Oracle® Fusion Middleware

Administrator's Guide for Oracle Business Intelligence Discoverer

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Describes how to create and maintain a business-oriented view of relational data for Discoverer users.

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Glossary

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Preface

Welcome to Oracle Business Intelligence Discoverer Administration Guide - helping you to use Discoverer Administrator and set up and maintain Discoverer systems.

Discoverer Administrator enables you to control and manage your Discoverer system so that users of Discoverer Desktop, Discoverer Plus and Discoverer Viewer can find the information they want.

Audience

Use this guide if you are responsible for managing a Discoverer system, and you want to know how to:

- Create and maintain End User Layers
- Set up business areas, folders and items
- Help users find information by defining joins, calculated items, and conditions
- Improve Discoverer performance using summary folders

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Oracle BI Discoverer supports standard keyboard navigation. Standard keyboard navigation includes the use of the tab key, mnemonics (using the Alt key and the underlined character), and accelerators (such as Alt+F4 to exit a window).

Related Documents

You can access the documents referenced in this guide, and other information about Oracle Business Intelligence (for example, whitepapers, best practices, documentation updates, other collateral) on Oracle Technology Network at:

http://www.oracle.com/technology

Conventions

Conventions used in this manual are shown in the table below:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.
< >	Angle brackets enclose user-supplied names or values.
[]	Square brackets enclose optional clauses from which you can choose one or none.
Menu name | Command	Text in this format conveys a sequence of menu choices (for example, choose the menu, then the command under that menu).

Discoverer often gives you several ways to perform an operation. For example, to create a new condition you could:

- choose Tools | Conditions
- click the Conditions toolbar button

Since you might not be using a mouse, the Discoverer documentation always tells you the menu and menu option to choose.

1

Introduction to Administering Discoverer

This chapter introduces you to administering Oracle Business Intelligence Discoverer, and includes the following topics:

- "What is Oracle Business Intelligence Discoverer?"
- "What are the components of Oracle Business Intelligence Discoverer?"
- "What is the role of the Discoverer manager"
- "What tools does the Discoverer manager use?"
- "What data sources can you use with Discoverer?"
- "Basic concepts for Discoverer managers"
- "Where should I look for more information?"

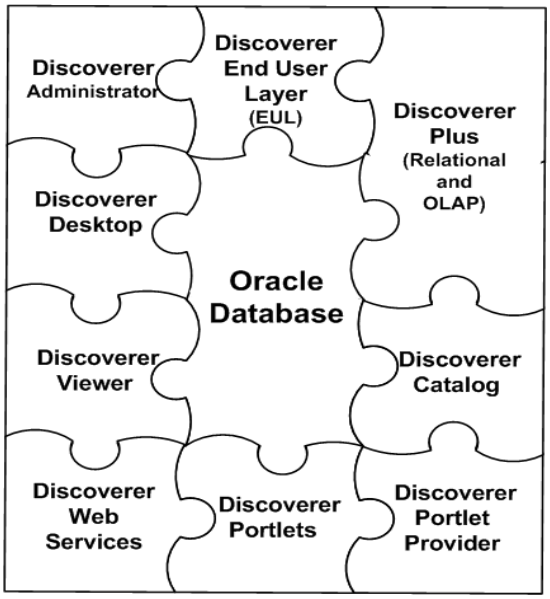
What is Oracle Business Intelligence Discoverer?

Oracle Business Intelligence Discoverer is an intuitive ad-hoc query, reporting, analysis, and Web publishing toolset that gives business users immediate access to information in databases.

Oracle Business Intelligence Discoverer enables business users at all levels of the organization to make faster and more informed business decisions. Using any standard Web browser, they have secure and immediate access to data from both relational and multidimensional data sources. Oracle Business Intelligence Discoverer provides a business view to hide the complexity of the underlying data structures, enabling you to focus on solving business problems.

Oracle Business Intelligence Discoverer consists of several integrated components that work with the Oracle database to give a complete and integrated Business Intelligence solution.

Figure 1–1 Oracle Business Intelligence Discoverer components



Which Oracle Business Intelligence Discoverer component you use will depend on what you want to do. For example:

- if you want to create new worksheets and analyze data from both relational and multi-dimensional datasources across the Web, you will use Discoverer Plus (and Plus OLAP)
- if you want to create new worksheets and analyze data from relational datasources using a Windows application on a PC, you will use Discoverer Desktop
- if you want to analyze data in existing worksheets, you will use Discoverer Viewer, or Discoverer portlets (that have been added to an Oracle Portal page or Oracle WebCenter Spaces using Discoverer Portlet Provider)
- if you want to obtain Discoverer connections, workbooks, worksheets, and execute queries in Oracle BI Publisher, or from a Java client application using the SOAP protocol, you will use Discoverer Web Services
- if you want to display Discoverer worksheets as gauges in dashboard-style portals, you will use Discoverer Portlet Provider
- if you want to manage the end user view of relational data, you will use Discoverer Administrator

The Oracle Business Intelligence Discoverer components use definitions of Discoverer objects stored in the Discoverer End User Layer or the Discoverer Catalog.

For more information, see "What are the components of Oracle Business Intelligence Discoverer?".

What are the components of Oracle Business Intelligence Discoverer?

Oracle Business Intelligence Discoverer comprises the following components:

- Oracle Business Intelligence Discoverer Plus (Relational and OLAP)

  This component runs over the internet or intranet and enables end users to:

  - create new worksheets and graphs to get the data they want
  - analyze the data
  - share worksheets and graphs with other people

  For more information about Discoverer Plus, see the *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Plus*.

- Oracle Business Intelligence Discoverer Viewer

  This Oracle Business Intelligence Discoverer component runs over the internet or intranet inside a web browser. End users can use Discoverer Viewer to analyze the data in worksheets created in Discoverer Plus and Discoverer Desktop. End users can personalize worksheets (for example, by repositioning items) and save their changes.

  For more information about Discoverer Viewer, see the *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Viewer*.

- Oracle Business Intelligence Discoverer Portlet Provider and Discoverer portlets

  These Oracle Business Intelligence Discoverer components run over the internet or intranet inside a web browser. End users can use Discoverer Portlet Provider to include Discoverer worksheets as areas (or portlets) within existing portal pages. Discoverer Portlet Provider enables end users to publish the following types of Discoverer portlet:

  - a List of Worksheets portlet
  - a Worksheet portlet
  - a Gauges portlet

  End users can personalize worksheets (for example, by adding stoplight formatting) and save their changes.

- Oracle Business Intelligence Discoverer Web Services

  The Oracle Business Intelligence Discoverer Web Services component is an Application Programming Interface (API) to obtain Discoverer connections, Workbooks, Worksheets, and to execute Worksheet queries, and return worksheet content by using the SOAP protocol (for more information, see *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Web Services API*).

- Oracle Business Intelligence Discoverer Desktop

  This Oracle Business Intelligence Discoverer component is a Windows-only application that enables end users to build new worksheets to analyze relational data. The worksheets that end users create in Discoverer Desktop can be used in Discoverer Plus, Discoverer Viewer, and Discoverer portals.

  For more information about Discoverer Desktop, see the *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Desktop*.

- Oracle Business Intelligence Discoverer Administrator

  This Oracle Business Intelligence Discoverer component is a Windows-only application used by the Discoverer manager to create and maintain a business oriented view of relational data. Discoverer Administrator provides wizards and dialogs to:

  - control access to data
  - manage summary data

  - administer batch scheduling

  For more information about the Discoverer Administrator, see "What is Oracle Business Intelligence Discoverer Administrator?".

- Oracle Business Intelligence Discoverer End User Layer (EUL)

  The Discoverer End User Layer component is a repository for storing and retrieving definitions of objects used when querying relational data sources.

  For more information about the End User Layer, see Chapter 4, "Creating and Maintaining End User Layers".

- Oracle Business Intelligence Discoverer Catalog

  The Discoverer Catalog component is a repository for storing and retrieving user definitions of objects used when querying multidimensional data sources.

  For more information about the Discoverer Catalog, see "What is the Discoverer Catalog?".

What is the role of the Discoverer manager

The role of the Discoverer manager is to make sure that end users are able to use Discoverer Plus, Discoverer Plus OLAP, Discoverer Viewer and Discoverer Desktop. The Discoverer manager might be responsible for any of the following tasks:

- Administering Discoverer with a relational data source.

  For more information, see Chapter 3, "Introduction to Administering Discoverer with a Relational Data Source".

- Administering Discoverer with a multidimensional data source.

  For more information, see Chapter 2, "Administering Discoverer Systems that Access Multidimensional Data Sources".

- Configuring the Discoverer components (that is, Discoverer Plus, Discoverer Plus OLAP, Discoverer Desktop and Discoverer Viewer).

  For more information, see the *Oracle Fusion Middleware Configuration Guide for Oracle Business Intelligence Discoverer*.

What tools does the Discoverer manager use?

The Discoverer manager uses the following tools:

- Discoverer Administrator

  For more information, see Chapter 3, "Introduction to Administering Discoverer with a Relational Data Source".

- Oracle Warehouse Builder

  For more information, see the Oracle Warehouse Builder documentation.

- Oracle Fusion Middleware Control

  For more information, see the *Oracle Fusion Middleware Configuration Guide for Oracle Business Intelligence Discoverer*.

What data sources can you use with Discoverer?

You can use the following data source with Discoverer:

- relational (for more information, see Chapter 3, "Introduction to Administering Discoverer with a Relational Data Source"
- multi-dimensional (for more information, see Chapter 2, "Administering Discoverer Systems that Access Multidimensional Data Sources"

Relational data sources differ from multi-dimensional data sources in the following ways:

- relational data sources are typically organized in tables composed of columns and rows that contain data values.
- multi-dimensional data sources are typically organized by one or more dimensions. These multidimensional data structures are often referred to as cubes.

Basic concepts for Discoverer managers

Before you start administering Discoverer, you will find it helpful to familiarize yourself with some basic concepts:

- "What is business intelligence?"
- "How does Discoverer work?"

What is business intelligence?

Business intelligence is the ability to analyze data to answer business questions and predict future trends.

Oracle Business Intelligence Discoverer is a great business intelligence tool because it enables users to analyze data in an ad hoc way. Instead of relying on IT specialists to pre-define queries and reports, Discoverer users can choose the data to analyze and can continue manipulating results until they have the necessary information to take business decisions. Oracle Business Intelligence Discoverer also enables users to share the results of their data analysis with their colleagues in different formats (including charts and Excel spreadsheets).

How does Discoverer work?

Users' requests for information from the database are in the form of worksheets.

When a user creates or opens a worksheet, Discoverer:

- converts the worksheet into the corresponding SQL statements (for example, by converting folder names and item names to table names and column names respectively)
- sends the SQL statements to the database
- displays the result set that is returned from the database

In the case of Discoverer Plus and Discoverer Viewer, the SQL statements are routed to the database through Discoverer processes running on an application server.

Where should I look for more information?

Where you find more information about administering Discoverer will depend on which data source you are using, as follows:

- If you are using a multi-dimensional data source, see Chapter 2, "Administering Discoverer Systems that Access Multidimensional Data Sources"

- If you are using a relational data source, see Chapter 3, "Introduction to Administering Discoverer with a Relational Data Source"

Part I

Administering Discoverer with Multidimensional Datasources

This section contains information about administering Discoverer with multidimensional datasources.

2

Administering Discoverer Systems that Access Multidimensional Data Sources

This chapter introduces you to administering a Discoverer system that accesses a multidimensional data source, and includes the following topics:

- "What are the prerequisites for administering Discoverer systems that access multidimensional data sources?"
- "What is online analytic processing (OLAP)?"
- "What is a multidimensional data source?"
- "What is the Discoverer Catalog?"
- "How do I administer a Discoverer system that accesses multidimensional data sources?"
- "How do I assist users of Discoverer Plus OLAP in getting started?"

What are the prerequisites for administering Discoverer systems that access multidimensional data sources?

Before Discoverer end users can access a multidimensional data source, you must perform the following tasks:

- Install the Enterprise Edition of the Oracle9*i* database or the Oracle Database 10*g* database with the OLAP Option and install the appropriate database patches.

  For more information, see the Oracle9*i* or Oracle Database installation guide for your platform and the guide that was used when installing Discoverer.

- Provide access to data from the OLAP Catalog, which defines logical multidimensional objects. The OLAP Catalog is mapped either to a relational database schema or to an analytic workspace.

  An analytic workspace stores multidimensional data objects and procedures that are written in the OLAP DML. The OLAP DML is a data manipulation language that is understood by the Oracle OLAP calculation engine. The OLAP DML extends the analytic capabilities of querying languages such as SQL and the OLAP API to include forecasting, modeling, and what-if scenarios.

  For more information, see *Oracle9i OLAP User's Guide* or *Oracle OLAP Application Developer's Guide*.

What is online analytic processing (OLAP)?

Online analytic processing (OLAP) describes queries that are run against a multidimensional data source. A simple query might ask, "When did order 84305 ship?" A typical series of OLAP queries might ask, "How do sales in the Southwestern region for this quarter compare with sales a year ago? What can we predict for sales next quarter? What factors can we alter to improve the sales forecast?"

Most standard queries involve simple data selection and retrieval. However, OLAP queries are more structured and involve calculations, time series analysis, and quick access to aggregated historical and current data. In OLAP queries, you know the dimensions and hierarchies that measures use. You query the data in business terms, such as "How are my products selling in my regions?" Each dimension has its own selection that mirrors the way that you ask questions.

For more information about OLAP, see:

- *Oracle9i OLAP User's Guide*
- *Oracle OLAP Application Developer's Guide*
- *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Plus*

What is a multidimensional data source?

A multidimensional data source is optimized for analyzing large amounts of data. Such data sources are sometimes called data warehouses, or online analytical processing (OLAP) data sources.

In a relational data source, data is organized in tables. A table is a data structure with columns and rows. Multidimensional data is data that is organized by one or more dimensions. These multidimensional data structures are often referred to as cubes. Oracle databases (version 9.2.0.7 or later) can include both relational data structures (tables and columns) and multidimensional data structures (cubes). This combination provides fast multidimensional data access while providing summaries of the relational data.

What is the Discoverer Catalog?

The Discoverer Catalog is a repository for storing and retrieving definitions of objects for Discoverer Plus OLAP. The Discoverer Catalog can be used by applications that are built with Oracle Business Intelligence Beans (BI Beans). With Discoverer Plus OLAP, end users store in the Discoverer Catalog objects such as workbooks, calculations, and saved selections and share objects with others who have access to the Discoverer Catalog. For example, in a BI Beans application, a user can create a graph and store it in the Discoverer Catalog. If another user has appropriate access, that user can retrieve the graph that was stored in the Discoverer Catalog and insert the graph into a new worksheet in Discoverer Plus OLAP.

The Discoverer Catalog provides security at the object level, by allowing users and system administrators to specify access to certain objects.

Note: Do not confuse the Discoverer Catalog, which contains object definitions, with the OLAP Catalog. The OLAP Catalog defines logical multidimensional objects that can be mapped either to columns in the tables of a star or snowflake schema or to multidimensional objects in an analytic workspace.

For complete information on installing and administering the Discoverer Catalog, see *Oracle Fusion Middleware Configuration Guide for Oracle Business Intelligence Discoverer*.

How do I administer a Discoverer system that accesses multidimensional data sources?

This section provides information on your role as the manager of Discoverer system that accesses a multidimensional data source, on the tools you use, and on the differences between administering for multidimensional and relational data sources.

About managing a Discoverer system that accesses multidimensional data sources

As a Discoverer manager, you are responsible for the initial implementation of Discoverer Plus OLAP and its ongoing administration and maintenance. To fulfill your role as a Discoverer manager and to support your company's decision-makers when using a multidimensional data source, you must:

- Understand the database: You must know what data is in the database, where the data is located, how the data is stored (whether it is stored in a relational database schema or analytic workspace), how its metadata is configured, and how the data relates to other data.
- Understand the business: You must know what data the decision-makers require, what kinds of analysis they perform, and how the final results should be presented for easy comprehension.

About administering Discoverer for multidimensional and relational data sources

Before administering a Discoverer system that accesses a multidimensional data source, you should understand the differences from administering a Discoverer system that accesses a relational data source, as described in the following list:

- When you use Discoverer with a multidimensional data source, you do not use Discoverer Administrator to perform administrative tasks. Instead, you use the tools that are outlined in "Which tools are used to administer Discoverer systems that access multidimensional data sources?"
- When you use Discoverer with a relational data source, Discoverer uses the End User Layer (EUL). When you use Discoverer with a multidimensional data source, Discoverer does not use the End User Layer (EUL) but uses the Discoverer Catalog.
- The following tasks are typically performed for a relational data source and not for a multidimensional data source:
  - Scheduling workbooks
  - Creating and maintaining joins
  - Creating and maintaining summary folders
  - Predicting query performance

For more information on the differences between using Discoverer with a relational data source and using Discoverer Plus OLAP, see *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Plus*.

Which tools are used to administer Discoverer systems that access multidimensional data sources?

When you administer a Discoverer system that accesses a multidimensional data source, you perform the following administrative tasks using the specified tools:

- You define OLAP Catalog metadata using Oracle Analytic Workspace Manager or Oracle Warehouse Builder. You define the metadata differently depending on whether you are using ROLAP (Relational Online Analytic Processing) or MOLAP (Multidimensional Online Analytic Processing):
  - In ROLAP, the OLAP Catalog is mapped to a relational database schema.
  - In MOLAP, the OLAP Catalog is mapped to an analytic workspace.

  For more information on which definition is appropriate for your data and on configuration details, see *Oracle9i OLAP User's Guide* or *Oracle OLAP Application Developer's Guide*.
- You configure the Discoverer Catalog, using Oracle Fusion Middleware Control to perform the following tasks:
  - Installing the Discoverer Catalog
  - Controlling access to information
  - Importing and exporting objects for the Discoverer Catalog
  - Customizing the logo and look and feel
  - Specifying the log level
  - Specifying URL parameters for the Discoverer Plus OLAP Servlet

  For more information, see *Oracle Fusion Middleware Configuration Guide for Oracle Business Intelligence Discoverer*.
- You maintain dimensions and measures, using Oracle Analytic Workspace Manager.

  For more information, see *Oracle9i OLAP User's Guide* or *Oracle OLAP Application Developer's Guide*.
- You maintain dimension hierarchies, using Oracle Analytic Workspace Manager or Oracle Warehouse Builder.

  For more information, see *Oracle9i OLAP User's Guide* or *Oracle OLAP Application Developer's Guide*.
- You create and maintain calculations and conditions in Discoverer Plus OLAP.

  For more information, see the Discoverer Plus OLAP Help system.

How do I assist users of Discoverer Plus OLAP in getting started?

As the Discoverer manager, you can assist users of Discoverer Plus OLAP in two important ways, as described in the following sections:

- "How do I enable access to the sample workbook?"
- "How do I create a preprocessor program?"

How do I enable access to the sample workbook?

Discoverer Plus OLAP is shipped with a sample workbook that demonstrates and explains many of the product's powerful features. To enable users to access the sample workbook, you must install the Discoverer Catalog and the sample workbook. You can find a document that describes this installation process in the Discoverer area of Oracle Technology Network.

How do I create a preprocessor program?

As the Discoverer manager, you can create a preprocessor program that assists users in performing specific tasks before Discoverer Plus OLAP or Discoverer Viewer starts.

Why create a preprocessor program?

Users of Discoverer Plus OLAP and Discoverer Viewer might find it useful to run a preprocessor program before the product is started. You can specify preprocessing tasks by entering PL/SQL code and defining the D4O_AUTOGO stored procedure in the D4OSYS schema. This stored procedure runs automatically whenever Discoverer Plus OLAP and Discoverer Viewer is started.

You can use the D4O_AUTOGO stored procedure to perform tasks such as the following ones:

- Execute SQL commands, in a ROLAP implementation.
- Call a routine in the analytic workspace using the AW.EXECUTE command in SQL, in a MOLAP implementation. You can use this routine to perform tasks such as the following:
  - Launch a program in the analytic workspace.
  - Perform a forecast.
  - Apply scoping to data using the PERMIT command, as demonstrated in "Example of creating a preprocessor program".

Arguments for the D4O_AUTOGO stored procedure

The D4O_AUTOGO stored procedure accepts only one argument, which is a text value for the user ID of the user who is logging in. Discoverer Plus OLAP and Discoverer Viewer pass the user ID of the current user to the D4O_AUTOGO stored procedure, if the procedure has been defined.

Example of creating a preprocessor program

One example of a preprocessor task is to scope the set of data values that users are permitted to analyze. For example, in the sample workbook, the Scott user is not allowed to see the forecasted data for future time periods (such as 2005). To set up this type of security, you must specify an environment for scoping data using the D4O_AUTOGO stored procedure.

The data used for the sample workbook is stored in an Oracle OLAP analytic workspace named shaw. In this workspace, a stored procedure named scope_data is defined that scopes the time periods based on the current database user ID. The scope_data stored procedure is defined as follows:

```
DEFINE SCOPE_DATA PROGRAM
PROGRAM
"Scopes data based on user id
trap on error noprint
aw attach CS_OLAP.SHAW first
"***
"* shawt_time_isvisible specifies for each user the time periods that are
 visible.
"* The SCOTT user does not have access to 2002 forecast data
"***
limit shawusers to upcase(userid)

cns shawt_time
```

```
    permit read when shawt_time_isvisible
error:
   return
END
```

To run the scope_data stored procedure, you can define the D4O_AUTOGO stored procedure as follows:

```
CREATE OR REPLACE PROCEDURE D4OSYS.D4O_AUTOGO (user_id IN VARCHAR) is
     BEGIN
     dbms_aw.aw_attach('CS_OLAP', 'SHAW');
     dbms_aw.execute('scope_data');
     END;
```

Part II

Administering Discoverer with Relational Datasources

This section contains information about administering Discoverer with relational datasources.

3

Introduction to Administering Discoverer with a Relational Data Source

This chapter introduces you to administering Oracle Business Intelligence Discoverer with a relational data source, and includes the following topics:

- "What is a relational data source, an OLTP system, and a data warehouse?"
- "What is Oracle Business Intelligence Discoverer Administrator?"
- "What are the fundamental concepts behind a Discoverer system when using a relational data source?"
- "What is your role as Discoverer manager when using a relational data source?"
- "What are the steps to a successful Discoverer implementation with a relational data source?"
- "What is involved in maintaining a Discoverer system with a relational data source?"
- "What are the prerequisites for using Discoverer Administrator?"
- "About Discoverer using database parameters"
- "How to start Discoverer Administrator"
- "What is the Workarea?"
- "What are the new features in Discoverer Administrator?"
- "About Discoverer Administrator documentation and online help"

What is a relational data source, an OLTP system, and a data warehouse?

A relational data source is a database that stores data in tables that are composed of rows and columns that contain data values. The overall structure of a relational database management system (RDBMS) can be set up in any number of ways, depending on how the system will be used.

A typical RDBMS is designed for online transaction processing (OLTP), with the main objective of storing vast quantities of transaction data as efficiently as possible. OLTP system design is primarily concerned with getting data into an RDBMS. An OLTP system contains the information that a business uses on a day-to-day basis. The information in an RDBMS designed for an OLTP system is typically process-oriented, current, and subject to change.

A data warehouse is an RDBMS with a structure designed to facilitate data analysis, rather than simply efficient storage of information. Data warehouse design is

primarily concerned with getting data out of an RDBMS. The information in a data warehouse is typically subject-oriented, historical, and static.

Oracle Business Intelligence Discoverer provides business users with data analysis capabilities, regardless of whether the RDBMS was designed for an OLTP system or as a data warehouse.

What is Oracle Business Intelligence Discoverer Administrator?

Oracle Business Intelligence Discoverer Administrator is one of the components of Oracle Business Intelligence Discoverer.

Discoverer Administrator is a tool to hide the complexity of a data source from business users, so they can answer business questions quickly and accurately using Oracle Business Intelligence Discoverer.

Discoverer Administrator's wizard-style interfaces enable you to:

- set up and maintain the End User Layer (EUL)

  The EUL is a set of database tables that contain information (or metadata) about the other tables and views in the database. For more information, see "Introducing the End User Layer".

- control access to information
- create conditions and calculations for Discoverer end users to include in their worksheets

Users of Discoverer Administrator are called Discoverer managers.

Discoverer Administrator is shipped as part of Oracle Business Intelligence Tools, which is a collection of business intelligence tools.

What are the fundamental concepts behind a Discoverer system when using a relational data source?

Before you design and implement a Discoverer system when using a relational data source, you must become familiar with some fundamental Discoverer concepts.

These fundamental concepts are described briefly in the sections below:

- "Introducing the End User Layer"
- "Introducing business areas"
- "Introducing folders and items"
- "Introducing workbooks and worksheets"
- "Introducing hierarchies and drills"
- "Introducing summary folders"

Each of these sections is only a brief description, but includes a cross-reference to other chapters in this manual where you can find more information.

Introducing the End User Layer

The End User Layer (EUL) insulates Discoverer end users from the complexity and physical structure of the database. The EUL provides an intuitive, business-focused view of the database that you can tailor to suit each Discoverer end user or user group. The EUL enables Discoverer end users to focus on business issues instead of data

access issues. It helps Discoverer end users produce queries by generating SQL and provides a rich set of default settings to aid report building.

The metalayer structure of the EUL preserves the data integrity of the database. Whatever the Discoverer manager or the Discoverer end user does with Discoverer, it affects only the metadata in the EUL and not the database.

The EUL is a collection of approximately 50 tables in the database. These are the only tables that can be modified through Discoverer Administrator. Business areas are defined in Discoverer Administrator using the EUL database tables. Discoverer provides read-only access to the application database.

For more information about the EUL, see Chapter 4, "Creating and Maintaining End User Layers".

Introducing business areas

Typically, no single user (or group of users) is interested in all the information in the database. The users are much more likely to be interested in a subset of the information that is connected in some way to the job that they do. Using Discoverer Administrator, you create one or more business areas as containers of related information.

Having created a business area, you load the database tables containing the related information into that business area.

For more information about business areas, see Chapter 5, "Creating and Maintaining Business Areas".

Introducing folders and items

The tables and views you load into a business area are presented to Discoverer end users as folders. The columns within a table or view are presented as items.

Often the database tables and columns have names that users will not find meaningful. Using Discoverer Administrator, you can make the names of folders and items more helpful than the names of the tables and columns on which they are based.

The folders in a business area do not have to be based directly on database tables or views. You can create complex folders that contain items based on columns from multiple tables or views. You can also create custom folders based on SQL statements you write yourself.

Similarly, the items in a business area do not have to be based directly on columns. You can create calculated items that perform calculations on several columns, or that make use of the analytic functions available within the Oracle database.

For more information about folders and items, see:

- Chapter 6, "Creating and Maintaining Folders"
- Chapter 9, "Maintaining Items and Item Classes"
- Chapter 11, "Creating and Maintaining Calculated Items"

Introducing workbooks and worksheets

Oracle Business Intelligence Discoverer end users analyze information by including items in worksheets and using Discoverer's data analysis and charting wizards to find the information they are interested in. Discoverer worksheets are grouped into

workbooks. A workbook can be stored on the file system (in Discoverer Desktop only) or in the database.

In some cases, you will want to restrict Discoverer end users to analyzing information in worksheets that have been created for them. In other situations, it will be more appropriate to allow end users to create their own worksheets. Discoverer Administrator enables you to decide which end users can create their own workbooks, and which end users can only use workbooks that have been created for them.

For more information about workbooks and worksheets, see *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Plus*.

Introducing hierarchies and drills

Hierarchies are logical relationships between items that enable users to drill up and down to view information in more or less detail. To analyze information effectively, Discoverer end users will want to:

- drill down to see more detail about a particular piece of information (for example, if the sales total for a specific region is disappointing, an end user will typically want to drill into the region's sales total figure to see which cities within that region have under-performed)
- drill up to see how the detail data contributes to information at a higher level (for example, when looking at the sales figure for a particular city, an end user will typically want to drill up to see the total sales figure for the region)

When you load tables into a business area, Discoverer automatically creates default date hierarchies for date items. Often you will want to create your own hierarchies for other items as well.

For more information about hierarchies, see Chapter 13, "Creating and Maintaining Hierarchies".

Introducing summary folders

Summary folders are a representation of queried data that has been saved for reuse.

You create summary folders with Discoverer Administrator to improve query response time for end users. The response time of a query is improved because the query accesses pre-aggregated and pre-joined data rather than accessing the database tables. You can also direct Discoverer to use summary folders based on tables containing summary data that have been created by another application. These tables are known as external summary tables.

For more information about summary folders, see:

- Chapter 14, "Managing Summary Folders"
- Chapter 15, "Creating Summary Folders Manually"
- Chapter 16, "Additional Information about Summary Folders"

What is your role as Discoverer manager when using a relational data source?

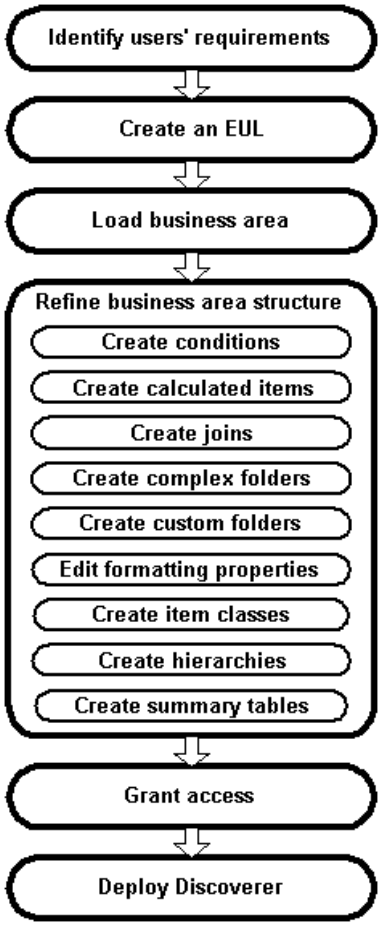
As a Discoverer manager, you are responsible for:

- the initial implementation of the Discoverer system
- the ongoing administration and maintenance of the Discoverer system

What are the steps to a successful Discoverer implementation with a relational data source?

Figure 3–1 shows the steps for implementing a Discoverer system with a relational data source.

Figure 3–1 Discoverer implementation flowchart (with a relational data source)



These six steps are described in more detail below.

1. **Identify users' requirements**

   For a Discoverer implementation to be successful, it must meet users' requirements. To find out what those requirements are, conduct interviews with key users and ask them questions like:

   - what information do you use now?
   - what information would you like to see?
   - how would you like the information presented?

   As a starting point, why not review the reports and information sources that users are currently using? You will quickly see how using Discoverer will give users both access to the information they currently use and the ability to analyze that information in new and powerful ways.

Remember that users' requirements typically change over time. Often the biggest changes are requested by users when a system has been rolled out. When users see what Discoverer can do for them, they soon have suggestions for other areas where it could be useful.

Try and anticipate changing requirements. After all, a successful system often starts by meeting a subset of requirements and is then modified over time based on user feedback.

2. **Create an EUL (mandatory if one does not exist already).**

   An EUL must exist before you can create a business area. If an EUL does not already exist, you must create one.

3. **Create a business area and load data into it (mandatory).**

   Having identified users' requirements, you will have a good idea of the information that users need to access. For example, one group of users might want to access sales information, another group might want to access manufacturing information, and so on.

   In Discoverer, you group information with a common business purpose into a business area. Having created a business area, you must specify which database tables and views hold that information. You do this by 'loading' the tables and views into the business area.

4. **Refine the structure of the business area so that users can view data in the most flexible and understandable way.**

   The default settings and contents of a business area are sufficient to enable users to access and analyze data. However, Discoverer Administrator provides you with several features to enhance the default analysis capabilities.

   Specifically, you can:

   - create optional and mandatory conditions to restrict the number of rows returned in a folder (for more information, see Chapter 12, "Creating and Maintaining Conditions")
   - create calculated items to provide users with ready-made computations (for more information, see Chapter 11, "Creating and Maintaining Calculated Items")
   - create joins to combine folders that were not automatically joined when tables were loaded from the database (for more information, see Chapter 10, "Creating and Maintaining Joins")
   - combine folders into complex folders to completely hide joins and relational structures from users (for more information, see Chapter 6, "Creating and Maintaining Folders")
   - create custom folders, to represent a result set (returned by a SQL statement that you have entered) as a folder with items (for more information, see Chapter 6, "Creating and Maintaining Folders")
   - edit item names, descriptions, and other formatting information to make data easier to understand (for more information, see Chapter 9, "Maintaining Items and Item Classes")
   - create item classes to support lists of values, alternative sorts, and drill to detail (for more information, see Chapter 9, "Maintaining Items and Item Classes")

- create hierarchies to simplify drilling operations (for more information, see Chapter 13, "Creating and Maintaining Hierarchies")
- create summary tables, let Discoverer automate summary management, or register existing summary tables to maximize query performance (for more information, see Chapter 14, "Managing Summary Folders")

5. **Grant business area access to users or roles (mandatory).**

   Having identified users' requirements, you will have a good idea of which users (and groups of users) need access to which information.

   In some cases, different users will want access to the same information. For example, information about an employee might be required by the employee's manager, payroll staff, and users in the Human Resources department.

   In other cases, it is appropriate for only one group of users to have access to the information. For example, information about an engineering project is invaluable for a project manager but of no interest to payroll staff.

   Keeping users' information requirements in mind, you can grant users access to the business area.

   Note that Discoverer users (whether end users or managers) never compromise the security of the underlying database. Users cannot see information in Discoverer to which they do not already have sufficient database privileges to access. In other words, all Discoverer security and privileges are additional to the database security mechanisms.

6. **Deploy Discoverer**

   Users' requirements will determine which of the Discoverer components you decide to make available in your company.

   When identifying their requirements, you will probably have realized that some users want the ability to create their own worksheets, while other users simply want to use worksheets that have been created for them. In addition, some users will want to run Discoverer using a Web browser, using either a Java applet user interface or an HTML user interface.

   Use the table below as a guide to decide which Discoverer components to deploy in your organization.

User requirement	Plus	Viewer	Desktop
Install and run Discoverer on a PC running Windows	No	No	Yes
Run Discoverer using a Web browser	Yes	Yes	No
Build new worksheets	Yes	No	Yes
Save workbooks to the file system	No	No	Yes
Customize Discoverer user interface	No	Yes	No

   Other factors will probably also influence your decision, including network performance and security issues.

   Having decided which Discoverer components to deploy, refer to the appropriate documentation for specific installation or configuration instructions. For more information, see "Related Documents".

What is involved in maintaining a Discoverer system with a relational data source?

Having implemented a Discoverer system with a relational data source, you will probably find that a small amount of ongoing maintenance is required to make sure that Discoverer continues to meet users' requirements.

Typically, you will continue to refine business areas by:

- adding new item classes, to support new lists of values, alternative sorts, and drill to detail (for more information, see Chapter 9, "Maintaining Items and Item Classes")
- adding new joins, to combine folders that were not automatically joined when tables were loaded from the database and which users now need access to in the same worksheet (for more information, see Chapter 10, "Creating and Maintaining Joins")
- adding new optional and mandatory conditions, to restrict the number of rows returned in a folder (for more information, see Chapter 12, "Creating and Maintaining Conditions")
- adding new calculated items, to provide users with ready-made computations that were not initially required (for more information, see Chapter 11, "Creating and Maintaining Calculated Items")
- adding new complex folders, to simplify query creation (for more information, see Chapter 6, "Creating and Maintaining Folders")
- adding new custom folders, to meet users' requirements that cannot be met using conventional folders (for more information, see Chapter 6, "Creating and Maintaining Folders")
- adding new hierarchies, to enable users to analyze data in new ways (for more information, see Chapter 13, "Creating and Maintaining Hierarchies")
- adding new summaries to resolve performance issues with particular queries (for more information see Chapter 14, "Managing Summary Folders")

In addition to the above, you will probably have to change which users have access to which business areas and the operations that individual users can perform in those business areas. For example:

- when a new user joins, you will have to grant them access to the business areas they need to do their job
- when an existing user changes jobs or departments, you might have to grant them access to new business areas, or revoke their access from previous business areas

  For more information, see Chapter 7, "Controlling Access to Information".

What are the prerequisites for using Discoverer Administrator?

This section describes the system and data access prerequisites for using Oracle Business Intelligence Discoverer Administrator and contains the following topics:

- "What are the system prerequisites?"
- "What are the data access prerequisites?"

What are the system prerequisites?

Before you can use Discoverer Administrator:

- A suitable database must be installed and available. An Oracle Enterprise Edition database will support the use of materialized views to improve the performance of summary folders.
- Discoverer Administrator must have been installed on a PC, typically as part of a full Oracle Classic Suite installation.

Before end users can use Discoverer, either one or both of the following must have been installed:

- Discoverer Plus or Discoverer Viewer must have been installed on an application server machine and configured correctly as part of an Oracle Business Intelligence installation (for more information, see the *Oracle Fusion Middleware Configuration Guide for Oracle Business Intelligence Discoverer*)
- Discoverer Desktop must have been installed on the end users' PCs.

What are the data access prerequisites?

To create and maintain a Discoverer system using Discoverer Administrator, you will require certain Discoverer privileges and database privileges:

- to create an EUL you must have the privileges described in:
  - "What privileges do you require to create an End User Layer in an Oracle database?"
  - "What privileges do you require to create an End User Layer in a non-Oracle database?"
- to manage an EUL you must have:
  - the Discoverer Administration privilege on the EUL
  - the Allow Administration privilege on business areas you want to modify
  - the SELECT database privilege on any tables you want to add to a business area
- to install the sample data, see Chapter 27, "Installing the Discoverer Sample Data EUL, Data, and Workbook".
- to take advantage of the following Discoverer features, you need specific privileges:
  - Automated Summary Management (for more information, see "What are the prerequisites for creating summary folders with ASM?")
  - manual summary folder creation (for more information, see "What are the prerequisites for creating summary folders manually in Discoverer?"

To use a Discoverer system, end users will require certain Discoverer and database privileges:

- access to at least one EUL
- access to at least one business area in the EUL
- the SELECT database privilege (granted either directly to database users or through a database role) on the tables on which folders in a business area are based

- to take advantage of the following Discoverer features, users need specific privileges
  - scheduled workbooks (for more information, see "What are the prerequisites for scheduling workbooks?")
  - user PL/SQL functions (for more information, see "What are custom PL/SQL functions?"

About Discoverer using database parameters

Discoverer uses several database parameters to take advantage of functionality that is available in the database. Database parameters need to be set to recommended values to achieve the expected outcome. You can specify database parameter values in the initialization file of the Oracle DBMS, the INIT<SID>.ORA file. For example, the value you specify for timed_statistics will affect Discoverer's query prediction feature.

The following table lists the database parameters referenced in this guide, that are used by Discoverer.

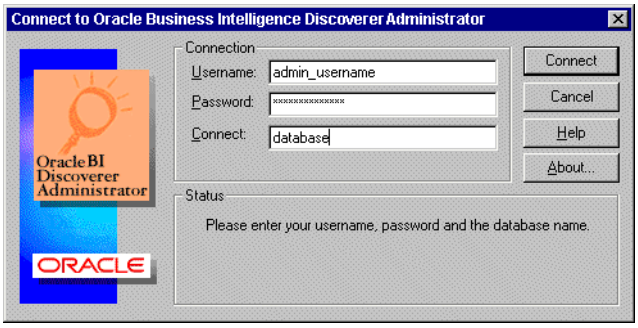
Database parameter	Possible result if value is not set	Description	Recommended value
timed_statistics	No query prediction given.	Related to enabling query prediction. For more information, see "How to verify and change the timed_statistics parameter for query prediction".	TRUE
optimizer_mode	No query prediction given.	Related to enabling query prediction. For more information, see "How to verify and change the optimizer_mode parameter for query prediction".	CHOOSE
optimizer_index_cost_adj	Slower queries.	Related to tuning the way the Cost-Based Optimizer uses indexes. For more information, see the Oracle11g documentation.	For more information, see your database administrator.
optimizer_index_caching	Slower queries.	Related to tuning the way the Cost-Based Optimizer uses indexes. For more information, see the Oracle11g documentation.	For more information, see your database administrator.
global_names	Invalid connect strings.	Related to setting up generic connectivity. For more information, see "About setting up generic connectivity for Discoverer".	FALSE
failover_mode	Database processes not relocated to alternative backup component on database failure.	Related to enabling support for Transparent Application Failover. For more information, see "How to enable Discoverer support for Transparent Application Failover".	FAILOVER_MODE=<type><retries>
type	Database processes not relocated to alternative backup component on database failure.	Sub-parameter of the failover_mode parameter. For more information, see "How to enable Discoverer support for Transparent Application Failover".	(TYPE=SELECT)
retries	Database processes not relocated to alternative backup component on database failure.	Sub-parameter of the failover_mode parameter. For more information, see "How to enable Discoverer support for Transparent Application Failover".	(RETRIES=5)

How to start Discoverer Administrator

To start Discoverer Administrator:

1. From the Windows Start menu, choose Programs | Oracle Business Intelligence Tools - <BI_TOOLS_HOME_NAME> | Discoverer Administrator to display the Connect to Oracle Business Intelligence Discoverer Administrator dialog.

