr>
<tr>
<td></td>
<td>Jan</td>
<td>Feb</td>
</tr>
<tr>
<td>Product</td>
<td>1,251</td>
<td>1,206</td>
</tr>
<tr>
<td>Diet</td>
<td>#Missing</td>
<td>#Missing</td>
</tr>
<tr>
<td>400</td>
<td>160</td>
<td>136</td>
</tr>
<tr>
<td>300</td>
<td>130</td>
<td>132</td>
</tr>
<tr>
<td>200</td>
<td>467</td>
<td>468</td>
</tr>
<tr>
<td>100</td>
<td>494</td>
<td>470</td>
</tr>
</tbody>
</table>

**See Also**

- ALLINSAMEDIM
- DESCENDANTS
- SORTASC
- SORTALTNAMES
- SORTGEN
SORTGEN

Sorts all members added with a member command, such as <CHILDREN, according to the generation of the member in the Database Outline. The top of the dimension in the Outline is generation 1 for the dimension. The children of the top are generation 2, and so on. Each member’s generation is one higher than its parent. Members entered directly in the report specification without using a member selection command, calculated rows and column names, or member commands encountered in the specification prior to the SORTGEN command, are not affected by the command.

This command must precede the selection commands, for example CHILDREN or DESCENDANTS. If no sorting commands are used, members are output in hierarchical order based on the member outline. Any sort command remains in effect until another sort command is issued.

Syntax

<SORTGEN

Notes

- SORTGEN sorts members from the last generation, which is the leaf member of the dimension, to the first generation in the branch, which is the root of the dimension.
- SORTGEN is not affected by other sort commands.

Example

The following example is based on Sample Basic.

<PAGE (Product, Measures)
East Sales
<COLUMN (Scenario, Year)

Actual Budget
Jan Feb Mar

<ROW (Market)
<SORTGEN
<IDESCENDANTS Market

Which produces the following report:

<table>
<thead>
<tr>
<th>Product Sales</th>
<th>Actual</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jan</td>
<td>Feb</td>
</tr>
<tr>
<td>Market</td>
<td>31,538</td>
<td>32,069</td>
</tr>
<tr>
<td>East</td>
<td>6,780</td>
<td>6,920</td>
</tr>
<tr>
<td>West</td>
<td>10,436</td>
<td>10,564</td>
</tr>
</tbody>
</table>
See Also

- ALLINSAMEDIM
- CHILDREN
- DESCENDANTS
- SORTEASC
- SORTALTNAME
- SORTDEFAULT
- SORTLEVEL
- SORTRMBRNAME
- SORTNONE

**SORTLEVEL**

Sorts all members added with a member selection command, such as `<CHILDREN`, according to the level of the member.

Each member is 1 level higher than the highest level of its children. Members entered without using a member selection command, calculated rows and column names, or member commands encountered prior to the SORTLEVEL command are not affected.

This command must precede the selection commands, for example CHILDREN or DESCENDANTS.

**Syntax**

```
 SorLEVEL
```

**Notes**

SORTLEVEL sorts members from the lowest level to the highest level.
Example

The following example is based on Sample Basic.

```xml
<PAGE (Product, Measures)
East Sales
<COLUMN (Scenario, Year)

Actual Budget
Jan Feb Mar
<ROW (Market)
<SORTLEVEL
<IDESCENDANTS Market

This example produces the following report:

<table>
<thead>
<tr>
<th>Market</th>
<th>Actual</th>
<th></th>
<th></th>
<th>Budget</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jan</td>
<td>Feb</td>
<td>Mar</td>
<td>Jan</td>
<td>Feb</td>
<td>Mar</td>
</tr>
<tr>
<td>New York</td>
<td>2,479</td>
<td>2,625</td>
<td>2,601</td>
<td>2,300</td>
<td>2,450</td>
<td>2,440</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>1,251</td>
<td>1,206</td>
<td>1,203</td>
<td>1,170</td>
<td>1,130</td>
<td>1,120</td>
</tr>
<tr>
<td>Florida</td>
<td>1,321</td>
<td>1,383</td>
<td>1,428</td>
<td>1,170</td>
<td>1,250</td>
<td>1,290</td>
</tr>
<tr>
<td>Connecticut</td>
<td>1,197</td>
<td>1,157</td>
<td>1,118</td>
<td>1,080</td>
<td>1,040</td>
<td>1,000</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>532</td>
<td>549</td>
<td>571</td>
<td>460</td>
<td>480</td>
<td>510</td>
</tr>
<tr>
<td>California</td>
<td>3,602</td>
<td>3,699</td>
<td>3,755</td>
<td>3,450</td>
<td>3,490</td>
<td>3,570</td>
</tr>
<tr>
<td>Oregon</td>
<td>1,741</td>
<td>1,667</td>
<td>1,650</td>
<td>1,590</td>
<td>1,530</td>
<td>1,500</td>
</tr>
<tr>
<td>Washington</td>
<td>1,605</td>
<td>1,629</td>
<td>1,601</td>
<td>1,420</td>
<td>1,450</td>
<td>1,440</td>
</tr>
<tr>
<td>Utah</td>
<td>1,388</td>
<td>1,397</td>
<td>1,424</td>
<td>1,320</td>
<td>1,320</td>
<td>1,350</td>
</tr>
<tr>
<td>Nevada</td>
<td>2,100</td>
<td>2,172</td>
<td>2,244</td>
<td>1,680</td>
<td>1,740</td>
<td>1,780</td>
</tr>
<tr>
<td>Texas</td>
<td>1,455</td>
<td>1,544</td>
<td>1,506</td>
<td>1,490</td>
<td>1,580</td>
<td>1,560</td>
</tr>
<tr>
<td>Oklahoma</td>
<td>980</td>
<td>980</td>
<td>1,001</td>
<td>920</td>
<td>920</td>
<td>940</td>
</tr>
<tr>
<td>Louisiana</td>
<td>978</td>
<td>980</td>
<td>948</td>
<td>900</td>
<td>910</td>
<td>900</td>
</tr>
<tr>
<td>New Mexico</td>
<td>563</td>
<td>578</td>
<td>600</td>
<td>560</td>
<td>560</td>
<td>590</td>
</tr>
<tr>
<td>Illinois</td>
<td>2,538</td>
<td>2,653</td>
<td>2,697</td>
<td>2,580</td>
<td>2,690</td>
<td>2,740</td>
</tr>
<tr>
<td>Ohio</td>
<td>1,471</td>
<td>1,411</td>
<td>1,390</td>
<td>1,470</td>
<td>1,410</td>
<td>1,380</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>1,341</td>
<td>1,363</td>
<td>1,369</td>
<td>1,280</td>
<td>1,330</td>
<td>1,330</td>
</tr>
<tr>
<td>Missouri</td>
<td>1,009</td>
<td>1,014</td>
<td>1,039</td>
<td>960</td>
<td>980</td>
<td>1,000</td>
</tr>
<tr>
<td>Iowa</td>
<td>2,029</td>
<td>2,042</td>
<td>2,104</td>
<td>1,810</td>
<td>1,800</td>
<td>1,860</td>
</tr>
<tr>
<td>Colorado</td>
<td>1,958</td>
<td>2,020</td>
<td>1,964</td>
<td>1,870</td>
<td>1,940</td>
<td>1,900</td>
</tr>
<tr>
<td>East</td>
<td>6,780</td>
<td>6,920</td>
<td>6,921</td>
<td>6,180</td>
<td>6,350</td>
<td>6,360</td>
</tr>
<tr>
<td>West</td>
<td>10,436</td>
<td>10,564</td>
<td>10,674</td>
<td>9,460</td>
<td>9,530</td>
<td>9,640</td>
</tr>
<tr>
<td>South</td>
<td>3,976</td>
<td>4,082</td>
<td>4,055</td>
<td>3,870</td>
<td>3,970</td>
<td>3,990</td>
</tr>
<tr>
<td>Central</td>
<td>10,346</td>
<td>10,503</td>
<td>10,563</td>
<td>9,970</td>
<td>10,150</td>
<td>10,210</td>
</tr>
<tr>
<td>Market</td>
<td>31,538</td>
<td>32,069</td>
<td>32,213</td>
<td>29,480</td>
<td>30,000</td>
<td>30,200</td>
</tr>
</tbody>
</table>
```

See Also

- ALLINSAMEDIM
- CHILDREN
- DESCENDANTS
- SORTASC
- SORTALT/NAMES
- SORTDESC
SORTMBRNAMES

Sorts all members added with a member selection command, such as <CHILDREN alphabetically by member name when the members are added to the report. Members entered without using a member selection command, calculated rows and column names, or member commands encountered in the specification prior to the SORTMBRNAMES command are not affected.

This command must precede the selection commands. Any sort command remains in effect until another sort command is issued.

Syntax

<SORTMBRNAMES

Notes

- SORTMBRNAMES disregards hierarchical relationships between members.
- Numeric characters rise above alphanumerical characters in the sort order. For example, 100 rises above A200, which rises above Accounts.
- If SORTASC or SORTDESC are used to control sorting, they must precede the SORTMBRNAMES command.

Example

The following example is based on Sample Basic.

<PAGE (Product, Measures)
Sales
<COLUMN (Scenario, Year)
Actual  Budget
Jan  Feb  Mar  Jan  Feb  Mar
Louisiana  978  980  948  900  910  900
New Mexico  563  578  600  560  560  590
Oklahoma  980  980  1,001  920  920  940
South  3,976  4,082  4,055  3,870  3,970  3,990
Texas  1,455  1,544  1,506  1,490  1,580  1,560

This example produces the following report:

<table>
<thead>
<tr>
<th>Product Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Louisiana</td>
</tr>
<tr>
<td>New Mexico</td>
</tr>
<tr>
<td>Oklahoma</td>
</tr>
<tr>
<td>South</td>
</tr>
<tr>
<td>Texas</td>
</tr>
</tbody>
</table>
SORTNONE

Disables all previous sorting commands.

Syntax

<SORTNONE

Notes

This command disables all previous sorting commands so that members added to the report with member selection commands are added in outline order.