Figure 3–2 Connect to Oracle Business Intelligence Discoverer Administrator dialog



2. Enter the username of the database user with which you want to start Discoverer Administrator in the **Username** field
3. Enter the password of the database user with which you want to start Discoverer Administrator in the **Password** field.

   Passwords are case-sensitive in Oracle databases (Enterprise Edition release 11.1 or later).
4. Specify the database to connect to in the **Connect** field, using the following guidelines:
   - if you are logging onto your default Oracle database, do not enter anything in the **Connect** field
   - if you are logging onto a different Oracle database, specify the name of the database (if you are not sure which name to use, contact your database administrator)
5. Click the Connect button to start Discoverer Administrator and connect to the database.

   What you see next depends on your Discoverer system:
   - if you have access to one or more EULs, you are prompted to create a new business area or open an existing business area in your default EUL (for more information, see Chapter 5, "Creating and Maintaining Business Areas")
   - if you do not have access to any EULs (for example, if you are the first person to use Discoverer Administrator in your organization, or if you have not been given Administration privilege on any existing EULs), you are prompted to create a new EUL (for more information, see "How to create an End User Layer for an existing database user")

Notes

- The Connect to Oracle Business Intelligence Discoverer Administrator dialog might contain the **Oracle Applications User** check box. Select this check box if you want to use Discoverer Administrator to manage an EUL for use with Oracle

Applications. For more information about using Discoverer with Oracle Applications, see Chapter 17, "Using Discoverer with Oracle Applications".

- You always start Discoverer Administrator in your default EUL. Your default EUL is the one specified on the "Options dialog: Connection tab". If you want to change the EUL you are working in, you must change your default EUL and then reconnect to Discoverer Administrator (for more information, see "How to view or change the default End User Layer").
- When you use Discoverer Administrator, you should make sure that no more than one current connection exists against a particular EUL. When you have a single connection against an EUL, you avoid the risk of unknowingly making conflicting changes to EUL objects.

What is the Workarea?

The Workarea is your view into the End User Layer. The Workarea is where you maintain the EUL by creating and editing:

- business areas and folders and items
- hierarchies
- item classes
- summary folders

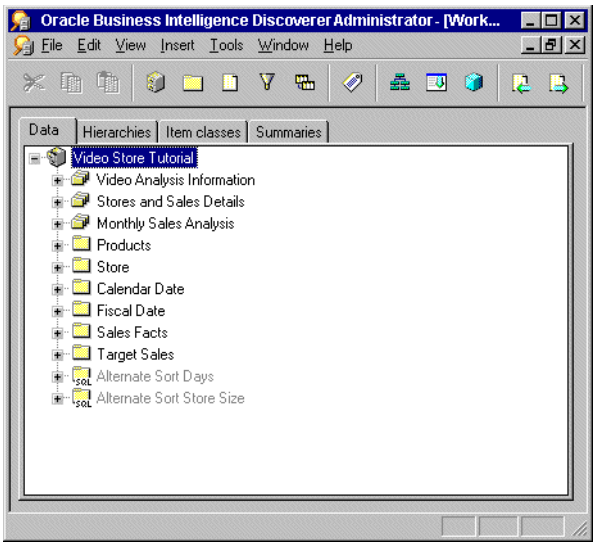
The Workarea window is displayed within the Discoverer Administrator main window. You can open more than one Workarea window at a time, which is useful when you want to copy objects between business areas. Note however that all Workarea windows contain the same business areas.

About the tabs in the Workarea window

The Workarea window contains four tabs:

- The Data tab displays the structure and content of each business area. The Data tab enables you to:
  - create calculated items
  - create complex and custom folders
  - create joins
  - create conditions
  - create new business areas, folders, and items
  - modify object properties

Figure 3–3 Workarea window: Data tab

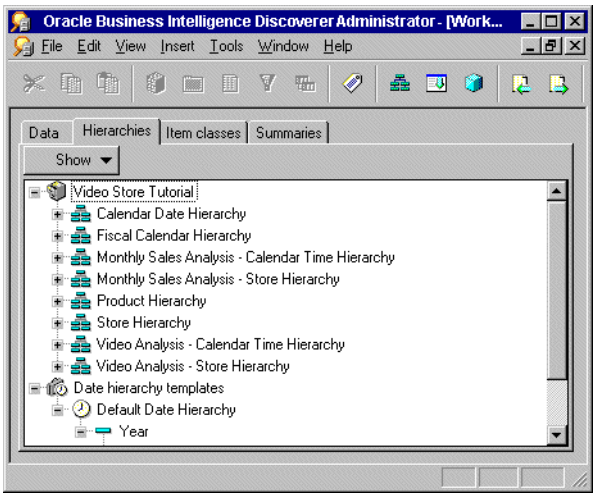


For more information about the Data tab and the icons displayed on it, see "Workarea: Data tab"

- The Hierarchies tab displays the hierarchies within each business area. The Hierarchies tab enables you to:
  - create new hierarchies
  - review the content and organization of existing hierarchies
  - view the hierarchy templates supplied with Discoverer Administrator

  The Show button on the Hierarchies tab enables you to specify the hierarchies that are displayed.

Figure 3–4 Workarea window: Hierarchies tab



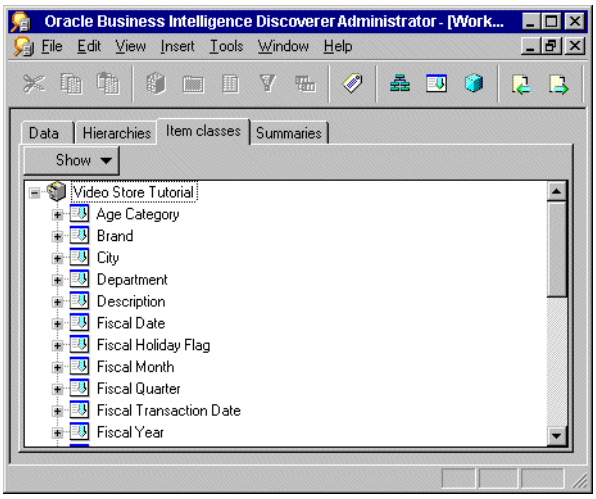
For more information about the Hierarchies tab and the icons displayed on it, see "Workarea: Data tab".

- The Item Classes tab displays the item classes within each business area. The Item Classes tab enables you to:

- create new item classes
- view the list of values associated with an item class (if there is one)
- view items that use each item class
- identify the item classes that have drill to detail and alternative sort attributes, and whether those options are active

The Show button on the Item Classes tab enables you to specify the item classes that are displayed.

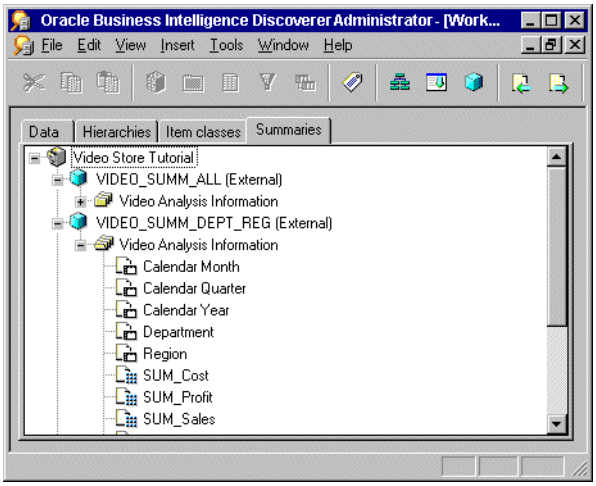
Figure 3–5 Workarea window: Item Classes tab



For more information about the Item Classes tab and the icons displayed on it, see "Workarea: Data tab".

- The Summaries tab displays the summary folders within each business area. The Summaries tab enables you to:
  - create new summary folders
  - review the organization and definition of summary folders
  - refresh summary folders

Figure 3–6 Workarea window: Summaries tab



For more information about the Summaries tab and the icons displayed on it, see "Workarea: Data tab".

About the context sensitive menus in the Workarea window

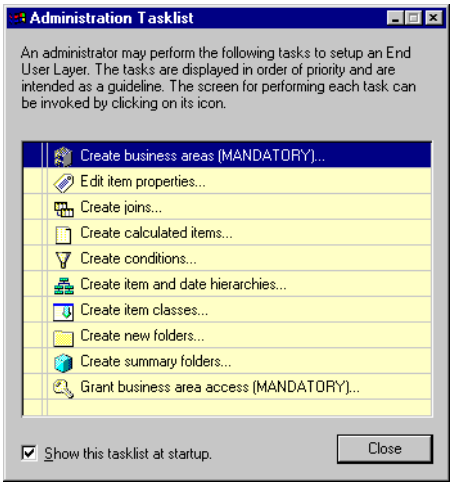
If you click the right-mouse button when working with Discoverer Administrator, a popup menu is displayed. In the Workarea window, the contents of this popup menu are the commands most frequently used with the currently selected object.

If no object is currently selected, the popup menu displays commands for working with a business area in general and commands appropriate to the current tab.

About the Administration Tasklist

When you first start Discoverer Administrator, the Administration Tasklist is displayed on top of the main Discoverer Administrator window.

Figure 3–7 Administration Tasklist



Use the Administration Tasklist in two ways:

- as a reminder of the basic steps involved in preparing a business area
- as a shortcut method of displaying the dialogs associated with the listed tasks

What are the new features in Discoverer Administrator?

Discoverer Administrator Version 11.1.1.1.0 contains the following new and improved features:

- Certification with Oracle 11g (version 11.1) Enterprise Edition Database

  Consideration has been made for Discoverer certification with the Oracle 11g (version 11.1) Enterprise Edition database.

About Discoverer Administrator documentation and online help

Discoverer Administrator is supplied with online Help and documentation.

The Discoverer Administrator Help System gives you context sensitive access to reference information from the Administration Guide in HTML format.

To start the Help System either click Help in a Discoverer dialog or choose Help | Help Topics.

- the Help button on Discoverer Administrator dialogs displays detailed context sensitive help on the fields in the dialog
- the Help | Help topics menu option displays the contents of the Oracle Business Intelligence Discoverer Administrator help system, including the context sensitive dialog help
- the Help | Manuals menu option displays a list of available Discoverer manuals (including the *Oracle Business Intelligence Discoverer Administrator error messages* file)

To find a topic in the Help System:

- click the Contents icon at the top of each help page or choose Help | Help Topics (to see a list of the topics in the help system)
- click the Index icon at the top of every help page to see a list of index entries

To view (and print) the Administration Guide in PDF format, use the Oracle Developer Suite documentation CD.

Tip: To search for words or phrases, use the Administration Guide in PDF format.

Additional information about Discoverer (for example, whitepapers, best practices, tutorials) is available on the Oracle Technology Network at www.oracle.com/technology.

4

Creating and Maintaining End User Layers

This chapter explains how you create and maintain End User Layers using Discoverer Administrator, and contains the following topics:

- "What is an End User Layer?"
- "Why is the End User Layer useful?"
- "What are End User Layer owners?"
- "What privileges do you require to create an End User Layer in an Oracle database?"
- "What privileges do you require to create an End User Layer in a non-Oracle database?"
- "What privileges do you require to maintain an End User Layer?"
- "What is the EUL Gateway?"
- "How to create an End User Layer for an existing database user"
- "How to create an End User Layer in a new database user"
- "How to delete an End User Layer"
- "How to view or change the default End User Layer"
- "About copying EULs and EUL objects by exporting and importing"
- "Which export/import method to use"
- "How to export the entire EUL using the Discoverer Export Wizard"
- "How to export selected business areas using the Export Wizard"
- "How to export selected EUL objects using the Export Wizard"
- "How to export End User Layer objects using the Discoverer command-line interface"
- "How to import End User Layer objects using the Discoverer command-line interface"
- "How to export an EUL using the standard database export utility"
- "How to import an EUL using the standard database import utility"
- "How to import EUL objects from a file using the Import Wizard"
- "Notes about EUL creation and maintenance"

What is an End User Layer?

The End User Layer (EUL) is the metadata (that is, data about the actual data in a database) that is simple and easy for Discoverer end users to understand. You use Discoverer Administrator to create, customize, and maintain this view for your users so they can easily access data in Discoverer. You must have access to at least one EUL to use Discoverer. Access is granted using the Privileges dialog, described in Chapter 7, "Controlling Access to Information".

Why is the End User Layer useful?

The EUL insulates Discoverer end users from the complexity usually associated with databases. It provides an intuitive, business-focused view of the database using terms that Discoverer end users are familiar with and can understand easily. The EUL enables Discoverer end users to focus on business issues instead of data access issues.

- What does the EUL contain?

  The EUL contains the metadata that defines one or more business areas. A business area is a conceptual grouping of tables or views that apply to a user's specific data requirements. Business areas can be set up to reflect the needs of the user or group of users accessing the EUL.

  For example, an accounting department might have an accounting business area that represents data about budgets and finance, while project leaders in an engineering department might have a business area specifically for projects requiring budget information. Although some of the columns may be the same, the exact combination of tables and views for each department may be different.

- Discoverer creates the EUL tables

  The EUL Manager dialog enables you to create or delete the set of tables that make up an EUL.

  When a Discoverer manager defines folders and items in a business area using Discoverer Administrator, Discoverer generates the appropriate SQL statements (that define the selections from a table, view, or column) and stores them in the EUL tables. When a Discoverer end user executes a query (in Discoverer Plus or Discoverer Viewer), Discoverer generates the corresponding SQL statement and sends it to the database, which in turn returns the results to display in Discoverer. The Discoverer end user does not have to understand any SQL to access, analyze, and retrieve data. It is all handled by Discoverer.

- Discoverer exports/imports EUL objects

  You can export EUL objects (for example, business areas, workbooks, folders, items) from one database and import them into another database. For example, you might want to move EUL objects when transitioning from a development environment to a production environment.

  You can import and export EULs and EUL objects in the following ways:

  - using the Discoverer Export Wizard and Import Wizard
  - using the Discoverer command-line interface
  - using the standard database export/import commands

  For more information, see "Which export/import method to use".

Notes

- The EUL preserves the database's data integrity. Nothing that you or the Discoverer end user does with Discoverer affects the application data in the database; Discoverer only affects the metadata held in the EUL. There are however, certain PL/SQL functions that can affect the data in the database (for more information, see your database administrator).
- Although it is possible to edit EUL tables (for example, by using SQL*Plus), Oracle is unable to support such edits, and therefore recommends that you do not attempt to make edits to EUL tables.
- You can migrate Discoverer EUL metadata for use in Oracle Business Intelligence Enterprise Edition (version 10.1.3.4 and later). For more information, see the Oracle Business Intelligence Enterprise Edition documentation on Oracle Technology Network at http://www.oracle.com/technology.

What are End User Layer owners?

An End User Layer (EUL) owner is the database user that an EUL is created for.

A database user can only own one EUL. If you are connected to your own EUL and you attempt to create a new one, Discoverer Administrator prompts you to delete your existing EUL. If you create an EUL for a database user that already owns an EUL, Discoverer Administrator prompts you to delete the existing EUL before creating the new one.

The EUL owner maintains and modifies their own EUL and can grant access to the EUL to other users. Depending on the privileges given to the other users, those users can use and make changes to the EUL.

When you create an EUL, you specify who has access to it, as follows:

- every user in the database (PUBLIC access)
- only the EUL owner (PRIVATE access)

Note: It is recommended that you specify PRIVATE access, where security is an issue. You can subsequently define business area access and privileges for users and roles as required.

To change access to an existing EUL, you must be logged in as the owner of the EUL or as a user who has the following Discoverer task privileges:

- Administrator
- Set Privileges

For more information, see Chapter 7, "Controlling Access to Information".

What privileges do you require to create an End User Layer in an Oracle database?

To create an End User Layer in an Oracle database, the database user that the EUL is being created in must have the following database privileges:

- CREATE SESSION
- CREATE TABLE
- CREATE VIEW
- CREATE SEQUENCE

- CREATE PROCEDURE

The database user must also have the following specified:

- a default tablespace (this must not be a temporary tablespace)
- a quota set in the default tablespace (recommended minimum is 3MB)

  For more information about the default tablespace, see "Create EUL Wizard: Step 2 dialog".

If you run Discoverer against an Oracle Enterprise Edition database, the database user requires further privileges to make use of Discoverer's manual summary management and Automated Summary Management (ASM) functionality. For more information, see:

- "What are the prerequisites for creating summary folders with ASM?"
- "What are the prerequisites for creating summary folders manually in Discoverer?"

The EUL Manager dialog enables you to:

- create an EUL for an existing Oracle database user (if the database user meets the above conditions)
- create an EUL for a new Oracle database user, provided you (the user creating the new user) have the following database privileges:
  - CREATE SESSION
  - CREATE USER
  - GRANT ANY PRIVILEGE
  - ALTER USER

  Note: The above privileges are all you require to create a new EUL for a new database user. You can connect to Discoverer Administrator as a database user with only these privileges and create a new EUL in a new database user.

  If you create an EUL for a new Oracle database user, Discoverer grants the necessary privileges and sets the default tablespace and quota.

  When you create a new database user (EUL owner) in Discoverer Administrator, Discoverer also grants the CREATE ROLE privilege, to enable the database user to create database roles (outside Discoverer). The database roles created outside Discoverer will enable the Administrator (within Discoverer) to define security configurations using those roles. The DBA will associate security access to the underlying tables through the Roles you have created. Hence security is not compromised by allowing a Discoverer EUL owner the privilege to create roles.

What privileges do you require to create an End User Layer in a non-Oracle database?

To create an End User Layer for a non-Oracle database user, the database user must have the following database privileges:

- CREATE SESSION (use your database's equivalent for this Oracle term)
- CREATE TABLE
- CREATE VIEW

Discoverer Administrator does not enable you to create new users for non-Oracle databases.

What privileges do you require to maintain an End User Layer?

You can maintain EULs in Discoverer Administrator if your database user has the Administration privilege.

To apply the Administration privilege to a database user, see "How to specify a user or role (responsibility) to perform a specific task".

What is the EUL Gateway?

The EUL Gateway provides a way for Discoverer to populate an EUL with metadata from another source. The EUL Gateway allows metadata defined in another tool or application to be loaded directly into the EUL.

To set up an EUL Gateway see the document `eulgatew.doc` located in the `<ORACLE_HOME>\discoverer\kits directory`.

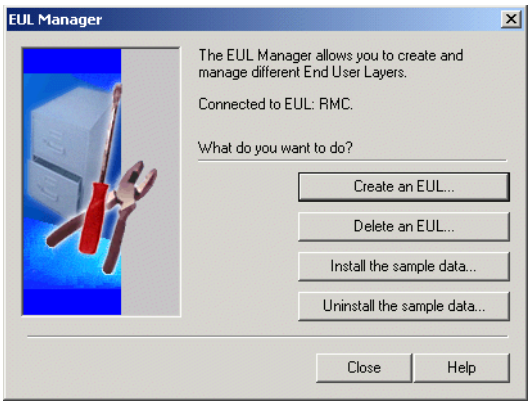
For information about loading a business area from the EUL Gateway see "How to create a business area using the Load Wizard".

How to create an End User Layer for an existing database user

To create an EUL for an existing database user:

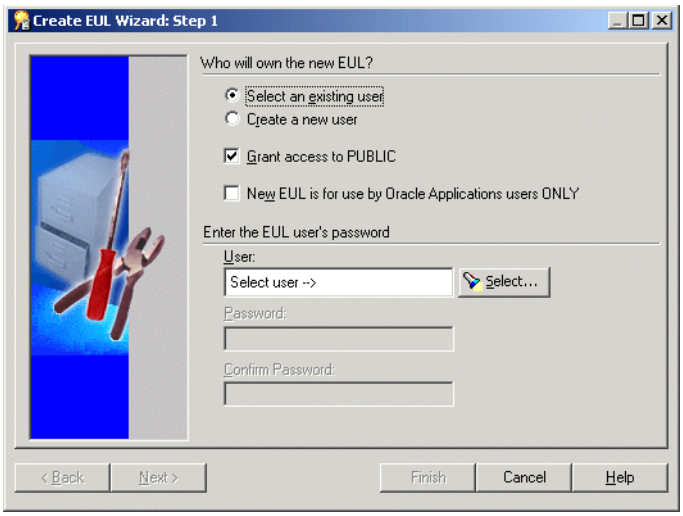
1. Choose Tools | EUL Manager to display the "EUL Manager dialog".

Figure 4–1 EUL Manager dialog



2. Click Create an EUL to display the "Create EUL Wizard dialog".

Figure 4–2 Create EUL Wizard Step 1 dialog



3. Select the **Select an existing user** option.
4. Select or clear the **Grant access to PUBLIC** check box as required:
   - select this check box to enable all users in the current database to access the new EUL
   - clear this check box to enable only the EUL owner to view data through the new EUL

   Note: It is recommended that you clear this check box where security might be an issue.
5. Select or clear the **New EUL is for use by Oracle Applications users ONLY** check box as required:
   - select this check box to restrict the new EUL to Oracle Applications users only (for more information about Applications Mode EULs, see Chapter 17, "Using Discoverer with Oracle Applications")
   - clear this check box to create a standard EUL

   Note: The choice that you make here is final. You cannot change a standard EUL into an Oracle Applications EUL (and vice versa).
6. Click the Select button to display the "Select User/Role dialog" where you search for, and select, the database user that you want to own the new EUL.
7. If you specified a database user other than the current user to be the EUL owner, you must specify the database user's password.

   Passwords are case-sensitive in Oracle databases (Enterprise Edition release 11.1 or later).
8. Click Finish.

   Discoverer Administrator displays the Creating EUL progress bar and creates a new EUL for the specified database user.

   When the new EUL has been created, Discoverer gives you the option to install the Discoverer sample data in the new EUL. For more information, see Chapter 27, "Installing the Discoverer Sample Data EUL, Data, and Workbook"

How to create an End User Layer in a new database user

Note: This feature is not available with non-Oracle databases. If you are using a non-Oracle database, ask your database administrator to create the necessary user IDs on the database.

For more information about the privileges required to create an EUL in a new database user, see "What privileges do you require to create an End User Layer in an Oracle database?".

To create an EUL in a new database user:

1. Choose Tools | EUL Manager to display the "EUL Manager dialog".
2. Click Create an EUL to display the "Create EUL Wizard dialog".
3. Select the **Create a new user** option.

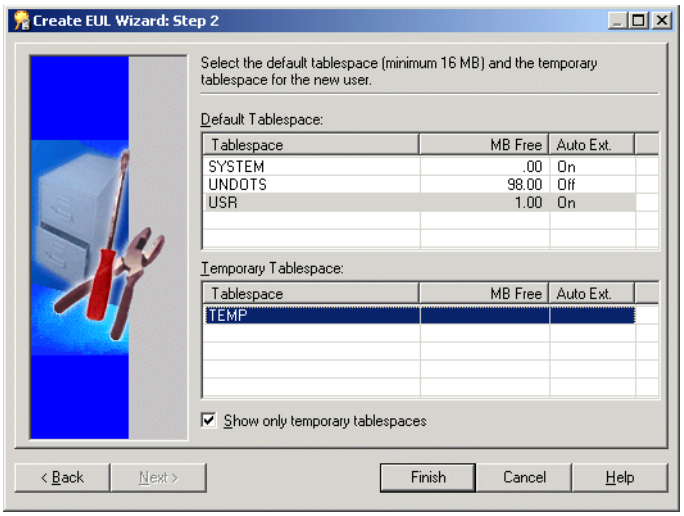
   If the **Create a new user** option is unavailable, contact your database administrator to grant the CREATE USER privilege (for more information, see "What privileges do you require to create an End User Layer in a non-Oracle database?").
4. Select or clear the **Grant EUL access to PUBLIC** check box as follows:
   - select this check box to enable all users in the current database to access the new EUL
   - clear this check box to enable only the EUL owner to view data through the new EUL

   Note: It is recommended that you clear this check box where security might be an issue.
5. Select or clear the **New EUL is for use by Oracle Applications users ONLY** check box as follows:
   - select the check box to restrict the new EUL to Oracle Applications users only (for more information about Applications Mode EULs, see "What are Oracle Applications?")
   - clear the check box to create a standard EUL

   Note: The choice that you make here is final. You cannot change a standard EUL into an Oracle Applications EUL (and vice versa).
6. Specify a name for the new database user in the **User** field.
7. Specify a password for the new database user in the **Password** field.

   Passwords are case-sensitive in Oracle databases (Enterprise Edition release 11.1 or later).
8. Specify the new database user's password again in the **Confirm Password** field.
9. Click Next to display the "Create EUL Wizard: Step 2 dialog".

Figure 4–3 Create EUL Wizard Step 2 dialog



10. Specify the default and temporary tablespaces for the new database user.

    If you are unsure which to choose, see your database administrator. For more information, see the "Create EUL Wizard: Step 2 dialog".

11. Click Finish.

    Discoverer Administrator displays the Creating EUL progress bar and creates a new database user and new EUL in that database user.

    When the new database user and EUL have been created, Discoverer gives you the option to install the Discoverer sample data in the new EUL. For more information, see Chapter 27, "Installing the Discoverer Sample Data EUL, Data, and Workbook".

How to delete an End User Layer

You might want to delete an EUL for several reasons. For example, it might be an old or a test EUL.

Note: You must connect as the owner of the EUL that you want to delete.

To delete an EUL:

1. Choose File | Connect to display the "Connect dialog".
2. Specify the username, password, and TNS alias for the owner of the EUL that you want to delete, and click Connect to display the "Load Wizard: Step 1 dialog".
3. Click Cancel to close the Load Wizard.
4. Choose Tools | EUL Manager.
5. Click Delete an EUL to display the "Delete EUL dialog".

   Discoverer prompts you to confirm that you want to delete the current EUL.
6. Make sure that the EUL specified in the **EUL** field is the one you want to delete and click OK.

   If the EUL name displayed is incorrect, go back to Step 2 and use the correct TNS alias to connect as the EUL owner.

When you click OK, Discoverer prompts you to confirm that you want to delete all EUL tables. This will delete all EUL information and workbooks in the database. This will also remove all summary data and information.

7. Click Yes to continue.
8. Click OK to delete the EUL.

   Discoverer deletes the EUL objects for the current database user.

How to view or change the default End User Layer

You can view or change which EUL is the default EUL for the current database user (that is, the EUL used when the current database user connects to Discoverer Administrator).

Note: You can only select an alternative EUL if the database user has access to more than one EUL.

To view or change the default EUL:

1. Choose Tools | Options | Default EUL tab to display the "Options dialog: Connection tab".
2. (optional) Click the EUL that you want to use next time you connect as the current database user and click OK.

About copying EULs and EUL objects by exporting and importing

Typically, you will want to:

- backup or archive EULs
- distribute EULs to other locations
- copy business areas between EULs (for more information, see "How to copy business areas between EULs")
- copy EUL objects (for example, business areas, folders, hierarchies, calculations) from one EUL to another
- apply patches to a production environment

There are several different ways to copy EULs and EUL objects, depending on whether you want to:

- copy specified EUL objects into another EUL
- copy an entire EUL and re-create it as a new EUL
- copy the database user that is the EUL owner

In all these cases, you perform an export operation followed by an import operation. For more information, see "Which export/import method to use".

If you use Discoverer Administrator to export EULs or EUL objects, you will create a Discoverer EUL export file (with an EEX suffix). Having created an EEX file, you can then use Discoverer Administrator to import the EEX file.

Note that you can import EEX files:

- that have been exported from Discoverer Release 3.1 and earlier (these EUL export files are standard text files)

- that have been exported from Discoverer Release 4.1 and later (these EUL export files are in XML format, although they still have an EEX extension)

Which export/import method to use

To copy EUL objects between EULs you first export the EUL objects to a file, then import them into a new EUL or new database.

You copy EUL objects between EULs using

- the Discoverer Export Wizard and Import Wizard (for more information, see "About using the Discoverer Export Wizard and Import Wizard")
- the Discoverer command-line interface (for more information, see "About using Discoverer command-line interface to export/import EUL objects")
- the standard database export/import commands (for more information, see "About using database export/import commands to export/import complete EUL")

About using the Discoverer Export Wizard and Import Wizard

You use the Discoverer Export Wizard to export EUL objects to an EUL export file (with a suffix EEX). Having exported the objects, you can then import the EEX file using the Discoverer Import Wizard.

The EUL objects that you export (to an EEX file) include business areas, folders, item hierarchies, date hierarchies, item classes, workbook definitions (created in Discoverer Desktop and Discoverer Plus), PL/SQL function registration information, summary folders, and the automated summary management (ASM) policy.

See the following topics for information about exporting and importing EUL objects by using the Discoverer user interface:

- "How to export the entire EUL using the Discoverer Export Wizard"

  Use this option to export an entire EUL to a file when you want to copy objects from the EUL into a new EUL or to create a backup.

- "How to export selected business areas using the Export Wizard"

  Use this option when you want to use the export file to update an existing EUL with selected business areas.

- "How to export selected EUL objects using the Export Wizard"

  Use this option when you want to use the export file to update an existing EUL with selected EUL objects. For example, when applying a minor change to a production business area.

- "How to import EUL objects from a file using the Import Wizard"

  Use this option to import EUL objects (for example, business areas, folders, hierarchies, calculations) from one EUL, to reuse them in another EUL.

Note: The Export Wizard does not export the database, EUL tables, or database objects referenced by the EUL. To export these objects, you must follow the steps in "How to export an EUL using the standard database export utility".

About using Discoverer command-line interface to export/import EUL objects

You use the Discoverer command-line interface to export/import EUL objects without using the Discoverer user interface. For more information about the Discoverer command-line interface, see "What is the Oracle Business Intelligence Discoverer command-line interface?".

See the following topics for information about exporting and importing EUL objects by using the Discoverer command-line interface:

- "How to export End User Layer objects using the Discoverer command-line interface"

  Use this option to copy EUL objects from one database to another by exporting them to a Discoverer export file (.EEX) and then importing the EEX file to another database using the command-line interface.

- "How to import End User Layer objects using the Discoverer command-line interface"

  Use this option to import EUL objects into a new database.

Note: The Discoverer command-line interface export facility does not export the database, EUL tables, or database objects referenced by the EUL definitions. To export these objects, you must follow the steps in "How to export an EUL using the standard database export utility".

About using database export/import commands to export/import complete EUL

You use standard database export/import commands to export/import the database, EUL tables and database objects referenced by the EUL definitions.

Use the following tasks to export/import EULs between users:

- "How to export an EUL using the standard database export utility"

  Use this option to export an entire EUL to a database dump file (.DMP) when you want to an EUL into a new user or to create a backup.

- "How to import an EUL using the standard database import utility"

  Use this option to import the EUL business areas, EUL tables and saved workbooks from a database dump file (.DMP) into a new EUL owner.

How you export or import an EUL depends on:

- the version of the Oracle client software installed on your machine
- the version of the Oracle database on which the EUL resides

We recommend that the version of the Oracle database and the version of the Oracle database client software installed on your machine are the same. If the versions are not the same (for example, if the EUL is on an Oracle9*i* database and Oracle10*g* client software is installed on your machine), you might not be able to follow the instructions below. If you are unable to export the EUL, contact your database administrator and ask them to export the EUL for you.

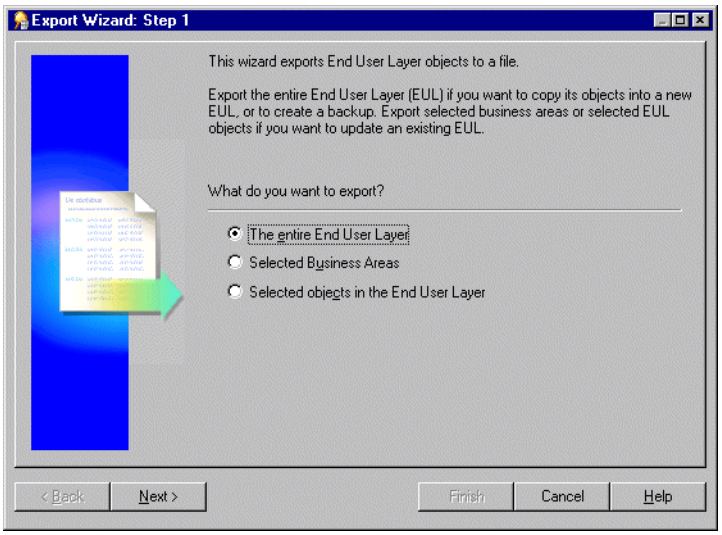
How to export the entire EUL using the Discoverer Export Wizard

Use this option to export an entire EUL to a file when you want to copy objects from the EUL into a new EUL or to create a backup.

To export the entire EUL using the Discoverer Export Wizard:

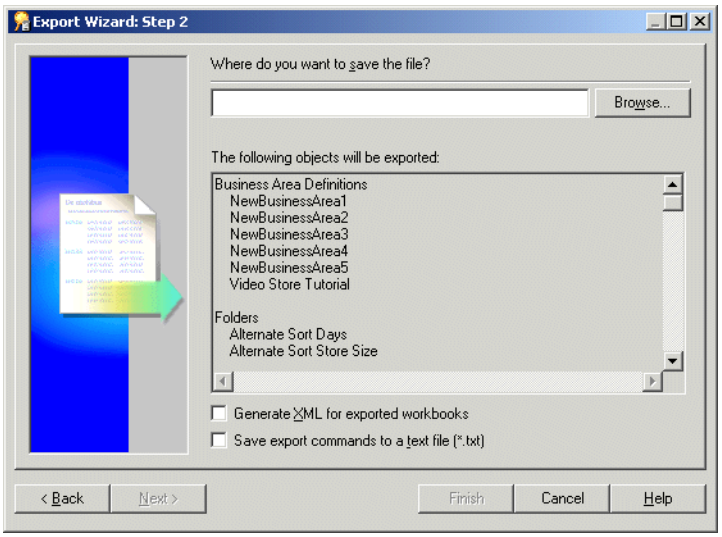
1. Choose File | Export to display the "Export Wizard Step 1 dialog".

Figure 4–4 Export Wizard: Step 1 dialog



2. Select the **The entire End User Layer** option and click Next to display the "Export Wizard: Step 2/3 dialog".

Figure 4–5 Export Wizard: Step 2 dialog



You use the above dialog to specify a name and location for the export file.

3. Click Browse to display the Save As dialog.

   Browse for the location to save the EUL export file.

4. Enter a suitable name for the exported EUL.

5. (optional) Select the **Generate XML for exported workbooks** check box to save any workbook definitions in XML format.

   Note: The export file (*.EEX) is always in XML format but workbooks by default are saved inside it as a binary to save space and time. Select this check box to save the workbook definitions additionally as XML inside the export file.

6. (optional) Select the **Save export commands to a text file (*.txt)** check box to save the export commands that created this export to a text file.

   This creates an additional file containing the commands used to create this export and applies the file extension `txt`. This file can then be used with the command-line interface (for further information about the command-line interface, see Chapter 22, "Discoverer Command-line Interface").

7. Click Finish to create the export file (and any additional files selected) in the specified location and display the Export Log.

Figure 4–6 Export Log dialog

   The Export Log displays information about what has been exported.

8. (optional) Click Save to specify a name and location to save the Log file.

9. Click Close to finish.

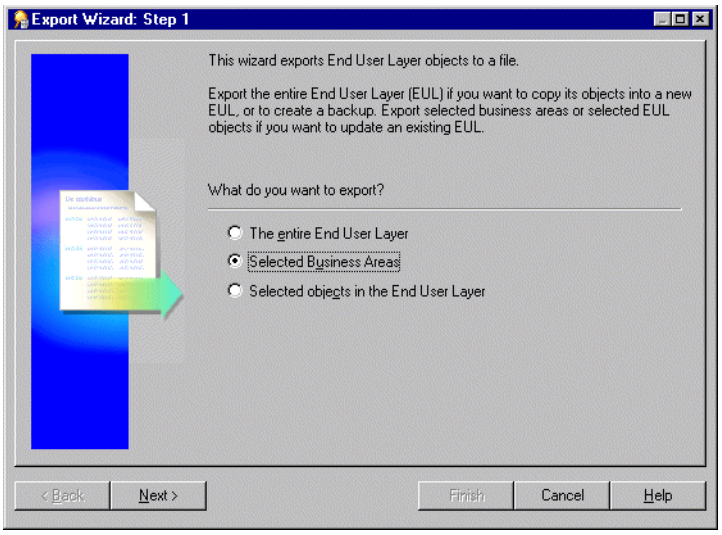
How to export selected business areas using the Export Wizard

Use this option when you want to use the export file to update an existing EUL with selected business areas.

To export the selected business areas using the Export Wizard:

1. Choose File | Export to display the "Export Wizard Step 1 dialog".

Figure 4–7 Export Wizard Step 1 dialog



2. Select the **Selected business areas** option and click Next to display the "Export Wizard: Step 2 dialog (to export selected business areas)".
3. Move the business areas that you want to export from the Available list to the Selected list.

   You can select more than one business area at a time by holding down the Ctrl key and clicking another business area.
4. Click Next to display the "Export Wizard: Step 2/3 dialog".
5. Click Browse to display the Save As dialog.

   Browse for the location to save the business area export file.
6. Enter a suitable name for the exported business area.
7. (optional) Select the **Generate XML for exported workbooks** check box to save any workbook definitions in XML format.
8. (optional) Select the **Save export commands as a text file (*.txt)** check box to save the export commands that created this export to a text file.

   This creates an additional text file containing the commands used to create this export and applies the file extension `txt`. This file can then be used with the command-line interface (for further information about the command-line interface, see Chapter 22, "Discoverer Command-line Interface").
9. Click Finish to create the export file (and any additional files selected) in the specified location and display the Export Log.

Figure 4–8 Export Log dialog

The Export Log displays information about what has been exported.

10. (optional) Click Save to specify a name and location to save the Log file.
11. Click Close to finish.

Note: If you are copying business areas between EULs, continue with step 2 of the task, "How to copy business areas between EULs".

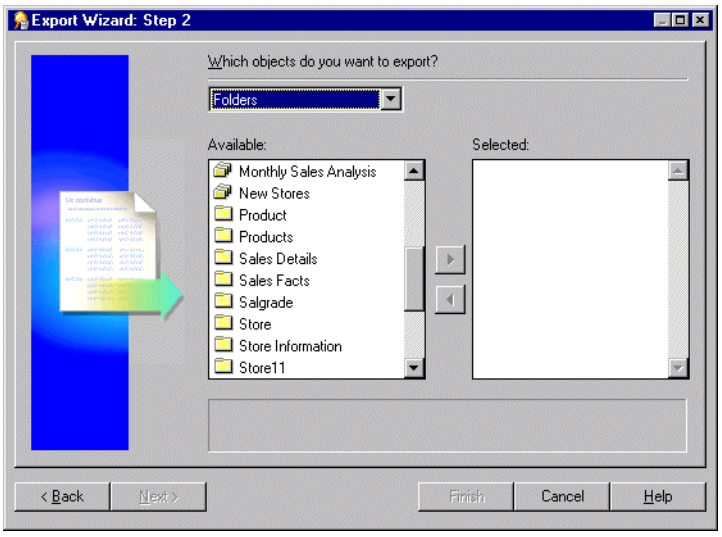
How to export selected EUL objects using the Export Wizard

Use this option when you want to use the export file to update an existing EUL with selected EUL objects. For example, when applying a minor change to a production business area.

To export the selected objects using the Export Wizard:

1. Choose File | Export to display the "Export Wizard Step 1 dialog".
2. Select the **Selected Objects in the End User Layer** option and click Next to display the"Export Wizard: Step 2 dialog (to export selected objects)".

Figure 4–9 Export Wizard: Step 2 dialog



3. Use the **Which objects do you want to export?** drop down list to display the EUL object types that you want to export to a file.

   For example, folders, item classes and item hierarchies.

   Note: If you select a business area above, Discoverer exports just the definition of the business area and not its folders and items. To export business area folders and items, you must select them explicitly.

4. Move the object that you want to export from the **Available** list to the **Selected** list.

   You can select more than one object at a time by holding down the Ctrl key and clicking another object.

5. Click Next to display the "Export Wizard: Step 2 dialog (to export selected business areas)".

6. Click Browse to display the Save As dialog.

   Browse for the location to save the export file.

7. Enter a suitable name for the exported objects.

8. (optional) Select the **Generate XML for exported workbooks** check box to save any workbooks in XML format.

9. (optional) Select the **Save export commands as a text file (*.txt)** check box to save the export commands that created this export to a text file.

   This creates an additional text file containing the commands used to create this export and applies the extension `txt`. This file can then be used with the command-line interface (for further information about the command-line interface, see Chapter 22, "Discoverer Command-line Interface").

10. Click Finish to create the export file (and any additional files selected) in the specified location and display the Export Log.

Figure 4–10 Export Log dialog

   The Export Log displays information about what has been exported.

11. (optional) Click Save to specify a name and location to save the Log file.

12. Click Close to finish.

How to export End User Layer objects using the Discoverer command-line interface

Use this option to copy EUL objects typically from one database to another, by exporting them to a Discoverer export file (.EEX) and then importing the EEX file (possibly to another database) using the command-line interface. This is the first of two tasks that enable you to copy EUL objects. You must complete this export task before you can import the EUL objects.

To export EUL objects using the Discoverer command-line interface:

1. Use the Discoverer command-line interface /export option to export the required EUL objects to a Discoverer export file (.EEX).

   For example, to export the Video Store Tutorial business area and two workbooks ("Vidstr5 Video Tutorial Workbook" and "Vidaf5 Analytic Function Examples") to the vidstr.eex file, you might type the following:

   ```
   D:\orant\bin\dis51adm.exe /connect eulowner/eulowner@orcl.world /export
    "D:\vidstr.eex" "Video Store Tutorial" /workbook "Vidstr5 - Video Tutorial
    Workbook" /workbook "Vidaf5 - Analytic Function Examples"
   ```

   For more information about exporting EUL objects using the Discoverer command-line interface, see "/export (EUL objects)".

Note: To copy the EUL objects back into a database, see "How to import End User Layer objects using the Discoverer command-line interface".

How to import End User Layer objects using the Discoverer command-line interface

Use this option to import EUL objects, possibly into a new database. Before you can complete this task you must export the EUL objects to a Discoverer export file (.EEX) (for more information, see "How to export End User Layer objects using the Discoverer command-line interface"). This is the second of two tasks enabling you to copy EUL objects.

To import End User Layer objects using the Discoverer command-line interface:

1. Use the Discoverer command-line interface /import option to import the EUL objects into the new EUL owner.

   For example, to import the vidstr.eex file, created above you might type the following:

   ```
   D:\orant\bin\dis51adm.exe /connect eulowner/eulowner@orcl.world /import
    "D:\vidstr.eex"
   ```

   For more information about importing EUL objects using the Discoverer command-line interface, see "/import (EUL objects)".

How to export an EUL using the standard database export utility

Use this option to export all business areas, EUL tables and saved workbooks to a database dump file (.DMP).

To export an EUL using the standard database export utility (assuming the EUL resides on an Oracle database (version 9.2.0.7 or later), and you are using a machine on which you have installed Oracle Developer Suite):

1. Display a command-line window (for example, by choosing Command Prompt from the Windows Start menu).
2. Navigate to the location where you want to export the EUL.
3. Type the following command:

   ```
   exp <eulowner>/<password>@<dbname> file=<filename.dmp> owner=<eulowner>
   ```

   For example, to export an EUL owned by a database user hrmgr to a file hreul.dmp, you would type the following:

   ```
   exp hrmgr/hrpswrd@HRDB file=hreul.dmp owner=hrmgr
   ```

   The EUL tables (and associated synonyms, views, and other definitions) are exported to the specified dmp file in the D:\ORACLE10 directory.

   When the export is complete, Discoverer displays the following message:

   Export terminated successfully without warnings.
4. Close the command-line window.

Having exported the EUL, you are now ready to import it into a new database user.

How to import an EUL using the standard database import utility

Use this option to import the EUL business areas, EUL tables and saved workbooks from a database dump file (.DMP) into a new EUL owner on the new database.

Note: It is recommended that this database user owns no other tables.

To import an EUL using the standard database import utility (assuming the EUL resides on an Oracle database (version 9.2.0.7 or later) and you are using a machine on which you have installed Oracle Developer Suite):

1. Display a command-line window (for example, by choosing Command Prompt from the Windows Start menu).
2. Navigate to the location where you want to import the EUL.
3. Type the following command:

   ```
   imp <eulowner>/<password>@<dbname> file=<filename.dmp> fromuser=<old_eul
   _owner> touser=<new_eul_owner>
   ```

   For example, to import an EUL owned by a database user hrmgr from a file hreul.dmp into a new user hrmgr2, you would type the following:

   ```
   imp hrmgr2/hrpswrd@HRDB file=hreul.dmp fromuser=hrmgr touser=hrmgr2
   ```

   The EUL tables (and associated synonyms, views, and other definitions) are imported from the specified dmp file in the D:\ORACLE10 directory.

   When the import is complete, Discoverer displays the following message:

   Import terminated successfully without warnings.
4. Close the command-line window.

   Note: Discoverer recognizes EULs using unique reference numbers. However, if you use the database export and import utilities to copy an EUL, the new EUL (including its reference number) will be identical to the original EUL. When EULs have the same reference number, EUL consistency issues can arise if you do both of the following:

- if you modify objects in both the original EUL and in the new EUL
- having modified objects in both EULs, if you then attempt to copy objects between the two EULs using the Discoverer Export Wizard and Import Wizard (or the Discoverer /export and /import commands)

To avoid potential EUL consistency issues, run the eul5_id.sql script as the owner of the new EUL. The eul5_id.sql script gives a new reference number to the new EUL and thereby avoids any potential EUL consistency issues.

5. Follow the instructions below to run the eul5_id.sql script:

   a. Start SQL*Plus (if it is not already running) and connect as the owner of the new EUL.

      For example, if SQL*Plus is already running, you might type the following at the command prompt:

      ```
      SQL> connect hrmgr2/hrmgr2@database;
      ```

      where hrmgr2 is the EUL owner and hrmgr2 is the EUL owner's password.

   b. Run the eul5_id.sql script.

      For example, you might type the following at the command prompt:

      ```
      SQL> start d:\<ORACLE_ HOME>\discoverer\util\eul5_id.sql
      ```

      where <ORACLE_HOME> is where Discoverer Administrator is installed.

      The eul5_id.sql script gives a new unique reference number to the new EUL and thereby avoids any potential EUL consistency issues.

   c. Exit the SQL*Plus session.

Notes

- Information in the EUL identifies the owner of summary tables. When you export an EUL containing summary tables from one database user and import it into a different database user, the second database user will become the owner of the summary tables. Therefore, you will need to update the EUL summary table ownership information.

  To update summary table ownership information, run the eulsown.sql script located in the <ORACLE_HOME>\discoverer\util directory. When you run the script, you will be prompted for the name of the previous summary table owner and the name of the new summary table owner.

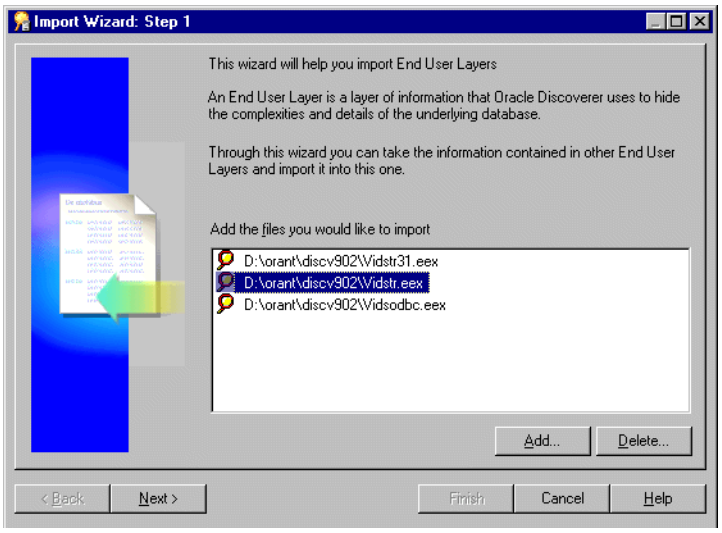
How to import EUL objects from a file using the Import Wizard

Use this option to import EUL objects (for example, business areas, folders, hierarchies, calculations) from one EUL, to reuse them in another EUL. You use an export file (.EEX) to update an existing EUL with selected EUL objects. For example, when applying a change to a production business area. For more information about exporting EUL objects, see "About copying EULs and EUL objects by exporting and importing".

To import EUL objects from a file using the Import Wizard:

1. Choose File | Import to display the "Import Wizard: Step 1 dialog".

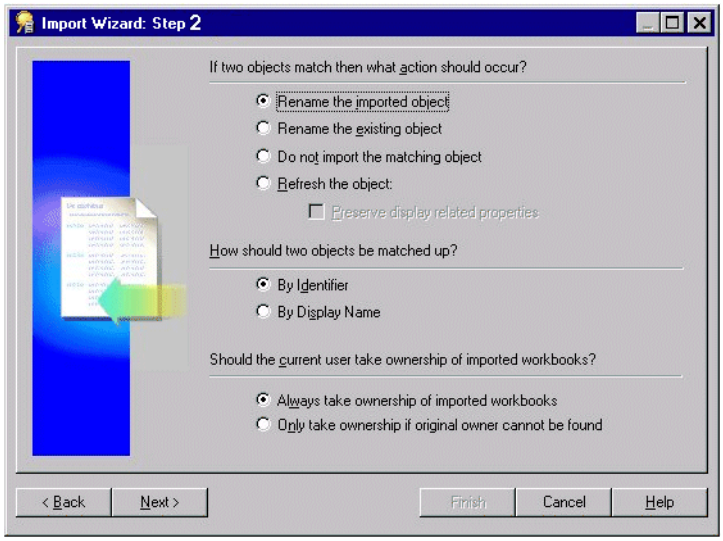
Figure 4–11 Import Wizard: Step 1 dialog



2. Click Add to display the Open dialog.
3. Locate and select one or more import files and click Open to return to the "Import Wizard: Step 1 dialog".

   Selected files appear in the Import File list.
4. Click Next to display the "Import Wizard: Step 2 dialog".

Figure 4–12 Import Wizard: Step 2 dialog

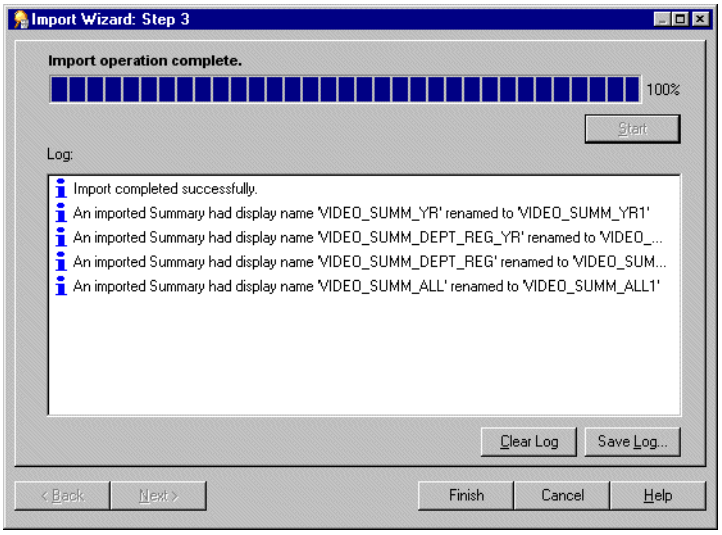


   This dialog enables you to specify how Discoverer Administrator processes matching objects from another EUL. For more information about matching objects from another EUL, see "What are identifiers?".
5. Specify what action should occur if two objects match.

   An object means any EUL object, for example, folder, item, calculated item.
6. Specify whether to preserve display related properties (only available if the **Refresh the object** option is selected).

7. Specify how you would like objects to be matched up.
8. Specify whether the current user should take ownership of imported workbooks.
9. Click Next to display the "Import Wizard: Step 3 dialog,".

Figure 4–13 Import Wizard: Step 3 dialog



This dialog enables you to start the import and monitor its status as each EUL object is processed.

10. Click Start to begin the import.

    Tip: You can stop the import at any point by clicking Cancel. For example, you might want to stop the import if there are warning messages in the Import Log.

11. (optional) After a completed import, click Save log... to save the status information to a text file in a specified location.
12. Click Finish to close the "Import Wizard: Step 3 dialog,".

Notes

- If you perform a complete import, the Data tab in the Workarea is updated to reflect the EUL objects imported, according to the match options that you have chosen.
- During the import of an EEX file where Discoverer Administrator cannot find joined folders a warning message is displayed in the Import Log dialog (for more information about exporting EUL objects and joins see "/export (EUL objects)".

Notes about EUL creation and maintenance

This section contains the following notes about EUL creation and maintenance:

- "What are identifiers?"
- "What are the space requirements and storage parameters for a typical EUL?"
- "What is a suggested workflow for initial EUL development and ongoing maintenance?"
- "Using the Discoverer workbook dump utility"

- "About creating EULs in Logical and Physical Standby (or read-only) databases"

What are identifiers?

Identifiers are unique names that Discoverer Administrator uses to identify unique EUL objects (and workbook objects in Discoverer Plus and Discoverer Viewer).

Discoverer Administrator uses identifiers to recognize when an object imported from another EUL refers to the same business object in the EUL you are importing into. Identifiers enable customized (or patched) EUL objects to be preserved. For example, a folder named Sales in EUL A may refer to the same folder named Sales Figures in EUL B. Both folders have the same identifier and can therefore be recognized as referring to the same EUL object.

Identifiers are visible in Discoverer Administrator but are hidden from Discoverer Plus users.

Typically, you will never need to alter an identifier. Indeed, changing identifiers is not advisable because it can affect the relationships between EUL objects. However, in some cases you might want to modify identifiers. For example, you might want to modify identifiers:

- to comply with strict naming conventions
- to re-create an object with a specific identifier because the object was incorrectly deleted from the EUL and must be re-created with the same identifier

In a future release of Discoverer, there will be a change to the valid characters that can be used in identifiers. The following characters will continue to be supported for use in identifiers in future releases of Discoverer:

- the letters A to Z in upper case
- the letters a to z in lowercase
- the numbers 0 to 9
- the underscore character (_)

However, the following characters will be de-supported in future releases of Discoverer:

- the exclamation mark (!)
- the tilde symbol (~)
- the asterisk symbol (*)
- the left and right parentheses characters: （ and ）
- the single quotation mark (’)
- the hyphen character (-)

For this release:

- if you create an identifier that contains a de-supported character, a warning will appear
- if you import an EEX file that has identifiers that contain de-supported characters, a warning will appear in the import log
- if you upgrade an EUL that has identifiers that contain de-supported characters, messages will be displayed indicating the identifiers that contain the invalid characters

You do not need to modify any identifiers that use de-supported characters, Discoverer will automatically modify these identifiers to make them valid in future releases.

Note: To locate the identifier of a workbook or worksheet in Discoverer Plus, see the *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Plus.*

What are the space requirements and storage parameters for a typical EUL?

The minimum default tablespace of 3MB suggested in the "Create EUL Wizard: Step 2 dialog" is based upon storage parameters that the EUL specifies when creating database objects for the EUL. If you install the tutorial, the figure of 3MB will be exceeded.

A newly created EUL has the following space requirements:

- approximately 2.8MB without tutorial data
- approximately 3.8MB with tutorial data

The amount of space that is actually used will depend on other factors, including the block size specified for the tablespace in which the EUL is created.

As an approximate guide, adding a typical business area to an EUL will increase the size of the EUL by 1MB. The more complicated the business area (for example, the more summary folders and complex items it contains), the more space the business area will require.

A default tablespace of 10-20MB will be adequate under normal conditions, but the amount of default tablespace required is determined by the amount of metadata that defines your EUL. Therefore, the default tablespace required could be larger, or smaller than the amount available in the tablespace that you select.

The database table storage parameters for EUL tables are as follows:

- EUL5_DOCUMENTS and EUL5_QPP_STATS are created with the following storage parameters:

```
STORAGE  (
    INITIAL  1064960
    NEXT  1024000
    PCTINCREASE  0
    )
```

- all other EUL tables are created with the following storage parameters:

```
STORAGE  (
    INITIAL  1064960
    NEXT  81920
    PCTINCREASE  0
    )
```

The database index storage parameters for EUL indexes are as follows:

```
STORAGE  (
    INITIAL  4096
    NEXT  8192
    PCTINCREASE  0
    )
```

There are two factors that might cause the EUL to use up more space:

- block size

Discoverer specifies an initial extent of 4096 for indexes, but the server will always allocate a minimum of two blocks for any segment. Therefore, if the block size is greater than 2k the indexes will take up more space than Discoverer calculates.

- tablespace minimum extent setting

  When a tablespace is created it is possible to specify the minimum extent for any extent created. This minimum size overrides the initial extent size if it is greater and therefore causes the EUL objects to use up more space than Discoverer calculates.

What is a suggested workflow for initial EUL development and ongoing maintenance?

There are typically three steps in the EUL creation and maintenance lifecycle:

- "Step 1: Prototype and design a new EUL in a development environment"
- "Step 2: Move the new EUL from a development environment to a production environment"
- "Step 3: Modify the EUL to meet new requirements"

Step 1: Prototype and design a new EUL in a development environment

As the Discoverer manager, you would usually want to create the first cut of a new EUL in a development environment rather than on the production database. The development environment must contain the same data tables that are to be used on the production database.

Creating the EUL in a development environment enables you to develop business area design without compromising the performance of production systems.

Having created business areas, folders, and items, you can create prototype workbooks. Get these prototypes reviewed by end user representatives in the development environment. When you have agreed on the workbook definitions, save them to the development environment database.

Step 2: Move the new EUL from a development environment to a production environment

When you and the end user representatives are satisfied with the EUL, you are ready to move the EUL from the development environment to the production database.

The first time you move the EUL from the development environment to the production database, we recommend you use the database export/import tools. Take a database export of the EUL schema from the development database and import the EUL schema into the production database

When you have imported the EUL to the production database, run the eul5_id.sql script to give the new EUL a unique reference number. For more information about how to run the eul5_id.sql script, see "How to import an EUL using the standard database import utility".

Having run the eul5_id.sql script, you can grant the entire Discoverer end user community access to the EUL.

Step 3: Modify the EUL to meet new requirements

Having rolled out the EUL to the organization, typically you will start receiving requests to modify the EUL definitions.

If you want to make changes to the EUL, we recommend you make them in the development environment and then use Discoverer's export and import tools to move the changes to the production environment.

Although the above is the recommended way to maintain the EUL, updates might have been made in the production environment that you do not want to lose. If this is the case, follow the steps below:

1. Use Discoverer's export and import tools to move the updates from the production environment to the development environment.

   Note: Changes made to the production environment from this point on will be lost. It is recommended therefore that the production environment be used in read-only mode during this time.

2. Make the necessary changes in the development environment.
3. Use Discoverer's export and import tools to move the changes back to the production environment.

Using the Discoverer workbook dump utility

Discoverer Administrator includes a workbook dump utility (d51wkdmp.exe) that enables you to inspect the EUL elements used by a workbook without having to open the workbook in Discoverer Desktop. This utility is particularly useful if you are unable to open a workbook (for example, because of missing joins).

To analyze a workbook, run the d51wkdmp.exe file from a command prompt window. The d51wkdmp.exe file is located in the `%ORACLE_HOME%\bin` directory.

The syntax for using the workbook dump utility is:

```
d51wkdmp <Workbook_Name> <Output_File> <DB|FS> <Connect_String>
<Eul_Schema> -f
```

The parameters are described in more detail in the table below:

Parameter	Mandatory or Optional	Description
<Workbook_Name>	Mandatory	Name of the workbook to be examined (including the path, if the workbook is stored in the file system).
<Output_File>	Mandatory	The file to write the output to.
<DB|FS>	Mandatory	DB = opens the workbook from the database FS = opens the workbook from the file system
<Connect_String>	Mandatory	A username, password and database SID combination (for example, user/passwd@database)
<Eul_Schema>	Mandatory	The name of the database user that owns the EUL tables.
-f	Optional	Use this parameter to output further details about EUL objects that the workbook uses, including whether the elements can be found in the specified EUL.

Note the following:

- If a connect string or workbook name includes spaces, enclose the connect string or workbook name in double quotation marks.

- Specify the parameters in the order shown above.
- You can only analyze a workbook stored in the database if the workbook is owned by the username you specify in the connect string.
- The case of the eul_schema parameter must be correct. In other words, if the EUL is owned by user SDC, you must enter "SDC". If you enter "sdc", the following error message is displayed:

  "Connect Error - EUL schema is not accessible. Default or specified schema containing EUL tables is inaccessible"

The examples below use the Video Tutorial Workbook that is shipped as part of the Discoverer tutorial to illustrate the output of the workbook dump utility.

Example 1: The following command outputs the content of the Video Tutorial Workbook to the video.txt file. In this example, the -f option is not used.

```
d51wkdmp "Video Tutorial Workbook" video.txt DB
disco/disco@orcl.world disco
```

The content of the video.txt file is as follows:

```
////////////////////////////////////////////////////////////////////////////
Sheet Number 1
////////////////////////////////////////////////////////////////////////////
 Sheet Name = Tabular Layout
 Sheet Unique Name = {8690F66A-B9C8-11D1-ADB2-0080C7CDEA89}
 Query(s) used =
 Query 1
  Items :-
  EUL Item - Video Analysis Information.Calendar Year
  EUL Item - Video Analysis Information.Department
  EUL Item - Video Analysis Information.Region
  Calculation - Profit SUM
  Sort On   EUL Item - Video Analysis Information.Region
  Filters :-
  EUL Filter - Video Analysis Information.Department is Video Rental or Video
 Sale
////////////////////////////////////////////////////////////////////////////
////////////////////////////////////////////////////////////////////////////
Sheet Number 2
////////////////////////////////////////////////////////////////////////////
 Sheet Name = Crosstab Layout
 Sheet Unique Name = {8690F66B-B9C8-11D1-ADB2-0080C7CDEA89}
 Query(s) used =
 Query 2
  Items :-
  EUL Item - Video Analysis Information.Calendar Year
  EUL Item - Video Analysis Information.Department
  EUL Item - Video Analysis Information.Region
  Calculation - Profit SUM
  Filters :-
  EUL Filter - Video Analysis Information.Department is Video Rental or Video
 Sale
////////////////////////////////////////////////////////////////////////////
```

Example 2: The following command outputs the content of the Video Tutorial Workbook to the video.txt file. In this example, the -f option is used.

```
d51wkdmp "Video Tutorial Workbook" video.txt DB
disco/disco@orcl.world disco -f
```

The content of the video.txt file is as follows:

```
EUL Item Reference
   IoId = 16
   Id = 100177
   Identifier = REGION
   Name = Region
   Folder Identifier = DC_VIDEO_ANALYSIS_INFORMATION
   Folder Name = Video Analysis Information
   *** Found in EUL by Identifier ***
  EUL Item Reference
   IoId = 24
   Id = 100153
   Identifier = DEPARTMENT
   Name = Department
   Folder Identifier = DC_VIDEO_ANALYSIS_INFORMATION
   Folder Name = Video Analysis Information
   *** Found in EUL by Identifier ***
  EUL Item Reference
   IoId = 32
   Id = 100175
   Identifier = PROFIT
   Name = Profit
   Folder Identifier = DC_VIDEO_ANALYSIS_INFORMATION
   Folder Name = Video Analysis Information
   *** Found in EUL by Identifier ***
  EUL Private Item
   Id = -105
   Name = Profit SUM
   Identifier = 1
   Desc = Total profit for one store, one product in one day
   DataType = 2
   Placement = 1
   Hidden = 0
   IsACalc = 0
   IOFormula = [1,1]([6,32])
   DisplayFormula = SUM(Profit)
  EUL Item Reference
   IoId = 41
   Id = 100139
   Identifier = CALENDAR_YEAR
   Name = Calendar Year
   Folder Identifier = DC_VIDEO_ANALYSIS_INFORMATION
   Folder Name = Video Analysis Information
   *** Found in EUL by Identifier ***
  EUL Filter Reference
   Id = 100218
   Identifier = DEPARTMENT_IS_VIDEO_RENTAL_OR_VIDEO_SALE
   Name = Department is Video Rental or Video Sale
   Folder Identifier = DC_VIDEO_ANALYSIS_INFORMATION
   Folder Name = Video Analysis Information
   *** Found in EUL by Identifier ***
  EUL Sort Item Reference
   Item =   EUL Item - Video Analysis Information.Region
   Identifier = 14
   Direction = 1
  Query Request QR1
   Distinct = 1
   Axis Item Usage -   Name =   EUL Item - Video Analysis Information.Calendar
 Year
   Axis Item Usage -   Name =   EUL Item - Video Analysis Information.Department
```

```
  Axis Item Usage -   Name =   EUL Item - Video Analysis Information.Region
  Measure Item Usage -  Name =   Calculation - Profit SUM
  Sort Item Usage -  Name =   Sort On   EUL Item - Video Analysis
Information.Region
  Filter Usage -  Name =   EUL Filter - Video Analysis Information.Department
is Video Rental or  Video Sale
  Identifier = 58
////////////////////////////////////////////////////////////////////////////
Sheet Number 1
////////////////////////////////////////////////////////////////////////////
 Sheet Name = Tabular Layout
 Sheet Unique Name = {8690F66A-B9C8-11D1-ADB2-0080C7CDEA89}
 Sheet Identifier = 7
 Query(s) used =
 Query 1
  Items :-
  EUL Item - Video Analysis Information.Calendar Year
  EUL Item - Video Analysis Information.Department
  EUL Item - Video Analysis Information.Region
  Calculation - Profit SUM
  Sort On   EUL Item - Video Analysis Information.Region
  Filters :-
  EUL Filter - Video Analysis Information.Department is Video Rental or Video
Sale
////////////////////////////////////////////////////////////////////////////
 Query Request QR2
  Distinct = 1
  Axis Item Usage -   Name =  EUL Item - Video Analysis Information.Calendar
Year
  Axis Item Usage -   Name =  EUL Item - Video Analysis Information.Department
  Axis Item Usage -   Name =   EUL Item - Video Analysis Information.Region
  Measure Item Usage -  Name =   Calculation - Profit SUM
  Filter Usage -  Name =  EUL Filter - Video Analysis Information.Department is
Video Rental or
Video Sale
  Identifier = 95
////////////////////////////////////////////////////////////////////////////
Sheet Number 2
////////////////////////////////////////////////////////////////////////////
 Sheet Name = Crosstab Layout
 Sheet Unique Name = {8690F66B-B9C8-11D1-ADB2-0080C7CDEA89}
 Sheet Identifier = 12
 Query(s) used =
 Query 2
  Items :-
  EUL Item - Video Analysis Information.Calendar Year
  EUL Item - Video Analysis Information.Department
  EUL Item - Video Analysis Information.Region
  Calculation - Profit SUM
  Filters :-
  EUL Filter - Video Analysis Information.Department is Video Rental or Video
Sale
////////////////////////////////////////////////////////////////////////////
```

About creating EULs in Logical and Physical Standby (or read-only) databases

To improve performance, Discoverer stores statistics about end user queries in the EUL. For this reason, Discoverer requires that the database containing the EUL is writeable. Specifically, Discoverer does not support the creation of EULs in Logical

and Physical Standby (or read-only) databases. To prevent Discoverer end users having write access to:

- business data, store the data in a read-only database and use database links to access the data from the writeable database that contains the EUL
- the EUL itself, do not grant the Create/Edit Workbook privilege to any users, and only grant the Administration privilege to the EUL owner

5

Creating and Maintaining Business Areas

This chapter explains how you create and maintain business areas using Discoverer Administrator, and contains the following topics:

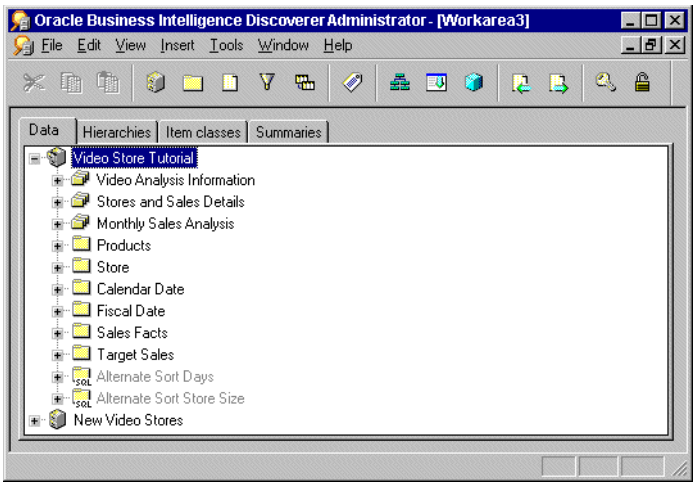
- "What are business areas?"
- "How to prepare to build a new business area"
- "What is the Load Wizard?"
- "How to create a business area using the Load Wizard"
- "How to open an existing business area when connecting to Discoverer Administrator"
- "How to open an existing business area when connected to Discoverer Administrator"
- "How to copy business areas between EULs"
- "How to edit business area properties"
- "How to delete a business area"
- "How to synchronize a business area with the database"
- "Notes about why a business area (or folders within it) might not be visible to a user"

What are business areas?

Business areas are conceptual groupings of tables or views (or both) designed to match Discoverer end users specific data requirements. For example, an accounting department needs a business area that represents data about budgets and finance. Alternatively, managers in a human resources department need a business area specifically for departments and employee information.

Discoverer Administrator displays a business area as a file cabinet on the Data tab of the Workarea. You can open a business area to display its folders and items (for more information, see "What are folders?" and "What are items?").

Figure 5–1 Workarea: Data tab displaying business areas, folders and items



How to prepare to build a new business area

You create a business area in Discoverer Administrator using the Load Wizard (for more information, see "What is the Load Wizard?"). Before you start the Load Wizard, prepare by sketching out the business area design. Keep in mind what will be useful to the Discoverer end users whose purposes the business area will serve.

Use the following guidelines:

- Interview your users for a clear understanding of their requirements. Use the list of questions in "What are the prerequisites for using Discoverer Administrator?" as a guideline for your user interviews.
- Identify the data source and have a clear understanding of its design.
- Identify which tables, views, and columns are required. Identify those that are likely to be included in multiple business areas. For example, the Employee folder might need to be in both the Sales and Human Resources business areas.
- Map out the necessary joins and determine whether they exist in the database or will have to be created by you using Discoverer Administrator. Joins might be predefined in the database with primary/foreign key constraints, or column names in different tables may match in ways that trigger sensible join conditions. For more information, see Chapter 10, "Creating and Maintaining Joins".
- Identify security issues and access privileges. Include the user names the business area is to serve.

Keep in mind that your design is likely to change as you add the objects that will make the business area a useful and efficient analysis tool. The sketch provides a framework for you to modify and build upon.

What is the Load Wizard?

The Load Wizard provides a user-friendly interface to create a business area and enables you to quickly:

- name and describe the business area
- load metadata into the business area
- and automatically:

- format data
- create joins from existing relationships between tables

  Note: When doing a bulk load from an Oracle database (version 9.2.0.7 or later), you can use also create joins from existing relationships between views (for example, constraints on views).
- create summaries
- create date hierarchies against date items
- create default aggregates for datapoint items
- create lists of values for items
- sort folders and items

How to create a business area using the Load Wizard

If you are already connected to Discoverer Administrator

1. Choose Insert | Business Area | From Database...then follow step 2 below.

If you have just connected to Discoverer Administrator

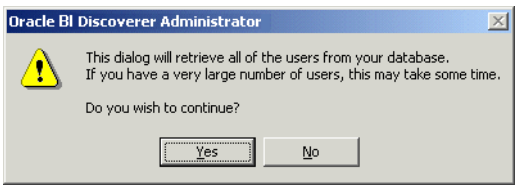
1. Click **Create a new business area** (conditional option, displayed only when connecting to Discoverer Administrator).

   Note: The Load Wizard starts automatically when you connect to Discoverer Administrator and your username has access to an EUL.
2. Select one of the following options to specify where you want to load the metadata from:
   - On-line dictionary (for more information, see "Loading from the online dictionary")
   - Gateway (for more information, see "Loading from a Gateway")

     For more information about the online dictionary and Gateway see the "Load Wizard: Step 1 dialog".
3. Click Next to display the "Load Wizard: Step 2 dialog":

   Discoverer displays the following warning dialog.

Figure 5–2 Warning dialog

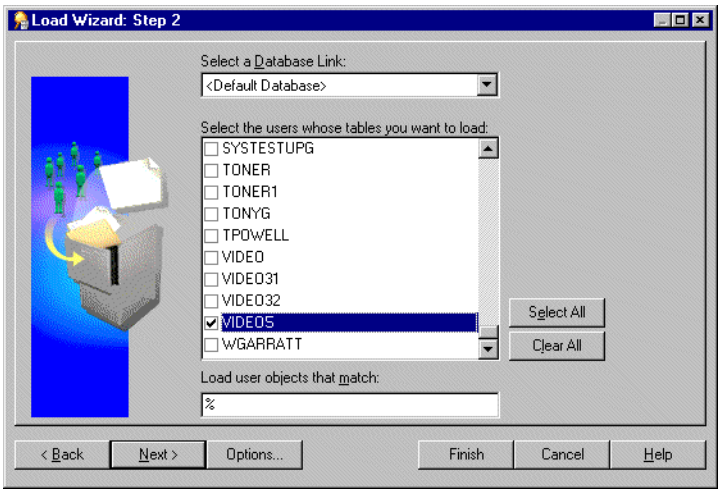


4. Click Yes to display the "Load Wizard: Step 2 dialog".

Loading from the online dictionary

The "Load Wizard: Step 2 dialog" enables you to define the user objects to load into your new business area.

Figure 5–3 Load Wizard: Step 2 dialog



Note: To change the maximum number of rows that Discoverer will display in the **Select the users whose tables you want to load** list, you edit the value of the Discoverer registry setting MaxNumListRows (for more information, see Chapter 21, "Discoverer Registry Settings").

1. Select the database link from the **Select a Database Link** drop down list.

   This displays the default database for the current user ID. The drop down list displays only the databases that the current user ID can connect to, based on any private or public database links that the user has access to.

2. Select a check box (for each database user) to load the data dictionary definitions of the database objects owned by each selected database user, into the business area.

   The database users displayed are those that exist on the selected database.

3. (optional) Specify the pattern that a user's objects must match to be loaded into the business area in the field **Load user objects that match**.

   The % symbol is displayed by default and is a wildcard that matches any character or string of characters. To reduce the number of schema objects that can be loaded from the database, use the wildcard in combination with other characters as follows:

To load schema objects	Enter what?
Find all schema objects	%
Find all schema objects beginning with D	D%
Find all schema objects ending with AND	%AND
Find all objects beginning with A and having a five letter name (each underscore represents a letter).	A _ _ _ _

4. (optional) Click Options to specify the type of tables to be loaded (for further information, see the "Online Dictionary Options dialog").

   For example, whether public or private, or whether owned by or accessible to the users you select.

   By default, the Load Wizard will load only:

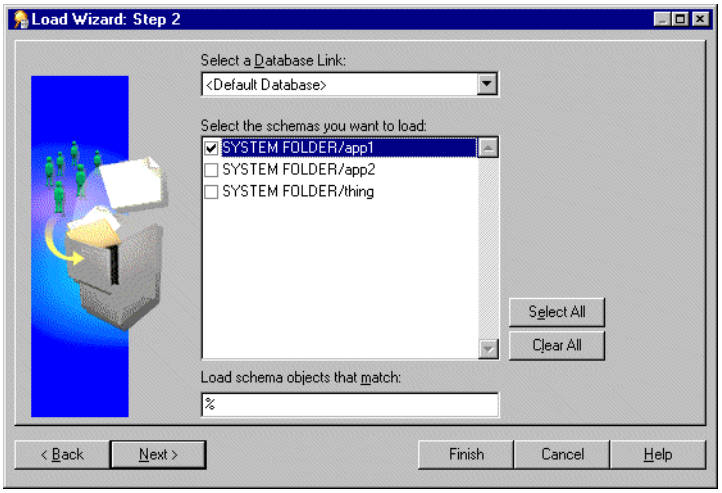
- tables owned by the users specified
- private tables

5. Click Next to display the "Load Wizard: Step 3 dialog".

Loading from a Gateway

The "Load Wizard: Step 2 dialog" enables you to define the schema objects to load into your new business area.

Figure 5–4 Load Wizard: Step 2 dialog



1. Select the database link from the **Select a Database Link** drop down list.

   The **Select a Database Link** field displays the default database for the current user ID. The drop down list displays only the databases that the current user ID can connect to.

2. Select a check box for each schema that you want to load into the business area.

   The schemas displayed are those that exist on the selected database.

3. Specify the pattern that schema objects must match to be loaded into the business area (in the **Load schema objects that match** field) and click Next.

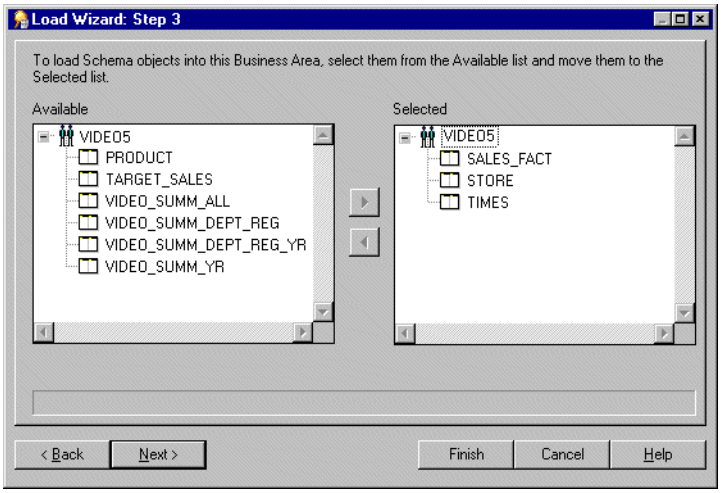
   The % symbol is displayed by default and is a wildcard that matches any character or string of characters. To reduce the number of schema objects that can be loaded from the database, use the wildcard in combination with other characters as follows:

To load schema objects	Enter what?
Find all schema objects	%
Find all schema objects beginning with D	D%
Find all schema objects ending with AND	%AND
Find all objects beginning with A and having a five letter name (each underscore represents a letter).	A _ _ _ _

Selecting tables and views

The "Load Wizard: Step 3 dialog" enables you to select tables and views (schema objects) to load into the business area.

Figure 5–5 Load Wizard: Step 3 dialog



The **Available** list displays a hierarchical list of users (through the on-line dictionary) or schemas (through the gateway) and the tables and views that are available to load into the business area. You can expand and collapse levels of the hierarchy by clicking the + and - signs.

To select tables or views to load into the business area:

1. Move the tables or views that you want to load into the business area, from the **Available** list to the **Selected** list.

   You can select more than one table or view at a time by holding down the Ctrl key and clicking another table or view.

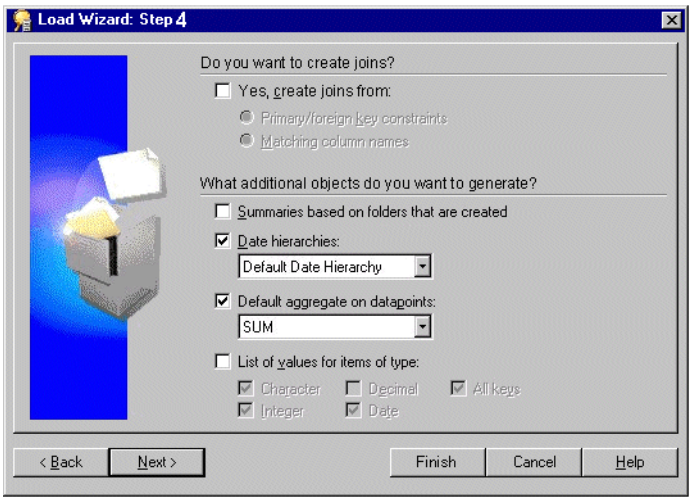
2. Click Next to display the "Load Wizard: Step 4 dialog" where you can specify how Discoverer Administrator creates joins and which additional objects Discoverer Administrator generates for the new business area.

Go to "Specifying what Discoverer Administrator generates for the business area".

Specifying what Discoverer Administrator generates for the business area

The "Load Wizard: Step 4 dialog" enables you to decide what Discoverer Administrator generates for the business area, in terms of joins, summary folders, date hierarchies, default aggregates on datapoints and lists of values.

Figure 5–6 Load Wizard: Step 4 dialog



To specify what Discoverer Administrator generates for the business area:

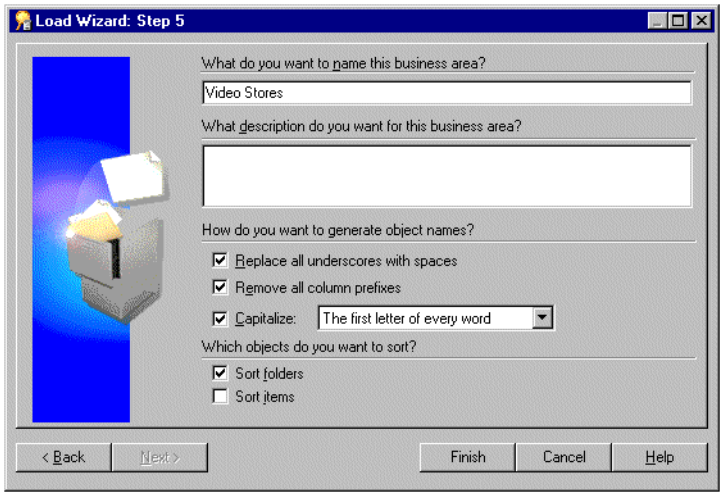
1. Select whether you want Discoverer Administrator to create joins and if so select an appropriate join option.
2. Select the additional objects you want to generate (for reference information about this dialog, see the "Load Wizard: Step 4 dialog").
3. Click Next to display the "Load Wizard: Step 5 dialog".

Go to "Naming the business area, specifying object name and sorting options".

Naming the business area, specifying object name and sorting options

The "Load Wizard: Step 5 dialog" enables you to enter a name and description and specify how Discoverer Administrator generates object names and which objects to sort for the business area.

Figure 5–7 Load Wizard: Step 5 dialog



To name the business area and specify the folder and item, naming and sorting options:

1. Specify a name, description and select the check boxes for how you want Discoverer Administrator to generate folder and item names and whether you want to sort folders or items for the business area and click Finish.
2. (conditional step) This step (and the next step) applies only if you selected the check box, **Summaries based on folders that are created**, in the Load Wizard: Step 4.