See Also

- ALLINSAMEDIM
- DESCENDANTS
- SORTALTNAMES
- SORTDESC
- SORTGEN
- SORTLEVEL
- SORTMBRNAMES

SPARSE

Tells Essbase to use the sparse data extraction method, which optimizes performance when a high proportion of the reported data rows are #MISSING. Essbase cannot use the sparse data retrieval optimization method on Dynamic Calc or Dynamic Calc and Store members.

If you have at least one sparse row dimension in your report, Essbase uses the sparse data extraction method in two cases:

- Case 1: You use SUPMISSINGROWS in your report script to suppress #MISSING values, and Essbase estimates that a very high proportion of the requested data rows are #MISSING. In this case, Essbase implicitly uses the sparse method to optimize performance.
- Case 2: You explicitly use the SPARSE command in your report script. This forces Essbase to use the sparse method. If you use the SPARSE command in a report, and you have not used SUPMISSINGROWS, Essbase automatically turns on SUPMISSINGROWS for the report containing SPARSE. Essbase also turns on SUPMISSINGROWS for all following reports in your report script, unless you specify INCMISSINGROWS in a subsequent report.

Note: If your report does not contain at least one sparse row dimension, Essbase cannot use the sparse method, and reverts to the regular method. Essbase displays a message to tell you that it cannot use the sparse method.

When Essbase uses the sparse method, it displays the following message: Report Writer Sparse Extractor method will be executed.
If you have at least one sparse row dimension in your report, the report is very large, and a very high proportion of the reported data rows are #MISSING, you may want to use the SPARSE command. You can then assess if this improves your report script performance.

If your report requests a small number of cells (#MISSING and non-missing), the sparse data extraction method is less efficient than the regular method. In this case, Essbase uses the regular method, unless you have at least one sparse row dimension in your report, and you explicitly use the SPARSE command.

SPARSE method: When Essbase uses the sparse data extraction method, Essbase first selects the row member combinations you have requested in your report script. Essbase looks at only the non-missing data blocks for these row member combinations. If your database is very sparse, this method is very efficient.

Regular method: By contrast, when Essbase uses the regular data extraction method, it cycles through every possible member combination requested by the report script. It then reports only those rows that are not#MISSING.

For example, suppose that only 1 in 10,000 data cells exist in a database. The remaining cells are #MISSING. On this database, you run a report script that requests 100% of the data, and uses SUPMISSINGROWS to suppress the #MISSING values.

If Essbase uses the regular method of data extraction, it cycles through all the requested member combinations.

If Essbase uses the sparse extraction method, it looks only at the non-missing data blocks for the row member combinations requested. As this database is very sparse, the number of data blocks is probably low. The sparse method produces the report much faster.

To exclude the sparse data extraction method from being used, use the <SPARSEOFF command. For example, you might want to use this command when reporting on data that includes Dynamic Calc and Dynamic Calc and Store members.

Syntax

<SPARSE
<SPARSEOFF

Notes

- The sparse extraction method cannot be used if the report contains attribute dimensions.
- When you include multiple logical reports separated by a ! within one report script, include the format commands/Headings for each logical report.

See Also

- SUPMISSINGROWS

STARTHEADING

Starts the definition of the page heading in place of the default heading, which is displayed at the top of each page in the report or immediately following a HEADING command.
Syntax

{ STARTHEADING }

Notes

- This command starts the definition of the page heading in place of the default heading, which is displayed at the top of each page in the report or immediately following a HEADING command. The ENDHEADING command signifies the end of the heading; all commands encountered between the STARTHEADING and ENDHEADING are part of the heading definition. Unless SUPHEADING is used outside the STARTHEADING / ENDHEADING group, the commands within the STARTHEADING/ENDHEADING group are re-executed at the start of each new page.

- By default, new pages are started whenever a page member changes, the makeup of column headings change, the page length is exceeded and SUPFEED has not been used, the NEWPAGE command is issued, the HEADING command is issued, or the PAGEONDIMENSION command causes a page break. A custom heading will include the default page header and column headers unless they are suppressed with SUPPAGEHEADING and/or SUPCOLHEADING in the custom heading definition.

- Headings (whether the default page and column headings or a custom heading created with ENDHEADING) do not get output right at the start of a new page. They are delayed until the next non-suppressed output data row is encountered, and even then the heading is output only after the data row's format { } commands have been processed. This avoids blank pages with nothing but headers on them but it can make it awkward to put out a TEXT (or other format which produces output) between the heading and the first output data row.

- To use a substitution variable in a heading, you must use the TEXT command. Example:

{STARTHEADING TEXT 2 "Prepared by:" 14 **USERNAME"
  C "The Electronics Club" 60 **PAGESTRING"
  TEXT C "Quarterly Sales by City" 60 **DATE"
  SUPPAGEHEADING
  Text 2 &Month
  TEXT 2 "**PAGEHDR" SKIP ENDHEADING}

Tip: To ensure that headings display correctly, structure the report script so that column member selections precede row member selections, and make sure that the script contains at least one column member.

Default Value

Replaces default heading.

Example

The following example shows how to define a heading for a report. All the commands within the STARTHEADING and ENDHEADING commands are executed at the top of each page. The TEXT commands display information about the person who prepared the report, the date the report was generated, and other title information.
This example produces the following report:

Prepared by: Bob          The Electronics Club         Page: 1
Quarterly Sales by City   05/13/03

Chicago Sales Actual

<table>
<thead>
<tr>
<th></th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stereo</td>
<td>2,591</td>
<td>2,476</td>
<td>2,567</td>
<td>3,035</td>
</tr>
<tr>
<td>Compact Disc</td>
<td>3,150</td>
<td>3,021</td>
<td>3,032</td>
<td>3,974</td>
</tr>
<tr>
<td>Audio</td>
<td>5,741</td>
<td>5,497</td>
<td>5,599</td>
<td>7,009</td>
</tr>
<tr>
<td>Television</td>
<td>4,410</td>
<td>4,001</td>
<td>4,934</td>
<td>6,261</td>
</tr>
<tr>
<td>VCR</td>
<td>3,879</td>
<td>3,579</td>
<td>4,276</td>
<td>4,877</td>
</tr>
<tr>
<td>Camera</td>
<td>2,506</td>
<td>2,522</td>
<td>2,602</td>
<td>3,227</td>
</tr>
<tr>
<td>Visual</td>
<td>10,795</td>
<td>10,102</td>
<td>11,812</td>
<td>14,365</td>
</tr>
<tr>
<td>Product</td>
<td>16,536</td>
<td>15,599</td>
<td>17,411</td>
<td>21,374</td>
</tr>
</tbody>
</table>

See Also

- ENDHEADING
- HEADING
- IMMHEADING
- SUPCOLHEADING
- SUPHEADING
- SUPPAGEHEADING

**SUDA**

Selects members based on a common attribute, defined as a UDA (user-defined attribute) along with their shared counterparts.

**Syntax**

< SUDA (dimName, udaStr) >
Parameter Description

| dimName | Name of the dimension associated with udaStr. |
| udaStr | Name of the UDA. |

Notes

- You can use the <SUDA command as a standalone command or as a selection command inside the LINK statement.
- You cannot use attributes as arguments.
- With the <UDA command, Report Extractor selects only the members tagged with the specified UDA. Shared members are not selected. For example, consider the following outline structure:

```
Product
  100
    100-10
    100-20 (UDAS: No Carb)
  200
    200-10
    200-20 (UDAS: No Carb)
Diet
  100-20 (shared)
  200-20 (shared)
```

The following command returns no members because the children of Diet are not recognized as having the UDA "No Carb":

```
<CHILDREN (Diet) and <UDA (Product, "No Carb")
```

In contrast, the <SUDA report command enables Report Extractor to recognize all instances of shared members as having the UDA associated with the original instance of the member. For example, the following command:

```
<CHILDREN (Diet) and <SUDA (Product, "No Carb")
```

returns the following members:

```
[Product].[100].[100-20]
[Product].[200].[200-20]
[Product].[Diet].[100-20]
[Product].[Diet].[200-20]
```

because these members are children of Diet, and the "No Carb" UDA associated with the first instances of the members is also associated with the shared members.

Example

The following example uses the SUDA command within a LINK statement to select shared members under Diet that are not "No Carb":

```
<LINK (<DESC(Diet) and not <SUDA (product, "No Carb"))
```
SUPALL

Suppresses the display of the page and column headings, all member names, page breaks, commas, and brackets.

Syntax

```{ SUPALL }
```

Notes

With this command, you see the data of the report and any text displayed as the result of the TEXT command. This command is equivalent to SUPHEADING, SUPPAGEHEADING, SUPCOLHEADING, SUPNAMES, SUPBRACKETS, SUPFEED, and SUPCOMMAS.