   Note: Discoverer Administrator displays the Recommended Summaries dialog that provides information about the summary folders that Automated Summary Management (ASM) will create for you (for more information about summary folders, see "Summary Wizard (ASM): Recommended Summaries dialog" and Chapter 14, "Managing Summary Folders").
3. Click Create to confirm your choice.

   Discoverer Administrator displays a progress indicator while it generates your new business area (and summaries, if appropriate). When finished, the progress indicator disappears and the new business area is displayed on the "Workarea: Data tab".

Note: If you loaded your metadata from another source, you must refresh the business area before it can be used. For more information, see "How to synchronize a business area with the database".

Important Note: User Access

A new business area (and the data it contains), can only be accessed by the user ID that was used to create it. For more information about how to grant access privileges to other user IDs, see "How to specify a user or role (responsibility) that can access a business area".

How to open an existing business area when connecting to Discoverer Administrator

Note: The Load Wizard starts automatically when you connect to Discoverer Administrator.

To open an existing business area when connecting to Discoverer Administrator:

1. Click Open an existing business area in the "Load Wizard: Step 1 dialog" to display all the business areas in the EUL of the database to which you are connected.
2. Select a check box for each business area that you want to open or click **Select All** to select all the business areas.
3. Click Finish to open the selected business area(s).

How to open an existing business area when connected to Discoverer Administrator

To open an existing business area when already connected to Discoverer Administrator:

1. Choose File | Open to display the "Open Business Area dialog".
2. Move the business areas that you want to open from the **Available** list to the **Selected** list.

You can select more than one business area at a time by holding down the Ctrl key and clicking another business area.

3. Click OK to open the selected business area(s).

How to copy business areas between EULs

To copy a business area from one EUL to another (for example, from a development system to a production system) you must first export the business area from the first EUL then reconnect to the second EUL and import the export file for the business area into the second EUL:

1. To export a business area to a file, perform the steps described in "How to export selected business areas using the Export Wizard"
2. Choose File | Connect.
3. Connect to the EUL that you want to move the business area into.
4. Choose File | Import.
5. To import the business area (exported in step 1, above) into the current EUL, perform the steps described in "How to import EUL objects from a file using the Import Wizard"

Notes

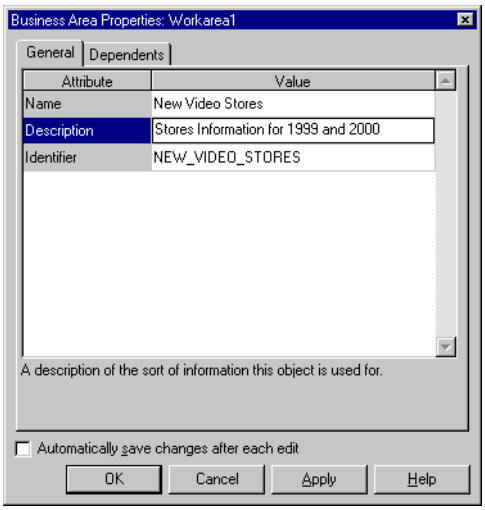
The Export option exports the definitions for the business area only. It does not export the database, EUL tables, workbooks, or database objects referenced by the business area definitions.

How to edit business area properties

To edit the properties of a business area:

1. Click a business area on the "Workarea: Data tab" and choose Edit | Properties to display the "Business Area Properties dialog".

Figure 5–8 Business Area Properties dialog



2. Set the business area name and description as required.

Warning: It is not advisable to change an identifier as it can affect the relationships between EUL objects. Do not change the identifier unless you understand the impact of the change. For example, if you are developing EUL patches in a test environment to be imported to a production environment.

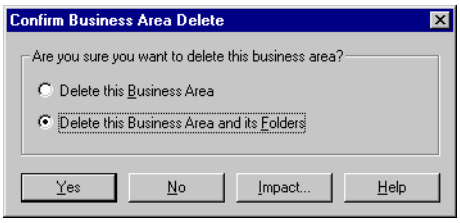
3. Click OK to confirm any changes made.

How to delete a business area

To delete a business area:

1. Click a business area on the "Workarea: Data tab" and choose Edit | Delete to display the "Confirm Business Area Delete dialog".

Figure 5–9 Confirm Business Area Delete dialog



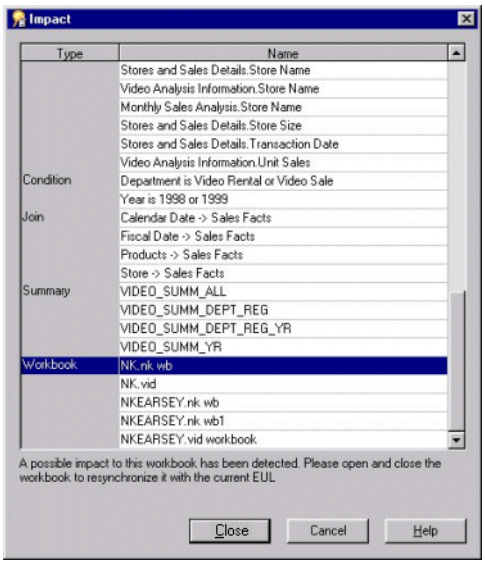
2. Specify the scope of deletion that you require:
   - Select the **Delete this Business Area** option to remove the business area but not its folders, they remain in the EUL.

     Note: Folders can exist in the EUL but not belong to a business area (orphan folders).
   - Select the **Delete this Business Area and its Folders** option to remove the business area and all of the folders contained in that business area.

     Note: Folders that are part of another business area are not removed.

     Note: This is the default option and is usually recommended.
3. (optional) To see the objects that might be affected by deleting this business area:
   a. Click Impact to display the "Impact dialog".

Figure 5–10 Impact dialog



The Impact dialog enables you to review the other EUL objects that might be affected when you delete a business area.

Note: The Impact dialog does not show the impact on workbooks saved to the file system (in `dis` files).

4. (optional) Select a row to view text at the bottom of the list, indicating what affect the current action will have on the EUL object.
5. When you have finished reviewing the impact of deleting the business area, click Close to close the Impact dialog.
6. Click Yes to delete the selected business area, based on the choices you have made.

How to synchronize a business area with the database

You use the Refresh command to synchronize a business area with the source dictionary whenever the database schema is changed.

Examples of typical database modifications might include the following:

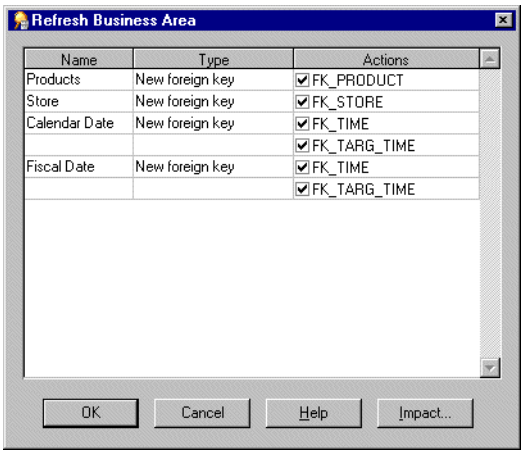
- adding tables
- adding columns
- adding joins
- changing the ownership of a table

To synchronize a business area with the database:

1. Select the business area that you want to refresh in the "Workarea: Data tab".
2. Choose File | Refresh to open the "Refresh Wizard dialog".
3. Select one of the following **Refresh business areas from** options:
   - On-line dictionary
   - Gateway
4. Click Finish to begin the refresh business areas process.

Where any objects have changed since the last refresh Discoverer Administrator displays the "Refresh Business Area dialog".

Figure 5–11 Refresh Business Area dialog



The Refresh Business Area dialog displays the:

- name of the object that has changed since the last refresh
- type of change that has occurred to objects since the last refresh
- effect that the refresh will have on the object

5. To decide whether you want to refresh each object:
   - select a check box next to each object you want to refresh
   - clear a check box next to each object you do not want to refresh
6. (optional) You can review objects that will be deleted when you refresh this business area. To see the potential impact of the refresh:
   a. Click Impact to display the "Impact dialog".
   b. When you have finished reviewing the impact of refreshing this business area, click Close to close the Impact dialog.
7. Click OK for Discoverer Administrator to refresh the business area or selected objects.

Notes about why a business area (or folders within it) might not be visible to a user

Having created a business area, it is possible that a Discoverer end user might not be able to see the business area (or folders within the business area). For a user to see a business area or folders within it, the following conditions must all be met:

- The user must have access to the EUL. If the user is not the EUL owner, either the EUL must be publicly accessible or the user must be granted explicit access to the EUL. Also make sure that the user is accessing the EUL in which the business area was created.
- The user must have access to the business area. For more information about granting access to business areas, see:
  - "How to specify a user or role (responsibility) that can access a business area"

- "How to specify the business areas a user or role (responsibility) can access"

- The user must have database SELECT access to the tables or views on which the folders in the business area are based.

  Tip: If you are not sure whether a particular user has access to a specific database table or view, log in to SQL*Plus as the user and type:

  ```
  select count(*) from <ownername>.<objectname>;
  ```

  where:

  - <ownername> is the database username of the owner of the table or view
  - <objectname> is the name of the table or view

  If the user does not have access to the database table or view, an error message is displayed.

- The folders in a business area must be based on current database table or view definitions. If the table or view definition has changed, you must refresh the business area (for more information, see "How to synchronize a business area with the database").

6

Creating and Maintaining Folders

This chapter explains how you create and maintain folders using Discoverer Administrator, and contains the following topics:

- "What are folders?"
- "What are simple folders?"
- "What are complex folders?"
- "What are custom folders?"
- "About dependencies between folders"
- "About sharing folders across business areas"
- "What is complex folder reach through?"
- "How to define a complex folder to enable reach through to the base folders"
- "What rules and restrictions apply when you use complex folder reach through?"
- "About sharing folders across business areas"
- "How to create simple folders from the database"
- "How to create complex folders"
- "How to create custom folders"
- "How to edit folder properties"
- "How to edit a custom folder's SQL statement"
- "How to delete folders from a business area"
- "How to assign folders to a business area"
- "How to assign a folder to multiple business areas"
- "How to view orphaned folders in the EUL"
- "How to remove an orphaned folder from the EUL"
- "How to sort folders in a business area"
- "How to sort items in a folder"
- "How to re-order folders in a business area"
- "How to validate folders in a business area"

What are folders?

A Discoverer folder is a representation of result set data. The visual concept of a folder in Discoverer is analogous to a directory in Windows where folders are the containers and items are the files held in the folders. A Discoverer folder represents a group of related items. Discoverer end users select items from one or more folders to get information from the database. As the Discoverer manager, it is your responsibility to create suitable folders to enable Discoverer end users to access the information they need.

There are three types of folder:

- simple folders, which contain items based on columns in a single database table or view
- complex folders, which can contain items based on columns from multiple database tables or views
- custom folders, which are based on SQL statements

To the Discoverer end user, the type of a particular folder is immaterial. Whether a folder is simple, custom, or complex is only important to the Discoverer manager. Even in Discoverer Administrator, there is very little difference in the behavior of these different types of folders. Folders can include items, calculated items, joins, conditions, item classes, and hierarchies. Items in a folder can be used in summary folders and to define hierarchies.

Discoverer end users work with folders within the context of business areas.

As the Discoverer Manager, you can assign a folder to one or more business areas. Note that a folder has a single definition, regardless of the number of business areas to which you assign it.

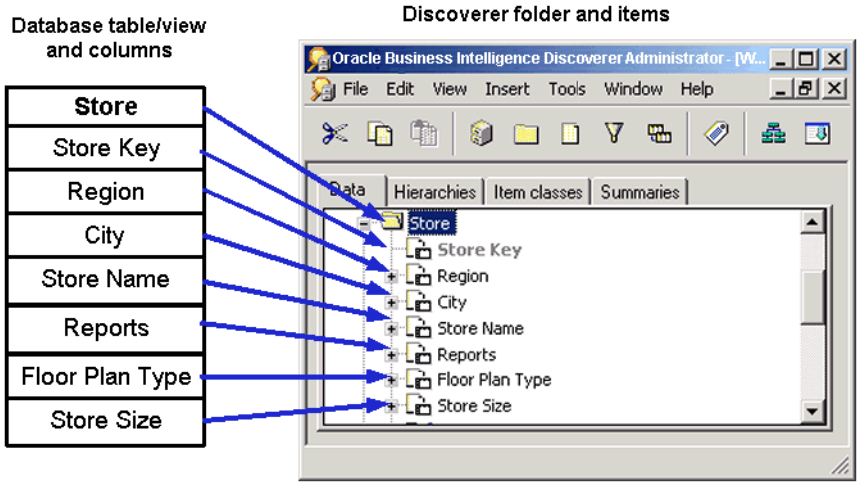
You can remove a folder from all business areas without deleting it from the EUL. Folders that exist in the EUL but which are not currently assigned to a business area are referred to as orphan folders.

What are simple folders?

Simple folders contain items based on columns in a single database table or view. Items in a simple folder can also represent calculations on other items in the folder.

You create a simple folder by loading a table definition or table metadata from the database or a gateway.

Figure 6–1 How Discoverer Administrator represents a table/view



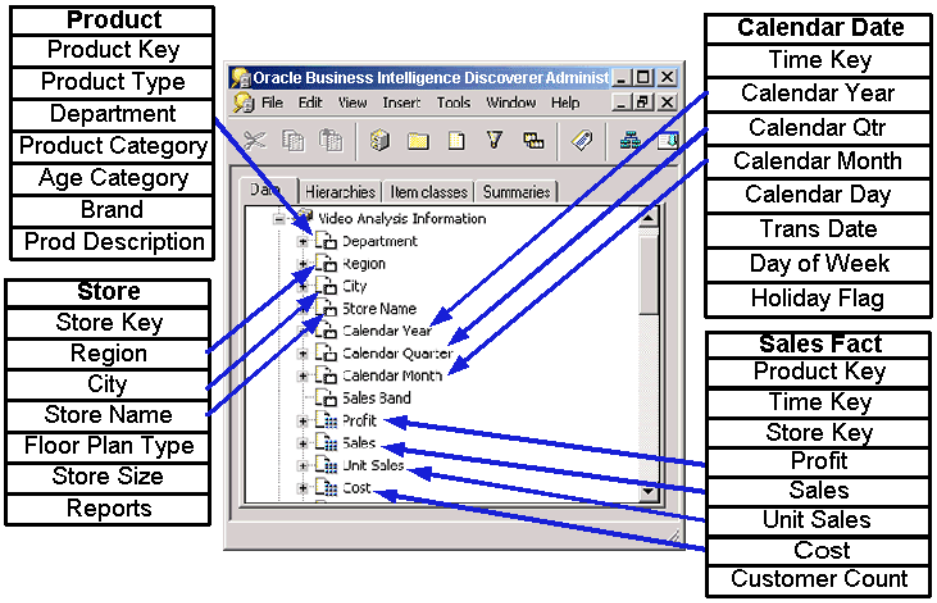
What are complex folders?

Complex folders contain items from one or more folders. Complex folders enable you to create a combined view of data from multiple folders. This is analogous to a view in the database.

Using a complex folder enables you to simplify the business area without creating a new database view. For example, you can create a complex folder called Dept-Emp which has columns from both the DEPT and EMP tables. The user can select from one folder instead of two.

For two items from different folders to belong to the same complex folder, a join condition must exist between the two folders. For more information about joins, see Chapter 10, "Creating and Maintaining Joins".

Figure 6–2 How a complex folder groups items from multiple source tables



What are the benefits of using complex folders instead of database views?

You could produce the same result set using a database view instead of a complex folder. However, using a complex folder instead of a database view offers several advantages. You can:

- create a complex folder without the database privileges required to create a database view
- control access to a complex folder using the folder's business area
- manage complex folders entirely within Discoverer Administrator, whereas database views can be complicated to maintain
- improve query performance by taking advantage of Discoverer's ability to optimize the SQL it generates for items in complex folders

What are custom folders?

Custom folders are folders based on a SQL statement which could include SET operators (for example, UNION, CONNECT BY, MINUS, INTERSECT) or a synonym that you type directly into a dialog.

By defining a custom folder, you can quickly create a folder that represents a complicated result set. When you save the custom folder, Discoverer Administrator creates items using the 'Select' part of the SQL statement you have entered.

In Discoverer Plus, there is no distinction between a custom folder and a simple folder. A Discoverer end user can use a custom folder to build queries in the same way as any other type of folder.

What are the differences between custom folders and simple folders?

Custom folders are very similar to simple folders, with the following exceptions:

Area	Simple Folder	Custom folder
Refresh	Simple folders are refreshed when the business area is refreshed	Custom folders are refreshed by editing and validating the existing SQL. **Note:** When a custom folder is based on a view you must refresh the business area.
Item properties	Items in simple folders have an Item Formula property.	Items generated in a custom folder do not have an Item Formula property. In other words, the only way to edit the formula of an item in a custom folder is to edit the SQL for the whole folder.
Folder properties	Simple folders have Database, Owner, and Object properties. Simple folders do not have a Custom SQL property.	Custom folders do not have Database, Owner, and Object properties. Custom folders have a Custom SQL property that contains the SQL statement used to generate the custom folder.

Examples of custom folders

This section consists of the following examples:

- "Example 1: Synonyms in a custom folder definition"
- "Example 2: Database link in a custom folder definition"
- "Example 3: Set Operator in a custom folder definition"
- "Example 4: Subquery in a custom folder definition"
- "Example 5: Optimizer hint in a custom folder definition"
- "Example 6: CONNECT BY Clause in a custom folder definition"
- "Example 7: Column Expression in a custom folder definition"
- "Example 8: Using a custom folder to improve LOV performance"

Example 1: Synonyms in a custom folder definition

```
SELECT BRAND FROM PROD
```

In this example, `PROD` is a synonym that points to the product table.

The underlying table or view to which the synonym points, can be switched without changing the custom folder definition in Discoverer, provided the column names of the table or view to which the synonym points, do not change.

Example 2: Database link in a custom folder definition

```
SELECT BRAND FROM PRODUCT@DATABASELINK
```

In this example, `PRODUCT` is a table in another database, and DATABASELINK is the database link to the other database.

Example 3: Set Operator in a custom folder definition

```
SELECT 'COMPANY1' COMPANY, ENAME, SAL FROM EMP@HQ
UNION
SELECT 'COMPANY2' COMPANY, ENAME, SAL FROM EMP@REGIONA
```

In this example, `HQ` and `REGIONA` are database links for remote databases. The result set is the union of all employees with a column named COMPANY1 to show which company they are from.

Example 4: Subquery in a custom folder definition

```
SELECT ENAME, SAL FROM EMP
WHERE SAL > (SELECT AVG (SAL) FROM EMP)
```

In this example, the `(SELECT AVG (SAL) FROM EMP)` subquery is included in the folder definition.

Example 5: Optimizer hint in a custom folder definition

```
SELECT /*+ FULL(scott_emp) PARALLEL (scott_emp, 5)
 */ename
FROM scott.emp scott_emp;
```

In this example, the `PARALLEL` hint overrides the degree of parallelism specified in the emp definition.

Example 6: CONNECT BY Clause in a custom folder definition

```
SELECT EMPNO, ENAME, JOB FROM EMP
CONNECT BY PRIOR EMPNO=MGR
```

```
START WITH KING
```

In this example, the CONNECT BY clause defines a hierarchical relationship in which the EMPNO value of the parent row equals the MGR value of the child row (that is, it filters each row where the PRIOR condition is true).

Example 7: Column Expression in a custom folder definition

```
SELECT ENAME, SAL*12+NVL(COMM,0) ANNUAL_SALARY
FROM EMP
```

In this example, the alias `ANNUAL_SALARY` is required on the `SAL*12+NVL(COMM,0)` expression.

Although a custom folder can contain any valid SQL statement, any column expressions must be aliased in the same way that a SQL view definition would be aliased. In these cases, the alias will be used as the item name.

No alias is required on simple column expressions like `ENAME`.

Example 8: Using a custom folder to improve LOV performance

You can use a custom folder to create a list of values for an item in a folder where you know that the list values in the database will not change. This is more efficient than running a query using a list of values defined against an item in a folder that has a much larger number of rows than the number of distinct values.

If you have a smaller number of static values you can use a custom folder to create a local list of values within the End User Layer.

For example, if you want a list of values for North, South, East and West, create a custom folder called Region_lov and enter the following SQL:

```
SELECT 'NORTH' REGION FROM sys.dual
UNION
SELECT 'SOUTH' REGION FROM sys.dual
UNION
SELECT 'EAST' REGION FROM sys.dual
UNION
SELECT 'WEST' REGION FROM sys.dual
```

The above SQL creates one item called Region that you can use as a list of values to significantly improve performance.

For more information about lists of values, see "What are lists of values?".

About dependencies between folders

If you copy an item from a simple folder and paste the item into the same simple folder, the new item is completely separate from the original item and has a new name generated (for example, region1). Changes in either item are never reflected in the other item.

If you copy an item from a simple folder and paste the item into a complex folder, the new item in the complex folder is still related to the original item. You can rename the new item and change its properties without the changes affecting the original item. However, the new item is dependent on the original item because the formula of the new item references the name of the original item. If you modify the formula of the original item, the data returned by the new item will also change. Similarly, if you delete the original item, the new item is also deleted because its formula property references the original item.

You can view a list of the dependencies for an item on the Dependencies tab of the Item Properties dialog.

If you apply a mandatory condition to a folder (for example, where Year=2000), the set of data that can be returned will change. A complex folder built using this folder will reflect the restricted set of data of the source folder. If you later remove the mandatory condition from the source folder, the change is reflected in the complex folder.

About sharing folders across business areas

Data that is important to one department is often useful to another. Discoverer Administrator therefore enables you to share a folder that you have created in one business area with other business areas. For example, you might want to share a Sales Facts folder that includes columns for Income and Costs in the business areas you create for both the Marketing Department and the Accounting Department.

If you make changes to a folder in one business area, the changes are reflected in the folder in every business area that uses it.

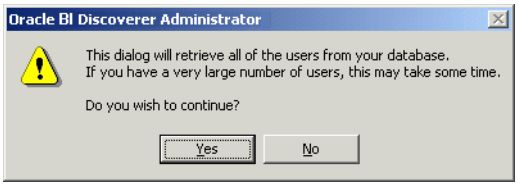
How to create simple folders from the database

To create simple folders from the database in an existing business area:

1. On the "Workarea: Data tab", select the business area in which you want to create a simple folder.
2. Choose Insert | Folder | from Database to display the "Load Wizard: Step 1 dialog".
3. Click **On-line Dictionary** to specify the location of the table/view on which you want to base the simple folder.
4. Click Next to display the "Load Wizard: Step 2 dialog":

   Discoverer displays the following warning dialog.

Figure 6–3 Warning dialog



5. Click Yes to display the "Load Wizard: Step 2 dialog".
6. Specify the database that owns the database table/view on which you want to base the simple folder.
7. Select a check box for a database user to base the simple folder on.
8. (optional) Specify the name of the object in the **Load objects that match** field.
9. Click Next to display the "Load Wizard: Step 3 dialog".
10. Expand the + symbol in the **Available** list to see the objects owned by the user.
11. Move the object on which you want to base the simple folder from the **Available** list to the **Selected** list.
12. Do one of the following:

- click Next to modify the default settings for the simple folder in the "Load Wizard: Step 4 dialog"
- click Finish to create the simple folder based on the table you specified using default settings

13. If you clicked Next in the previous step, do one of the following:
    - click Next to modify further default settings for the simple folder in the "Load Wizard: Step 5 dialog"
    - click Finish to create the simple folder based on the table you specified using default settings and those specified so far
14. If you clicked Next in the previous step, click Finish to create the simple folder based on the table you specified using the settings you specified.

How to create complex folders

To create a complex folder:

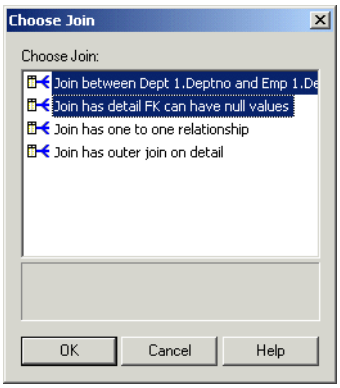
1. On the "Workarea: Data tab", select the business area in which you want to create a complex folder.
2. Choose Insert | Folder | New to create a new complex folder.
3. Click the new folder's icon on the Data tab and choose Edit | Properties to display the "Folder Properties dialog".
4. (optional) Specify a more descriptive name for the new folder in the **Name** field.
5. (optional) Specify a description for the new folder in the **Description** field.
6. Close the Folder Properties dialog if it is open.
7. On the "Workarea: Data tab", Drag an item from any folder in any open business area to the new folder.

   Tip: You might find it easier to drag items between folders if you have two Workareas open. To open a second Workarea, choose Window | New Window.
8. Drag the items into the new folder as required.

   When you add an item to a complex folder, the folders that it comes from must be joined to the folder of at least one other item already in the complex folder. If this is not the case, Discoverer Administrator will display an error dialog.

   If you select items from two folders that are joined using more than one join, Discoverer displays the Choose Join dialog. For more information, see "About joining two folders using more than one join".

Figure 6–4 Choose Join dialog



Note: If you select an item from a simple folder that has a join that conflicts with existing items, Discoverer will display an error and you will not be allowed to add the item.

9. (optional) Select one or more joins and click OK.

Discoverer creates a complex folder.

Notes

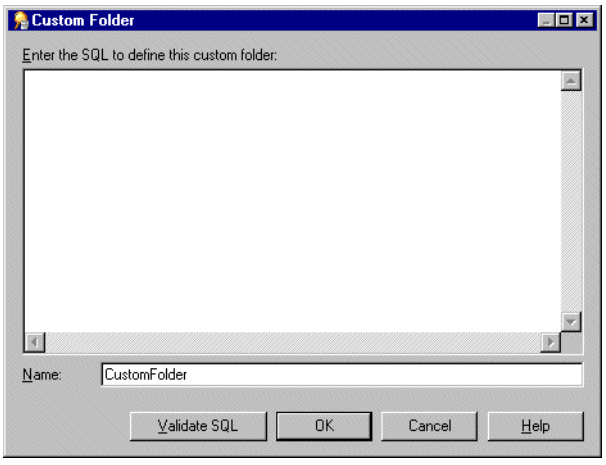
- If you include an item from a simple folder in a complex folder, the new item in the complex folder is not totally independent of the original item. For more information, see "About dependencies between folders".

How to create custom folders

To create a custom folder:

1. On the "Workarea: Data tab", select a business area (or any object within a business area).
2. Choose Insert | Folder | Custom to display the "Custom Folder dialog".

Figure 6–5 Custom Folder dialog



3. Specify the SQL statement on which the custom folder will be based.

You can include comments as separate lines within the SQL statement by starting the comment line with two dash characters (- -).

4. Specify the name of the custom folder in the **Name** field.
5. Click Validate SQL to ensure you have entered valid SQL.
6. Click OK to validate the SQL statement and save the custom folder.

Notes

- To enable you to create custom folders before the underlying database objects have been created or made available, Discoverer Administrator permits you to save a custom folder even if the SQL is invalid. Note that Discoverer end users will not be able to query the database object until the SQL is valid.
- For examples of SQL statements you might enter, see "Examples of custom folders".
- Where the SQL references multiple database objects, you must define joins between those objects. For more information, see Chapter 10, "Creating and Maintaining Joins".
- Discoverer does not allow you to use the WITH clause in the custom folder SQL

How to edit folder properties

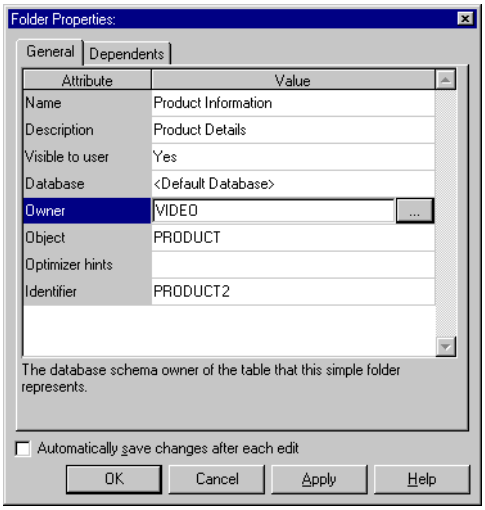
To edit the properties of a folder:

1. On the "Workarea: Data tab", click the folder to select it.

   You can select more than one folder by pressing the Ctrl key and clicking another folder.

2. Choose Edit | Properties to display the "Folder Properties dialog".

Figure 6–6 Folder Properties dialog



If you selected multiple folders, the Folder Properties dialog displays a value for each property that has the same value for all of the selected folders. If the value for a particular property is not the same for all of the selected folders, no value is displayed for that property.

3. Make the changes as required.

Tip: To save the changes you make as you make them, select the **Automatically save changes after each edit** check box. With this option selected, you do not have to click OK or Apply.

4. Click OK to save the changes you have made.

Notes

- You can assign a folder to more than one business area. However, there is only ever one definition of the folder in the EUL and that definition is shared by all the business areas to which the folder is assigned. If you modify the folder definition, the change is reflected in all the business areas to which the folder is assigned. For more information, see "About sharing folders across business areas".
- You can change a folder's name at any time because Discoverer Administrator identifies folders using unique identification labels called identifiers (for more information, see "What are identifiers?"). Changing a folder's name does not alter the structure of the business area. However, folder names must be unique within the EUL. Note also that item names must be unique within a particular folder.
- If you change the name of an item, this might affect the names of secondary elements (for example, joins, hierarchies, hierarchy nodes, item classes) that have the Auto generate name property set to Yes (for more information, see "About generating and updating EUL item names automatically").
- You can change the database user that owns the database object on which a simple folder is based without changing the name of the object itself. For example, you might want to do this when moving from a development to a production environment. To change the database user, click the button beside the **Owner** field to display the "Choose user or table/view dialog" and specify the new database user.
- You can base a simple folder on a table/view without specifying the database user that owns that table/view. You might want to do this:
  - to enable different Discoverer Plus users to access database tables/views that have the same name but which exist in their own database users (for example, for Oracle Applications users)
  - to create/maintain an EUL for which the tables or table owners are not yet available
  - to create/maintain an EUL to which you as the Discoverer Manager do not have access
  - to move the EUL between different databases where the person who owns the data is different

  To base a simple folder on a table/view without specifying the database user name, clear the **Owner** field. When the **Owner** field is left blank, Discoverer Administrator generates SQL that does not include the owner before the table name.

  For example, if the **Owner** field contains the name of the schema that owns the table/view, the generated SQL statement might be:

select <column> from <owner>.<table>

If you clear the **Owner** field, the generated SQL statement would be:

select <column> from <table>

If the object is not in the current schema, a warning is displayed.

How to edit a custom folder's SQL statement

To edit a a custom folder's SQL statement:

1. On the "Workarea: Data tab", select the custom folder.
2. Choose Edit | Properties to display the "Folder Properties dialog".
3. Click the Custom SQL field to display the "Custom Folder Properties dialog".

   Tip: You can resize the Custom Folder dialog to view more of the SQL statement.
4. Make changes as required.
5. Click Validate SQL to ensure you have entered valid SQL.
6. Click OK to validate the SQL statement and save the custom folder.

Notes

- To enable you to create custom folders before the underlying database objects have been created or made available, Discoverer Administrator permits you to save a custom folder even if the SQL is invalid. Note that end users will not be able to query the object until the SQL is valid.
- Discoverer Administrator analyzes the modified SQL statement to assess the changes you have made. If Discoverer Administrator determines that the changes will affect existing items or create new items, Discoverer Administrator displays the "Impact dialog" that shows you each item that is affected. Use the Impact dialog to help you decide whether to confirm the changes you have made, make further changes, or abandon the edit.

What is complex folder reach through?

Complex folder reach through is a mechanism that enables Discoverer Plus and Discoverer Desktop users to add items to their worksheets in addition to those provided in a selected complex folder. When a user selects items from a complex folder, other items in other folders become available for selection.

Note that you could achieve the same result by creating joins between the complex folder and its base folders. However, this approach is undesirable because:

- it might result in poor query performance
- you will have additional joins to maintain

In Discoverer Administrator you can define one or more base folders within a complex folder as 'reach through enabled'. When a Discoverer Plus or Discoverer Desktop user selects an item from the complex folder, the associated reach through enabled base folders become available for selection in a worksheet.

Complex folder reach through is particularly useful when using Discoverer with Oracle Applications flexfields (that is, user defined items) to query a base folder after a complex folder has been created. If the base folder is defined as reach through enabled and new flexfield items can be added to the base folder without having to modify the complex folder definition. Oracle Applications users can select the new flexfield items from the base folder immediately, as they are reach through enabled.

Notes

- A complex folder contains items from one or more base folders. A complex folder enables you to create a combined view of data from multiple folders. This is analogous to a view in the database.

- A base folder can be any of the following types of folder:
  - a simple folder, containing items based on columns in a single database table or view
  - a custom folder, based on SQL statements
  - a complex folder, containing items from one or more base folders

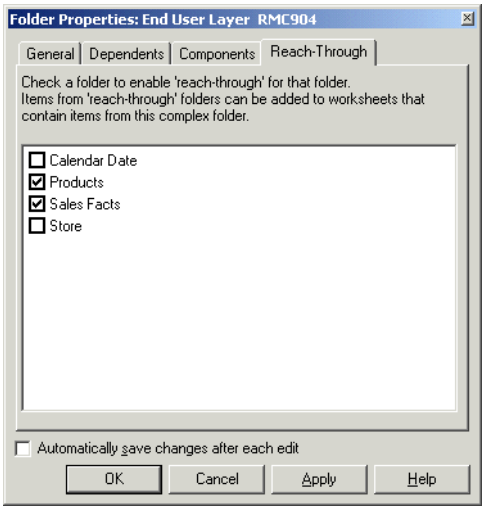
How to define a complex folder to enable reach through to the base folders

You define a complex folder to enable reach through the base folders to enable Discoverer users to select items from base folders that are not in the complex folder.

Note: Users can select items from base folders that are not in the complex folder only if they first select an item from the complex folder.

To define a complex folder and enable reach through enabled base folders:

1. Select a complex folder on the "Workarea: Data tab" and choose Edit | Properties to display the "Folder Properties dialog".
2. Display the "Folder Properties dialog: Reach-Through tab".



3. Click one or more check boxes to select the base folders that you want to be reach through enabled.
4. Click OK to save your changes and close the Folder Properties dialog.

The folders you selected in the "Folder Properties dialog: Reach-Through tab" are now reach-through enabled for the selected complex folder and are available for an end user to select, after they have selected an item from the complex folder.

What rules and restrictions apply when you use complex folder reach through?

Several rules and restrictions apply to complex folder reach through as follows:

- "What rules determine the availability of base folder items to end users?"
- "Restrictions on joins in Discoverer Administrator when defining a base folder as reach through enabled?"

- "Restrictions on summary folders in Discoverer Administrator when defining a base folder as reach through enabled?"
- "Restrictions on Discoverer Plus and Desktop when building a worksheet using items from a reach through enabled base folder"
- "Exceptions when Discoverer end users open and save workbooks that contain items from reach through enabled base folders?"
- "What rules apply to complex folder reach through when you import EUL objects?"

What rules determine the availability of base folder items to end users?

After the end user selects an item from a complex folder, the availability of base folder items is defined as follows:

- if a base folder is defined within the complex folder as reach through enabled, all of its items will be available for selection
- if a base folder is not defined within the complex folder as reach through enabled, items from that folder, that are not in the complex folder, will not be available for selection

Restrictions on joins in Discoverer Administrator when defining a base folder as reach through enabled?

The following restrictions apply to joins in Discoverer Administrator when you define a base folder as reach through enabled:

- Discoverer Administrator does not allow you to reach through enable a base folder if a join already exists between the complex folder and the base folder. Discoverer Administrator displays an error if this is attempted
- Discoverer Administrator does not allow you to create a join between a base folder and a complex folder, if that base folder is reach through enabled in the context of the complex folder. Discoverer Administrator displays an error if this is attempted

Restrictions on summary folders in Discoverer Administrator when defining a base folder as reach through enabled?

When you define a base folder as reach through enabled, and use Automated Summary Management (ASM) to create summary folders, Discoverer will not generate summary folder recommendations based on items from base folders that are defined as reach though enabled. For more information about using ASM, see "How to run ASM using the Summary Wizard".

Restrictions on Discoverer Plus and Desktop when building a worksheet using items from a reach through enabled base folder

The following restrictions apply in Discoverer Plus and Discoverer Desktop when building a worksheet using items from a reach through enabled base folder:

- When a complex folder is defined as reach through enabled in the context of another complex folder, only one level of reach through is available.

  For example, if a complex folder (for example, Complex2) is defined as reach through enabled in the context of another complex folder (for example, Complex1). Another complex folder (for example, Complex3) is not allowed to be

defined as reach through enabled in the context of Complex2. The user will only be able to select items from Complex1 and Complex2.

- If a Discoverer user selects an item from a reach through enabled base folder, any existing joins between the base folder and other folders are not included.

  In other words, if a base folder is available to a Discoverer user because it is reach through enabled, the joins normally associated with the base folder are not available. Therefore items in folders that are joined to the reach through enabled base folder are not available to the Discoverer user.

Exceptions when Discoverer end users open and save workbooks that contain items from reach through enabled base folders?

When Discoverer users open or save workbooks that contain items from reach through enabled base folders, Discoverer displays these items without requiring an explicitly defined join. The reach through mechanism enables workbooks to open normally, with the following exceptions:

- if all the items of a reach through enabled base folder have been removed from a complex folder, and the items are in the worksheet

  In this case, Discoverer treats the worksheet items as if there was no join and displays an appropriate error message when opening the worksheet.

- if a base folder has its reach through enabled property revoked

  In this case, the join required to use the base folder item does not exist, and Discoverer displays an appropriate error message when opening the worksheet.

- if you remove a join, to define a base folder as reach-through enabled

  In this case, existing workbooks that use the join will not open, and Discoverer displays an appropriate error message when opening such workbooks. Before you remove a join, always check the impact.

- if the end user attempts to open a workbook containing items from reach-through enabled base folders in a version of Discoverer lower than 9.0.4.1

  In this case, the workbook cannot be opened.

What rules apply to complex folder reach through when you import EUL objects?

The following rules apply to complex folder reach through when you import EUL objects:

- If you import a reach through enabled base folder into an EUL in which a join already exists between a complex folder and the base folder, Discoverer imports the base folder and defines it as not being reach through enabled. Discoverer writes a warning to the import log.

- If you import a complex folder that is joined to a base folder into an EUL in which the base folder is defined as reach through enabled, Discoverer imports the complex folder and the join. However, Discoverer redefines the base folder as not being reach through enabled.

How to delete folders from a business area

To delete a folder from a business area:

1. On the "Workarea: Data tab", select the folder you want to delete.

You can select more than one folder by pressing the Ctrl key and clicking another folder.

2. Choose Edit | Delete to display the "Confirm Folder Delete dialog".

   The Confirm Folder Delete dialog enables you to choose how you want to delete the folder and to assess the impact of deleting the folder.

3. Specify how you want to delete the folder by selecting one of the following options:

   - **Delete from this Business Area**

     Removes the selected folder from the current business area. Note that this option does not delete the folder from the EUL. If the folder is not shared by any other business area, it becomes an orphan folder.

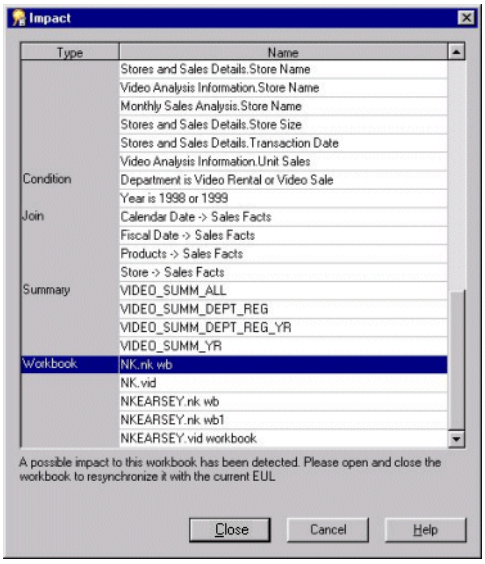
   - **Delete from the End User Layer**

     Removes the selected folder from all business areas that contain that folder. Note that this option also completely removes the folder definition from the EUL.

4. (optional) To see the objects that might be affected by deleting this folder:

   a. Click Impact to display the "Impact dialog".

Figure 6–7 Impact dialog



   The Impact dialog enables you to review the other EUL objects that might be affected when you delete a folder.

   Note: The Impact dialog does not show the impact on workbooks saved to the file system (that is, in `dis` files).

   b. (optional) Select a row to view text at the bottom of the list, indicating what affect the current action will have on the EUL object.

   c. When you have finished reviewing the impact of deleting the folder, click Close to close the Impact dialog.

5. When you are certain that you want to delete the selected folder, click Yes.

   The selected folder is deleted in the way that you specified.