Example

```<PAGE (Market, Accounts, Scenario)
Chicago Sales Actual
  <COLUMN (Year)
  <CHILDREN Year
<ROW (Product)
<ICHILDREN Audio
  
{ SUPALL }
Boston Sales Actual
  <CHILDREN Year
<ICHILDREN Audio

This example produces the following report.

Note: The last three rows show the totals for Boston, without headings.
SUPBRACKETS

Suppresses the display of parentheses around negative numbers.

Syntax

{ SUPBRACKETS }

Notes

The negative sign, (-), rather than parentheses, indicates negative numbers.

Example

{SUPBRACKETS}

displays (34.43) as -34.43.

See Also

- COMMAS
- DECIMAL
- SUPALL
- SUPBRACKETS
- SUPCOMMAS

SUPCOLHEADING

Suppresses display of default column headings.

Syntax

{ SUPCOLHEADING }

Notes

Unless a custom heading is defined, you will see only the page heading members at the top of
the page and row members on the left side of each row. The keyword >"COLHDR with the
TEXT command is not affected by SUPCOLHEADING and may still be used to generate column headings where desired.

Example

```xml
<PAGE (Market, Accounts, Scenario)
(SUPCOLHEADING )
Boston Sales Actual
(COLUMN (Year)
<CHILDREN Year
<ROW (Product)
<ICHILDREN Audio
!
```

This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>Boston Sales Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stereo</td>
<td>2,450  2,341  2,377  2,917</td>
</tr>
<tr>
<td>Compact_Disc</td>
<td>3,290  3,034  3,132  3,571</td>
</tr>
<tr>
<td>Audio</td>
<td>5,740  5,375  5,509  6,488</td>
</tr>
</tbody>
</table>

See Also

- COLHEADING
- NAMESON
- PAGEHEADING
- SUPNAMES
- SUPPAGEHEADING

**SUPCOMMAS**

Suppresses the display of commas in numbers greater than 999.

Note: The display of commas is the default.

Syntax

```
(SUPCOMMAS )
```

Example

```
(SUPCOMMAS)
```

displays the number 12,234,534.23 as 12234534.23.

See Also

- BRACKETS
- COMMAS
- DECIMAL
- SUPBRACKETS
**SUPCURHEADING**

Suppresses the display of currency information when you use the CURRENCY command to convert the data values in your report to a specified currency.

**Syntax**

```
{ SUPCURHEADING }
```

**Notes**

The keyword "CURRENCY with the TEXT command is not affected by SUPCURHEADING and may be used after SUPCURHEADING to create custom currency heading and placement.

**See Also**

- CURHEADING
- CURRENCY

**SUPEMPTYROWS**

Suppresses the display of rows that have only 0 or `#MISSING` values in the row.

**Syntax**

```
{ SUPEMPTYROWS }
```

**Notes**

This command suppresses the display of zero rows, for example, rows that have only 0 or missing values. The report will contain only rows which have at least one data value which is neither `#MISSING` nor zero.

**Example**

```
{SUPEMPTYROWS} would suppress the display of the following row in a report:
```

<table>
<thead>
<tr>
<th>Qtr1</th>
<th>Actual</th>
<th>0</th>
<th>#Missing</th>
<th>0</th>
<th>0</th>
<th>#Missing</th>
</tr>
</thead>
</table>

**See Also**

- INEMPTYROWS
- INCMISSINGROWS
- INCZEROROWS
- SUPMISSINGROWS
- SUPZEROROWS

**SUPEUROPEAN**

Disables the European method for displaying numbers.

**Syntax**

```
{ SUPEUROPEAN }
```
Notes
In European mode, commas separate the decimal and whole number portion of a data value, while decimal points are used for the thousands separator character. Non-European number display uses commas to separate thousands and the decimal point to separate decimals.

SUPEUROPEAN need only be used after a EUROPEAN command.

Default Value
Non-European is the default.

Example
See the example for EUROPEAN.

See Also
- EUROPEAN

SUPFEED

Suppresses the automatic insertion of a physical page break whenever the number of lines on a page exceeds the current PAGELENGTH setting.

Syntax
```
{ SUPFEED }
```

Notes
This command disables the FEEDON command. The command FEEDON re-enables physical page breaks. The default page length is 66 lines unless reset with the PAGELENGTH command.

Default Value
Default when performing ad-hoc reports in a grid client.

See Also
- FEEDON
- NEWPAGE
- PAGELENGTH

SUPFORMATS

 Suppresses formats that produce extra output such as underlines and skips.

Syntax
```
{ SUPFORMATS }
```
Notes

The SUPFORMATS command is used in those instances where you need to suppress formats which produce output, such as underlines, skips, etc., because the data row with which the formats are associated is automatically (and therefore unpredictably) suppressed due to commands such as SUPMISSING. Otherwise, a page could be filled with "orphan" underlines and no data. If you want to retain formatting in this case, you need to turn the formats on by using the INCFORMATS command.

Default Value

Set to "ON" by default when the SUPMASK, SUPMISSING, or SUPZERO commands are used.

See Also

- INCFORMATS

SUPHEADING

Suppresses the display of the default heading (page header and column headers) or custom header, if defined, at the top of each page.

Syntax

{ SUPHEADING }

Notes

A custom heading is defined with the STARTHEADING and ENDHEADING commands. The HEADING command cancels the effect of the SUPHEADING command in addition to displaying the heading immediately prior to the next non-suppressed data row to be output. By default, new pages are started either when a page member changes, the makeup of column headings change, the page length is exceeded and SUPFEED has not been used, the NEWPAGE command is issued, the HEADING command is issued, or the PAGEONDIMENSION command causes a page break.

Default Value

Display of the default heading is suppressed.

Example

See the example for STARTHEADING.

See Also

- ENDHEADING
- HEADING
- IMMHEADING
- STARTHEADING
**SUPMASK**

Suppresses the display of a text mask.

**Syntax**

```
{ SUPMASK }
```

**Notes**

Text masks are defined using the MASK command. The MASK command cancels the effect of the SUPMASK command, in addition to defining a new mask. While SUPMASK is in effect, a mask text string may still be output using the TEXT command's *MASK option.

**See Also**

- MASK
- TEXT

---

**SUPMISSINGROWS**

Suppresses the display of rows that contain only #MISSING values.

**Syntax**

```
{ SUPMISSINGROWS }
```

**Example**

```
<Sym
    <Column (Scenario, Year)
        Actual Budget
        Jan Dec
    <Top ("Measures", 5, @DATACOLUMN(4))
    <Row (Measures, Market, Product)
    {SupMissingRows}
    <Idescendants Profit
    <Ichildren Market
    <Idescendants Product

This example produces the following report:

<table>
<thead>
<tr>
<th></th>
<th>Actual</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jan</td>
<td>Dec</td>
</tr>
<tr>
<td>Sales</td>
<td>31,538</td>
<td>33,342</td>
</tr>
<tr>
<td>Margin</td>
<td>17,378</td>
<td>18,435</td>
</tr>
<tr>
<td>COGS</td>
<td>14,160</td>
<td>14,907</td>
</tr>
<tr>
<td>Sales</td>
<td>10,346</td>
<td>10,662</td>
</tr>
<tr>
<td>West</td>
<td>10,436</td>
<td>11,116</td>
</tr>
</tbody>
</table>
```

**See Also**

- INCEMPTYROWS
- INCMISSINGROWS
**SUPNAMES**

Suppresses the display of row member names in the final report.

**Syntax**

```plaintext
{ SUPNAMES }
```

**Notes**

The NAMESON command re-enables the display of row member names in the report.

**Example**

The following example is based on Demo Basic.

```plaintext
<PAGE (Market, Accounts, Scenario)
Chicago Sales Actual
    <COLUMN (Year)
    <CHILDREN Year

<ROW (Product)
<ICHILDREN Audio
    !

{ SUPNAMES }
Boston Sales Actual
    <CHILDREN Year
    <ICHILDREN Audio
    !
```

This example produces the following report:

*Note:* The rows with the suppressed row member names are not indented with whitespace.
SUPOUTPUT

Suppresses all output, except columns, while continuing to process other operations such as calculations or format settings. Use the OUTPUT command to resume output.

Syntax

{ SUPOUTPUT }

Example

<PAGE (Market, Accounts, Scenario)
Chicago Sales Actual

   <COLUMN (Year)
   <CHILDREN Year

<ROW (Product)
<ICHILDREN Audio
Stereo
Compact_Disc
{SUPOUTPUT}
VCR
TELEVISION
{OUTPUT}
Audio
!
{ SUPNAMES }
Boston Sales Actual
   <CHILDREN Year
   <ICHILDREN Audio
!

Which produces the same report as in the SUPNAMES example.

See Also

● OUTPUT

SUPPAGEheading

Suppresses display of the page member heading whenever a heading is generated.

Syntax

{ SUPPAGEheading }


Notes

This command does not suppress column headings and row members.

To reinstate page headings, use the PAGEHEADING command.

The keyword *PAGEHDR with the TEXT command may be used after a SUPPAGEHEADING to produce a custom page member heading. *PAGEHDR with the TEXT is not affected by SUPCOLHEADING.

Example

```
<PAGE (Market, Accounts, Scenario)
Chicago Sales Actual

  <COLUMN (Year)
  <CHILDREN Year

<ROW (Product)
<ICHILDREN Audio

  { SUPPAGEHEADING }
Boston Sales Actual
  <CHILDREN Year
  <ICHILDREN Audio

This example produces the following report:

Chicago Sales Actual

<table>
<thead>
<tr>
<th></th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stereo</td>
<td>2,591</td>
<td>2,476</td>
<td>2,567</td>
<td>3,035</td>
</tr>
<tr>
<td>Compact_Disc</td>
<td>3,150</td>
<td>3,021</td>
<td>3,032</td>
<td>3,974</td>
</tr>
<tr>
<td>Audio</td>
<td>5,741</td>
<td>5,497</td>
<td>5,599</td>
<td>7,009</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stereo</td>
<td>2,450</td>
<td>2,341</td>
<td>2,377</td>
<td>2,917</td>
</tr>
<tr>
<td>Compact_Disc</td>
<td>3,290</td>
<td>3,034</td>
<td>3,132</td>
<td>3,571</td>
</tr>
<tr>
<td>Audio</td>
<td>5,740</td>
<td>5,375</td>
<td>5,509</td>
<td>6,488</td>
</tr>
</tbody>
</table>
```

See Also

- COLHEADING
- HEADING
- IMMHEADING
- NAMESON
- PAGEHEADING
- SUPCOLHEADING
- SUPNAMES
- TEXT
SUPSHARE

Suppresses the display of later instances of shared members when you use generation or level names to extract data for your report.

Syntax

<SUPSHARE

Notes

This command suppresses the display of later instances of shared members only when you extract data using:

- Default or user-defined generation or level names
- DIMBOTTOM
- OFSAMEGEN
- ONSAMELEVELAS

SUPSHARE suppresses the display for the duration of the script, which can contain one or more reports. Use the SUPSHAREOFF command to reinstate the display of shared members.

Default Value

SUPSHAREOFF.

Example

The Sample Basic database has a shared level of diet drinks. The shared members are 100-20 (Diet Cola), 200-20 (Diet Root Beer), and 300-30 (Diet Cream). All are level 0 members on the Product dimension. The following report:

{SUPMISSINGROWS}
<SUPSHARE
<PAGE (Measures, Market, Scenario)
Sales West Actual
<COLUMN (Year)
<IDESCENDANTS Qtr1
<ROW (Product)
lev0,Product
!

returns the following data. The shared members appear only once in the data.

<table>
<thead>
<tr>
<th></th>
<th>Sales</th>
<th>West</th>
<th>Actual</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jan</td>
<td>Feb</td>
<td>Mar</td>
<td>Qtr1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>-------</td>
<td>------</td>
<td>--------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>100-10</td>
<td>1,174</td>
<td>1,146</td>
<td>1,173</td>
<td>3,493</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-20</td>
<td>700</td>
<td>726</td>
<td>727</td>
<td>2,153</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-30</td>
<td>465</td>
<td>426</td>
<td>413</td>
<td>1,304</td>
<td></td>
<td></td>
</tr>
<tr>
<td>200-10</td>
<td>667</td>
<td>705</td>
<td>707</td>
<td>2,079</td>
<td></td>
<td></td>
</tr>
<tr>
<td>200-20</td>
<td>1,203</td>
<td>1,209</td>
<td>1,209</td>
<td>3,621</td>
<td></td>
<td></td>
</tr>
<tr>
<td>200-30</td>
<td>853</td>
<td>845</td>
<td>880</td>
<td>2,578</td>
<td></td>
<td></td>
</tr>
<tr>
<td>300-10</td>
<td>1,102</td>
<td>1,127</td>
<td>1,133</td>
<td>3,362</td>
<td></td>
<td></td>
</tr>
<tr>
<td>300-20</td>
<td>523</td>
<td>546</td>
<td>566</td>
<td>1,635</td>
<td></td>
<td></td>
</tr>
<tr>
<td>300-30</td>
<td>977</td>
<td>1,029</td>
<td>1,040</td>
<td>3,046</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SUPSHAREOFF

The SUPSHAREOFF command reinstates the display of later instances of shared members after they have been suppressed using the SUPSHARE command.

Syntax

<SUPSHAREOFF

Notes

You can suppress and reinstate shared member display only when you extract data for your report using:

- Default or user-defined generation or level names
- DIMBOTTOM
- OFSAMEGEN
- ONSAMELEVELAS

Default Value

SUPSHAREOFF.

Example

The Sample Basic database has a shared level of diet drinks. The shared members are 100-20 (Diet Cola), 200-20 (Diet Root Beer), and 300-30 (Diet Cream). All are level 0 members on the Product dimension. The following report:

{SUPMISSINGROWS}
<SUPSHAREOFF
<PAGE (Measures, Market, Scenario)
Sales West Actual
COLUMN (Year)
DESCENDANTS Qtr1
ROW (Product)
lev0,Product
!

returns the following data. The example assumes that you have used SUPSHARE in a previous report in the report script. The SUPSHAREOFF command reinstates the shared member display so that the shared members appear twice in the report.

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Qtr1</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-10</td>
<td>1,174</td>
<td>1,146</td>
<td>1,173</td>
<td>3,493</td>
</tr>
</tbody>
</table>

1432
<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>100-20</td>
<td>700</td>
<td>726</td>
<td>727</td>
<td>2,153</td>
</tr>
<tr>
<td>100-30</td>
<td>465</td>
<td>426</td>
<td>413</td>
<td>1,304</td>
</tr>
<tr>
<td>200-10</td>
<td>667</td>
<td>705</td>
<td>707</td>
<td>2,079</td>
</tr>
<tr>
<td>200-20</td>
<td>1,203</td>
<td>1,209</td>
<td>1,209</td>
<td>3,621</td>
</tr>
<tr>
<td>200-30</td>
<td>853</td>
<td>845</td>
<td>880</td>
<td>2,578</td>
</tr>
<tr>
<td>300-10</td>
<td>1,102</td>
<td>1,127</td>
<td>1,133</td>
<td>3,362</td>
</tr>
<tr>
<td>300-20</td>
<td>523</td>
<td>546</td>
<td>566</td>
<td>1,635</td>
</tr>
<tr>
<td>300-30</td>
<td>977</td>
<td>1,029</td>
<td>1,040</td>
<td>3,046</td>
</tr>
<tr>
<td>400-10</td>
<td>1,115</td>
<td>1,122</td>
<td>1,107</td>
<td>3,344</td>
</tr>
<tr>
<td>400-20</td>
<td>1,032</td>
<td>1,065</td>
<td>1,100</td>
<td>3,197</td>
</tr>
<tr>
<td>400-30</td>
<td>625</td>
<td>618</td>
<td>619</td>
<td>1,862</td>
</tr>
<tr>
<td>100-20</td>
<td>700</td>
<td>726</td>
<td>727</td>
<td>2,153</td>
</tr>
<tr>
<td>200-20</td>
<td>1,203</td>
<td>1,209</td>
<td>1,209</td>
<td>3,621</td>
</tr>
<tr>
<td>300-30</td>
<td>977</td>
<td>1,029</td>
<td>1,040</td>
<td>3,046</td>
</tr>
</tbody>
</table>

See Also
- SUPSHARE

**SUPZEROROWS**

The SUPZEROROWS command suppresses the display of rows that have only 0 values.

**Syntax**

```plaintext
{ SUPZEROROWS }
```

**Example**

```plaintext
{SUPZEROROWS} would not display the following row in the report:

Qtr1    Actual  0  0  0  0
```

but would display the following row:

```plaintext
Qtr1    Actual 0  #Missing 0  0
```

See Also
- INCEMPTYROWS
- INCZEROROWS
- SUPEMPTYROWS
- SUPMISSINGROWS

**SYM**

Forces a symmetric report, regardless of the data selection. Use SYM to change the symmetry of a report that Essbase would create as an asymmetric report.

**Syntax**

```plaintext
<SYM
```
Notes

This command is used to set the report type as symmetric. Under default conditions (for example, when neither the ASYM nor SYM commands have been used), Essbase will print an asymmetric report (with BLOCKHEADERS) when all column dimensions include the same number of selected members and all members for each column dimension are on the same line. Otherwise, a symmetric report (with PYRAMIDHEADERS) is produced. If the <SYM keyword is used, all report headers will appear in a symmetric format, even if there are equal numbers of members in each row of the column header. A symmetric report will also result if at least one of the column member lists is broken out onto more than one line.

When the <SYM keyword is used, the report will always be generated as a symmetric report, even with equal numbers of members selected in each column dimension. This is especially useful when you want to create a symmetric report without having to repeatedly type the lower-level members of symmetric/asymmetric reports. For a more detailed explanation see the <ASYM command. To turn off symmetric-only mode, use the <ASYM command.

Default Value

Essbase prints a symmetric report (with PYRAMIDHEADERS) when column dimensions do not include the same number of selected members or the members for each column dimension are not on the same line.

Example

The following example is based on Sample Basic.

```bash
<PAGE (Measures, Market)
Texas Sales
<SYM
   <COLUMN (Scenario, Year)
      Actual Budget
      Jan  Feb
   <ROW (Product)
   <IDESCENDANTS "100"
```

This example produces the following report:

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual</td>
<td>Budget</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jan</td>
<td>Feb</td>
<td>Jan</td>
<td>Feb</td>
</tr>
<tr>
<td>======</td>
<td>======</td>
<td>======</td>
<td>======</td>
</tr>
<tr>
<td>100-10</td>
<td>452</td>
<td>465</td>
<td>560</td>
</tr>
<tr>
<td>100-20</td>
<td>190</td>
<td>190</td>
<td>230</td>
</tr>
<tr>
<td>100-30</td>
<td>#Missing #Missing</td>
<td>#Missing #Missing</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>642</td>
<td>655</td>
<td>790</td>
</tr>
</tbody>
</table>

See Also

- ASYM
**TABDELIMIT**

The TABDELIMIT command places tabs rather than spaces between columns.

**Syntax**

{ TABDELIMIT }

**Notes**

This command is useful when you want to turn report output into a more compressed form for export. TABDELIMIT can occur anywhere in a report script.

**Example**

```<PAGE (Scenario)
<COLUMN (Year)
<ROW (Product, Market, Measures)
(Tabdelimit)
 ROWREPEAT)
<ICHILDREN Year
<DIMBOTTOM Product
<DIMBOTTOM Market
<CHILD Profit
!

This example produces the following report (example truncated):

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-10</td>
<td>New York Margin 1,199 1,416 1,568 1,184 5,367</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-10</td>
<td>New York Total Expenses 433 488 518 430 1,869</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-10</td>
<td>Massachusetts Margin 1,237 1,533 1,741 1,224 5,735</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-10</td>
<td>Massachusetts Total Expenses 164 155 149 162 630</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-10</td>
<td>Florida Margin 372 442 494 375 1,683</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-10</td>
<td>Florida Total Expenses 174 192 200 175 741</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-10</td>
<td>Connecticut Margin 567 481 425 557 2,030</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-10</td>
<td>Connecticut Total Expenses 217 197 184 215 813</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-10</td>
<td>New Hampshire Margin 213 249 276 209 947</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-10</td>
<td>New Hampshire Total Expenses 139 149 155 137 580</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-10</td>
<td>California Margin 1,199 1,416 1,568 1,184 5,367</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-10</td>
<td>California Total Expenses 433 488 517 431 1,869</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-10</td>
<td>Oregon Margin 270 203 202 216 891</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-10</td>
<td>Oregon Total Expenses 193 183 176 180 732</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