Notes

- Before deleting a folder, you might find it useful to identify the business areas to which the folder is assigned. To identify the business areas, click the folder you want to delete on the Data tab of the Workarea and choose Tools | Manage Folders to display the "Manage Folders dialog: By Business Area tab". The Manage Folders dialog contains a drop down list of other business areas that hold the selected folder.
- To delete an orphaned folder from the EUL, you choose Tools, and then Manage Folders to display the "Manage Folders dialog: By Business Area tab" where you can view and delete orphaned folders. For more information, see "How to remove an orphaned folder from the EUL".

How to assign folders to a business area

To assign folders to a specific business area:

1. Choose Tools | Manage Folders to display the "Manage Folders dialog: By Business Area tab".

   Use the "Manage Folders dialog: By Business Area tab" to assign any number of folders (including orphan folders) to a specific business area.

2. Select the business area to which you want to assign one or more folders from the **Business area** drop down list.

   By default, the **Business area** drop down list displays the business area currently selected in the Workarea.

3. Move the required folders from the **Available folders** list to the **Current folders** list.

   You can select more than one folder by pressing the Ctrl key and clicking another folder.

4. Click OK to save the changes you have made.

   The business area now contains the folders you specified in the **Current folders** list.

How to assign a folder to multiple business areas

To assign a folder to multiple business areas:

1. Choose Tools | Manage Folders and display the "Manage Folders dialog: By Folder tab".

   Use the "Manage Folders dialog: By Folder tab" to assign a specific folder (including an orphan folder) to multiple business areas.

2. Select the folder that you want to assign to one or more business areas from the **Folder** drop down list.

3. Move the required business areas from the **Available business areas** list to the **Current business areas** list

   You can select more than one business area by pressing the Ctrl key and clicking another business area.

4. Click OK to save the changes you have made.

The folder is now assigned to the business areas you specified in the **Current business areas** list.

How to view orphaned folders in the EUL

To view orphaned folders in the EUL:

1. Choose Tools | Manage Folders and display the "Manage Folders dialog: Orphaned Folders tab".

   Discoverer displays all the Orphaned Folders in the current EUL.

How to remove an orphaned folder from the EUL

To remove an orphaned folder from the EUL:

1. Choose Tools | Manage Folders and display the "Manage Folders dialog: By Business Area tab".

   Use the Orphaned Folders tab to delete an orphan folder from the EUL.

2. Select the folder that you want to delete from the **Orphaned Folders** field.
3. Click Delete to remove the highlighted folder from the EUL

   You can select more than one orphaned folder by pressing the Ctrl key and clicking another orphaned folder.

4. Click OK to save the changes you have made.

   The folder is now deleted from the current EUL.

How to sort folders in a business area

You can alphabetically sort folders in a selected business area.

To alphabetically sort folders in a business area:

1. Select a business area in the "Workarea: Data tab".
2. Choose Edit | Sort Folders.

   Note: Discoverer Administrator displays the "Alphabetical Sort dialog" indicating the number of folders that will be alphabetically sorted and stating that the existing order will be lost.

3. Click Yes to continue.

Notes

Folders can also be sorted during bulk load when you load a business area. For information about sorting folders when using the:

- Load Wizard, see "How to create a business area using the Load Wizard"
- command-line interface, see "/load"

How to sort items in a folder

You can alphabetically sort items in a selected folder.

To alphabetically sort items in a folder:

1. Select a folder from a business area in the "Workarea: Data tab".
2. Choose Edit | Sort items.

   Note: Discoverer Administrator displays the "Alphabetical Sort dialog" indicating the number of items that will be alphabetically sorted and stating that the existing order will be lost.
3. Click Yes to continue.

Notes

Items can also be sorted during bulk load when you load a business area. For information about sorting items when using the:

- Load Wizard, see "How to create a business area using the Load Wizard"
- command-line interface, see "/load"

How to re-order folders in a business area

The order in which you see folders displayed in Discoverer Administrator is the same order that Discoverer end users will see. By default, folders within a business area are displayed in alphabetical order. However, you might want to change the default order to:

- group folders that are logically connected
- move the most commonly used folders to the top of the list

To change the order of folders in a business area:

1. Display the "Workarea: Data tab".
2. Drag and drop the folder to the position where you want it to appear in the list of folders.

How to validate folders in a business area

Occasionally, you might encounter difficulties with Discoverer Administrator folders. For example, you might be able to see folders in Discoverer Administrator that Discoverer end users cannot access. Use the Validate Folders facility to help you diagnose the problem.

To validate the link between the folders in a business area and the database objects to which they refer:

1. Choose View | Validate Folders.

   The Validate Folders facility uses the database parser to check that the relevant tables exist in the database and the EUL owner has SELECT access to them.

   If there are any errors, a message is displayed alongside the relevant folder(s).

7

Controlling Access to Information

This chapter explains how to control access to information using Discoverer Administrator, and contains the following topics:

- "About Discoverer and security"
- "About Discoverer access permissions"
- "About Discoverer and the Oracle Advanced Security Option (ASO)"
- "About Discoverer task privileges"
- "How to specify a user or role (responsibility) that can access a business area"
- "How to specify the business areas a user or role (responsibility) can access"
- "How to specify the tasks a user or role (responsibility) can perform"
- "How to specify a user or role (responsibility) to perform a specific task"
- "How to set query retrieval limits"
- "How to set scheduled workbook limits"
- "How to share Discoverer workbooks using a database role"
- "About Transparent Application Failover"

About Discoverer and security

As a Discoverer manager, it is your responsibility to control the information that users can access and what they can do with that information. You use Discoverer access permissions and task privileges as follows:

- you use Discoverer access permissions to control who can see and use the data in business areas
- you use Discoverer task privileges to control the tasks each user is allowed to perform

You can grant Discoverer access permissions and task privileges to database roles and to database users. When you grant access permissions or task privileges to a role, all users with that role have the role's access permissions and task privileges. If you run Discoverer Administrator in Oracle Applications mode, you grant access permissions or task privileges to Oracle Applications Responsibilities instead of roles. For more information about Oracle Applications mode, see "What features does Discoverer support for Oracle Applications users?".

The access permissions and task privileges that you grant in Discoverer Administrator only apply to Discoverer's business areas and not to the underlying database tables.

Data access rights to the database tables remain under the control of the database administrator.

Regardless of the access permissions and task privileges that you set in Discoverer Administrator, a Discoverer end user only sees folders if that user has been granted the following database privileges (either directly or through a database role):

- SELECT privilege on all the underlying tables used in the folder
- EXECUTE privilege on any PL/SQL functions used in the folder

You can enable a user to perform administrative tasks (for example, the creation of folders, calculations, conditions, hierarchies, summaries) in a business area by granting that user Administration privilege on the business area. A user with the Administration privilege on a particular business area can also grant Administration privilege on that business area to other users. Note that although you can devolve business area administration to multiple users, it is often easier to maintain control with a single administrator for each business area.

About Discoverer access permissions

Discoverer access permissions enable you to control who can see and use the data in business areas.

You control access to business areas in two ways:

- by specifying the business areas that a particular user or role can access (for more information, see "How to specify the business areas a user or role (responsibility) can access")
- by specifying the users or roles that can access a particular business area (for more information, see "How to specify a user or role (responsibility) that can access a business area")

Before Discoverer end users see folders in a business area, Discoverer confirms that the user has database access to the tables referenced by the folders. If the user does not have access to a table referenced by a folder, Discoverer does not display the folder. You can override this behavior (for example, to improve performance where access privileges rarely change) by changing the value of the ObjectsAlwaysAccessible registry setting (for more information, see Chapter 21, "Discoverer Registry Settings").

About Discoverer and the Oracle Advanced Security Option (ASO)

Discoverer is certified with the Oracle Advanced Security Option (ASO) encryption technology provided by the Oracle database (in Oracle Enterprise Edition databases). The certification has four encryption types (RC4, DES, Triple-DES and AES). Oracle ASO encryption incurs little performance overhead, although performance will vary depending on several factors (for example, the operating system, the encryption algorithm). For more information about Oracle ASO encryption, see the *Oracle9i Security Overview*.

About Discoverer task privileges

Discoverer task privileges enable you to control the tasks each user is allowed to perform.

You use task privileges to specify whether a Discoverer end user is able to:

- create new worksheets or edit existing ones (without this option, a user only has the ability to run predefined worksheets)
- use item drills, drill to related items, and drill from summary to detail items
- drill out to launch other applications
- grant access to workbooks to other users
- create and edit scheduled workbooks
- save workbooks to the database
- collect query performance statistics

You also use task privileges to specify whether a user of Discoverer Administrator is able to:

- edit only the formatting information in an existing business area
- create new business areas and edit existing ones
- create summary tables
- grant and revoke EUL privileges
- maintain the scheduled workbooks of end users

How to specify a user or role (responsibility) that can access a business area

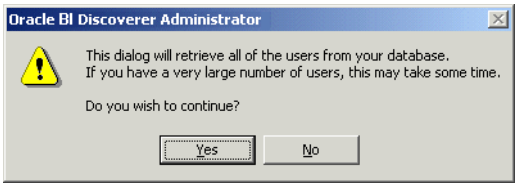
Note: When Oracle Applications database users are connected, Discoverer Administrator displays responsibilities instead of roles.

To specify the users or roles that can access a specific business area:

1. Choose Tools | Security and select the "Security dialog: Business Area - > User tab".

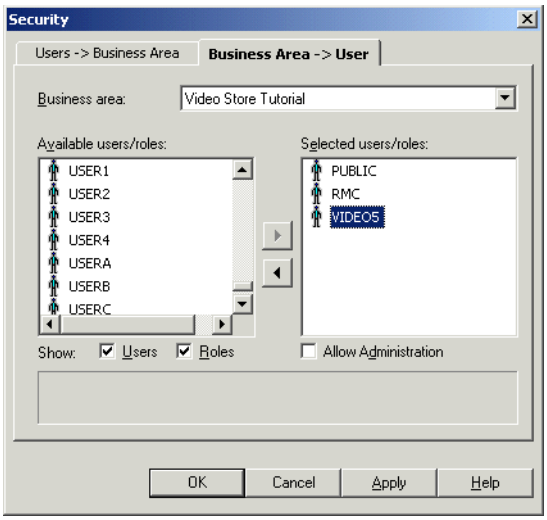
   Discoverer Administrator displays the following warning dialog.

Figure 7–1 Warning dialog



2. Click Yes to display the "Security dialog: Business Area - > User tab".

Figure 7–2 Security dialog: Business Area->User tab



Note: To change the maximum number of rows that Discoverer will display in the **Available users/roles** list, you edit the value of the Discoverer registry setting MaxNumListRows (for more information, see Chapter 21, "Discoverer Registry Settings").

3. Select the business area to which you want to grant access from the **Business area** drop down list.
4. Specify the content of the **Available users/roles** list by selecting the **Users** check box and the **Roles** check box, as appropriate.
5. Move the users or roles that you want to have access to the selected business area from the **Available users/roles** list to the **Selected users/roles** list.

   You can select more than one user or role by pressing the Ctrl key and clicking another user or role.
6. For each new user or role you add to the **Selected users/roles** list, follow the instructions below to specify whether they have administration access to the business area:

   a. Click the user or role in the **Selected users/roles** list.

   b. Select or clear the **Allow Administration** check box as required.

   The setting of a user's **Allow Administration** privilege controls which administration tasks the user can perform. For more information, see "How to specify the tasks a user or role (responsibility) can perform".
7. Click OK to save the changes you have made and close the Security dialog.

Notes

- To remove access to a business area from a user or role, move the user or role from the **Selected users/roles** list to the **Available users/roles** list.
- The **Available users/roles** list includes a role called PUBLIC. Select this role to view or edit the default access permissions for users or roles whose permissions you have not yet defined.
- If you run Discoverer Administrator as an Oracle Applications user, the Security dialog shows Oracle Applications Responsibilities instead of roles. For more

information about Applications mode, see "What features does Discoverer support for Oracle Applications users?".

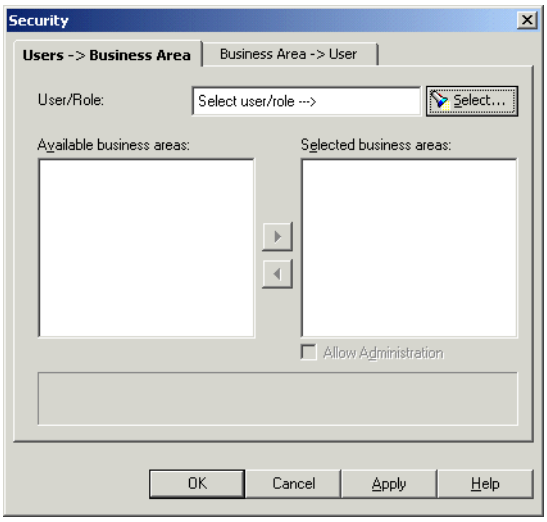
How to specify the business areas a user or role (responsibility) can access

Note: When Oracle Applications database users are connected, Discoverer Administrator displays responsibilities instead of roles.

To specify the business areas that a user or role can access:

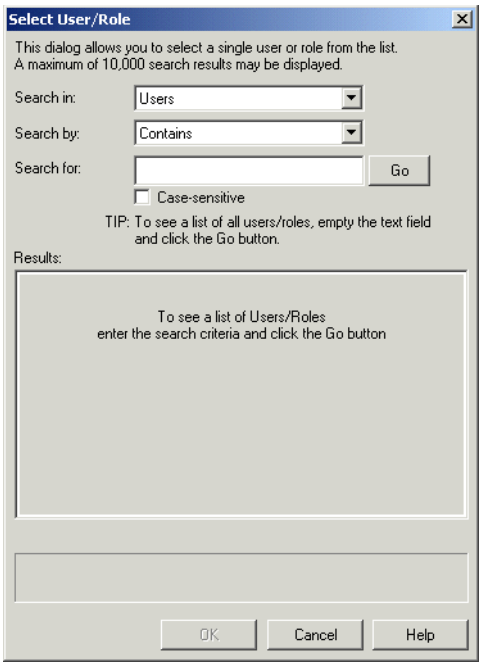
1. Choose Tools | Security and display the "Security dialog: Users - > Business Area tab"

Figure 7–3 Security dialog: Users-> Business Area tab



2. Click Select to display the "Select User/Role dialog" where you can search for and select the database user or role to which you want to grant access.

Figure 7–4 Select User/Role dialog



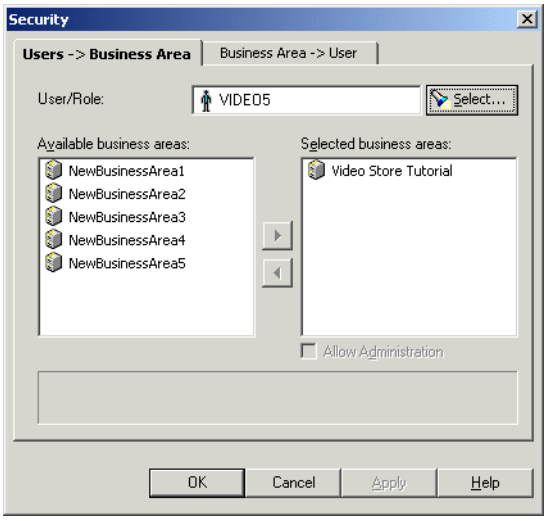
3. Enter the search criteria in the **Search For** field and click Go.

   Discoverer Administrator displays the search results in the **Results** list.

4. Select a user or role from the **Results** list.

5. Click OK to display the "Security dialog: Users - > Business Area tab" with the business areas for the selected user or role.

Figure 7–5 Security dialog: Users-> Business Area tab



6. Move the business areas that you want the selected user or role to have access to from the **Available business areas** list to the **Selected business areas** list.

   You can select more than one business area by pressing the Ctrl key and clicking another business area.

7. For each new business area you add to the **Selected business areas** list, follow the instructions below to specify whether the selected user or role has administration access to the business area:

   a. Click the business area in the **Selected business areas** list.

   b. Select or clear the **Allow Administration** check box as required.

   The setting of a user's **Allow Administration** privilege controls which administration tasks the user can perform. For more information, see "How to specify the tasks a user or role (responsibility) can perform".

8. Click OK to save the changes you have made and close the Security dialog.

Notes

- To remove access to a business area from a user or role, move the business area from the **Selected business areas** list to the **Available business areas** list.
- The list of available users/roles includes a role called PUBLIC. Select this role to view or edit the default access permissions for users or roles whose permissions you have not yet explicitly defined.
- If you run Discoverer Administrator as an Oracle Applications user, the Security dialog shows Oracle Applications Responsibilities instead of roles. For more information about Applications mode, see "What features does Discoverer support for Oracle Applications users?".

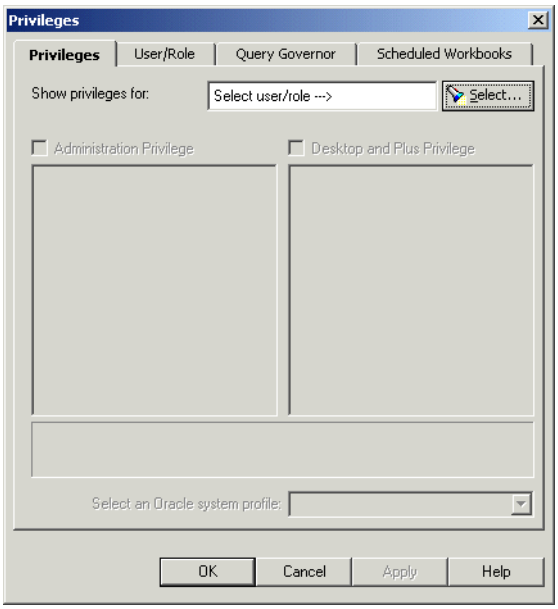
How to specify the tasks a user or role (responsibility) can perform

Note: When Oracle Applications database users are connected, Discoverer Administrator displays responsibilities instead of roles.

To specify the tasks a user or role can perform:

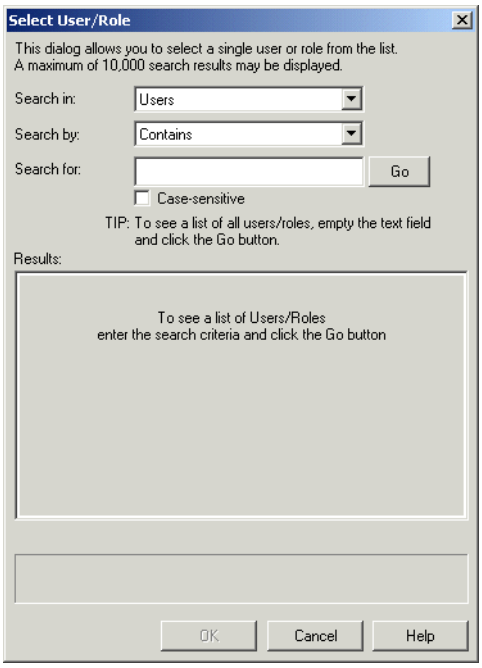
1. Choose Tools | Privileges and display the "Privileges dialog: Privileges tab".

Figure 7–6 Privileges dialog: Privileges tab



2. Click Select to display the "Select User/Role dialog" where you can search for and select the user or role whose task privileges you want to change.

Figure 7–7 Select User/Role dialog



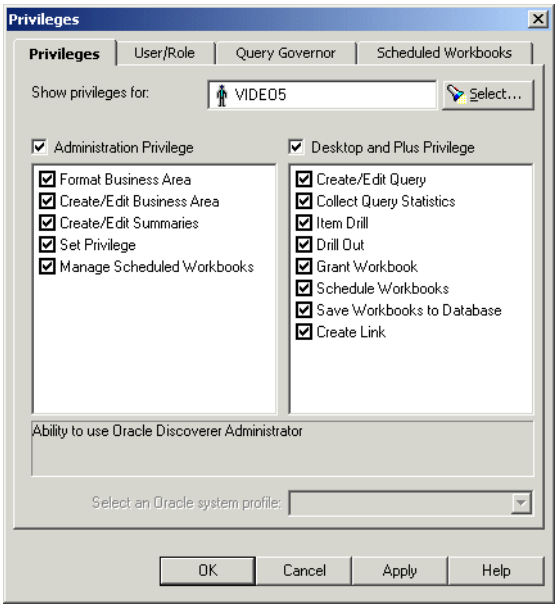
3. Enter the search criteria in the **Search For** field and click Go.

   Discoverer Administrator displays the search results in the **Results** list.

4. Select a user or role from the **Results** list.

5. Click OK to display the "Privileges dialog: Privileges tab" for the selected user or role.

Figure 7–8 Privileges dialog: Privileges tab



6. Grant or revoke specific task privileges for the user or role by selecting or clearing the appropriate check boxes in the **Administration Privilege** list or the **Desktop and Plus Privilege** list.

   Note: To grant a privilege, you must first grant the parent privilege using the **Administration Privilege** check box or the **Desktop and Plus Privilege** check box. If a user has access to Discoverer Desktop or Discoverer Plus through a responsibility and you clear the **Desktop and Plus** check box, any selected check boxes in the list of privileges will still be active (although they appear grayed out). The total privileges for a user are determined by the combination of responsibility and user privileges.

   Tip: Click a privilege in the **Administration Privilege** list or the **Desktop and Plus Privilege** lists to see a brief description of that privilege in the area below the lists.

   Note: The Desktop and Plus privilege also applies to Discoverer Viewer

7. Choose an Oracle system profile to apply to the user or role from the **Select an Oracle System Profile** drop down list.

   Oracle system profiles are created by the database administrator to control access to database resources.

   Note: To assign Oracle system profiles within Discoverer Administrator you must have access to the following database views:

   - DBA_PROFILES
   - DBA_USERS

8. Click OK to save the changes you have made and close the Privileges dialog.

Notes

- The changes you have made will take effect when users re-connect to Discoverer.
- The list of available users/roles includes a role called PUBLIC. Select this role to view or edit the default task privileges for users or roles whose privileges you have not yet explicitly defined.
- If you want to grant Administration privileges to a user or role, you must also grant that user Administration access to the business area. For more information, see "How to specify a user or role (responsibility) to perform a specific task".
- If you run Discoverer Administrator as an Oracle Applications user, the Privileges dialog shows Oracle Applications Responsibilities instead of roles. For more information about Oracle Applications mode, see Chapter 17, "Using Discoverer with Oracle Applications".

How to specify a user or role (responsibility) to perform a specific task

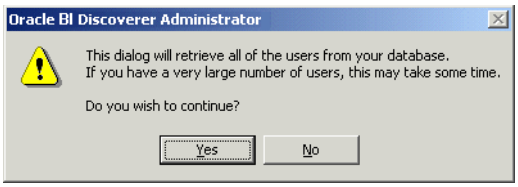
Note: When Oracle Applications database users are connected, Discoverer Administrator displays responsibilities instead of roles.

To specify the users or roles that can perform a specific task:

1. Choose Tools | Privileges to display the "Privileges dialog: User/Role tab".

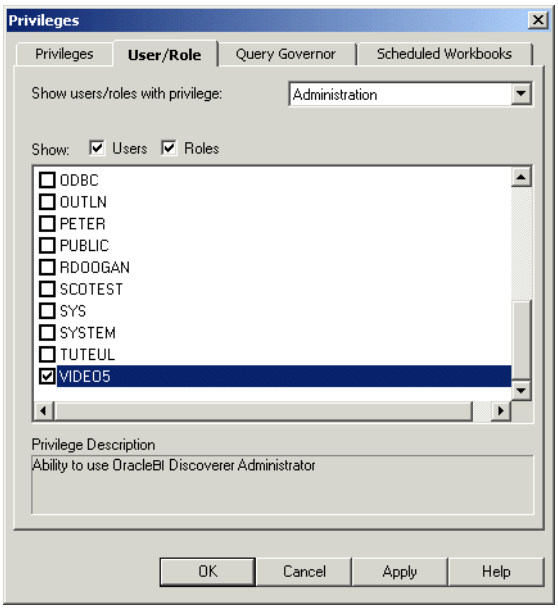
   Discoverer first displays the following warning dialog.

Figure 7–9 Warning dialog



2. Click Yes to display the "Privileges dialog: User/Role tab".

Figure 7–10 Privileges dialog: User/Role tab



Note: To change the maximum number of rows that Discoverer will display in the **Show Users/Roles** list, you edit the value of the Discoverer registry setting MaxNumListRows (for more information, see Chapter 21, "Discoverer Registry Settings").

3. Select the task privilege that you want to grant to (or revoke from) users or roles from the drop down list.

   When you select a privilege from the drop down list, a brief description of the privilege appears on the lower area of the dialog.

4. Specify the content of the **Users/Roles** list by selecting the **Users** check box and the **Roles** check box, as appropriate.

   The content of the **Users/Roles** list is sorted alphabetically. If you include both users and roles, users appear first.

5. Grant or revoke privileges for the currently selected task by selecting or clearing the appropriate check boxes in the **Users/Roles** list.

6. Click OK to save the changes you have made and close the Privileges dialog.

Notes

- The changes you have made will take effect when users re-connect to Discoverer.

- If you want to grant (or deny) administration privileges to a user or role, you must also grant (or deny) that user administration access to the business area. For more information, see "How to specify a user or role (responsibility) that can access a business area".
- If you run Discoverer Administrator as an Oracle Applications user, the Privileges dialog shows Oracle Applications Responsibilities instead of roles. For more information about Oracle Applications mode, see Chapter 17, "Using Discoverer with Oracle Applications".

How to set query retrieval limits

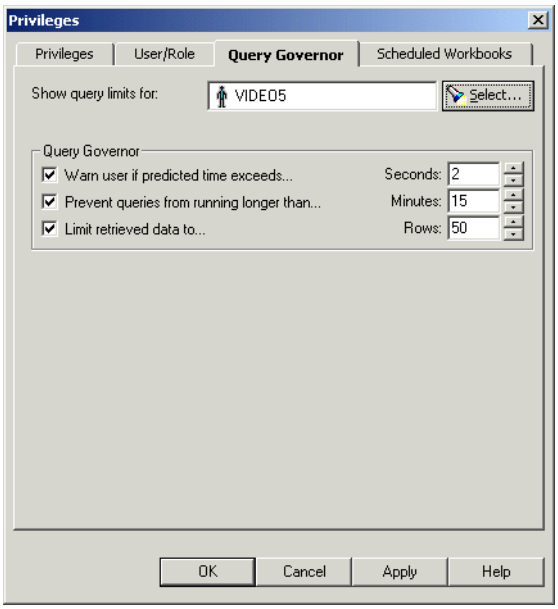
You can maintain overall system performance by setting query limits for users and roles.

Note: When Oracle Applications database users are connected, Discoverer Administrator displays responsibilities instead of roles.

To set query retrieval limits for a user or role:

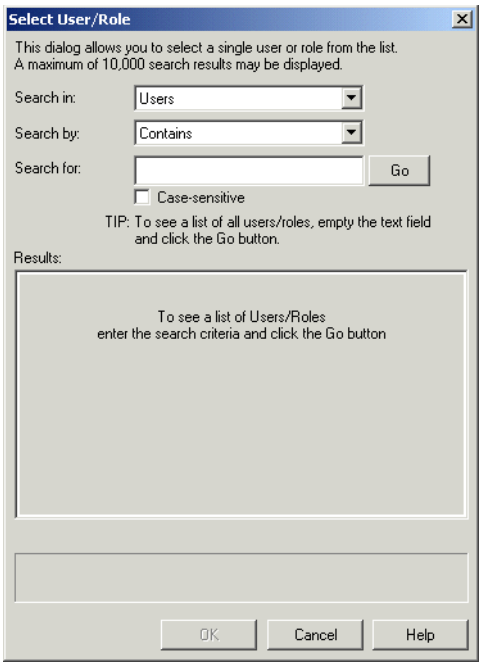
1. Choose Tools | Privileges and display the "Privileges dialog: Query Governor tab".

Figure 7–11 Privileges dialog: Query Governor tab



2. Click Select to display the "Select User/Role dialog" where you can search for and select the user or role for which you want to specify a query limit.

Figure 7–12 Select User/Role dialog



3. Enter the search criteria in the **Search For** field and click Go.

   Discoverer Administrator displays the search results in the **Results** list.

4. Select a user or role from the **Results** list.

5. Click OK to display the "Privileges dialog: Query Governor tab" for the selected user or role.

6. Specify the following Query Governor options as required:

Option	Use to:
Warn user if predicted time exceeds:	issue a warning if the estimated time to perform a query exceeds the limit you specify
Prevent queries from running longer than:	stop queries that have been running for longer than the limit you specify
Limit retrieved data to:	restrict the number of rows a query can retrieve to the limit you specify

7. Click OK to save the changes you have made and close the Privileges dialog.

Notes

- To find out how Discoverer estimates the time a query will take to run and the number of rows the query will retrieve, see Chapter 20, "Predicting Query Performance".
- Where Discoverer estimates that a query will take longer to run than the limit you set, you can specify that the user must run the query as a scheduled workbook using options on the "Privileges dialog: Privileges tab".
- If you run Discoverer Administrator as an Oracle Applications user, the Privileges dialog shows Oracle Applications Responsibilities instead of roles. For more

information about Oracle Applications mode, see Chapter 17, "Using Discoverer with Oracle Applications".

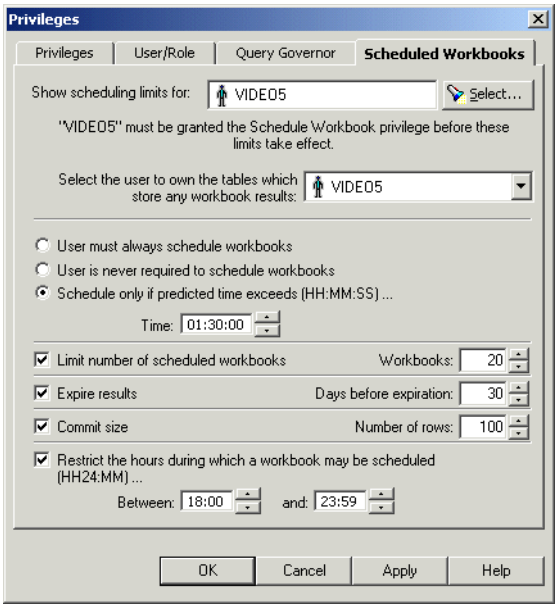
How to set scheduled workbook limits

You can control how a Discoverer end user uses scheduled workbooks by setting scheduled workbook limits.

To set scheduled workbook limits for a user or role:

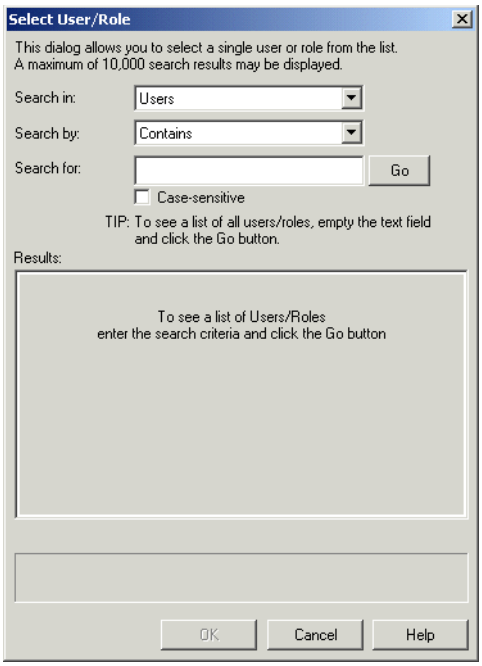
1. Choose Tools | Privileges and display the "Privileges dialog: Scheduled Workbooks tab".

Figure 7–13 Privileges dialog: Scheduled Workbooks tab



2. Click Select to display the "Select User/Role dialog" where you can search for and select the user or role for which you want to specify scheduled workbook limits.

Figure 7–14 Select User/Role dialog



3. Enter the search criteria in the **Search For** field and click Go.

   Discoverer Administrator displays the search results in the **Results** list.

4. Select a user or role from the **Results** list.

5. Click OK to display the "Privileges dialog: Scheduled Workbooks tab" for the selected user or role.

6. Select the user to own the result tables created in the database (that contain the results of scheduled workbooks).

   The results of scheduled workbooks are stored in database tables. These tables can belong to a different user to the one that originally ran the scheduled workbook.

   Note: Oracle Applications users should use the Oracle Applications user (created with the `batchuser_app.sql` script) as the scheduled workbook results schema in which to store scheduled workbook results.

   Alternatively, Oracle Applications users can use the Oracle Applications APPS schema.

   ---

7. Specify when you want to force the user to schedule workbooks.

8. Set the scheduled workbook options as required.

9. Click OK to save the changes you have made and close the Privileges dialog.

Note: You might decide to have a single database user owning the tables containing the results of all users' scheduled workbooks (with the benefit that individual users do not need additional privileges to run scheduled workbooks). Alternatively, you might decide to have a scheduled workbook results schema owning the tables containing the results for each user's scheduled workbooks (with the benefit that space quota is not shared and is therefore less likely to be exhausted than if the tables were owned by a

single database user). For more information, see "Where to store the results of scheduled workbooks?".

How to share Discoverer workbooks using a database role

You might want to share Discoverer workbooks in an End User Layer (EUL) using a database role. For example you might only want database users that have been granted the database role of a manager, to access specific Discoverer workbooks. You can determine the database users that can use specific Discoverer workbooks by associating the database users with a database role, and sharing the Discoverer workbooks with the database role as follows:

- identify an existing database role or create a new database role
- make sure that the database role can select data from the database tables that will be used by your Discoverer workbooks
- grant the database role to the database users, whose workbooks you want to share with the database role
- identify or create the Discoverer workbooks using a database user that has been granted the database role
- share the Discoverer workbooks with the database role

Each database user that is granted the database role will be able to access workbooks that are shared with that database role.

How to share workbooks using a database role:

1. Start SQL*Plus (if it is not already running) and connect as the EUL owner.

   For example, if SQL*Plus is already running, you might type the following at the command prompt:

   ```
   SQL> connect jchan/tiger@database;
   ```

   Where jchan is the EUL owner and tiger is the EUL owner password.

2. Create a database role as the EUL owner.

   For example, in SQL*Plus you might enter the following SQL statement:

   ```
   SQL> create role role1;
   ```

   The above statement creates a database role named role1.

3. Grant the SELECT privilege on the appropriate database tables to the database role you just created.

   For example, in SQL*Plus you might enter the following SQL statement:

   ```
   SQL> grant select on product to role1;
   SQL> grant select on store to role1;
   SQL> grant select on sales_fact to role1;
   ```

   The above statement grants the select privilege on the product, store and sales_fact tables to the database role role1.

   Note: The select privilege must be granted to the role on all the tables that are referenced by items used in Discoverer workbooks.

4. Grant the role that you just created to each database user with whom you want to share Discoverer workbooks.

For example, in SQL*Plus you might enter the following SQL statement:

```
SQL> grant role1 to jchen;
```

The above statement grants the database role role1 to the database user jchen.

The remaining task steps must be carried out using Discoverer Plus or Discoverer Desktop.

For more information, see the *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Plus*.

5. In Discoverer Plus or Discoverer Desktop, connect as the EUL owner and choose File | Manage Workbooks | Sharing to display the Share Workbooks dialog.
6. Select the database role that you previously created (for example, role1).
7. Move the workbooks you want to share with the database role role1, from the **Available** field to the **Shared** field.
8. Click OK to close the dialog and save the changes you made.

The database users that have been granted the database role will now be able to use any Discoverer workbooks that have been shared with the database role.

About Transparent Application Failover

Discoverer provides Transparent Application Failover support for Oracle Enterprise Edition databases, described in the following topics:

- "What is Transparent Application Failover?"
- "What impact does Transparent Application Failover have on Discoverer users?"
- "How to enable Discoverer support for Transparent Application Failover"
- "Notes on Discoverer support for Transparent Application Failover"

What is Transparent Application Failover?

Transparent Application Failover is a feature included in Oracle Enterprise Edition databases (8.1.7 or later). If a database failure occurs, Transparent Application Failover masks the database failure by relocating processing from the failed database component to an alternative backup component.

What impact does Transparent Application Failover have on Discoverer users?

For most database failures, Discoverer users are not aware that Transparent Application Failover has relocated database processing. In some circumstances, Discoverer might display an error message. If users see such an error message, they have to repeat the Discoverer operation that was interrupted.

How to enable Discoverer support for Transparent Application Failover

To enable Discoverer support for Transparent Application Failover:

1. Add the FAILOVER MODE parameter to the CONNECT_DATA section of a connect descriptor in the tnsnames.ora file (typically located in the <ORACLE_HOME>\network\admin directory).
2. Set the value of the TYPE subparameter to SELECT.

3. Specify values for other subparameters of the FAILOVER_MODE parameter as required.

   For example:

```
MYSERVICENAME=(DESCRIPTION=(ADDRESS_
LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=HOSTNAME)(PORT = 1521)))
(CONNECT_DATA=(SERVICE_NAME=MYSERVICENAME)(FAILOVER_
MODE=(TYPE=SELECT)(RETRIES=5))))
```

   For more information about enabling Transparent Application Failover, see the *Oracle Database Net Services Administrator's Guide 11g Release 1*, Chapter 13 Enabling Advanced Features of Oracle Net Services".

Notes on Discoverer support for Transparent Application Failover

Note the following:

- Transparent Application Failover does not relocate processing for the PL/SQL packages that provide Discoverer workbook scheduling and summary folder refresh functionality. If the database fails when a scheduled workbook is running or when a summary folder is being refreshed, these operations will fail.
- Transparent Application Failover does not relocate processing for user-defined PL/SQL functions that are referenced in a worksheet, and users will need to rerun the query.
- In the event of a database failure, Discoverer Portlet Provider can obtain Portlet Provider metadata by accessing the EUL from a failover database instance. However, Discoverer Portlet Provider cannot obtain portlets-specific metadata, because the metadata repository (MR) schema, which contains portlet-specific metadata, does not support Transparent Application Failover.

  In effect, if the database that contains the metadata repository schema fails, even if an Oracle RAC database is being used, portlets would not work.

8

Scheduling Workbooks

This chapter explains how to enable users to schedule workbooks and contains the following topics:

- "What are workbooks and scheduled workbooks?"
- "Why schedule workbooks?"
- "What happens when an end user schedules a workbook?"
- "Where to store the results of scheduled workbooks?"
- "What are the prerequisites for scheduling workbooks?"
- "How to confirm that the DBMS_JOB package is installed"
- "How to specify the owner of the tables containing scheduled workbooks results"
- "How to grant the SELECT privilege on the synonym v$parameter to enable you to run scheduled workbooks"
- "How to view and manage scheduled workbooks"

What are workbooks and scheduled workbooks?

A workbook is a collection of Discoverer worksheets. Workbooks are essentially documents containing query definitions. Discoverer end users can store their workbooks centrally in the database. In Discoverer Desktop, users can also store workbooks on their own PC or on a network file server.

A scheduled workbook is a workbook that has been set by the user to run automatically at a particular date, time, and frequency. Scheduled workbooks are placed on a process queue on the database server. End users can schedule workbooks using Discoverer Plus and Desktop. As the Discoverer manager, you can use Discoverer Administrator to monitor and maintain scheduled workbooks.

Note the following:

- Users can run workbooks in the background using the Discoverer command-line options (Desktop only). Such workbooks are not scheduled workbooks.
- Scheduled workbooks, scheduling information and the results of scheduled workbooks are not exported when you export a business area.
- If the objects of the EUL used by a scheduled workbook changed between the time when the workbook is scheduled and the time when the result set is displayed, the scheduled workbook's status is set to indicate that the EUL has changed.

- For information about compatibility with earlier versions of Discoverer, see "About scheduled workbooks and compatibility between Discoverer 10.1.2 and pre-Oracle9i database releases".

Why schedule workbooks?

From a Discoverer end user's point of view, the ability to schedule workbooks is useful for:

- reports that take a long time to run
- reports that have to run at regular intervals

For example, a Discoverer end user might want to run a report that they know will take a long time to complete. The user can schedule the report to run overnight and have the results ready to view the next morning.

From a Discoverer manager's point of view, workbook scheduling is useful to prevent long-running queries from adversely affecting system performance. You can force users to schedule workbooks (either all workbooks, or only those workbooks that will exceed a predicted time that you specify), and you can further specify the time periods that scheduled workbooks are permitted to run.

What happens when an end user schedules a workbook?

The table below shows what happens when an end user schedules a workbook in Discoverer Plus.

Sequence	Action	Notes
1.	User selects worksheet (or worksheets) to include in scheduled workbook	N/A
2.	User specifies date, time, and frequency at which scheduled workbook is to run	N/A
3.	Discoverer Plus confirms that scheduling the workbook does not exceed user's limit on number of scheduled workbooks	The limit on the number of scheduled workbooks restricts the number of scheduled workbooks that can be maintained at any one time. As the Discoverer manager, you specify this limit on the "Privileges dialog: Privileges tab". If the user exceeds their limit, Discoverer Plus displays a message and the workbook is not scheduled.
4.	Discoverer adds scheduled workbook to DBMS_JOB within Oracle database kernel	N/A
5.	Periodically, the job queue process is activated and the next job in the queue is run	The scheduled workbook is processed entirely on the server.
6.	A database table is created and populated with the output or result set of the scheduled workbook	The result set is stored under the schema specified by the Discoverer manager. For more information, see "Where to store the results of scheduled workbooks?".
7.	User can view scheduled workbook	N/A

Sequence	Action	Notes
8.	User can delete result set when no longer required - at which point the table is dropped	As the Discoverer manager, you can specify how long the results of a user's scheduled workbook can remain in the database before being automatically deleted (see "Privileges dialog: Privileges tab").