The following is the same report without TABDELIMIT:

```<PAGE (Scenario)
<COLUMN (Year)
<ROW (Product, Market, Measures)
 ROWREPEAT)
<ICHILDREN Year
<DIMBOTTOM Product
<DIMBOTTOM Market
<CHILD Profit
!```
Without TABDELIMIT, the report looks like this (example truncated):

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-10 New York Margin</td>
<td>1,199</td>
<td>1,416</td>
<td>1,568</td>
<td>1,184</td>
<td>5,367</td>
</tr>
<tr>
<td>100-10 New York Total Expenses</td>
<td>433</td>
<td>488</td>
<td>518</td>
<td>430</td>
<td>1,869</td>
</tr>
</tbody>
</table>

**TEXT**

Inserts text or other information on a new line in the report. You specify the character position (`charPosition`) to begin the text along with the text (`text`) that you want to display. The command can accept multiple sets of `charPosition` and `text` arguments.

In addition to text, you can use this command to insert special information based on keywords into the report. These keywords begin with a `*` and must be entered exactly. For example, you can display the current date and time, the page number, or information such as user name and application.

The following list presents the keywords and associated display information.

- **APPNAME**: Name of application
- **ARBOR**: Version information
- **CALC**: All or part of a calculated row Optionally, the CALC keyword can include an integer to designate a data column that is to be displayed. For example, `{TEXT 25 **CALC 2 "TotSales"}` would display the column 2 value of the calculated row "TotSales" starting at character position 25, using the current column format settings in effect for column 2.

**Note**: Names columns are not allowed.

- **COLHDR number1 number2**: Displays the column heading members from the current default heading. You can indicate which rows of the column header members you want to display and which members in the row following the keyword.

  `number1` selects the row of column members and `number2` selects the member within the row. If you specify just `*COLHDR` or `*COLHDR with number1`, the column heading members cannot be combined with any other text on the same line. Furthermore, the position of the text is ignored (the header line will automatically be lined up with the existing data column setup), unless you specify both `number1` and `number2`. For example, `*COLHDR 2` would display the second row of column heading members in normal position over the data columns. `*COLHDR 2 5` would display the 5th column member from the second row of column heading members. This command is usually used with `SUPHEADING` or `SUPCOLHEADING`.

  Using both `number1` and `number2`,

  `TEXT 25 **COLHDR 2 3`*

  would display the third member of the column heading range from the second row of column members starting in position 25.
Generally all column heading rows after the first level in symmetric reports have repeating groups of the same range of members.

The number specified refers to the member in the basic group of repeating members. For example, if Qtr1 Qtr2 and Qtr3 are the basic group which repeats in the second level column heading, the value for number can range from 1 to 3. Just because the group repeats 2 or 3 times does not mean that number can range up to 6 or 9. In this example, any number higher than 3 would be interpreted as trying to access a calculated column header.

Calculated column headers may also be accessed by the *COLHDR option. If a report has, for example, 3 calculated columns, the number which is used to access any particular level of the calculated column name depends on the number of members in the primary column header group for that heading level. In the previous example, where the second column heading line contained three members (Qtr1, Qtr2, and Qtr3), the second-level calculated column headings would be accessed with number set to 4, 5, or 6 (assuming only one row names column). Again, it does not matter how many times Qtr1, Qtr2, and Qtr3 may have been repeated on the column heading line—there are still only three members of the primary column header group.

For example, if the first calculated column defined is "YTD~PCT~TOTAL", then the second level header "PCT" could be printed with TEXT 10 **COLHDR 2 4", assuming once again that the primary column heading group on level 2 had three members and only one row name dimension. Refer to ORDER for more information about column numbering.

The ORDER command does not affect the parameters for selecting the headers. The number value is based on the original column order without regard to any reordering or truncation of columns with ORDER or FIXCOLUMNS.

- COLHDRFULL, which is the full column heading along with underlines of the column headings and a 1 line skip. The position is ignored with this keyword (the headers and underlines will be aligned automatically over the data columns as currently set up) and it can not be combined with any other text on the same line.
- CURRENCY, which is the currency conversion label which indicates which currency the data values have been converted to at report time with the CURRENCY command. Usually used with SUPCURHEADING.
- DATA, which is used to display data rows. If the command does not include a column designator, it will display all data starting at the character position. If a column number is included, only that column will be displayed. See *CALC above.
- DATE, which is the date the report was generated.
- DATETIME, which is the date followed by the time the report was generated.
- DBNAME, which is the name of the data base within the application.
- EDATE, which is the date in European (dd/mm/yy) format.
- EDATETIME, which is the date in European (dd/mm/yy) format followed by the time. Time is in 24-hour format, as hour:minute:second; for example, 14:35:02.
- MACHINE, which is the network name for the machine that is running the Essbase Server.
- PAGEHDR number: Displays the default page member heading. number indicates which specific page members you wish to display following the keyword. The page member text
can only be combined with other text on the same line if number is specified. For example, TEXT C *PAGEHDR 2 would display only the second page member from the page heading members from the current default page heading. Usually used with SUPHEADING or SUPPAGEHEADING.

- PAGENO: Page number for the current page.
- PAGESTRING: Page number preceded by the text "Page:"
- TIME: Time the report was generated.
- TIMEDATE: Time followed by the date the report was generated.
- TIMEEDATE: Time followed by the European format (dd/mm/yy) date.
- USERNAME: Name of the user generating the report.

**Syntax**

```
{TEXT charPosition "text" [charPosition "text" ... ]}
```

**Parameter**  |  **Description**  
---|---
charPosition | Character position on the line to start the text specified in the next text argument. When multiple sets of charPositions and text can be specified, successive charPositions need not be in ascending order. If the positions of two text strings cause an overlap, the last overwrites the first. "Last" is determined by left-right order in the TEXT statement, not by charPosition.

text | Text to add to the report. Commas, tabs and multiple spaces are ignored. Maximum length: 500 characters.

**Notes**

- TEXT is an output command.
- n must be an integer greater than or equal to zero or the letter c for centered. (If you specify n as zero, the line starts at the left margin.) You must specify a value for n.
- TEXT does not wrap the text specified in "text".
- You can use the * (asterisk) character to add report keywords, such as *CALC and *TIME. If * precedes an invalid keyword, Essbase displays the text that follows.

**Example**

- Adding the text "Golden State Bottling Division" 27 spaces from the left margin of the report. This example is based on Demo Basic.
  
  ```
  (TEXT 27 "Golden State Bottling Division"
  )
  ```
- The following report lists several Examples of the TEXT command.

  The first set of TEXT commands is defined in the custom heading of the report which is displayed at the top of every page.

  - The command [ TEXT 2 "*DATETIME" C "Annual Report" 65 "*PAGESTRING" SKIP ] displays the date and time starting at character position 2 of the first line of the heading, centers the text "Annual Report" in the middle of the line, and displays the text "Page" followed by the actual page number starting at character position 65 of the first line.
The second line of the heading is defined by the command \{ TEXT 2 "City: " 12 "*PAGEHDR 1" \} which displays the text "City:" starting a character position 2 and then displays the first page member for the page in the report. As per the first member in the PAGE command, these members are always from the Market dimension.

The command \{ TEXT 2 "Account: " 12 "*PAGEHDR 2" SKIP \} for the third line of heading displays the text "City:" at character position 2 followed by the page heading member from the Accounts dimension.

The TEXT commands at the end of the report display summary information about the report.

The command \{ TEXT 2 "Prepared by: " 18 "*USERNAME" \} displays the text "Prepared by:" at character position 2 followed by the name of the user who generated the report at character position 18.

For the next line, the command \{ TEXT 2 "Server Version: " 18 "*ARBOR" \} displays the text "Server Version:" at character position 2 followed by the version information.

The third line uses the command \{ TEXT 2 "Application: " 18 "*APPNAME" \} to display the text "Application:" at character position 2 followed by the application name.

The final line uses the command \{ TEXT 2 "Database: " 18 "*DBNAME" \} to display the text "Database:" at character position 2 followed by the database name.

\{ STARTHEADING
  SUPPAGEHEADING
  TEXT 2 "Annual Report" 65 "*PAGESTRING" SKIP
  TEXT 2 "City: " 12 "*PAGEHDR 1"
  TEXT 2 "Account: " 12 "*PAGEHDR 2" SKIP
  ENDHEADING \}

<PAGE (Market, Accounts)
Chicago Sales

  <COLUMN (Scenario, Year)

  Actual
  <CHILDREN Year

<ROW Audio

\{ SKIP 2 "Prepared by: " 18 "*USERNAME" \}
\{ TEXT 2 "Server Version: " 18 "*ARBOR" \}
\{ TEXT 2 "Application: " 18 "*APPNAME" \}
\{ TEXT 2 "Database: " 18 "*DBNAME" \}

! 09/15/03 14:14:59         Annual Report           Page: 1

City:     Chicago
Account:  Sales

<table>
<thead>
<tr>
<th></th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stereo</td>
<td>2,591</td>
<td>2,476</td>
<td>2,567</td>
<td>3,035</td>
</tr>
</tbody>
</table>
The remaining examples of the TEXT command are based on the following report heading:

Chicago Sales

<table>
<thead>
<tr>
<th>Actual</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qtr1</td>
<td>Qtr2</td>
</tr>
<tr>
<td>===========</td>
<td>===========</td>
</tr>
</tbody>
</table>

- `TEXT 10 "*COLHDR 2"` would produce the following line:
  Qtr1 Qtr2 Qtr3 Qtr1 Qtr2 Qtr3

- `TEXT 10 "*COLHDR 2 3"` would produce the following text at position 10:
  Qtr3

- `TEXT 10 "*COLHDR 1 2"` would produce the following text at position 10:
  Budget

- `{ TEXT 10 &QUOT;*COLHDRFULL&QUOT; }` would produce the following lines of text regardless of the value of `charPosition`:

<table>
<thead>
<tr>
<th>Actual</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qtr1</td>
<td>Qtr2</td>
</tr>
<tr>
<td>===========</td>
<td>===========</td>
</tr>
</tbody>
</table>

See Also
- SUPCOLHEADING
- SUPPAGEHEADING

**TODATE**

The TODATE command converts date strings to numbers that can be used to extract data output for a specific time period. TODATE converts date strings into the number of seconds elapsed since midnight, January 1, 1970.

**Syntax**

```plaintext
<TODATE (formatString, dateString)
```

**Parameter Description**

- `formatString` The date string format, either "mm-dd-yyyy" or "dd-mm-yyyy".
Parameter | Description
---|---
dateString | The date string.

Notes
- If you specify a date that is earlier than 01-01-1970, this command returns an error.
- The latest date supported by this command is 12-31-2037.

Example
```<TODATE("dd-mm-yyyy","15-10-2002")>```

See Also
- ATTRIBUTE
- WITHATTR

**TOP**

Returns rows with the highest values of a specified data column.