Where to store the results of scheduled workbooks?

Discoverer stores the results of scheduled workbooks in database tables. Before an end user can schedule a workbook, you must decide which database user (schema) is to own those tables. You have two choices as described in the table below:

Owner	Notes
the schema running the scheduled workbook	The advantage of specifying the result set storage in the end user's schema is that a database limit can be specified on the maximum amount of data an end user can store in the database. If the result set is stored under the end user's schema, you keep control over the maximum amount of space one individual end user can fill with result sets. If the end user creates a scheduled workbook that fills the space, only that end user's schema is affected. A disadvantage is that it increases the maintenance overhead. **Note:** This option is not recommended for Oracle Applications users.
scheduled workbook results schema	The advantage of specifying the result set storage in a scheduled workbook results schema is that it is generally easier to manage than using multiple database user schemas. Also each end user does not need to set up additional database privileges to run scheduled workbooks. The disadvantage is that space quota is shared and so could be exhausted by a single end user.

For more information about how to specify where the results of scheduled workbooks are stored, see "How to specify the owner of the tables containing scheduled workbooks results".

What are the prerequisites for scheduling workbooks?

Before an end user can schedule a workbook, you must:

- configure the database to enable the scheduled workbooks feature by:
  - confirming that the DBMS_JOB package is already installed on the database and installing the package if it is not already installed (for more information, see "How to confirm that the DBMS_JOB package is installed")
  - specifying the database user that will own the tables containing the results of scheduled workbooks (for more information, see "How to specify the owner of the tables containing scheduled workbooks results")
  - granting the SELECT privilege on the view V_$PARAMETER to the database user that owns the results set (for more information, see "How to grant the SELECT privilege on the synonym v$parameter to enable you to run scheduled workbooks")
- grant the Schedule Workbooks privilege to the database user (for more information, see "How to specify the tasks a user or role (responsibility) can perform")

How to confirm that the DBMS_JOB package is installed

Before an end user can schedule a workbook, the DBMS_JOB package must have already been installed on the database. If the DBMS_JOB package has not yet been installed, you must install it.

To confirm that the DBMS_JOB package is installed:

1. Start SQL*Plus (if it is not already running) and connect as the database administrator.

   For example, if SQL*Plus is already running, you might type the following at the command prompt:

   ```
   SQL> CONNECT dba_user/dba_pw@database;
   ```

   Where dba_user is the database administrator, and dba_pw is the database administrator password and database is the database to connect to.

2. Type the following at the command prompt:

   ```
   SQL> select * from all_objects where object_name='DBMS_JOB' and object_type =
   'PACKAGE';
   ```

   If the above statement returns one or more rows, the DBMS_JOB package is already installed on the database.

   If the above statement returns no rows, the DBMS_JOB package has not yet been installed. You must install the DBMS_JOB package before users can schedule workbooks.

To install the DBMS_JOB package if it is not yet installed, for Oracle databases (version 9.2.0.7 or later):

1. Start SQL*Plus (if it is not already running) and connect as the SYS user, or a user to which the sysdba privilege has been granted.

   For example, if SQL*Plus is already running, you might type the following at the command prompt:

   ```
   SQL> CONNECT sys/sys_pw@database AS SYSDBA;
   ```

   Where sys is the SYS user and sys_pw is the SYS user password.

2. Type the following at the command prompt:

   ```
   SQL> start <ORACLE_HOME>/rdbms/admin/dbmsjob.sql;
   ```

3. Type the following at the command prompt:

   ```
   SQL> start <ORACLE_HOME>/rdbms/admin/prvtjob.plb;
   ```

How to specify the owner of the tables containing scheduled workbooks results

The results of scheduled workbooks are stored in database tables. Discoverer's default behavior is to store scheduled workbooks in the EUL owners schema. Before an end user schedules a workbook, you must decide which database user is to own those tables. You have two choices:

- The database user running the scheduled workbook
- A scheduled workbook results schema

For more information about these two choices, see "Where to store the results of scheduled workbooks?"

Regardless of the choice you make, the database user that will own the tables containing scheduled workbook results must have certain database privileges.

Specify that the database user scheduling a workbook is to own the database tables containing the results of that workbook

To specify a database user to own the database tables containing the results of that workbook:

1. Start SQL*Plus (if it is not already running) and connect as the database administrator.

   For example, if SQL*Plus is already running, you might type the following at the command prompt:

   ```
   SQL> CONNECT dba_user/dba_pw@database;
   ```

   dba_user is the database administrator and dba_pw is the database administrator password.

2. Type the following at the command prompt:

   ```
   SQL> grant CREATE PROCEDURE to <user name>;
   SQL> grant CREATE TABLE to <user name>;
   SQL> grant CREATE VIEW to <user name>;
   ```

   <user name> is the name of the database user that is to schedule workbooks.

   Note that you must grant these privileges directly to the database user and not to a database role.

Use a script to specify a scheduled workbook results schema to own the scheduled workbook results tables (not the database user scheduling the workbook)

To specify a scheduled workbook results schema to own the results tables of scheduled workbooks:

1. Start SQL*Plus (if it is not already running) and connect as the database administrator.

   For example, if SQL*Plus is already running, you might type the following at the command prompt:

   ```
   SQL> CONNECT dba_user/dba_pw@database;
   ```

   Where dba_user is the database administrator and dba_pw is the database administrator password.

2. Type the following at the command prompt:

   ```
   SQL> start<ORACLE_HOME>\discoverer\util\batchusr.sql;
   ```

   Notes:

   - To run the `batchusr.sql script`, you must know the user name and password of the EUL owner .
   - Oracle Applications users should use the `batchuser_app.sql` script. To run the `batchusr_app.sql` script, you must know the Oracle Applications

Foundation Name (FNDNAM). If you do not know the FNDNAM, ask your database administrator.

3. (if running the `batchusr_app.sql` script) Enter the Oracle Applications Foundation Name (FNDNAM). For more information, contact your database administrator.
4. Enter the user name, password and database connection details for the scheduled workbook results schema being created by the `batchusr.sql` or `batchusr_app.sql` script.

   Passwords are case sensitive in Oracle databases (Enterprise Edition release 11.1 or later).
5. (optional) Change the tablespace settings for the scheduled workbook results schema.

   Note: Ask your database administrator if you are unsure about these settings.
6. Enter the EUL owner user name for the EUL that the scheduled workbook results schema will have access to.

   Note: The script creates a scheduled workbook results schema and grants the following database privileges:

   - CREATE PROCEDURE
   - CREATE TABLE
   - CREATE VIEW
   - SELECT ANY TABLE

   The scheduled workbook results schema created by the batchusr.sql script is granted the SELECT ANY TABLE database privilege to enable access to the underlying data needed for workbook scheduling. Without this grant, this database user's access to the underlying data might be limited.

   If you do not want the scheduled workbook results schema to have the SELECT ANY TABLE database privilege on the underlying data, you must revoke the privilege manually.
7. Connect to Discoverer Administrator as the EUL owner that you used in the previous step (when running the `batchusr.sql` or `batchusr_app.sql` script).
8. In Discoverer Administrator select Tools | Privileges and display the "Privileges dialog: Privileges tab".

   You must use Discoverer Administrator to choose the database user that will own the scheduled workbook result tables created in the database.
9. Click the Select button next to the **Show scheduling limits for** field to display the "Select User/Role dialog" where you select the EUL owner.
10. Use the **Select the user to own the tables which store any workbook results:** drop down list to select the scheduled workbook results schema that you created in the `batchusr.sql` or `batchusr_app.sql` script.
11. Click OK.

    You have used the script batchusr.sql to create a scheduled workbook results schema and then used the Privileges dialog to select the scheduled workbook results schema to be used for the EUL owner.

    For more information about scheduled workbook privileges, see "How to set scheduled workbook limits".

Notes

- The scheduled workbook results schema created by the `batchusr.sql` or `batchusr_app.sql` script can only have access to one EUL.
- Be aware that a Discoverer end user could run a scheduled workbook that fills the available result set space. Other database users would not be able to run scheduled workbooks until it is cleared.
- The scheduled workbook results schema created by the `batchusr.sql` or `batchusr_app.sql` script will not be able to directly schedule a workbook using Discoverer Plus.

How to grant the SELECT privilege on the synonym v$parameter to enable you to run scheduled workbooks

You grant the SELECT privilege on the synonym v$parameter by granting the SELECT privilege on the view v_$parameter to the scheduled workbook results set schema name.

The scheduled workbook results schema requires the select privilege to be granted on v_$parameter to run scheduled workbooks. However, v_$parameter is a view owned by the SYS user and does not have public access, therefore the SYS user must explicitly grant the SELECT privilege on v_$parameter to the scheduled workbook results schema name.

Notes

- The <user> below is the name of the scheduled workbook results schema created by the batchusr.sql script (for more information, see "How to specify the owner of the tables containing scheduled workbooks results").

To use SQL*Plus to manually grant the select privilege on v_$parameter to run scheduled workbooks, for Oracle databases (version 9.2.0.7 or later):

1. Start SQL*Plus (if it is not already running) and connect as the SYS user, or a user to which the sysdba privilege has been granted.

   For example, if SQL*Plus is already running, you might type the following at the command prompt:

   ```
   SQL> CONNECT sys/sys_pw@database AS SYSDBA;
   ```

   Where sys is the SYS user and sys_pw is the SYS user password.

2. Type the following at the command prompt:

   ```
   SQL> grant SELECT on v_$parameter to <user>;
   ```

   Note: To enable the <user> to select from the synonym v$parameter, you must grant the SELECT privilege on the view v_$parameter.

   Note: To grant SELECT on v_$parameter you must log in as the SYS user. If you are unable to login as the SYS user or are unsure about the SYS user name and password, see your database administrator.

To use SQL*Plus to verify the select privilege on v_$parameter has been granted:

1. Start SQL*Plus (if it is not already running) and connect as the <user>.

   For example, if SQL*Plus is already running, you might type the following at the command prompt:

```
SQL> CONNECT <user>/<user_pw>@database;
```

Where user is the is the name of the scheduled workbook results schema and user_pw is the user password.

2. Type the following at the command prompt:

```
SQL> select count (*) from v$parameter;
```

SQL*Plus displays the number of rows when the SELECT privilege has been granted to the <user>.

SQL*Plus displays an 'ORA - 01031 Insufficient privileges' error message when the SELECT privilege has not been granted to the <user>.

How to view and manage scheduled workbooks

As the Discoverer manager, you would want to monitor the status of currently scheduled workbooks, and perform the following tasks:

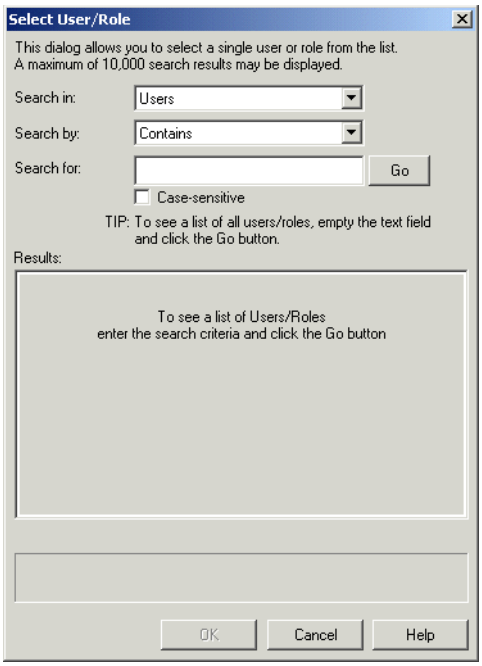
- view error messages for scheduled workbooks that have not run successfully
- delete scheduled workbook results from the database
- remove scheduled workbooks from the process queue
- edit scheduled workbook settings

Note: If you have an Oracle Applications mode EUL, you must log in as an applications user with administrative privileges, to view and manage scheduled workbooks.

To view and manage a scheduled workbook:

1. Choose Tools | Manage Scheduled Workbooks to display the "Manage Scheduled Workbooks dialog".
2. Click Select to display the "Select User/Role dialog" where you can search for and select the user or role whose scheduled workbooks you want to display in the **Show workbooks for** field.

Figure 8–1 Select User/Role dialog



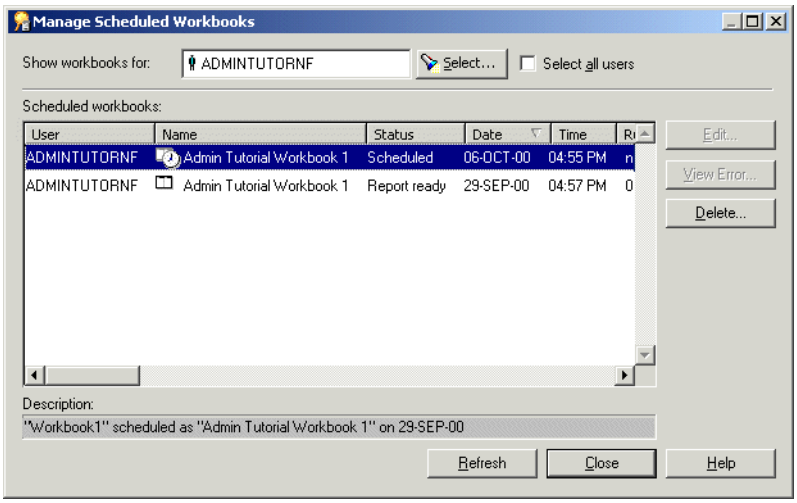
3. Enter the search criteria in the **Search For** field and click Go.

   Discoverer Administrator displays the search results in the **Results** list.

4. Select a user or role from the **Results** list and click OK.

   Discoverer displays the following screenshot showing the results of scheduled workbooks owned by the user you selected in the **Results list** field.

Figure 8–2 Manage Scheduled Workbooks dialog



Tips: You can:

- show all scheduled workbooks by selecting the **Select All Users** check box
- sort the list using different columns by clicking the appropriate column heading

- view a description (where one exists) of the currently selected scheduled workbook in the **Description** field.

5. (optional) To view an error message for a scheduled workbook that has not run successfully, select the scheduled workbook and click View Error.

   The View Error button is only enabled for scheduled workbooks when the status is set to indicate that an error occurred while running the query.

6. (optional) To prevent a scheduled workbook from running by removing it from the process queue:

   a. Select the scheduled workbook.

   b. Click Unschedule.

   c. Click Yes to confirm that you want to remove the scheduled workbook.

7. (optional) To delete the results of a scheduled workbook from the database (that is, after the scheduled workbook has run), select the scheduled workbook and click Delete.

8. (optional) To edit a scheduled workbook scheduling information, select the workbook and click Edit... to display the Schedule Workbook dialog and:

   - use the "Schedule Workbook dialog: General tab" to view the sheets included in the scheduled workbook, set the schedule time and repeat interval.
   - use the "Schedule Workbook dialog: General tab" to view the name of the scheduled workbook, view and edit the description, choose whether to save just the latest results and set the interval after which results will automatically be deleted.

9. (optional) To see the effect of the changes you have made in the "Manage Scheduled Workbooks dialog", click Refresh.

10. Click Close to close the Manage Scheduled Workbooks dialog.

Notes

- The Delete button only appears when you select a scheduled workbook that has run.
- If a scheduled workbook uses EUL objects that have changed between the time when the workbook is scheduled and the time when the result set is displayed, the scheduled workbook's status is set to EUL has changed.

9

Maintaining Items and Item Classes

This chapter explains how to maintain items and item classes using Discoverer Administrator, and contains the following topics:

- "What are items?"
- "What are item classes?"
- "What are lists of values?"
- "About setting up lists of values"
- "What are alternative sorts?"
- "Examples of different ways to implement alternative sorts"
- "What is drill to detail?"
- "About setting up drill to detail"
- "What are date items?"
- "What are date format masks?"
- "About truncating date items and the EUL_DATE_TRUNC function"
- "About applying conditions to truncated date items"
- "About drilling out to other applications"
- "About generating and updating EUL item names automatically"
- "How to edit item properties"
- "How to create a LOV item class"
- "How to create an alternative sort item class"
- "How to create a drill to detail item class"
- "How to create a list of values using a custom folder"
- "How to edit an item class"
- "How to add items to an item class"
- "How to remove items from an item class"
- "How to view the items that use an item class"
- "How to view the list of values for an item"
- "How to view the list of values for an item class"
- "How to delete items and item classes"

- "About improving performance when end users select parameter values in worksheets"
- "How to assign an indexed item to an item"
- "Notes about items based on columns with user-defined datatypes"

What are items?

A Discoverer item is a representation in the End User Layer of one of the following:

- a column in a database table or view
- a component of a custom folder (for more information, see "What are custom folders?")
- a calculation (for more information, see Chapter 11, "Creating and Maintaining Calculated Items")

Items are stored in folders and can be created, deleted and moved between folders. Items have properties that you can change (for example, display name, formatting details). Items enable Discoverer end users to access and manipulate information until they find the information they want.

What are item classes?

Item classes are groups of items that share some similar properties. An item class enables you to define item properties once, and then assign the item class to other items that share similar properties.

For example, assume the Product folder includes an item called Product Name that describes each product. A similar item also called Product Name may be required in the Sales Revenue folder. To enable both items to share common properties (for example, a list of values), you might create one item class to define the properties, and apply it to both items. In other words, you only have to define the properties once. Without the item class, you would have to define the properties individually for each item.

Discoverer uses item classes to implement the following features:

- lists of values
- alternative sorts
- drill to detail links

As the Discoverer manager, it is your responsibility to create suitable item classes to support these Discoverer features. You can create a different item class for each feature or you can specify that Discoverer uses the same item class for more than one feature. Note that an item class to support an alternative sort must also support a list of values.

What are lists of values?

A list of values (or 'LOV') is a set of valid values for an item. The values are those values in the database column on which the item is based. Discoverer end users use LOVs to display values or enter values in:

- parameters
- conditions
- the Discoverer item navigator

- the Export dialog

For example, assume that an item is based on a database column (say, Region) that contains the following values:

West
East
South
North
East
North
South

An LOV based on this item might contain four distinct values:

- West
- East
- South
- North

About setting up lists of values

Discoverer uses item classes to implement LOVs. When you first create a business area, you can specify that LOVs are to be generated automatically (for more information, see "Load Wizard: Step 4 dialog"). Subsequently, you can use the Item Class Wizard to create new LOVs and assign existing LOVs to other items (for more information, see "How to create a LOV item class").

What are alternative sorts?

An alternative sort is an instruction to Discoverer about how to sort the values in an item. Alternative sorts enable you to specify a different sort order to the one that Discoverer uses by default.

By default, Discoverer sorts items in ascending or descending order using ASCII values. However, Discoverer end users might require some items to be sorted in a different order.

For example, by default, Discoverer sorts a series of sales regions alphabetically (for example, East, North, South, West). But Discoverer end users might need sales regions sorted in a different order (for example, North, South, East, West).

To create an alternative sort order, you must use an item class to link together two items:

- an item to define the sort order
- an item to define the list of values to be sorted

Having defined the item class, you associate that item class with the item that Discoverer end users will include in their worksheets.

There are several ways to implement alternative sorts, including:

- using a custom folder (for more information, see "Example 1: Using a custom folder to implement alternative sorts")
- using a separate database table (for more information, see "Example 2: Using a database table to implement alternative sorts")

- using a calculated item and a DECODE statement (for more information, see "Example 3: Using a calculated item and a DECODE statement to implement alternative sorts")

Regardless of the way you choose to implement an alternative sort, note the following:

- the item class you use to implement an alternative sort must include both an alternative sort and a LOV
- the two items you select for the item class's alternative sort and LOV must be in the same folder, and have a one to one relationship

For information about how to create an alternative sort item class, see "How to create an alternative sort item class".

Examples of different ways to implement alternative sorts

This section contains the following examples of different ways to implement alternative sorts:

- "Example 1: Using a custom folder to implement alternative sorts"
- "Example 2: Using a database table to implement alternative sorts"
- "Example 3: Using a calculated item and a DECODE statement to implement alternative sorts"

Example 1: Using a custom folder to implement alternative sorts

You can use a custom folder to implement an alternative sort by using the folder's Custom SQL property to create two items. One item contains the list of values and the other item specifies the sort order. You can then create an item class and specify the two items in the custom folder as the item class's LOV and alternative sort respectively.

For example, you might want Discoverer end users to include an item called Ordered Regions in their worksheets. When users sort the values in this item, you want the order of the sales regions to be North, South, East, West (not the default alphabetical order). To implement this alternative sort using a custom folder, you might:

- create a custom folder called Sales Regions Sort Folder
- enter the following as the custom folder's Custom SQL property:

```
select 'North' region_name, 1 region_order from dual union
select 'South' region_name, 2 region_order from dual union
select 'East' region_name, 3 region_order from dual union
select 'West' region_name, 4 region_order from dual union
```

- create an item class called Sales Regions Customized Sort
- specify region_name as the LOV item and region_order as the alternative sort item for the Sales Regions Customized Sort item class
- specify Sales Regions Customized Sort as the item class associated with the Ordered Regions item that users will include in their worksheets
- when users sort a worksheet using the Ordered Regions item, the worksheet is sorted using the new order

Example 2: Using a database table to implement alternative sorts

You can use a database table to implement an alternative sort by creating a new database table with two columns containing the values and their associated numeric order. If a suitable database table containing the values and their associated numeric order already exists, consider using that table. To avoid performance issues, avoid using a database table that contains more than one occurrence of each value.

Having loaded the table into the EUL as a folder, you can then create an item class and specify the two items for the item class's LOV and alternative sort respectively.

For example, you might want Discoverer end users to include an item called Ordered Regions in their worksheets. When users sort the values in this item, you want the order of the sales regions to be North, South, East, West (not the default alphabetical order). To implement this alternative sort using a database table:

- use SQL*Plus to create a database table called SALES_REGION_SORT with two columns REGION_NAME and REGION_NUMBER by entering the following at the command prompt:

```
> create table SALES_REGION_SORT (REGION_NAME VARCHAR2(10), REGION_NUMBER
NUMBER(2));
```

- use SQL*Plus to insert values into the SALES_REGION_SORT table by entering the following at the command prompt:

```
> insert into SALES_REGION_SORT (REGION_NAME, REGION_NUMBER) values ('North',
1)
> insert into SALES_REGION_SORT (REGION_NAME, REGION_NUMBER) values ('South',
2)
> insert into SALES_REGION_SORT (REGION_NAME, REGION_NUMBER) values ('East', 3)
> insert into SALES_REGION_SORT (REGION_NAME, REGION_NUMBER) values ('West', 4)
```

- load the SALES_REGION_SORT database table into the EUL as a new folder containing the items Name and Number (for more information, see Chapter 5, "Creating and Maintaining Business Areas")
- create an item class called Sales Regions Customized Sort
- specify the Region Name item as the LOV item and the Region Number item as the alternative sort item for the item class
- specify Sales Regions Customized Sort as the item class associated with the Ordered Regions item that users will include in their worksheets
- when users sort a worksheet using the Ordered Regions item, the worksheet is sorted using the new order

Example 3: Using a calculated item and a DECODE statement to implement alternative sorts

You can use a calculated item with a DECODE statement to implement an alternative sort. You create two new items in an existing folder and specify the SQL statements for those items so that they contain the list of values and the sort order. You can then create an item class and specify the two items for the item class's LOV and alternative sort respectively.

If an item containing the list of values already exists in the folder, you can use that item.

For example, you might want Discoverer end users to include an item called Ordered Regions in their worksheets. When users sort the values in this item, you want the

order of the sales regions to be North, South, East, West (not the default alphabetical order). To implement this alternative sort using a calculated item and a DECODE statement:

- create a new calculated item called Sales Region Order in the folder that already contains the Ordered Regions item (the Ordered Regions item will provide the names of the regions)
- specify the following SQL statement as the formula for the item:

```
DECODE(Ordered Regions,'North',1,'South',2,'East',3,4)
```

- create an item class called Sales Regions Customized Sort
- specify Sales Regions Customized Sort as the item class associated with the Ordered Regions item that users will include in their worksheets
- when users sort a worksheet using the Ordered Regions item, the worksheet is sorted using the new order

Note: In performance terms, this is the least efficient mechanism.

What is drill to detail?

A drill to detail is a relationship between two or more items that might otherwise be unrelated. Drill to detail is achieved using an item class and gives Discoverer end users direct access to detail information about the currently selected row from other folders, without having to drill through hierarchical levels.

About setting up drill to detail

When you create a drill to detail item class, you specify the items that use that item class. The folders containing the items that share the item class do not have to be joined.

When a user selects the drill to detail option for one item, any folders containing other items that share the same drill to detail item class are available for drilling. If the user selects one of those folders, the worksheet contains all the items in the selected folder and conditions are applied for all the item classes that it has in common with the original sheet.

Note that for a hyperdrill to work, items that share the same drill to detail item class must have the same data type.

What are date items?

Date items are items that users include in worksheets to show date information.

Date items can be:

- items that are based on database columns with a date datatype
- calculated items that you have created
- items that Discoverer creates automatically when you specify a date hierarchy for a date item

What are date format masks?

A date format mask is an instruction about how to display date information.

The table below shows how dates are stored in the database, and the effect of applying different date format masks to those dates.

Stored in the database:	DD-MM-YYYY	DD-MONTH	MM/DD	DD-Month-YY HH:MI AM
04-JUN-1999 13:03:45	04-06-1999	04-JUNE	06/04	04-June-99 1:03 PM
05-AUG-2000 23:14:12	05-08-2000	05-AUGUST	08/05	05-August-00 11:14 PM
15-JAN-2001 03:45:38	15-01-2001	15-JANUARY	01/15	15-January-01 3:45 PM
14-APR-2002 09:52:26	14-04-2002	14-APRIL	04/14	14-April-02 9:52 AM

As the Discoverer manager, you can specify a default date format mask for date items that users include in their worksheets.

Note that date format masks have no effect on the way the date is stored in the database.

When you create a new level in a date hierarchy template, you specify a date format for the new level. If you include that new level in the date hierarchy, Discoverer automatically creates a new date item in any folders with date items that use that date hierarchy.

The formula of the new date item is:

EUL_DATE_TRUNC(*item_name*, *format_mask*)

where:

- EUL_DATE_TRUNC is a Discoverer function to truncate dates to the format specified by format_mask
- *item_name* is the name of the item in the folder that uses the date hierarchy
- *format_mask* is the date format you specified for the new level in the date hierarchy template

The date format you specified for the new level in the date hierarchy template is also used to set the Format Mask property of the new date item.

About truncating date items and the EUL_DATE_TRUNC function

Truncating date items involves extracting and manipulating individual elements of a date (for example, the month, the quarter, the year). Truncating date items is useful when comparing dates. Discoverer uses truncated date items to implement date hierarchies.

The EUL_DATE_TRUNC function truncates a date value to a specified date format mask. Using EUL_DATE_TRUNC has several benefits:

- it is easier to use EUL_DATE_TRUNC to truncate a date than the alternative method (which is to convert a date to a character string, remove part of the date, and then convert the character string back to a date)
- using EUL_DATE_TRUNC enables truncated dates to be sorted in correct chronological order (for example, if the date format mask is Q, data for quarters is ordered within each year, and then by year)
- using EUL_DATE_TRUNC enables periods of time to be represented by a single date, which is useful when defining conditions

Discoverer uses EUL_DATE_TRUNC automatically when creating date hierarchies. You can also use EUL_DATE_TRUNC yourself when entering a formula for a date item.

Note that EUL_DATE_TRUNC always returns dates that comprise day, month, and year elements. If one of these elements is not included in the specified format mask, EUL_DATE_TRUNC uses 01-JAN-1900 as a default date to provide the missing elements. For example:

- if you apply EUL_DATE_TRUNC(date,'YYYY') to the dates 25-aug-1934, 11-nov-1934 and 03-feb-1933, the results are 01-jan-1934, 01-jan-1934 and 01-jan-1933 respectively
- if you apply EUL_DATE_TRUNC(date,'Mon') to the dates 25-aug-1934, 11-nov-1934 and 03-feb-1933, the results are 01-Aug-1900, 01-Nov-1900 and 01-Feb-1900 respectively
- if you apply EUL_DATE_TRUNC(date,'DD') to the dates 25-aug-1934, 11-nov-1934 and 03-feb-1933, the results are 25-jan-1900, 11-jan-1900 and 03-jan-1900 respectively

It is likely that the default values that EUL_DATE_TRUNC returns for the missing date elements will be inappropriate or not required. We therefore recommend that you specify (that is, in the EUL_DATE_TRUNC formula) all of the date elements that you want to display. Or put another way, that you only display those date elements that you specified in the EUL_DATE_TRUNC function call.

About applying conditions to truncated date items

You can include a truncated date item in a condition. The value you specify for the condition must be in the same format as the date format mask of the truncated date item.

Note the following:

- To reduce the risk of an item's date format mask being incompatible with the date format mask specified in the formula used to truncate the item, a warning is displayed whenever you attempt to change the date format mask of a date item that has an editable formula.
- The standard Oracle date format includes time (DD-MON-YYYY:HH24:MI:SS). When you load date items into the EUL, Discoverer gives them a default date format mask of DD-MON-YYYY (without the time). If time information is stored in a database column and a user applies a condition to a date item based on that column:
  - the time component is included in the condition (even though the default date format mask indicates that the time component is not included)
  - no results will be returned

  To resolve this situation, change the date item's formula to truncate dates to DD-MON-YYYY.

Example 1

Assume the formula of a date item is EUL_DATE_TRUNC(order_date,'YYYY') and the item is included in a condition as order_date='2001':

- the dates of all orders placed in 2001 will be returned by the item

- the date of each order will be shown as 01-JAN-2001 (because EUL_DATE_TRUNC uses the date 01-JAN-1900 to default date elements that are not specified in the format mask)

Example 2

Assume you have used EUL_DATE_TRUNC to truncate a date item called order_quarter_date, and you want to include the order_quarter_date item in a condition. If the date format mask of the truncated item is 'Q', the formula of the item must use the same date format mask (that is, EUL_DATE_TRUNC(order_quarter_date,'Q')).

About drilling out to other applications

From a Discoverer perspective, a database column can contain data itself (for example, regions, order numbers) or pointers to where data is located outside the database (for example, names of files containing pictures of stores, URLs). You can set an item property to specify that an item is a pointer for Discoverer Desktop to drill to data outside the database.

Note: You can only drill to data outside the database (and display the data by launching an external application) when you are using Discoverer Desktop.

To specify the location of the data of the column on which an item is based, use the item's Content Type property as follows (for more information, see "Item Properties dialog"):

- select NONE to specify that the column contains the data
- select FILE to specify that the column contains a pointer to information held outside the database when using Discoverer Desktop (for example, Microsoft Word documents, HTML pages)

When users include an item that has its Content Type property set to FILE, Discoverer Desktop displays the pointers contained in the column. If a user clicks the pointer, Discoverer Desktop launches the application associated with the pointer. For example:

- if the pointer is a filename, Discoverer Desktop launches the application associated with the filename extension and displays the specified file (for example, if the filename extension is .doc, Discoverer Desktop launches Microsoft Word containing the specified file)
- if the pointer is a URL, Discoverer Desktop launches the user's web browser and displays the specified page

You can also set the Alternative Display Value for items that have the Content Type of FILE. Discoverer displays the value you put in Alternative Display Value in worksheets instead of the file reference or URL.

Note: If you want to change the URL to something more user-friendly, you can specify a descriptive title for the worksheet item value. For example, you might want to change the default worksheet item value \Report.doc to 'Click here to display the report in Wordpad'. To specify a descriptive title for a worksheet item value, display the "Item Properties dialog" and enter the title in the **Alternative display value** field.

Notes

If the datatype of the column is LONG RAW, the column can contain different kinds of data, including:

- BFILE data - Locators to large binary files stored outside the database. BFILE data enables byte stream I/O access to external LOBs (large objects) residing on the database server. BFILE data has a maximum size of 4 gigabytes.
- BLOB data - Binary large objects. BLOB data has a maximum size of 4 gigabytes.
- CLOB data - Character large objects containing single-byte characters. Both fixed-width and variable-width character sets are supported, both using the CHAR database Data Type. CLOB data has a maximum size of 4 gigabytes.
- NCLOB data - Character large objects containing multibyte characters. Both fixed-width and variable-width character sets are supported, both using the NCHAR database Data Type. Stores national character set data. NCLOB data has a maximum size of 4 gigabytes.

If the datatype of the column on which an item is based is LONG RAW, Discoverer provides additional options for the item's Content Type property (that is, options in addition to FILE and NONE). These options enable you to specify how Discoverer Desktop decides which application to launch to view the column's content. For example, if you select DOC as the item's Content Type property, Discoverer Desktop will launch the application associated with the .DOC extension (usually Microsoft Word).

About generating and updating EUL item names automatically

The names of some EUL items can be automatically generated for you based on the names of underlying items. For example, a sensible join name can be automatically generated for you from the names of the two folders that are involved in the join.

This section contains the following topics:

- "What are primary and secondary elements?"
- "What does the Auto-Generate Name property do?"
- "How to set the value of the Auto-Generate name property of a secondary element"
- "How to set the default value of the Auto-Generate name property to Yes"
- "What happens when you create a business area using the Load Wizard?"
- "How to set the Auto-Generate name property to Yes for all secondary elements in an existing business area"
- "Notes about the Auto-Generate Name property"

What are primary and secondary elements?

Primary elements are End User Layer (EUL) folders or items.

The following are defined as secondary elements:

- joins
- complex folder items
- item hierarchies
- item hierarchy nodes
- date hierarchy templates
- date hierarchy items

- item classes

What does the Auto-Generate Name property do?

The Auto-Generate name property enables names of secondary elements to be automatically updated whenever a primary element name is changed. The Auto-Generate name property is applied to secondary elements using Discoverer Administrator (its value can be set to Yes or No). When the value of the Auto-Generate name property is set to Yes for a secondary element, Discoverer generates its name using the names of its primary elements (that is, the folder and item names used in the secondary element).

For example, Discoverer might display a join named DEPT.DEPTNO->EMP.DEPTNO, where EMP and DEPT are primary elements (folders and items) and DEPTNO is the foreign key used in the join. If the Auto-Generate name property value of this join is set to Yes, and you change the name of the primary element EMP to EMPLOYEE, Discoverer automatically updates the join name to DEPT.DEPTNO->EMPLOYEE.DEPTNO.

Note: The Auto-Generate name property value is set to No by default.

How to set the value of the Auto-Generate name property of a secondary element

You might want to set the value of the Auto-Generate name property for a secondary element to Yes to automatically update the secondary element name, whenever a primary element name (from which the secondary element name is derived), is changed.

To set the value of the Auto-Generate name property for a secondary element:

1. Select the secondary element to set the Auto-Generate name property value.

   For more information, see "What are primary and secondary elements?"

2. Display the Properties dialog for the selected secondary element.
3. Select a value from the Auto-Generate name drop down list and click OK to confirm your selection.

   For example, select Yes, to automatically update the secondary element name, whenever a primary element name (from which the secondary element name is derived), is changed.

How to set the default value of the Auto-Generate name property to Yes

You might want to set the default value of the Auto-Generate name property to Yes for creating new secondary elements.

To set the default value of the Auto-Generate name property to Yes:

1. Follow the steps described in "How to edit Discoverer Administrator and Discoverer Desktop registry settings"

   Note: The AutogenNameOnCreate registry setting must be present in the registry and its value must be set to 1. If the AutogenNameOnCreate registry setting is not present in the registry, you must create it and set its value to 1. The AutogenNameOnCreate Registry setting is located in HKEY_CURRENT_USER\Software\Oracle\Discoverer 10\Database and its Type is REG_DWORD.

Notes

- If the AutogenNameOnCreate Registry setting is present in the registry and its value is set to 1, Discoverer does the following:
  - if you install the Discoverer sample data, Discoverer sets the Auto-Generate name property to Yes for all secondary elements
  - when you create a secondary element, Discoverer sets the Auto-Generate name property to Yes
- If you export and then import EUL objects using the /auto_gen_name command modifier in the EUL Command Line for Java (or the Discoverer Command-line Interface), Discoverer sets the Auto-Generate name property to Yes for all the secondary elements contained in the EUL objects that you exported and imported (for more information, see "How to set the Auto-Generate name property to Yes for all secondary elements in an existing business area"). Note that the AutogenNameOnCreate registry setting has no effect on the Auto-Generate name property when you import EUL objects using the Oracle Business Intelligence Discoverer EUL Command Line for Java or the Oracle Business Intelligence Discoverer command-line interface.

What happens when you create a business area using the Load Wizard?

When you create a business area using the Load Wizard and the value of the AutogenNameOnCreate registry setting is set to 1, Discoverer automatically sets the Auto-Generate name property of all secondary elements to Yes.

For more information about editing Discoverer Registry settings, see "How to edit Discoverer Administrator and Discoverer Desktop registry settings".

How to set the Auto-Generate name property to Yes for all secondary elements in an existing business area

You might set the Auto-Generate name property for all secondary elements in an existing business area, by setting the property for each secondary element one at a time. However, you might find it quicker to set this property for all secondary elements at once.

To set the Auto-Generate name property to Yes for all secondary elements in an existing business area:

1. Export the EUL objects that contain the secondary elements you want Discoverer to automatically generate.

   For more information about exporting EUL objects to an .EEX file, see "How to export selected EUL objects using the Export Wizard".

2. Import the exported EUL objects in the exported .EEX file using the EUL Command Line for Java (or the Discoverer Command-line Interface).

   For more information about importing EUL objects to an .EEX file using the:

   - Oracle Business Intelligence Discoverer EUL command line for Java

     For more information, see the *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer EUL Java Command Line*.

   - Oracle Business Intelligence Discoverer command-line interface , see "How to import End User Layer objects using the Discoverer command-line interface"

Note: You must include the /auto_gen_name command modifier in your import command. When you import EUL objects and use the /auto_gen_name command modifier Discoverer sets the Auto-Generate name property of each secondary element to Yes (regardless of its current setting).

Note: The AutogenNameOnCreate Registry setting has no effect on the Auto-Generate name property when you import EUL objects using the Oracle Business Intelligence Discoverer EUL Command Line for Java or the Oracle Business Intelligence Discoverer command-line interface.

The following example shows a typical Oracle Business Intelligence Discoverer command-line interface command that imports EUL objects and uses the /auto_gen_name command modifier:

"D:\Oracle\ORA10\dis51adm" /connect username/password@database /import d:\ba_export.eex /refresh /auto_gen_name /show_progress

For more information about using the Discoverer EUL Command Line for Java and the Oracle Business Intelligence Discoverer command-line interface, see "Which Discoverer command-line interfaces are available?".

Notes about the Auto-Generate Name property

- If the Auto-Generate name property value is set to Yes for a secondary element, the Name field in the Properties dialog is read-only. However, you can update the secondary element name by selecting it in the Workarea and editing it directly. Discoverer automatically resets the Auto-Generate name property of the secondary element to No.
- The Auto-Generate name property of a primary element is set to No, and is read-only.
- You can edit the Auto-Generate name property of generated date hierarchy items in the Properties dialog. Generated date hierarchies are the date items generated by Discoverer when you associate a date hierarchy template with a date item (for more information about creating date hierarchies, see "What are date hierarchies?")
- You can also set the Auto-Generate name property to Yes for a secondary item that is dependent on another secondary item. If you change the name of the other secondary item, its Auto-Generate name property changes to No. However, the dependent secondary item still inherits the name change.
- When an item has its Auto-Generate name property value set to Yes, it is displayed in the Workarea in a different color from other items (for example, blue when the Windows default color scheme is applied).
- When you drag a primary item into a complex folder, the new secondary items in the complex folder will automatically have their Auto-Generate name property value set to Yes (if the AutogenNameOnCreate Registry setting exists in the registry and its value is set to 1). For more information, see "How to set the default value of the Auto-Generate name property to Yes".
- You cannot set the Auto-Generate Name property of secondary items in an existing business area to Yes using the Import Wizard (for more information, see "How to set the Auto-Generate name property to Yes for all secondary elements in an existing business area".
- Do not use Discoverer Release 9.0.4 to load a business area created using Discoverer Release 10.1.2 (and where the AutogenNameOnCreate Registry setting value has been set to 1).

For example, if you upgrade Discoverer to Release 10.1.2 and load a business area or install the Sample data (after the AutogenNameOnCreate Registry setting value has been set to 1) and then use Discoverer Release 9.0.4 to access the business area or Tutorial, Discoverer will display folders that all appear to use the same name (for example, AUTOGENERATE_NAME). To avoid this you should only load business areas that were created using the same or earlier Discoverer releases.

How to edit item properties

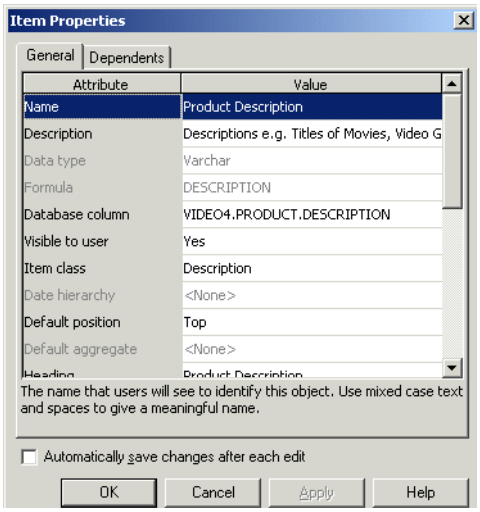
To edit item properties:

1. Click an item on the Data page and choose Edit | Properties to display the "Item Properties dialog".

   You can select more than one item at a time by holding down the Ctrl key and clicking another item.