**Syntax**
```<TOP ([<rowgroupDimension>],) <rows>, <column>>```  

Parameter | Description
---|---
<rowgroupDimension> | Optional. Row grouping dimension that determines the rows to sort as a set. The default is the inner row.
<rows> | Positive integer that specifies the number of rows to be returned; must be greater than 0.
<column> | `@DATACOLUMN(<colNumber>)` | `@DATACOLUMN(<colNumber>)+`  
where `<colNumber>` is the target column number; must be between 1 and the maximum number of columns in the report.

Notes
This command sorts the result set by the value of the specified data column in descending order. Rows containing #MISSING values in the sort column are discarded from the result set before TOP is applied. You can use TOP and BOTTOM, ORDERBY and RESTRICT in the same report script, but you can use each command only once per report. If you repeat the same command in the same report script, the second command overwrites the first. Place global script formatting commands before a PAGE, COLUMN command or associated member (for example, `<ICHILDREN` or `<IDESCENDANTS`). Avoid using row formatting commands with TOP.

If any of the ORDERBY, TOP, BOTTOM, or RESTRICT commands coexist in a report script, the row group dimension `<rowgroupDimension>` should be the same. This prevents confusion about the sorting and ordering of rows within a row group. Otherwise, an error is issued. The ORDERBY, TOP, and BOTTOM commands sort a report output by its data values. The
RESTRICT command restricts the number of valid rows for the report output. Their execution order is:

1. Any sorting command that sorts on member names (for example <SORTDESC or <SORTASC)
2. RESTRICT
3. TOP and BOTTOM
4. ORDERBY

This order applies regardless of the order in which the commands appear in the report script. For an example that uses TOP, BOTTOM, ORDERBY, and RESTRICT together, see the entry for the BOTTOM command.

You can configure the size of the internal buffers used for storing and sorting the extracted data. The following settings affect the way the RESTRICT, TOP, and BOTTOM commands work:

- Retrieval Buffer Size (a database setting)
- Retrieval Sort Buffer Size (a database setting)
- “NUMERICPRECISION” on page 528 (an Essbase.cfg setting)

For more information on the database settings, see the Oracle Essbase Database Administrator’s Guide.

**Example**

```
<Sym
<Column (Scenario, Year)
  Actual Budget
  Jan Dec
<Top ("Measures", 5, @DATACOLUMN(4))
<Row (Measures, Market, Product)
  {SupMissingRows}
  <Idescendants Profit
  <Ichildren Market
  <Idescendants Product
  
```

Which produces the following report based on the Sample Basic sample database:

<table>
<thead>
<tr>
<th></th>
<th>Actual</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jan</td>
<td>Dec</td>
</tr>
<tr>
<td>Sales</td>
<td>31,538</td>
<td>33,342</td>
</tr>
<tr>
<td>Margin</td>
<td>17,378</td>
<td>18,435</td>
</tr>
<tr>
<td>COGS</td>
<td>14,160</td>
<td>14,907</td>
</tr>
<tr>
<td>Sales</td>
<td>10,346</td>
<td>10,662</td>
</tr>
<tr>
<td>West</td>
<td>10,436</td>
<td>11,116</td>
</tr>
</tbody>
</table>

See Also

- RESTRICT
- ORDERBY
UCHARACTERS

Underlines all non-blank characters in the preceding row.

To underline names cleanly, the UCHARACTERS command treats a single space between two non-space characters as a character to underline. For example, in the name Sales_Revenue, the underscore is changed to a space on output, UCHARACTERS changes the space to "_". Default underline character ":=" is used.

Syntax

```
{ UCHARACTERS [ "char" ] }
```

Parameter Description

- "char": Optional. A single-byte character, enclosed in quotation marks, used as the underline character.

Notes

Double-byte characters are not supported.

Example

The following example is based on Demo Basic.

```
{UCHARACTERS} underlines all the characters in the previous (Television) row.

<PAGE (Market, Accounts, Scenario)
Chicago Sales Actual
    <COLUMN (Year)
    <ICHILDREN Year

<ROW (Product)
Television
    { UCHARACTERS }
VCR
Compact_Disc
!

This example produces the following report:

<table>
<thead>
<tr>
<th>Chicago Sales Actual</th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Television</td>
<td>4,410</td>
<td>4,001</td>
<td>4,934</td>
<td>6,261</td>
<td>19,606</td>
</tr>
<tr>
<td>VCR</td>
<td>3,879</td>
<td>3,579</td>
<td>4,276</td>
<td>4,877</td>
<td>16,611</td>
</tr>
<tr>
<td>Compact_Disc</td>
<td>3,150</td>
<td>3,021</td>
<td>3,032</td>
<td>3,974</td>
<td>13,177</td>
</tr>
</tbody>
</table>
```
See Also
- U_COLUMNS
- U_DATA
- UNDERLINECHAR
- UNDERSCORECHAR

U_COLUMNS

Underlines all columns, including names and data, in the preceding row.
The underline width is based on column width. If char is provided, it is used as the underline
character. Otherwise the default character "=" is used.

Syntax
{ U_COLUMNS [ "char" ] }

Parameter Description

"char"  Optional. A single-byte character, enclosed in quotation marks, that creates an underline character.

Notes
Double-byte characters are not supported.

Example
The command [U_COLUMNS] in the following report underlines all the columns in the previous
row which is the Television row.

<PAGE (Market, Accounts, Scenario)
Chicago Sales Actual

        <COLUMN (Year)
        <ICHILDREN Year

<ROW (Product)
Television

{ U_COLUMNS }

VCR
Compact_Disc
!

This example produces the following report:

Chicago Sales Actual

<table>
<thead>
<tr>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>=====</td>
<td>=====</td>
<td>=====</td>
<td>====</td>
<td>======</td>
</tr>
</tbody>
</table>

Television 4,410 4,001 4,934 6,261 19,606

============ ======= ====== ====== ====== ======
Selects and reports on members based on a common attribute, defined as a UDA (user-defined attribute).

Syntax

<UDA (dimName, udaStr)

Parameter Description

dimName  The dimension associated with the udaStr.

udaStr  Name of the user-defined attribute.

Notes

- If a UDA is associated with shared members, only the first instance is returned. If you want to include all instances, use the SUDA command.
- You can use the <UDA command as a standalone command or as a selection command inside the LINK statement.
- You cannot use attributes as arguments.

Example

The following example selects products that are sweet:

<UDA (product, "Sweet")

The following example uses the UDA command within a LINK statement to select level 0 products that are sweet:

<LINK(<UDA(product, "Sweet") AND <LEV(product, 0))

Note: If the Product dimension includes shared members with the UDA "Sweet", this command selects only the first instance in the outline of the shared member.

See Also

- SUDA
**UDATA**

Underlines data columns for a row, while not underlining the row name columns.

The underline width is based on column width. If `char` is provided, it is used as the underline character. Otherwise, the default underline character is "=".

**Syntax**

```
{ UDATA ["char"] }
```

**Parameter Description**

"char"  
Optional. A single-byte character, enclosed in quotation marks, used as the underline character.

**Notes**

Double-byte characters are not supported.

**Example**

The command `{UDATA}` in the following report underlines all the data in the previous row which is the Television row.

```
<PAGE (Market, Accounts, Scenario)  
Chicago Sales Actual  
    <COLUMN (Year)  
    <ICHILDREN Year  
<ROW (Product)  
Television  
( { UDATA }  
VCR  
Compact_Disc  
!
```

This example produces the following report:

```
Chicago Sales Actual  

<table>
<thead>
<tr>
<th></th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Television</td>
<td>4,410</td>
<td>4,001</td>
<td>4,934</td>
<td>6,261</td>
<td>19,606</td>
</tr>
<tr>
<td>VCR</td>
<td>3,879</td>
<td>3,579</td>
<td>4,276</td>
<td>4,877</td>
<td>16,611</td>
</tr>
<tr>
<td>Compact_Disc</td>
<td>3,150</td>
<td>3,021</td>
<td>3,032</td>
<td>3,974</td>
<td>13,177</td>
</tr>
</tbody>
</table>
```

**See Also**

- [UCHARACTERS](#)
- [UNDERLINECHAR](#)
UNAME

Underlines the row name columns in the preceding row while not underlining the data columns.

If char is provided, then it will be used as the underline character. Otherwise, the default underline character is "=".

Syntax

{ UNAME ["char"] }

Parameter Description

"char" Optional. A single-byte character, enclosed in quotation marks, used as the underline character.

Notes

Double-byte characters are not supported.

Example

The command { UNAME } in the following report underlines the row member names in the previous row which is the Television row.

<PAGE (Market, Accounts, Scenario)
Chicago Sales Actual
   <COLUMN (Year)
   <ICHILDREN Year

<ROW (Product)
Television
{ UNAME }
VCR
Compact_Disc
|

This example produces the following report:

Chicago Sales Actual

<table>
<thead>
<tr>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>TV</td>
<td>4,410</td>
<td>4,001</td>
<td>4,934</td>
<td>6,261</td>
</tr>
<tr>
<td>VCR</td>
<td>3,879</td>
<td>3,579</td>
<td>4,276</td>
<td>4,877</td>
</tr>
<tr>
<td>CD</td>
<td>3,150</td>
<td>3,021</td>
<td>3,032</td>
<td>3,974</td>
</tr>
</tbody>
</table>

See Also

● UCHARACTERS
● UDATA
UNAMEONDIMENSION

Underlines the row member names in a row whenever a member from the same dimension as the specified member changes.

Syntax

\{ UNAMEONDIMENSION mbrName \}

Parameter Description

mbrName Single member representing a dimension. When a new member from this dimension is output, an underline appears under all row names in the previous line.

Notes

With the ROW command, you can display members from several dimensions in columns on the side of the report. At least one member changes from one of these dimensions for each row of the report. A single report can have several UNAMEONDIMENSION commands to underline row member names, based on different dimensions which change. When combined with UNAMEONDIMENSION and PAGEONDIMENSION, UNAMEONDIMENSION is processed first, followed by SKIPONDIMENSION and PAGEONDIMENSION in order.

Example

The following example is based on Demo Basic.

<PAGE (Market, Accounts)
Chicago Sales
  <COLUMN (Scenario)
    Actual
  <ROW (Year, Product)
    \{ UNAMEONDIMENSION Year \}
  <ICHILDREN Year
    <ICHILDREN Audio
      !

This example produces the following report:

=============== ================
Chicago Sales Actual
  Qtr1              Stereo          2,591
                     Compact_Disc  3,150
                     Audio           5,741
=============== ================
  Qtr2              Stereo          2,476
                     Compact_Disc  3,021
                     Audio           5,497
=============== ================
  Qtr3              Stereo          2,567
                     Compact_Disc  3,032
                     Audio           5,599
=============== ================
  Qtr4              Stereo          3,035
                     Compact_Disc  3,974
Audio 7,009
================ ================
Year Stereo 10,669
Compact_Disc 13,177
Audio 23,846

See Also
- NOPAGEONDIMENSION
- NOSKIPONDIMENSION
- PAGEONDIMENSION
- SKIPONDIMENSION

UNDERLINECHAR
Sets the default underline character displayed in a report.

You can use any graphic character that you can generate in the text editor used to define the report. In some editing tools, you can generate a graphic underline by holding the ALT key down while typing 196 on the numeric keypad and then releasing the ALT key. For a double graphic underline, type 205. You must use a font with these graphic characters if the report is to print correctly. Default underline character “=” is used.

Syntax
{ UNDERLINECHAR [ "char"] }

Parameter Description
"char" A single-byte character, enclosed in quotation marks, for the new underline character.

Notes
Double-byte characters are not supported.

Example
{UNDERLINECHAR "-"}
sets the character used when underlining to a single dash.

See Also
- UCHARACTERS
- COLUMN
- UDATA

UNDERSCORECHAR
Replaces the _ (underscore) character in a member name with another character.

Reports generated with this command may not be suitable for reloading into the database as report format files. Member names may no longer match the outline if the underscores are replaced.
Syntax