   Note: Where you select multiple items, all properties that are common to each of the selected items are displayed. If the data for a field is not common to each of the selected items, the field is blank.

Figure 9–1 Item Properties dialog



2. Make the required changes.

   Note: If you change the name of an item, the names of secondary elements (for example, joins, items in complex folders) that have the Auto-Generate name property set to Yes might also change (for more information, see "About generating and updating EUL item names automatically").

3. Click OK.

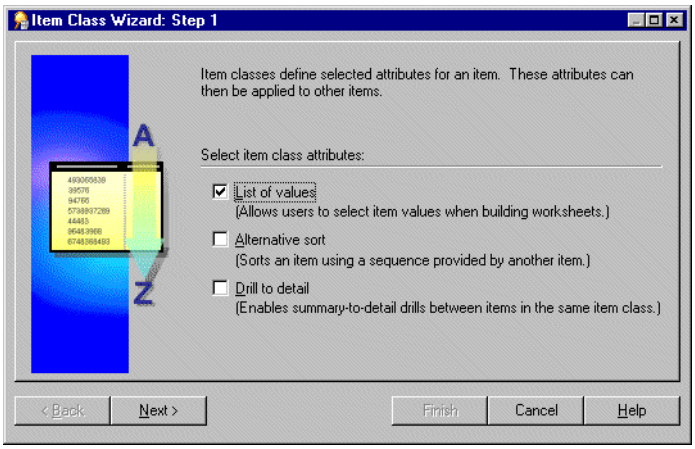
How to create a LOV item class

To create a LOV item class:

1. Choose Insert | Item Class to display the "Item Class Wizard: Step 1 dialog".

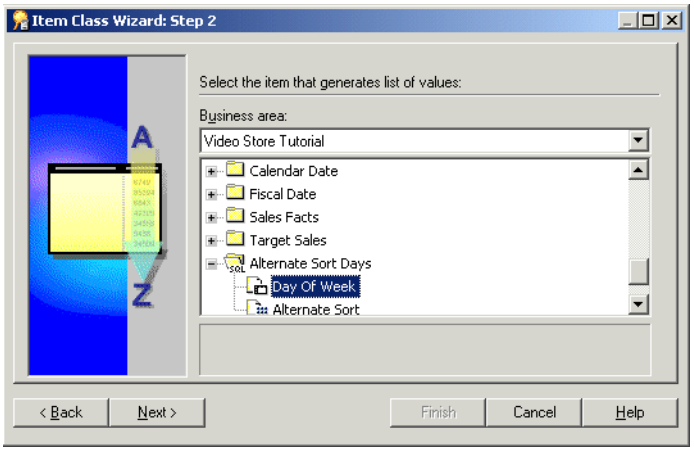
   If Discoverer displays the "Item Class Wizard: Step 2 dialog (select the item that generates the LOV)" press the Back button.

Figure 9–2 The Item Class Wizard dialog



2. Select the **List of Values** check box.
3. Click Next to display the "Item Class Wizard: Step 2 dialog (select the item that generates the LOV)".

Figure 9–3 Item Class Wizard: Step 2 dialog

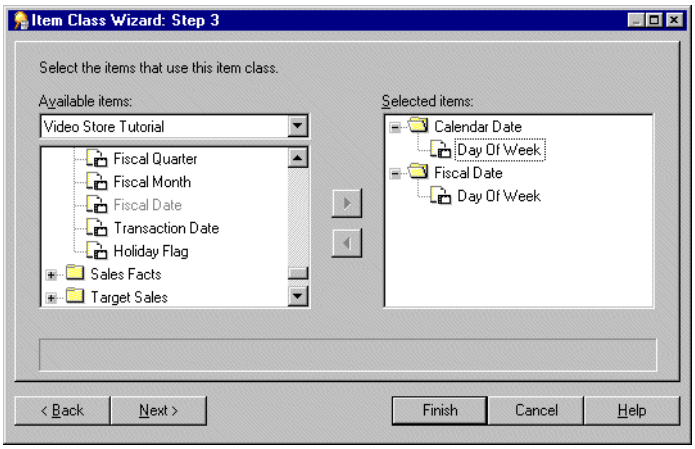


4. Select the business area that contains the item you want to use to generate the list of values from the drop down list.
5. Select the item that you want to use to generate the list of values.

   Note: By default, Discoverer uses a SELECT DISTINCT query to retrieve a list of values. If you select an item in a folder with a large number of rows compared to the number of distinct values, then the query can be inefficient. It is more efficient to select an item from a smaller table (joined to the folder with a large number of rows) rather than using the large table itself. If a smaller table does not exist, it might be worth creating it to speed up the list of values process.

   Alternatively if you have a small number of values, use a custom folder to create a local list of values within the End User Layer. For more information, see "How to create a list of values using a custom folder".
6. Click Next to display the "Item Class Wizard: Step 3 dialog (select items that use this item class)".

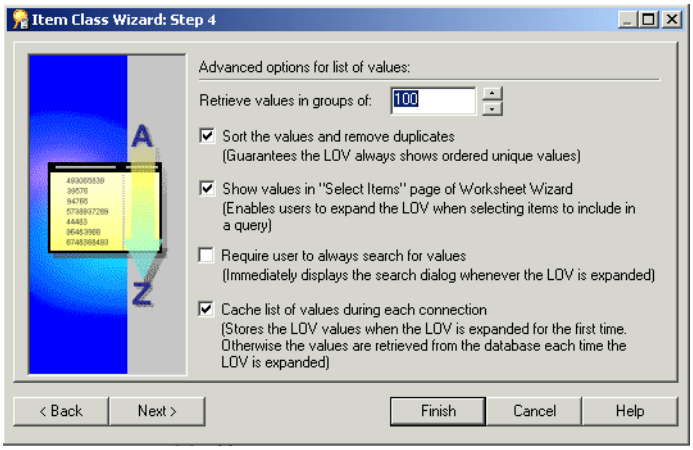
Figure 9–4 Item Class Wizard: Step 3 dialog



Note: If you had also selected the **Drill to detail** check box on the first page of the Item Class Wizard, end users will be able to drill between any of the items that you select on this page.

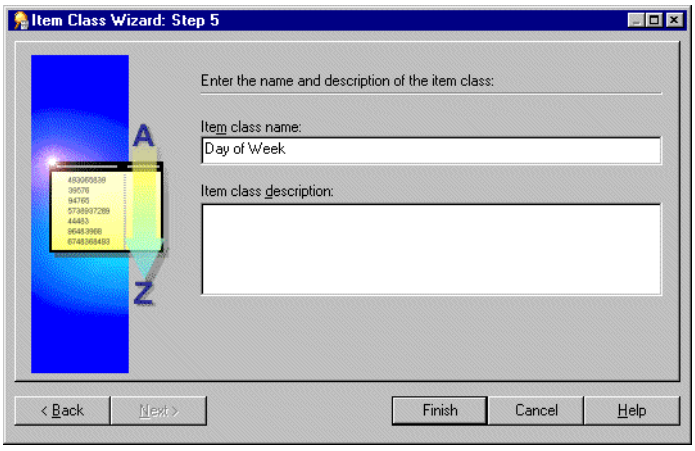
7. Move the items that use this item class, from the **Available items** list to the **Selected items** list.
8. Click Next to display the "Item Class Wizard: Step 4 dialog (advanced options for list of values)" to specify options controlling how LOVs are selected and displayed in Discoverer Plus.

Figure 9–5 Item Class Wizard: Step 4 dialog



9. Specify the number of values to retrieve in each group, and select other check boxes as required.
10. Click Next to display the "Item Class Wizard: Step 5 dialog (enter name and description)" and specify a name and description for the new item class.

Figure 9–6 Item Class Wizard: Step 5 dialog



11. Enter a name and description for your new item class.
12. Click Finish.

    Discoverer creates a new List of Values item class.

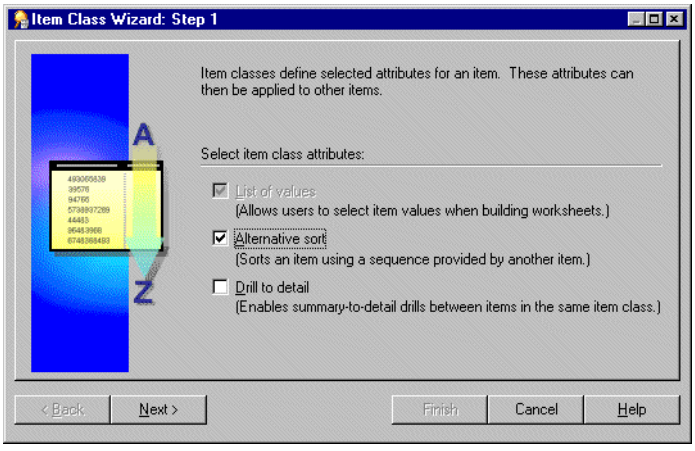
How to create an alternative sort item class

An alternative sort item class enables you to sort a list of values based on an alternative sort sequence.

To create an alternative sort item class:

1. Choose Insert | Item Class to display the "Item Class Wizard: Step 1 dialog".

Figure 9–7 The Item Class Wizard: Step 1 dialog

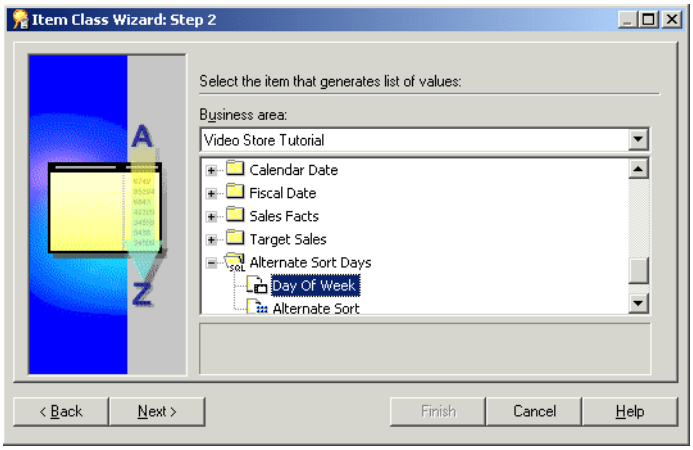


2. Select the **Alternative sort** check box.

   Note: If you select the **Alternative sort** check box, the **List of values** check box is automatically selected.

3. Click Next to display the "Item Class Wizard: Step 2 dialog (select the item that generates the LOV)".

Figure 9–8 Item Class Wizard: Step 2 dialog

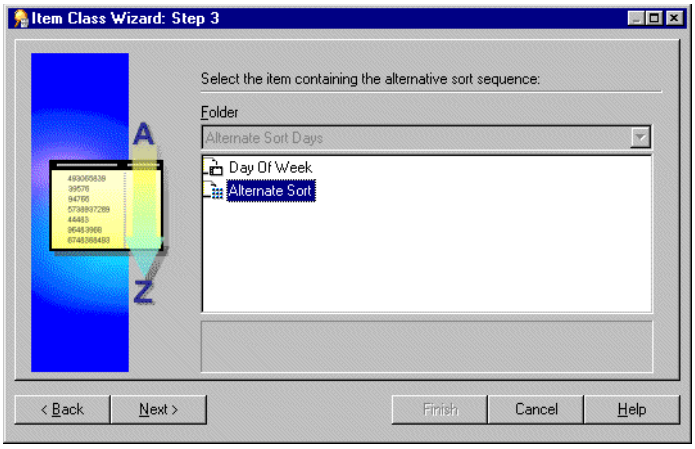


4. Select the business area that contains the item you want to use to generate the list of values from the drop down list.
5. Select the item that you want to use to generate the list of values.

   Note: Discoverer uses a SELECT DISTINCT query to retrieve a list of values. If you select an item in a folder with a large number of rows compared to the number of distinct values, then the query can be inefficient. It is more efficient to select an item from a smaller table (joined to the folder with a large number of rows) rather than using the large table itself. If a smaller table does not exist, it might be worth creating it to speed up the list of values process.

   Alternatively if you have a small number of values, use a custom folder to create a local list of values within the End User Layer. For more information, see "How to create a list of values using a custom folder".
6. Click Next to display the "Item Class Wizard: Step 3 dialog (select the item containing the alternative sort sequence)".

Figure 9–9 Item Class Wizard:Step 3 dialog



7. Select the item that contains the alternative sort sequence.

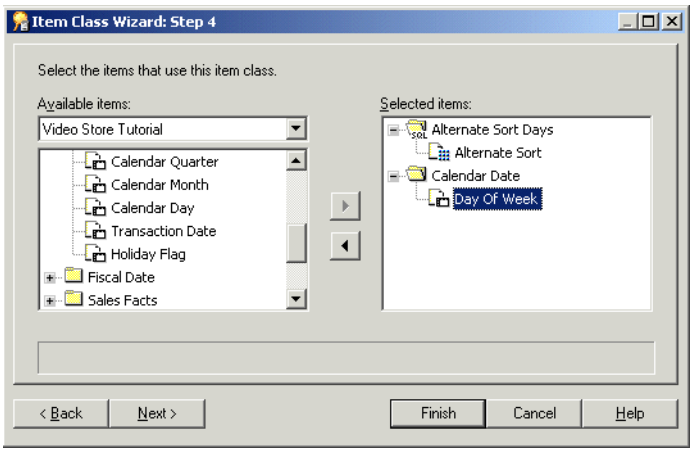
   This item must:

   - already exist in the database
   - be in the same folder as the item that generates the list of values

- have a one to one relationship with the item that contains the list of values

8. Click Next to display the "Item Class Wizard: Step 4 dialog (select items that use this item class)" dialog.

Figure 9–10 Item Class Wizard: Step 4 dialog

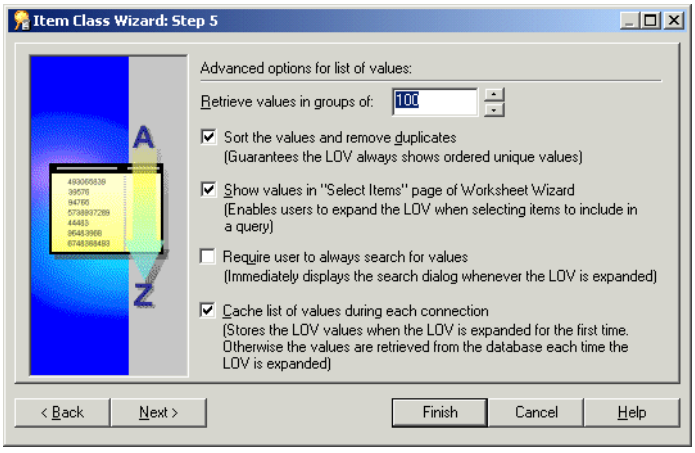


Note: If you selected the **Drill to detail** check box on the first page of the Item Class Wizard, end users will be able to drill between any of the items that you select on this page.

9. Move the items that use this item class, from the **Available items** list to the **Selected items** list.

10. Click Next to display the "Item Class Wizard: Step 5 dialog (advanced options for list of values)" to specify options controlling how LOVs are selected and displayed in Discoverer Plus.

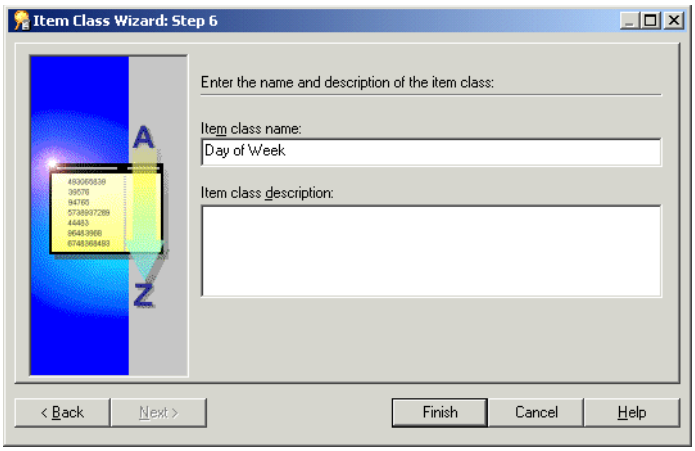
Figure 9–11 Item Class Wizard: Step 5 dialog



11. Specify the number of values to retrieve in each group, and select other check boxes as required.

12. Click Next to display the "Item Class Wizard: Step 6 dialog (enter name and description)".

Figure 9–12 Item Class Wizard: Step 6 dialog



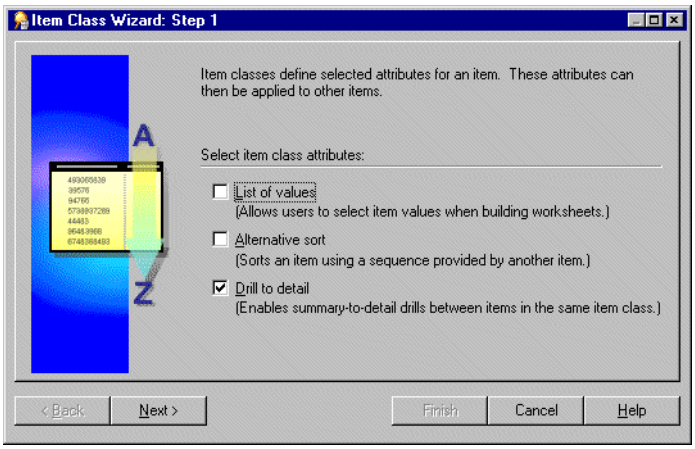
13. Enter a name and description for your new item class.
14. Click Finish.

How to create a drill to detail item class

To create a drill to detail item class:

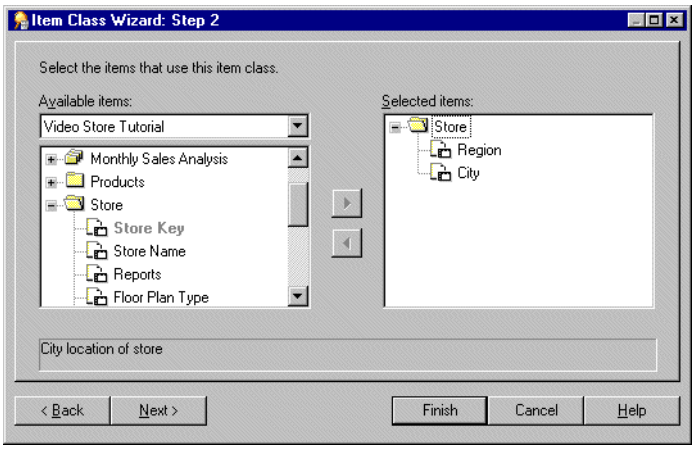
1. Choose Insert | Item Class to display the "Item Class Wizard: Step 1 dialog".

Figure 9–13 The Item Class Wizard: Step 1 dialog



2. Select the **Drill to detail** check box.
3. Click Next to display the "Item Class Wizard: Step 2 dialog (select items that use this item class)" dialog.

Figure 9–14 Item Class Wizard: Step 2 dialog

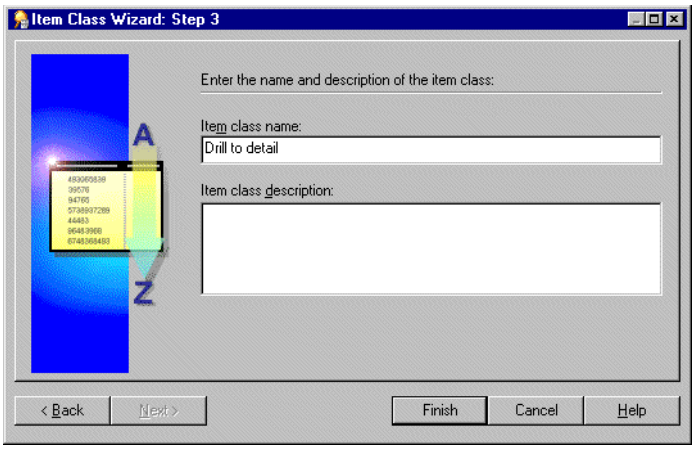


4. Move the items that use this item class, from the **Available items** list to the **Selected items** list.

   Note: End users will be able to drill between any of the items that you select on this page.

5. Click Next to display the "Item Class Wizard: Step 3 dialog (enter name and description)" dialog.

Figure 9–15 Item Class Wizard: Step 3 dialog



6. Enter a name and description for your new item class.
7. Click Finish.

How to create a list of values using a custom folder

This alternative method is useful if you have a small number of values. You can use a custom folder to create a local list of values within the End User Layer.

For example, if you want a list of values for North, South, East, and West, create a custom folder called Region_lov and type in the SQL statements suggested below.

1. In the Data page of the Workarea, choose Insert | Folder | Custom to display the "Custom Folder dialog".
2. Enter the following SQL statements into the Custom Folder dialog:

```
SELECT 'NORTH' REGION FROM sys.dual
UNION
SELECT 'SOUTH' REGION FROM sys.dual
UNION
SELECT 'EAST' REGION FROM sys.dual
UNION
SELECT 'WEST' REGION FROM sys.dual
```

This query creates one item Region, that can now be used as a list of values which will help optimize performance.

For more information about custom folders, see "What are custom folders?".

3. Click Validate to validate the SQL statement.
4. Click OK.

How to edit an item class

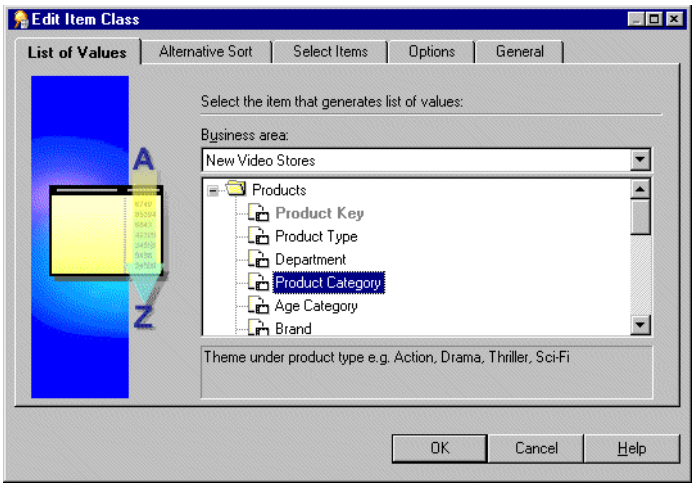
To edit an existing item class:

1. In the "Workarea: Data tab", click the item class that you want to edit and choose Edit | Edit... to display the Edit Item Class dialog.

   Note: The Edit Item Class dialog consists of five tabs. These resemble the pages in the Item Class Wizard and enable you to edit the settings you specified when you created the item class.

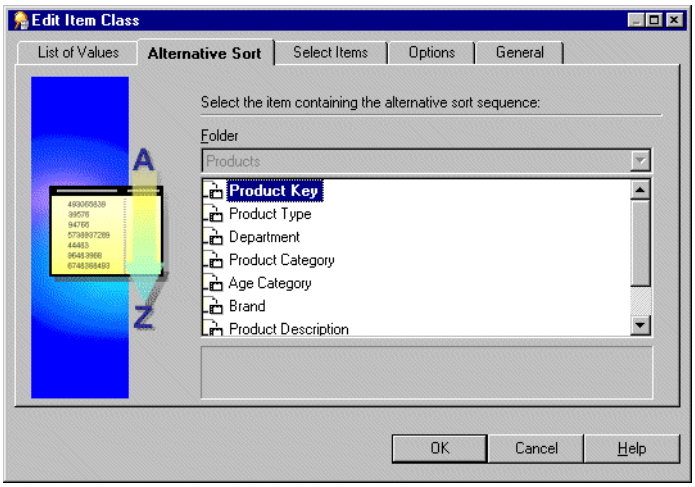
2. Display the "Edit Item Class dialog: List of values tab" to change the list of values used in the selected item class.

Figure 9–16 Edit Item Class dialog: List of Values tab



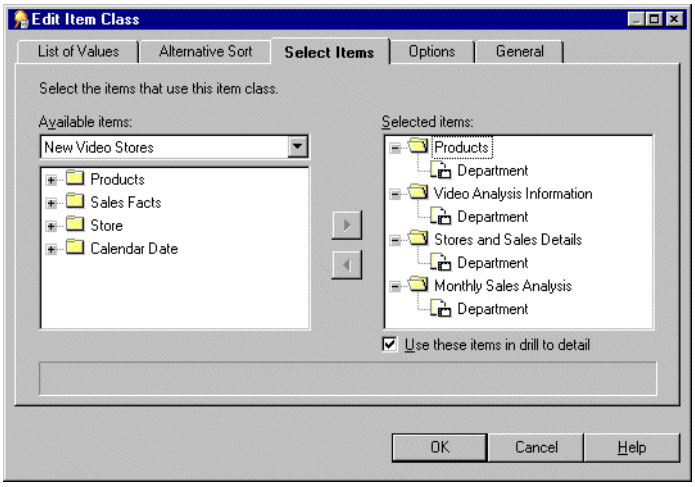
3. Display the "Edit Item Class dialog: Alternative Sort tab" to change the alternative sort sequence assigned to the list of values for the selected item class.

Figure 9–17 Edit Item Class dialog: Alternative Sort tab



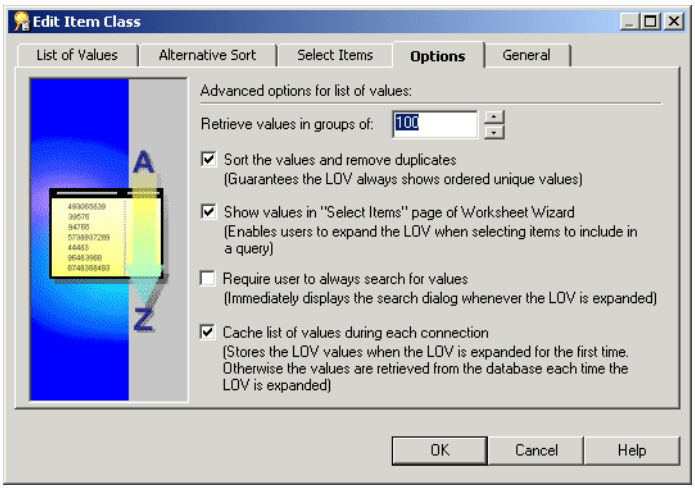
4. Display the "Edit Item Class dialog: Select Items tab" to add or remove the items that use the selected item class.

Figure 9–18 Edit Item Class dialog: Select Items tab



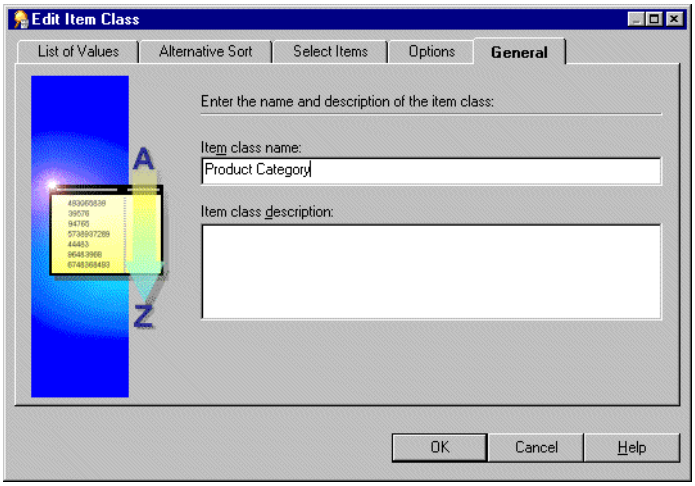
5. Select the **Use these items in drill to detail** check box to enable drill to detail between the items that belong to this item class (otherwise, clear it).
6. Display the "Edit Item Class dialog: Options tab" to set the advanced LOV options as required.

Figure 9–19 Edit Item Class dialog: Options tab



7. Display the "Edit Item Class dialog: General tab" to change the name and description of the selected item class.

Figure 9–20 Edit Item Class dialog: General tab



8. Click OK.

How to add items to an item class

Use one of the following methods to add items to an item class:

- "How to add items to an item class using drag and drop"
- "How to add items to an item class using the Edit Item Class dialog"
- "How to add items to an item class using the Item Properties dialog"

How to add items to an item class using drag and drop

1. Choose Window | New Window to display a second Workarea.
2. Select the Data tab in one Workarea.
3. Display the Item Classes tab in the other Workarea.

4. Select the Item(s) that you want to add to an item class in the Data tab of the first Workarea.
5. Drag the Items from the Data tab to the item class in the Item classes tab of the second Workarea.
6. Close one of the Workarea windows.

How to add items to an item class using the Edit Item Class dialog

1. In the "Workarea: Data tab" click the item class to edit and choose Edit | Edit.
2. Display the "".
3. Move the items from the **Available items** list to the **Selected items** list to add them to this item class.

   You can select more than one item at a time by holding down the Ctrl key and clicking another item.

   Note: The **Available items** drop down list enables you to select items from any open business area.
4. Click OK.

For more information see "How to edit an item class".

How to add items to an item class using the Item Properties dialog

1. In the "Workarea: Data tab", select the item(s) to add to an item class.
2. Choose Edit | Properties to display the "Item Properties dialog".
3. Specify the item class for the selected item(s) to belong to using the Item class field.
4. Click OK.

For more information, see "How to edit item properties".

How to remove items from an item class

Use one of the following methods to remove items from an item class:

- "How to remove items from an item class using a popup menu"
- "How to remove items from an item class using the Edit Item Class dialog"
- "How to remove items from an item class using the Item Properties dialog"

How to remove items from an item class using a popup menu

1. Display the "Workarea: Data tab".
2. Click the + symbol next to the item class you want to remove items from.
3. Click the + symbol to expand the **Items using this item class (with drill to detail)** object.
4. Select the items to remove from the item class.

   You can select more than one item at a time by holding down the Ctrl key and clicking another item.

5. Right click one of the selected items and choose **Delete Item from Item Class** on the popup menu.
6. Discoverer Administrator displays the "Confirm Delete dialog".

   For further information, see "How to delete items and item classes".

How to remove items from an item class using the Edit Item Class dialog

1. Click the "Workarea: Data tab".
2. Click the item class to edit and choose Edit | Edit...
3. Display the "".
4. Move the items you want to remove from this item class from the **Selected items** list to the **Available items** list.

   You can select more than one item at a time by holding down the Ctrl key and clicking another item.
5. Click OK.

For more information, see "How to edit an item class".

How to remove items from an item class using the Item Properties dialog

1. In the "Workarea: Data tab" select the item(s) to remove from an item class.
2. Choose Edit | Properties to display the "Item Properties dialog".
3. Specify None in the **Item class** field.
4. Click OK.

For more information, see "How to edit item properties".

How to view the items that use an item class

To view the items that use a specific item class:

1. In the "Workarea: Data tab", click the + symbol next to the item class that you want to expand.

   This reveals two objects under the item class.

   - List of values
   - Items using this item class (with drill to detail)
2. Click the + symbol next to **Items using this item class (with drill to detail)** to display the list of items that belong to this item class.

How to view the list of values for an item

To view the list of values associated with an item:

1. In the "Workarea: Data tab" expand the item that has a list of values you want to view.

Notes

- Discoverer may warn you that retrieving the list of values may take a long time. When you retrieve a list of values Discoverer submits a SELECT DISTINCT query

to the database (which selects the distinct set of values for the item). If there is a large number of values in the database, retrieving the list can take some time. The End User Layer has a record of the length of time it takes to retrieve the values. If this length of time is greater than 15 seconds, Discoverer displays a warning. You can change this limit in Discoverer Plus under Tools | Options | Query Governor.

- If the item you want to display a list of values for exists in more than one folder, choose the item in the folder that has the least number of rows. This will return the list of values in the shortest amount of time.

How to view the list of values for an item class

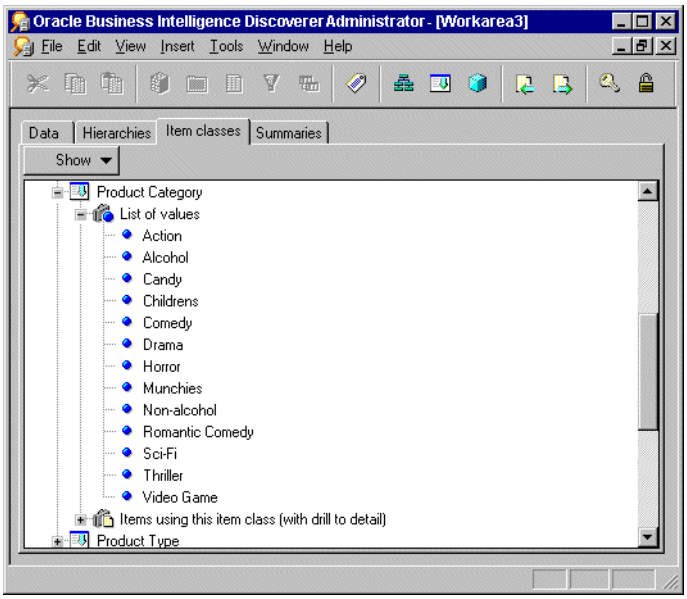
To view the list of values associated with an item class:

1. Display the "Workarea: Data tab".
2. Click the + symbol to expand the item class whose list of values you want to view.

   This reveals two items under the item class:

   - List of values
   - Items using this item class
3. Click the + symbol to expand the **List of values** object to display the list of values for the item class.

Figure 9–21 Workarea: Item classes tab displaying a list of values



Notes

- Discoverer may warn you that retrieving the list of values may take a long time. When you retrieve a list of values, Discoverer submits a SELECT DISTINCT query to the database (which selects the distinct set of values for the item). If there is a large number of values in the database, retrieving the list can take some time. The End User Layer has a record of the length of time it takes to retrieve the values. If this length of time is greater than 15 seconds, Discoverer displays a warning. You can change this limit in Discoverer Plus under Tools | Options | Query Governor.

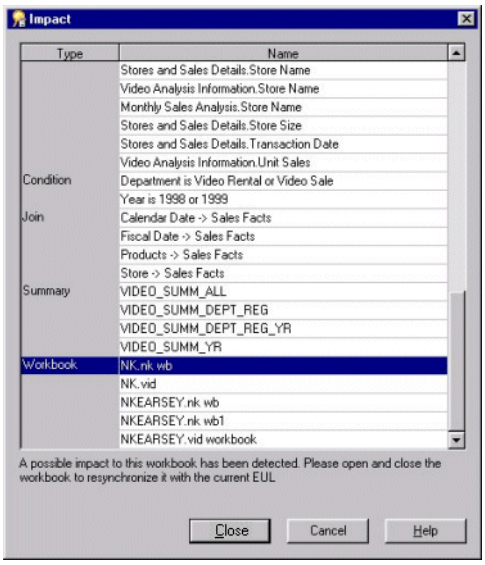
How to delete items and item classes

To delete items and item classes:

1. Select the item(s) or item class(es) to delete as follows:
   - select the items to delete from the "Workarea: Data tab"
   - select the item classes to delete from the "Workarea: Data tab"

   You can select more than one item or item class at a time by holding down the Ctrl key and clicking another one.
2. Choose Edit | Delete to open the "Confirm Delete dialog".
3. (optional) To see the objects that might be affected by deleting the items or item classes you selected for deletion:
   a. Click Impact to display the "Impact dialog".

Figure 9–22 The Impact dialog



   The Impact dialog enables you to review the other EUL objects that might be affected when you delete an item or item class.

   Note: The Impact dialog does not show the impact on workbooks saved to the file system (in `.dis` files).

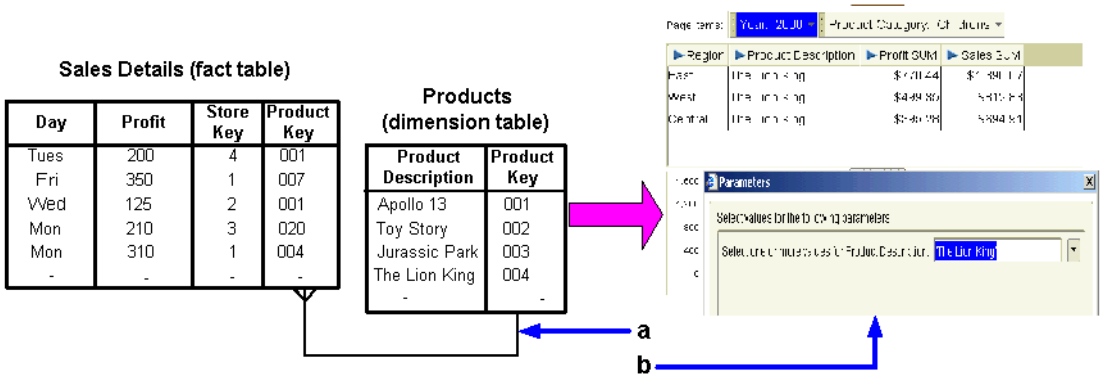
   b. (optional) Select a row in the Impact dialog to view text at the bottom of the list, indicating what affect the current action will have on the EUL object.
   c. Click Close when you have finished reviewing the impact that the deletion will have.
4. Click Yes to confirm you want to delete the selected item(s) or item class(es).

About improving performance when end users select parameter values in worksheets

You can improve Discoverer's performance when end users select values for a parameter, by assigning an indexed item to the folder item on which the parameter is based.

The following diagram helps to explain how assigning indexed items to items that are used as parameters in worksheets improves Discoverer's performance. The diagram shows a typical database schema containing a large fact table (Sales Details) containing millions of rows, and a much smaller dimension table (Products) containing just a few rows.

Figure 9–23 Part of a typical schema



Key to figure:
a. Join between Products and Sales Details table
b. Discoverer Plus worksheet using a parameter.

Using the schema above, an end user might select the parameter value Product Description=The Lion King to display rows (in a worksheet) from the Sales Details table. However, the Sales Details table does not contain a Product Description, only a Product Key. Therefore, to find rows for a specific Product Description in the Sales Details table, Discoverer must first look in the Products table to match the Product Description with its Product Key, and then use the Product Key to return matching rows from the Sales Details table. This operation might be slow when the fact table that you are querying contains hundreds of thousands, or millions of rows.

To improve performance, you can specify that when an end user selects a parameter value, Discoverer is able instead to use a number (for example, the Product Key) associated with the item on which the parameter is based to query the fact table for matching rows. For more information about how to improve Discoverer's performance when end users select parameter values in worksheets, see "How to assign an indexed item to an item".

Note: If the item on which a parameter is based is in a complex folder, you must complete the following tasks to improve performance when end users select a value using this parameter:

- Include an indexed item (to be assigned to the item on which the parameter is based) in the complex folder.

  For example, if Product Description is the item in the complex folder on which the parameter is based, you would add the indexed item, Product Key (also from the Products folder) to the complex folder. For more information, see "How to create complex folders".

- Assign the indexed item, to the item in the complex folder on which the parameter is based.

For example, assign the Product Key item to the Product Description item (in the same complex folder). For more information, see "How to assign an indexed item to an item".

- Hide the indexed item in the complex folder from end users (for more information, see "How to edit item properties").

  For example, set the value of the **Visible to user** item property of the Product Key item (in the complex folder) to No. Users of Discoverer Plus and Discoverer Desktop do not need to see indexed items when creating a worksheet.

Notes

- It is recommended that you assign indexed items to those items in folders or complex folders that end users are likely to select as parameter values in worksheets.
- An item and its indexed item must have a one-to-one relationship (for example, each Product Description must have a corresponding unique Product Key value).
- Assigning indexed items to items also enables more likelihood of matching against summary folders.
- To see whether the indexed item is being used in a query, you can view the SQL in the SQL Inspector dialog (for more information, see the *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Plus*).

How to assign an indexed item to an item

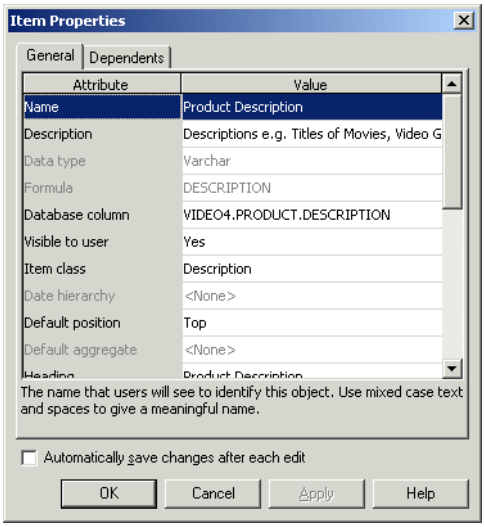
You can assign an indexed item to an item (in the same folder) to improve Discoverer's performance when end users select parameter values in worksheets. For more information, see "About improving performance when end users select parameter values in worksheets".

Note: The screenshots in the instructions below assume you want to assign an indexed item (Product Key) to the Product Description item in the Product folder. The instructions below should also be followed when you assign an indexed item to an item in a complex folder.