```
{ UNDERSCORECHAR "char"}
```

**Parameter Description**

"char"  Single character, enclosed in quotation marks, that displays in place of underscore.

**Notes**

UNDERSCORECHAR is a setting command.

**Example**

```
{UNDERSCORECHAR " "}
```

replaces all underscores with spaces (for example, member name New_York would appear as New York in the final report.)

**WIDTH**

Specifies the width of columns in a report.

If the WIDTH command is followed by `number` with no column selections, `number` sets the width for all data columns. Otherwise, the width is set for each data column listed in the command. Column numbers are assigned starting at 0 for the first row-name column, incrementing by one for each row-name column, data column, and calculated column, in that order. The tilde character (~) follows member names or values that must be truncated to fit in the column to indicate part of the name or value is not displayed. If possible, space from adjacent columns is used to avoid truncating. The widths of names columns may be adjusted if their column numbers (0,1,...) are specifically included in the command. Alternatively, the NAMEWIDTH command may be used.

If the WIDTH command is not used, columns are wide enough to fit the widest value.

**Syntax**

```
{ WIDTH number [ column1 [ column2 [ columnN ] ] ] }
```

**Parameter Description**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>number</td>
<td>New column width in characters.</td>
</tr>
<tr>
<td>column1 column2 columnN</td>
<td>Optional. Numbers designating the columns to resize, separated by spaces. Values: between 0 and 161, where 0 is the first row-name column. If column-numbers are not specified, all columns are resized to the width indicated by <code>number</code>.</td>
</tr>
</tbody>
</table>

**Notes**

- The value of `number` must be zero or a positive integer.
- WIDTH is a column formatting command. If you specify columns in the WIDTH command before designating them with a member selection, Essbase expands the report to that number of columns. See the information on "Column Formatting Commands".
After members for the report specification are selected, the numbers specified should not exceed the number of columnN.

Example

The following example is based on Sample Basic.

```xml
<PAGE (Measures, Market)
Illinois Sales
<SYM
(WIDTH 7)
(WIDTH 20 0)
<COLUMN (Scenario, Year)
   Actual Budget Scenario
   Jan Feb Mar
<DESCENDANTS "100"
>
```

Which resizes all data columns to a WIDTH of seven and the row name label column (column 0) to a WIDTH of 20.

```
Sales Illinois

<table>
<thead>
<tr>
<th>Actual</th>
<th>Budget</th>
<th>Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>Feb</td>
<td>Mar</td>
</tr>
<tr>
<td>======</td>
<td>======</td>
<td>======</td>
</tr>
<tr>
<td>100-10</td>
<td>345</td>
<td>354</td>
</tr>
<tr>
<td>100-20</td>
<td>234</td>
<td>254</td>
</tr>
<tr>
<td>100-30</td>
<td>Missi</td>
<td>Missi</td>
</tr>
</tbody>
</table>
```

See Also

- NAMEWIDTH

WITHATTR

Specifies the characteristics of a base-dimension member that match the specified values in a report script. You must create attribute dimensions in the outline and associate them with a base dimension before you use WITHATTR.

Syntax

```
<WITHATTR (dimName, "operator", value)
```

Parameter Description

- `dimName` Single attribute dimension name.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;operator&quot;</td>
<td>Operator specification, which must be enclosed in double quotes (&quot; &quot;).</td>
</tr>
<tr>
<td></td>
<td>The supported operators are:</td>
</tr>
<tr>
<td></td>
<td>• &gt; (Greater than)</td>
</tr>
<tr>
<td></td>
<td>• &gt;= (Greater than or equal to)</td>
</tr>
<tr>
<td></td>
<td>• &lt; (Less than)</td>
</tr>
<tr>
<td></td>
<td>• &lt;= (Less than or equal to)</td>
</tr>
<tr>
<td></td>
<td>• = = (Equal to)</td>
</tr>
<tr>
<td></td>
<td>• &lt;&gt; or != (Not equal to)</td>
</tr>
<tr>
<td></td>
<td>• IN (Within a specified range)</td>
</tr>
<tr>
<td>Note:</td>
<td>These operators may behave differently depending on the attribute type with which you use them. See the table in Examples for more information.</td>
</tr>
<tr>
<td>value</td>
<td>Value that, in combination with the operator, defines the condition that must be met. Can be an attribute member specification, a constant, or a date-format function (for example, &lt;TODATE&gt;).</td>
</tr>
</tbody>
</table>

Notes
This command specifies two or more attribute dimension tags, which are associated with a base dimension. If you use the <WITHATTR syntax, the command is applied only to a specific query.

Example

Example 1
The following table shows examples, based on the Sample Basic database, for each type of operator:

<table>
<thead>
<tr>
<th>Operator</th>
<th>Example</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;</td>
<td>&lt;WITHATTR(Population,&quot;&quot;,&quot;18000000&quot;)</td>
<td>Returns New York, California, and Texas</td>
</tr>
<tr>
<td>&gt;=</td>
<td>&lt;WITHATTR(Population,&quot;=&quot;),100000000) where 10,000,000 is not a numeric attribute member, but a constant</td>
<td>Returns New York, Florida, California, Texas, Illinois, and Ohio</td>
</tr>
<tr>
<td>&lt;</td>
<td>&lt;WITHATTR(Ounces,&quot;&quot;,&quot;16&quot;)</td>
<td>Returns Cola, Diet Cola, Old Fashioned, Sasparilla, and Diet Cream</td>
</tr>
<tr>
<td>&lt;=</td>
<td>&lt;WITHATTR(&quot;Intro Date&quot;,&quot;=&quot;),&lt;TODATE(&quot;mm-dd-yyyy&quot;,&quot;04-01-1996&quot;))</td>
<td>Returns Cola, Diet Cola, Caffeine Free Cola, and Old Fashioned</td>
</tr>
<tr>
<td>= =</td>
<td>&lt;WITHATTR(&quot;Pkg Type&quot;,&quot;=&quot;),Can)</td>
<td>Returns Cola, Diet Cola, and Diet Cream</td>
</tr>
<tr>
<td>&lt;&gt; or !=</td>
<td>&lt;WITHATTR(Caffeinated,&quot;=&quot;),True)</td>
<td>Returns Caffeine Free Cola, Sasparilla, Birch Beer, Grape, Orange, Strawberry</td>
</tr>
<tr>
<td>IN</td>
<td>&lt;WITHATTR(&quot;Population&quot;,&quot;IN&quot;),Medium)</td>
<td>Returns Massachusetts, Florida, Illinois, and Ohio</td>
</tr>
</tbody>
</table>
Example 2

The following report script

```
<PAGE (Product, Measures, Scenario)
Florida Sales Actual

<COLUMN (Year)
<ICHILDREN Year

<ROW (Market)
<WITHATTR(Population IN Large)
!
```

returns on rows only those members of Market whose Population attributes map to ranges defined as Large:

```
<table>
<thead>
<tr>
<th>Product Sales Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qtr1</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>New York</td>
</tr>
<tr>
<td>California</td>
</tr>
<tr>
<td>Texas</td>
</tr>
</tbody>
</table>
```

See Also

- `<ATTRIBUTE`
- `<TODATE`

**WITHATTREX**

Specifies the characteristics of a base-dimension member that match the specified values in a report script. You must create varying attribute dimensions in the outline and associate them with a base dimension before you use WITHATTREX in a report script.

**Syntax**

```
<WITHATTREX (dimName, "operator", value,options,startTuple[,endTuple])
```

**Parameter**

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>dimName</td>
</tr>
<tr>
<td>Single varying attribute dimension name.</td>
</tr>
</tbody>
</table>
Parameter | Description
---|---
"operator" | Operator specification, which must be enclosed in double quotes ("").
The supported operators are:
- > (Greater than)
- >= (Greater than or equal to)
- < (Less than)
- <= (Less than or equal to)
- = = (Equal to)
- <> or != (Not equal to)
- IN (Within a specified range)

value | Value that, in combination with the operator, defines the condition that must be met. Can be an attribute member specification, a constant, or a date-format function (for example, <TODATE).

options | ANY

startTuple[, endTuple] | (m1, m2, ..., mN)
Level-0 members from one or more independent dimensions for attrMbrName may be part of the input tuple.
Members from all independent dimensions should be listed. If a member is not listed, the member of the same dimension from the current query or calculation context is used.

Notes
This command specifies two or more attribute dimension tags, which are associated with a base dimension. If you use the <WITHATTREX syntax, the command is applied only to a specific query.

Example
<withattrex("intro date","<=",<todate("mm-dd-yyyy","04-01-1996"),ANY,(jan),(jun))
<withattrex(ounces,"">","16",ANY,(jan),(jun))

See Also
- <ATTRIBUTEVA
- <PERSPECTIVE
- <TODATE

ZEROTEXT
Replaces zero data values with a text string if a zero data value is output.

Syntax
{ ZEROTEXT [ "text" ] }
**Parameter**  **Description**

text  Optional. String, in quotation marks, to use in place of 0.

**Notes**

All data values less than .00000000000001 and greater than -.00000000000001 are treated as 0, as well as all data values that would be displayed as 0, regardless of their true value.

**Default Value**

If you do not specify text, the default 0 is restored.

**Example**

```
{ZEROTEXT "-"}
```

changes a 0 value to -.

**See Also**

- **MISSINGTEXT**
Essbase Unicode File Utility Overview

The Essbase Unicode File Utility is a standalone program that enables you to add encoding identifiers to files used with Unicode-mode applications. Encoding identifiers are markers that identify the text encoding used in the file. Located in the ESSBASEPATH\bin directory, this utility is called essutf8.exe (in Windows) or ESSUTF8 (in UNIX). You can use this utility to make the following changes to text files, outline files, and rules files:

- Add a UTF-8 signature to UTF-8-encoded text files
- Convert non-Unicode-encoded text files to UTF-8 encoding, including the UTF-8 signature
- Insert a locale indicator in non-Unicode-encoded files, including script files, data source files, outline files (.otl) and rules files (.rul)
- Remove locale indicators from non-Unicode-encoded files
- Backup the files before changing them

The Essbase Unicode File Utility works with text files and binary files that you can edit and change. This utility does not support user-defined characters (UDC) such as can be found in Japanese, Korean, Chinese, and Taiwanese host code pages.

Applicable text files include:
- Calculation scripts (.csc)
- Report scripts (.rep)
- Data source files for dimension builds, data loads, and partition area definitions
- Alias table import files (.alt)

Applicable binary files include:
- Outline files (.otl)
Using the Essbase Unicode File Utility to insert locale indicators in outline files and rules files is relevant when outline files and rules files were created by earlier releases of Essbase or its clients (prior to Release 7.0) or when rules files are initially created on a client. For a more detailed description of encoding and locale indicators, see the "Enabling Multi-Language Applications Through Unicode" part in the Oracle Essbase Database Administrator’s Guide.

Note: Text files for non-Unicode-mode applications cannot be encoded in UTF-8. They must be encoded according to a locale definition common to the client and Essbase Server.

See the "Enabling Multi-Language Applications through Unicode" part of the Oracle Essbase Database Administrator’s Guide for additional information about encoding formats, the UTF-8 signature, and locale indicators.

Types of Encoding Indicators

Different types of encoding indicators are used, depending on the type of file and its encoding:

- The UTF-8 signature, which indicates that a text file is encoded in UTF-8, is a mark at the beginning of the file. Although optional within the computer industry, Essbase requires that UTF-8-encoded files include the UTF-8 signature.

- Inserted at the beginning of non-Unicode-encoded text files, the locale header record is an additional text record that includes a locale that identifies the encoding of the file. You can use the Essbase Unicode File Utility to insert the locale header or you can use a text editor to create the locale header. For the format and other details about the locale header record, see the Oracle Essbase Database Administrator’s Guide.

- As binary files that contain text information, outline files and rules files contain a flag that indicates whether the text is encoded in UTF-8 or in a supported non-Unicode encoding.

- As needed, if a file is not UTF-8-encoded, Essbase uses an internal locale indicator to identify the locale used for character text encoding.

Determining Whether to Use UTF-8 or Non-Unicode Text Files

While you are migrating various client and server sites to a Unicode-enabled release with Unicode-mode applications, Essbase provides you the flexibility to use non-Unicode-encoded files. For Unicode-mode applications, using UTF-8-encoded text files is recommended. Using UTF-8 encoding is simpler; you do not need to keep track of different locales.
When to Use the Essbase Unicode File Utility

The following list includes examples of situations when you would use the Essbase Unicode File Utility.

- To determine if a file contains an encoding indicator and, if it does, how it is encoded.
- To add a UTF-8 signature to a UTF-8-encoded file. UTF-8-encoded files must include the UTF-8 signature.
- To add a locale indicator to an outline file or rules file that is input to a Unicode-mode application on a Release 7.0 Essbase Server, if the file was created by an earlier release of Essbase.
- To remove a locale indicator from a file created by Release 7.0 Oracle Essbase Administration Services, if the file is to be used with an Essbase Server release prior to 7.0.

Note: Release 7.0 rules files that are not compatible with prior releases of Essbase are excepted.

For a more detailed description of encoding and locale indicators, see the Oracle Essbase Database Administrator’s Guide.

Essbase Unicode File Utility Syntax

The Essbase Unicode File Utility (ESSUTF8 or essutf8) modifies files to be used with Unicode-mode applications. Use this utility to make the following changes to files:

- Add a UTF-8 signature to UTF-8-encoded text files
- Convert non-Unicode-encoded text files to UTF-8 encoding, including the UTF-8 signature
- Insert a locale indicator in non-Unicode-encoded files including script files, data sources, outline files (.otl) and rules files (.rul)
- Remove locale indicators from non-Unicode-encoded files
- Backup files before changing them

For a description of encoding indicators, see the “Types of Encoding Indicators” on page 1458.

essutf8 [option] filespec

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
</table>
| [option]   | Case-sensitive, lowercase execution options. A single command can include more than one execution option Include the hyphen at the beginning of each execution option within a command. See Table 3, “Execution Options,” on page 1460.  
|            | The -c, -d, -i, and -s options may not be used in combination. The remaining options may be used in combination with one of the four options, or in combination with each other. See Notes for more information. |
filespec

Location and names of files. You can specify any of the following items:

- A file name in the current directory
- An absolute path that includes the file name
- A file-name mask containing the * (asterisk) and ? (question mark) wildcards (for example, abc*.txt includes all files with names starting with abc and ending with the extension .txt)

Caution! To avoid corruption of binary files not related to Oracle Essbase, do not use wildcards within file extensions (for example, do not specify anything like xyz.* or *.*). Use of wildcards is recommended only within the portion of the file name before the dot; for example, *.scr or *2002.txt.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-a</td>
<td>Lists supported locales. You can copy locales from the list into the clipboard.</td>
</tr>
<tr>
<td>-b</td>
<td>Creates a backup file (.bak) for each modified file.</td>
</tr>
<tr>
<td>-c</td>
<td>Converts text files without a UTF-8 signature to UTF-8 encoding, removing existing locale indicators and inserting a UTF-8 signature in each file.</td>
</tr>
<tr>
<td></td>
<td>Caution! The utility cannot recognize a file to be in UTF-8 encoding if the file does not contain a UTF-8 signature. Be sure to use the -c option only with files that are not in UTF-8 encoding. Using the -c option with files that are in UTF-8 encoding results in files that are not usable. To add a UTF-8 signature to a UTF-8 encoded file, use the -s option as described below.</td>
</tr>
<tr>
<td>-d</td>
<td>Deletes locale indicators from specified non-Unicode outline and rules files.</td>
</tr>
<tr>
<td>-e</td>
<td>Displays the encoding of each specified text, outline, or rules file.</td>
</tr>
<tr>
<td>-h</td>
<td>Displays help text. This is the default option.</td>
</tr>
<tr>
<td>-i</td>
<td>Inserts a locale indicator in each non-Unicode file that does not have an indicator. If a -l option is not included to specify a locale, the ESSLANG locale is assumed.</td>
</tr>
<tr>
<td>-l locale</td>
<td>Specifies the locale for the locale indicator for a non-Unicode file. For locale, use the following locale format: &lt;language&gt;_&lt;territory&gt;.&lt;code page name&gt;@&lt;sort sequence&gt;</td>
</tr>
<tr>
<td></td>
<td>Supported locales are listed in the Oracle Essbase Database Administrator’s Guide</td>
</tr>
<tr>
<td></td>
<td>Caution! Do not add a locale indicator to a file containing UTF-8 encoding.</td>
</tr>
<tr>
<td>-q</td>
<td>Defines a quiet operation. No messages are displayed.</td>
</tr>
<tr>
<td>-s</td>
<td>Adds a UTF-8 signature to each text file that does not have a UTF-8 signature or a locale header</td>
</tr>
<tr>
<td></td>
<td>Caution! The utility cannot recognize a file to be in UTF-8 encoding if the file does not contain a UTF-8 signature. Be sure to use the -s option only with files that are not in UTF-8 encoding. Using the -s option with files that are in UTF-8 encoding results in files that are not usable.</td>
</tr>
</tbody>
</table>

Notes

- In Windows, run essutf8.exe; in UNIX, run ESSUTF8.
- Backing up files (option -b) is recommended.
To process UTF-8 encoded files, Essbase Server requires the files include the UTF-8 signature.

Do not combine a UTF-8 signature and locale header in the same file. If a text file contains both types of encoding indicators, the file is interpreted as UTF-8 encoded, and the locale header is read as the first data record.

See the "Enabling Multi-Language Applications Through Unicode" part in the Oracle Essbase Database Administrator’s Guide for more information about file encoding.

Ensure that the encoding and condition of the specified files is what the specified operation expects. For example, do not define a command to delete locale indicators from non-Unicode-encoded files that do not contain locale indicators.

Examples

Backup plus UTF-8 signature insertion

essutf8 -b -s salesjune.utf8

Backup plus insertion of locale header record

essutf8 -b -i -l Spanish_Spain.Latin1@Spanish complex.rep

Backup plus conversion of multiple files to UTF-8 encoding

essutf8 -b -c *.txt

Backup plus deletion of locale indicator in a rules file

essutf8 -b -d \EssbaseServer\app\demo\basic\genref.rul