To assign an indexed item to an item:

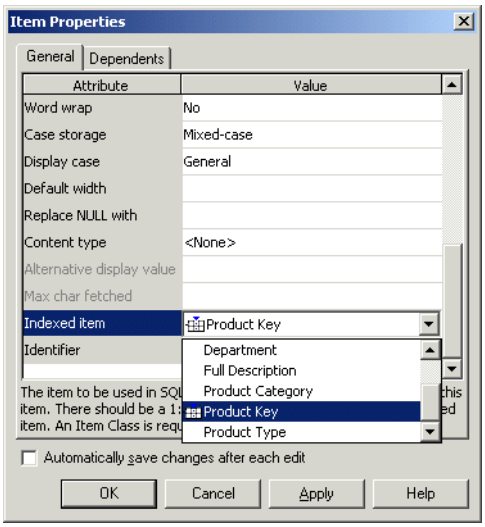
1. Display the "Workarea: Data tab" and select a folder that contains the item to which you want to assign an indexed item.
2. Click an item and choose Edit | Properties to display the "Item Properties dialog".

Figure 9–24 Item Properties dialog



3. Select the **Indexed Item** field to display a drop down list of the other items in the folder that you can choose.
4. Select an item from the drop down list to use as an indexed item.

Figure 9–25 Item Properties dialog showing an indexed item



The item and its indexed item must have a one-to-one mapping. In this example each Product Description has a corresponding unique Product Key value.

Note: You can select the following items to be an indexed item:

- Items that are indexed in the database

  Note: In simple folders this is indicated by an icon displayed next to the item. However, in complex folders Discoverer does not display an icon next to the item.

  The item will preferably be defined as a primary key in the database. If you are not sure whether the item is defined as a primary index or not, ask your database administrator.

- Items that are not indexed in the database

  Note: In simple folders this is indicated by the absence of an icon displayed next to the item. However, in complex folders Discoverer does not display an icon next to items whether they are indexed in the database or not. Therefore, in complex folders the absence of an icon does not indicate that an item is not indexed in the database. If you are unsure about whether an item is indexed in the database, ask the database administrator.

  The item will preferably be an item that has few values (for example, Region, Department, Month, Days of the Week,). If you are not sure, ask your database administrator.

5. Click **Apply**.

   Note: If Discoverer determines that an identical item and an associated indexed item are already defined in another folder, Discoverer displays the "Matching Values dialog".

   Note: If you selected an item from the **Indexed Item** field drop down list that does not have a list of values (LOV) item class defined for it, Discoverer displays the following warning dialog:

Figure 9–26 Warning dialog

6. If the above warning dialog is displayed, click OK.

   Discoverer automatically creates a LOV item class for the item you selected in the **Indexed Item** field drop down list. For more information about creating a LOV item class, see "About setting up lists of values".

   Note: When the item to which you assigned the indexed item is used by an end user as a parameter in a worksheet, the indexed item will improve Discoverer's performance.

   Note: If you click Cancel in the warning dialog, Discoverer does not create a LOV item class for the item selected in the **Indexed Item** field, and Discoverer cannot improve performance for worksheet parameters. However, Discoverer still uses the indexed item to improve performance for drilling on the item in a worksheet.

7. Click **OK** to close the Item Properties dialog.

Notes about items based on columns with user-defined datatypes

When a table is created, a datatype must be specified for each of the columns in the table. Oracle provides several built-in datatypes (for example, number, date, varchar2) and several categories for user-defined datatypes (for example, object types, varrays, nested tables). User-defined datatypes are sometimes called abstract datatypes. User-defined datatypes use Oracle built-in datatypes and other user-defined datatypes as the building blocks of types that model the structure and behavior of data in applications.

Note that when you create a Discoverer folder based on a table using the Load Wizard, any columns that have user-defined datatypes are ignored (that is, no items are created in the folder).

If you want to include an attribute of a user-defined datatype as an item in a Discoverer folder, you must do one of the following:

- create a custom folder and define a column with a built-in datatype in the folder's SQL statement to access the attribute of the user-defined datatype on which you want to base the item (for more information about creating custom folders, see "How to create custom folders")
- create a database view, define a column with a built-in datatype in the view definition to access the attribute of the user-defined datatype on which you want to base the item, and specify the view as the object on which to base a simple folder when using the Load Wizard (for more information about using the Load Wizard, see "How to create simple folders from the database")

To access the attributes of a user-defined datatype, you will have to be familiar with the appropriate syntax. For more information about user-defined datatypes and accessing their attributes, see the Oracle documentation supplied with your version of the database.

Part III

Introduction to Administering Discoverer

This section contains introductory information about administering Oracle Business Intelligence Discoverer.

10

Creating and Maintaining Joins

This chapter explains how to implement joins using Discoverer Administrator, and contains the following topics:

- "What are joins?"
- "What are single item joins?"
- "What are multi-item joins?"
- "About joining more than two folders"
- "What are non-equi-joins?"
- "What are one-to-many joins, one-to-one joins, and many-to-many joins?"
- "About joining two folders using more than one join"
- "What effect do joins have on query results and query performance?"
- "Examples of how joins can affect query results from complex folders"
- "What are outer joins?"
- "How to create joins"
- "How to view or edit joins"
- "How to delete a join"
- "What are fan traps, and how does Discoverer handle them?"
- "Example of a fan trap"
- "What to do if you set up a fan trap inside a complex folder"
- "What to do if you have a data type mismatch in a join"

What are joins?

In Discoverer, a join relates two folders using one or more matching items. In the database, a join relates two tables using matching columns.

For example, consider the two tables DEPT and EMP.

Figure 10–1 EMP and DEPT tables

DEPT	
DEPTNO	DNAME
10	ACCOUNTS
20	RESEARCH
30	SALES

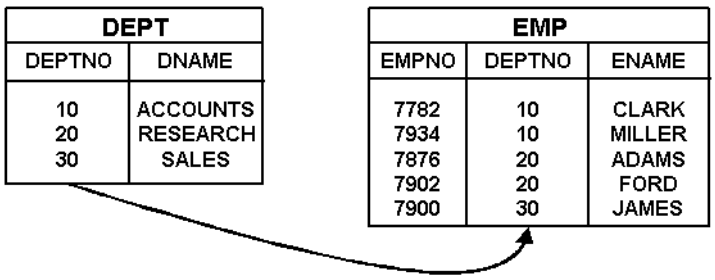
EMP		
EMPNO	DEPTNO	ENAME
7782	10	CLARK
7934	10	MILLER
7876	20	ADAMS
7902	20	FORD
7900	30	JAMES

Every department in the DEPT table has a department name and a department number. Every employee in the EMP table has a name and belongs to a department (which is identified by its department number).

To see the name of an employee and the name of the department in which they work, you must extract information from both tables. However, before you can extract information from both tables in the same query, a join must exist between the tables.

To define a join, you typically specify one column in one table that matches a column in the other table. In the case of the DEPT and EMP tables, the DEPTNO column in the DEPT table matches the DEPTNO column in the EMP table. In other words, the values in the DEPTNO column in the DEPT table have matching values in the DEPTNO column in the EMP table.

Figure 10–2 EMP and DEPT tables joined using the DEPTNO column



A join typically comprises a master table and a detail table. The master table has one row for which there are many rows in the detail table. In the example above, the DEPT table is the master table and the EMP table is the detail table because each department can have many employees.

The matching column in the detail table is often referred to as the foreign key column.

When you create a join using Discoverer Administrator, you specify a join condition that identifies the item in the master folder and the matching item in the detail folder. It is important to make sure you:

- Define the join with the correct folder as the master. If a query uses two or more folders and you define the incorrect folder as the master, you might get misleading or incorrect results (for more information, see "What are fan traps, and how does Discoverer handle them?").
- Choose the correct join option details. These details also determine whether summary folders can be used to speed up queries (for more information, see "What effect do joins have on query results and query performance?").

Having defined a join between two folders:

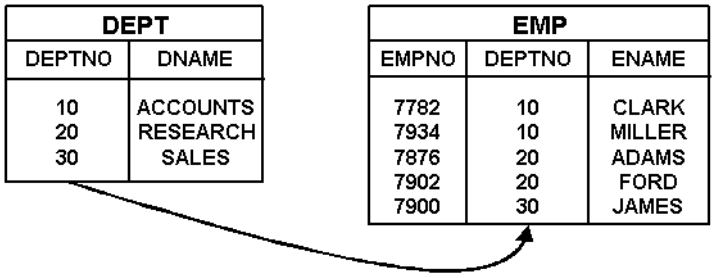
- Discoverer end users can include items from both folders in the same worksheet in Discoverer Plus (and Discoverer Desktop)
- you can create complex folders and hierarchies in Discoverer Administrator that contain items from both folders

What are single item joins?

In Discoverer, a single item join relates two folders by specifying an item that is common to both folders in a join condition. A join condition is the combination of two join items related by a join operator. Typically, the join operator is the equals (=) sign and the join is therefore referred to as an equi-join (for more information about alternative join operators, see "What are non-equi-joins?").

For example, the schema below uses the common column DEPTNO to join the DEPT and EMP tables.

Figure 10–3 Example of two tables joined using a single item join



Every department in the DEPT table has a department name and a department number. Every employee in the EMP table has a name and belongs to a department (which is identified by its department number). To see the name of an employee and the name of the department in which they work, you need information from both the EMP table and the DEPT table.

Imagine that a Discoverer end user wants to see the name of every employee and the name of the department in which they work, as follows:

DNAME	ENAME
ACCOUNTS	CLARK
ACCOUNTS	MILLER
RESEARCH	ADAMS
RESEARCH	FORD
SALES	JAMES

In other words, DEPT.DNAME and EMP.ENAME.

The following SQL statement would achieve the required result:

```
select dname, ename
from dept, emp
where
dept.deptno=emp.deptno
```

To enable the Discoverer end user to see the required result, you can do either of the following:

- You can create a custom folder containing the above SQL statement (for more information, see "How to create custom folders").
- You can create a join with one join condition (that is, a single item join) between DEPT.DEPTNO and EMP.DEPTNO (for more information, see "How to create joins").

  Having defined the join:

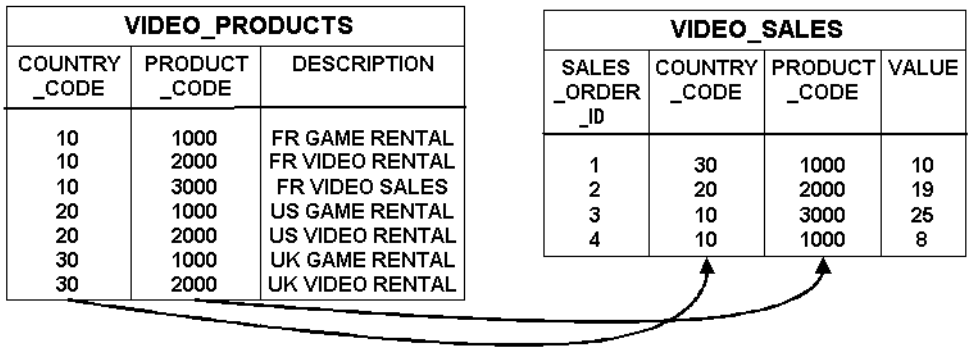
  - In Discoverer Administrator you can create a complex folder, then drag DNAME from DEPT and ENAME from EMP into the complex folder (for more information, see "How to create complex folders").
  - The Discoverer end user can use the complex folder. Alternatively, the end user can select DNAME from DEPT and ENAME from EMP.

What are multi-item joins?

In Discoverer, a multi-item join relates two folders using more than one join condition, such that the join becomes true when all of the join conditions are met (for more information about join conditions, see "What are single item joins?").

For example, the schema below uses a combination of COUNTRY_CODE and PRODUCT_CODE to uniquely identify products.

Figure 10–4 Example of two tables joined using a multi-item join



Every product in the VIDEO_PRODUCTS table has a description and is uniquely identified by the combination of a country code and a product code (note that product codes are only unique within each country code). Every sale in the VIDEO_SALES table is of a particular product (which is identified by its country code and product code). To see the value of a sale and a description of the product that was sold, you need information from both the VIDEO_SALES table and the VIDEO_PRODUCTS table.

Imagine that a Discoverer end user wants to see the value of each sale and a description of the product that was sold, as follows:

Description	Value
UK GAME RENTAL	10
US VIDEO RENTAL	19

Description	Value
FR VIDEO SALES	25
FR GAME RENTAL	8

In other words, VIDEO_PRODUCTS.DESCRIPTION and VIDEO_SALES.VALUE.

The following SQL statement would achieve the required result:

```
select description, value
from video_products, video_sales
where
video_products.country_code=video_sales.country_code
and
video_products.product_code=video_sales.product_code
```

To enable the Discoverer end user to see the required result, you can do either of the following:

- You can create a custom folder containing the above SQL statement (for more information, see "How to create custom folders").
- You can create a join with two join conditions (that is, a multi-item join) between VIDEO_PRODUCTS.COUNTRY_CODE and VIDEO_SALES.COUNTRY_CODE, and between VIDEO_PRODUCTS.PRODUCT_CODE and VIDEO_SALES.PRODUCT_CODE (for more information, see "How to create joins").

  Having defined the multi-item join:

  - In Discoverer Administrator you can create a complex folder, then drag DESCRIPTION from VIDEO_PRODUCTS and VALUE from VIDEO_SALES into the complex folder (for more information, see "How to create complex folders").
  - The Discoverer end user can use the complex folder. Alternatively, the end user can select DESCRIPTION from VIDEO_PRODUCTS and VALUE from VIDEO_SALES.

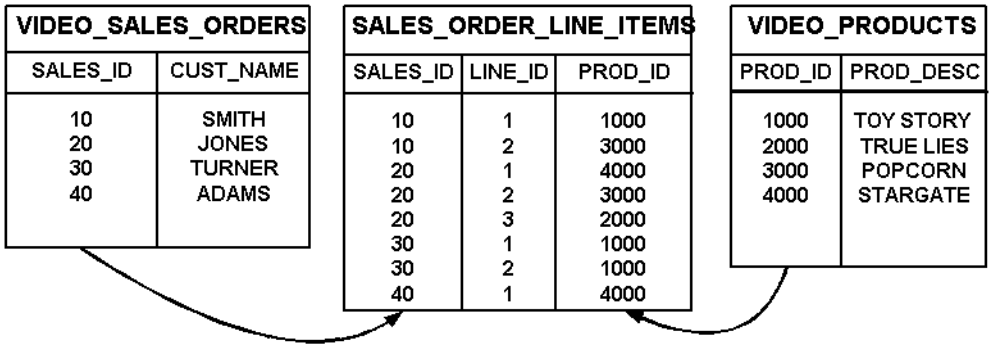
Note: A join that uses more than one column in each table to uniquely identify a row is also referred to as a composite join key.

About joining more than two folders

To join more than two folders in Discoverer, you must define a separate join between each of the folders you want to join.

For example, the schema below uses two joins to relate three tables. One join relates the VIDEO_SALES_ORDERS table with the SALES_ORDER_LINE_ITEMS table and the other join relates the VIDEO_PRODUCTS table with the SALES_ORDER_LINE_ITEMS table.

Figure 10–5 Example of three tables joined using two joins



Every sales order in the VIDEO_SALES_ORDERS table is for a particular customer (and is uniquely identified by a sales id). As shown in the SALES_ORDER_LINE_ITEMS table, every sales order comprises one or more line items and each line item is for a particular product. Every product in the VIDEO_PRODUCTS table has a description (and is uniquely identified by a product id).

Imagine that a Discoverer end user wants to see the customer's name and a description of what they have been buying, as follows.

Customer name	Product description
TURNER	TOY STORY
TURNER	TOY STORY
JONES	STARGATE
JONES	POPCORN
JONES	TRUE LIES
SMITH	POPCORN
SMITH	TOY STORY
ADAMS	STARGATE

In other words, VIDEO_SALES_ORDERS.CUST_NAME and VIDEO_PRODUCTS.PROD_DESC.

The following SQL statement would achieve the required result:

```
select cust_name, prod_desc
from video_sales_orders, sales_order_line_items, video_products
where
video_sales_orders.sales_id=sales_order_line_items.sales_id
and
sales_order_line_items.prod_id=video_products.prod_id
```

To enable the Discoverer end user to see the required result, you can do either of the following:

- You can create a custom folder containing the above SQL statement (for more information, see "How to create custom folders").
- You cannot use the Discoverer Administrator Join Wizard to create a single join that joins more than two tables. Instead, you must create two separate joins, one between VIDEO_SALES_ORDERS and SALES_ORDER_LINE_ITEMS, and a

second between SALES_ORDER_LINE_ITEMS and VIDEO_PRODUCTS (for more information, see "How to create joins").

Having defined two separate joins:

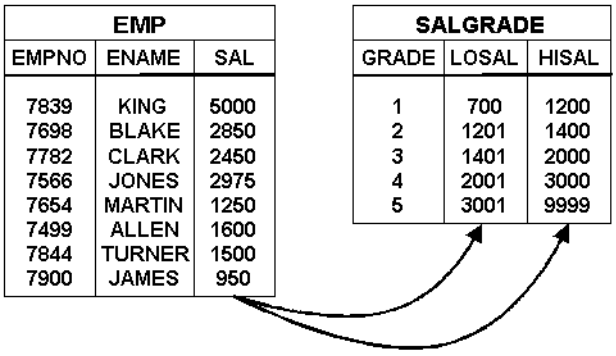
- In Discoverer Administrator you can create a complex folder, then drag CUST_NAME from VIDEO_SALES_ORDERS, one item from SALES_ORDER_LINE_ITEMS, and PROD_DESC from VIDEO_PRODUCTS into the complex folder. Having selected the item from SALES_ORDER_LINE_ITEMS, you can subsequently remove the item to get the two item folder you want (for more information, see "How to create complex folders").
- The Discoverer end user can use the complex folder. Alternatively, the end user can select CUST_NAME from VIDEO_SALES_ORDERS, one item from SALES_ORDER_LINE_ITEMS, and PROD_DESC from VIDEO_PRODUCTS. Having selected the item from SALES_ORDER_LINE_ITEMS, the end user can subsequently remove the item to get the two column worksheet they want.

What are non-equi-joins?

In Discoverer, a non-equi-join enables you to join two folders where there is no direct correspondence between columns in the tables. A non-equi-join relates two folders using one or more join conditions that use non-equi-join operators.

For example, the schema below uses a non-equi-join to join the EMP and SALGRADE tables because there are no matching columns in the two tables.

Figure 10–6 Example of two tables joined using a non-equi-join



An employee's grade depends on their salary. Employees earning between 700 and 1200 are in grade 1, those earning between 1201 and 1400 are in grade 2, and so on.

Imagine that a Discoverer end user wants to see the grade of each employee, as follows:

ENAME	GRADE
KING	5
BLAKE	4
CLARK	4
JONES	4
MARTIN	2

ENAME	GRADE
ALLEN	3
TURNER	3
JAMES	1

In other words, EMP.ENAME and SALGRADE.GRADE.

The following SQL statement would achieve the required result:

```
select ename, grade
from emp, salgrade
where
emp.sal>=salgrade.losal
and
emp.sal<=salgrade.hisal
```

To enable the Discoverer end user to see the required result, you can do either of the following:

- You can create a custom folder containing the above SQL statement (for more information, see "How to create custom folders").
- You can create a join with two non-equi-join conditions, one between EMP.SAL and SALGRADE.LOSAL and the other between EMP.SAL and SALGRADE.HISAL (for more information, see "How to create joins").

  Having defined the join:

  - In Discoverer Administrator you can create a complex folder, then drag SAL from EMP and GRADE from SALGRADE into the complex folder (for more information, see "How to create complex folders").
  - The Discoverer end user can use the complex folder. Alternatively, the end user can select ENAME from EMP and GRADE from SALGRADE.

What are one-to-many joins, one-to-one joins, and many-to-many joins?

One-to-many joins are the most common type of join. With a one-to-many join, one row in the master folder is joined to multiple rows in the detail folder.

One-to-one joins are joins between two folders where both items used in the join are primary keys. Therefore only one row in one folder will join to only one (or no) rows in the other folder. There is no real master and detail in this case, because each row in the master table can correspond to no more than one row in the detail table. Occasionally, one-to-one joins are a valid construct. Discoverer enables you to specify that a join is a one-to-one join.

It is possible to query a master folder with multiple detail folders (if all but one of the detail folders are joined with one-to-one joins). If more than two detail folders are joined to the master folder using one-to-many joins (also known as a fan trap schema), a row in the master folder might join to many rows in the detail tables, resulting in a Cartesian product. Fan trap schemas are resolved in Discoverer to prevent them returning unexpected results. For more information, see "What are fan traps, and how does Discoverer handle them?".

Many-to-many joins are not supported directly in Discoverer (or in any relational system). However, many-to-many joins can always be reworked and transformed into

multiple one-to-many joins. Very occasionally, a many-to-many join is a valid construct.

About joining two folders using more than one join

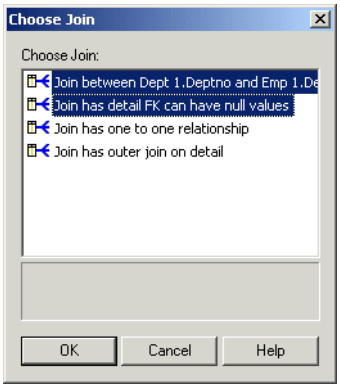
You might want to join two folders using more than one join when creating a complex folder. For example, you might create several complex folders that contain the same items, but each complex folder uses one or more joins. Each one of these joins can be defined using different join options.

The following table illustrates how you can join two folders (for example, emp and dept) using four different joins. You can choose one or more of these joins when adding items to complex folders.

Complex folder name	Master folder join item	Join operator	Detail folder join item	Join options used for the join
Complex1	emp.deptno	=	dept.deptno	No options selected
Complex2	emp.deptno	=	dept.deptno	Detail foreign key can have null values
Complex3	emp.deptno	=	dept.deptno	One-to-one relationship
Complex4	emp.deptno	=	dept.deptno	Outer join on detail folder

When you create a complex folder and drag items from two folders that have more than one join between the two folders, Discoverer Administrator displays the Choose Joins dialog where you can choose one or more joins to use.

Figure 10–7 Choose Join dialog



For more information, see "How to create complex folders".

When Discoverer Plus or Discoverer Desktop users create worksheets using items from multiple folders, if end users choose items from two folders joined using more than one join, Discoverer does one of the following:

- Discoverer uses all of the available joins

  This occurs if you select the **Disable multiple join path detection** option in Discoverer Plus or Discoverer Desktop.

- Discoverer displays the Join Folders dialog enabling you to select one or more joins

This occurs if you clear the **Disable multiple join path detection** option in Discoverer Plus or Discoverer Desktop.

For more information, see the *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Plus.*

What effect do joins have on query results and query performance?

In some circumstances, you will always want Discoverer to use a join when querying a master folder and a detail folder. For example:

- you might want a query to return values from both the master folder and the detail folder
- you might want a query to return only those rows from the detail folder that have matching values in the master folder

Resolving joins is relatively time-consuming, so returning results from such a query might be relatively slow.

In other circumstances, it will not be necessary for Discoverer to query the master folder and the detail folder. For example:

- if you know that values in the detail folder always have corresponding values in the master folder
- if you know that you will always want the query to return all of the detailed values from the detail folder regardless of whether values exist in the master folder

If you set the appropriate option to indicate that Discoverer does not need to query the master folder, query performance will improve. However, be aware that not querying the master table might give you unexpected results. If you are not sure whether to include the master folder, see "Examples of how joins can affect query results from complex folders".

If you combine two or more folders in a complex folder (by using a join), Discoverer can improve query performance by detecting and removing joins that are not required (a process known as join trimming). If the SQLJoinTrim Discoverer registry setting is enabled (that is, if it is set to the default value of 1), Discoverer will remove joins from a query when both of the following conditions are met:

- if Discoverer can return the requested rows without using the join
- if you select the **Detail item values always exist in master folder** option for the join (for more information, see "Examples of how joins can affect query results from complex folders")

For more information about Discoverer registry settings, see Chapter 21, "Discoverer Registry Settings".

Discoverer will never use a summary folder to satisfy a query that uses a join with the **Detail item values might not exist in master folder** option selected (for more information, see the "Edit Join dialog: Options tab").

Examples of how joins can affect query results from complex folders

The examples below assume that you have used Discoverer Administrator to create a complex folder called Emp_and_Dept. The complex folder is based on the DEPT and EMP tables with the join condition DEPT.DEPTNO=EMP.DEPTNO.

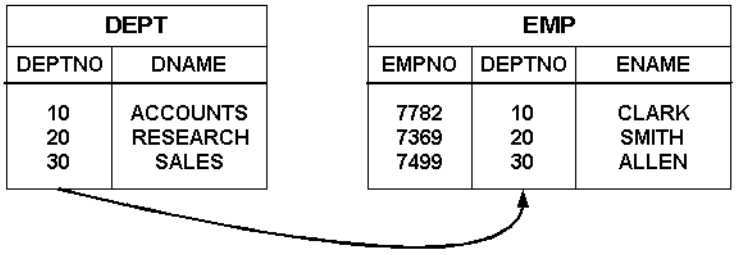
Consider the following two scenarios:

- **Scenario One**

  In Scenario One, employees in the EMP table must always belong to one of the departments in the DEPT table:

  - the DEPT table contains rows for department 10 (Accounts), department 20 (Research), and department 30 (Sales)
  - the EMP table contains rows for Clark (an employee of department 10), Smith (an employee of department 20), and Allen (an employee of department 30)

Figure 10–8 Scenario One: An example of a schema where the rows returned do not depend on whether the master folder is included in the query



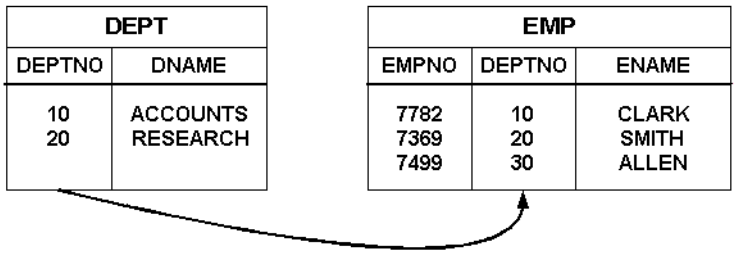
This scenario illustrates a schema in which a query on ENAME produces the same results, regardless of whether you include the master folder in the query.

- **Scenario Two**

  In Scenario Two, employees in the EMP table need not belong to a department in the DEPT table, as follows:

  - the DEPT table contains rows for department 10 (Accounts) and department 20 (Research)
  - the EMP table contains rows for Clark (an employee of department 10), Smith (an employee of department 20), and Allen (a former employee of department 30, which no longer exists)

Figure 10–9 Scenario Two: An example of a schema where the rows returned depend on whether the master folder is included in the query



This scenario illustrates a schema in which a query on ENAME might produce different results, depending on whether you include the master folder in the query.

Example 1: Excluding the master folder always possible

You will want to exclude the master folder from a query when including the master folder will either make no difference to the results, or when including the master folder will not return the required results.

Note: Excluding the master folder from a query (that uses only items from a complex folder), means that Discoverer Plus or Discoverer Desktop does not use the join between the master and detail folder. Discoverer does not use the join when you select query items from a complex folder (when creating a worksheet in Discoverer Plus or Discoverer Desktop), and the query items come only from the detail folder (for example, EMP).

Imagine that a Discoverer end user wants to see the name of all the employees in the EMP table by selecting the ENAME item from the Emp_and_Dept complex folder.

In Scenario One, the required results are as follows:

ENAME
CLARK
SMITH
ALLEN

Including the master folder in the query will make no difference to the results because all of the employees will be returned by the query. To improve query performance, you can specify that Discoverer does not query the master folder by selecting the **Detail items always exist in the master folder** option in the "Edit Join dialog: Options tab". Providing that the SQLJoinTrim Discoverer registry setting is also enabled, Discoverer will not query the master folder (for more information, see Chapter 21, "Discoverer Registry Settings").

In Scenario Two, the required results are as follows:

ENAME
CLARK
SMITH
ALLEN

Including the master folder in the query will only return those employees with department numbers that match department numbers in the DEPT table. But the Discoverer end user wants to see all employees in the EMP table. To return all the employees in the EMP table, you can specify that Discoverer does not query the master folder by selecting the **Detail items always exist in the master folder** option in the "Edit Join dialog: Options tab". Providing that the SQLJoinTrim Discoverer registry setting is also enabled, Discoverer will not query the master folder (for more information, see Chapter 21, "Discoverer Registry Settings").

Example 2: Excluding the master folder might be possible

You will want to include the master folder in a query when excluding the master folder will not return the required results from the detail table.

Note: Including the master folder in a query (that uses only items from a complex folder), means that Discoverer Plus or Discoverer Desktop uses the join between the master and detail folder. Discoverer uses a join when you select query items from a complex folder (when creating a worksheet in Discoverer Plus or Discoverer Desktop), and the query items come from either the master or the detail folder (for example, DEPT and EMP respectively).

Imagine that a Discoverer end user wants to see the current employees in the EMP table by selecting the ENAME item from the Emp_and_Dept complex folder. Any employees that belong to departments that are not in the DEPT table are not current employees, and are therefore not required.

In Scenario One, the required results are as follows:

ENAME
CLARK
SMITH
ALLEN

Including the master folder in the query will make no difference to the results because all of the employees belong to a department. To improve query performance, you can specify that Discoverer does not query the master folder by selecting the **Detail item values always exist in the master folder** option in the "Edit Join dialog: Options tab". Providing that the SQLJoinTrim Discoverer registry setting is also enabled, Discoverer will not query the master folder (for more information, see "What are Discoverer registry settings?").

In Scenario Two, the required results are as follows:

ENAME
CLARK
SMITH

Including the master folder in the query will only return those employees with department numbers that match department numbers in the DEPT table, which is exactly what the Discoverer end user wants. You can specify that Discoverer always queries the master folder by selecting the **Detail item values might not exist in the master folder** option in the "Edit Join dialog: Options tab".

Example 3: Excluding the master folder never possible

You will always want to include the master folder in a query if you want the results to contain information from both the master folder and the detail folder.

Note: Including the master folder in a query (that uses only items from a complex folder), means that Discoverer Plus or Discoverer Desktop uses the join between the master and detail folder. Discoverer uses a join when you select query items from a complex folder (when creating a worksheet in Discoverer Plus or Discoverer Desktop), and the query items come from either the master folder or the detail folder or from both folders (for example, DEPT and EMP).

Imagine that a Discoverer end user wants to see employees and the departments to which those employees belong by selecting the ENAME item and the DNAME item from the Emp_and_Dept complex folder.

In Scenario One, the required results are as follows:

ENAME	DNAME
CLARK	ACCOUNTS
SMITH	RESEARCH

ENAME	DNAME
ALLEN	SALES

Including the master folder in the query is essential to return the names of the departments. Discoverer will include the master folder in the query even if you have selected the **Detail item values always exist in the master folder** option in the "Edit Join dialog: Options tab".

In Scenario Two, the required results are as follows:

ENAME	DNAME
CLARK	ACCOUNTS
SMITH	RESEARCH

Including the master folder in the query is essential to return the names of the departments. Discoverer will include the master folder in the query even if you have selected the **Detail item values always exist in the master folder** option in the "Edit Join dialog: Options tab".

Note that Allen will only be returned (with a null value for the department name) if you select the **Outer join on master** option in the "Edit Join dialog: Options tab" (for more information, see "What are outer joins?").

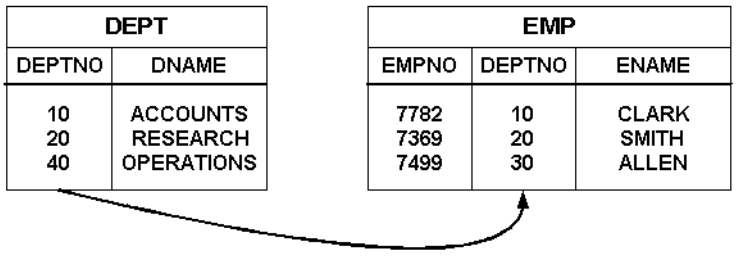
What are outer joins?

Outer joins are SQL constructs that enable you to return rows from one table when there are no matching rows in a table to which it is joined.

Consider the following scenario:

- the master table DEPT contains rows for department 10 (ACCOUNTS), department 20 (RESEARCH) and department 40 (OPERATIONS)
- the detail table EMP contains rows for Clark (department 10), Smith (department 20) and Allen (a former employee of department 30, which no longer exists)

Figure 10–10 Master and detail tables DEPT and EMP, where the rows returned are determined by the position of the outer join construct in the query



The following examples use the schema in the above figure to illustrate how the position of the outer join determines the rows returned from a query.

Example 1 - Outer join placed on the master table

Imagine that a Discoverer end user wants to see all employee records, even when an employee does not belong to a department. The required results are as follows:

DNAME	ENAME
ACCOUNTS	CLARK
RESEARCH	SMITH
<NULL>	ALLEN

The following SQL statement would achieve the required result:

```
select dname, ename
from dept, emp
where
dept.deptno(+)=emp.deptno
```

When the outer join is placed on the master table, the database returns each detail row for which there is no matching master row, and all matching detail and master rows. In the SQL statement, the plus (+) symbol signifies the outer join.

To enable the Discoverer end user to see the required result, you can do either of the following:

- You can create a custom folder containing the above SQL statement (for more information, see "How to create custom folders").
- You can create a join with a single join condition between DEPT.DEPTNO and EMP.DEPTNO and select both the **Detail items might not exist in the master folder** option and the **Outer join on master** option in the "Edit Join dialog: Options tab" (for more information about creating joins, see "How to create joins").

  Having defined the join:

  - In Discoverer Administrator you can create a complex folder, then drag DNAME from DEPT and ENAME from EMP into the complex folder (for more information, see "How to create complex folders").
  - The Discoverer end user can use the complex folder. Alternatively, the end user can select DNAME from DEPT and ENAME from EMP.

Example 2 - Outer join placed on the detail table

Imagine that a Discoverer end user wants to see all department records even when a department does not have any employees. The required results are as follows:

DNAME	ENAME
ACCOUNTS	CLARK
RESEARCH	SMITH
OPERATIONS	<NULL>

The following SQL statement would achieve the required result:

```
select dname, ename
from dept, emp
where
dept.deptno=emp.deptno(+)
```

When the outer join is placed on the detail table, the database returns each master row for which there is no matching detail row, and all matching master and detail rows. In the SQL statement, the plus (+) symbol signifies the outer join.

To enable the Discoverer end user to see the required result, you can do either of the following:

- You can create a custom folder containing the above SQL statement (for more information, see "How to create custom folders").
- You can create a join with a single join condition between DEPT.DEPTNO and EMP.DEPTNO and select **Outer join on detail** in the "Edit Join dialog: Options tab" (for more information about creating joins, see "How to create joins").

  Having defined the join:

  - In Discoverer Administrator you can create a complex folder, then drag DNAME from DEPT and ENAME from EMP into the complex folder (for more information, see "How to create complex folders").
  - The Discoverer end user can use the complex folder. Alternatively, the end user can select DNAME from DEPT and ENAME from EMP.

How to create joins

You create a join to enable end users to include items from different folders in the same worksheet.

To create a join:

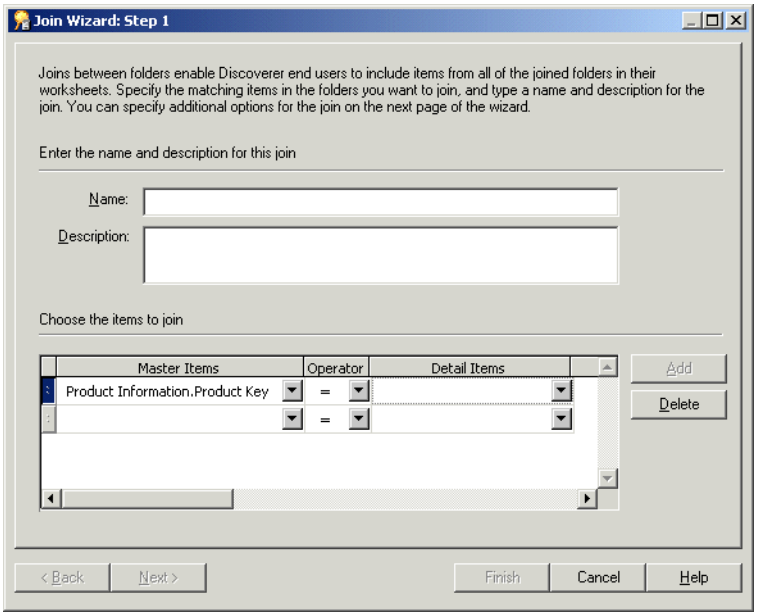
1. Display the "Workarea: Data tab" and select the item in the master folder that will match an item in the detail folder.

   Tip: For more information about which is the master and detail folder, see "What are joins?".

2. Choose Insert | Join to display the "Join Wizard: Step 1 dialog".

   The master item is displayed in the **Master Items** field.

Figure 10–11 Join Wizard: Step 1 dialog



Tip: If you want to change the folder and item in the **Master Items** field, choose the **More items** option at the bottom of the drop down list.

3. Click the **Operator** down arrow and select a join operator from the drop down list to specify the join type.
4. Click the **Detail Items** down arrow to display the "New Join dialog".
5. Select the folder and the detail item for the join.

   You can choose a detail item from a folder in the same business area or in any other open business area.

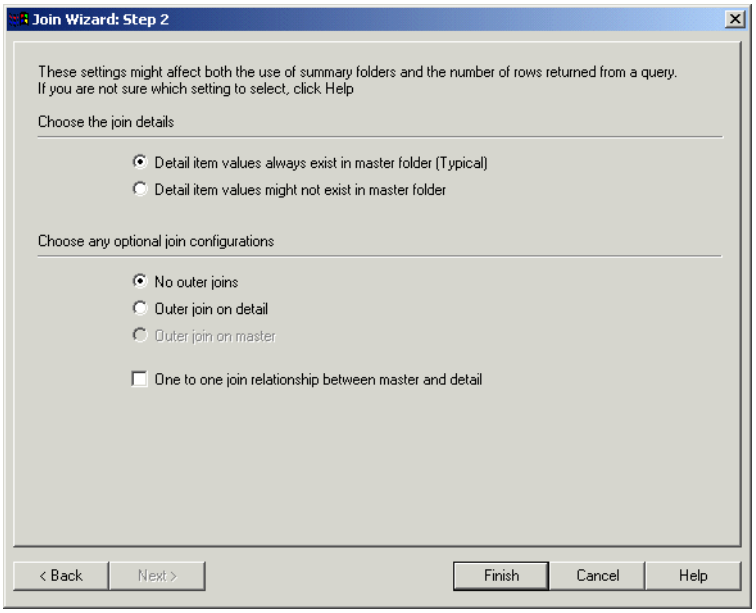
   By specifying a master item, a detail item, and a join operator, you have created a join condition. Joins that have only one join condition are referred to as single-item joins (for more information, see "What are single item joins?").

   Tip: If you want to change the folder and item in the **Detail Items** field, choose the **More items** option at the bottom of the drop down list.

   In some circumstances, you will need to create more than one join condition (for more information, see "What are multi-item joins?").
6. (optional) To create a multi-item join:
   a. Click Add to display a new row for a new join condition.
   b. Use the drop down lists for **Master Items** and **Detail Items** to select a new pair of items from the same master and detail folders as the previous join condition.

      Note: If you specify a master or detail item from a folder that was not included in the previous join condition, the previous join condition is removed.
   c. Add new join conditions until you have specified all the matching items in the master folder and the detail folder.
7. Click Next to display the "Join Wizard: Step 2 dialog".

Figure 10–12 Join Wizard: Step 2 dialog



8. Select the join details for this join as follows:
   - **Detail item values always exist in the master folder (Typical)**

Select this option to improve query performance (for more information, see "What effect do joins have on query results and query performance?").

- **Detail item values might not exist in the master folder**

  Select this option if you cannot be sure that all the values in the detail folder have matching values in the master folder. Note that selecting this option might return unexpected results (for more information, see "What effect do joins have on query results and query performance?").

9. (optional) Select any of the following options for this join, as required:

   - **No outer joins**

     Select this option to not create any outer joins, and display all matching master and detail rows.

   - **Outer join on detail**

     Select this option to display master rows that have no corresponding detail items, and all matching master and detail rows.

   - **Outer join on master**

     Select this option to display detail rows that have no corresponding master, and all matching detail and master rows. This check box is only available if the **Detail item values might not exist in the master folder** option is selected.

   - **One to one relationship between master and detail**

     Select this check box to specify that there is a one to one relationship between master and detail tables.

     Note: Clear this check box if you are creating an outer join.

   For more information about the above options, see:

   - "What are outer joins?"
   - "What are one-to-many joins, one-to-one joins, and many-to-many joins?"
   - "Edit Join dialog: Options tab"

10. Click Finish to save the changes and close the dialog.

    Discoverer Administrator creates the join between the two folders. The join icon is shown below both folders in the Workarea.

Notes

- To include a function or a literal (for example, text string, number, date) in a join, create a calculated item that includes the function or literal you want to use. You can then create a join and specify the item in the join.

How to view or edit joins

You can view or edit a join using either or both of the following methods:

- using the "Edit Join dialog: Items tab" and "Edit Join dialog: Options tab" to:
  - view and edit join items
  - add and remove join items
  - edit the join name and description
  - view and edit join options

- using the "Join Properties dialog" to:
  - view and edit join properties for one or more joins
  - view dependent objects for one or more joins

Both methods are described below.

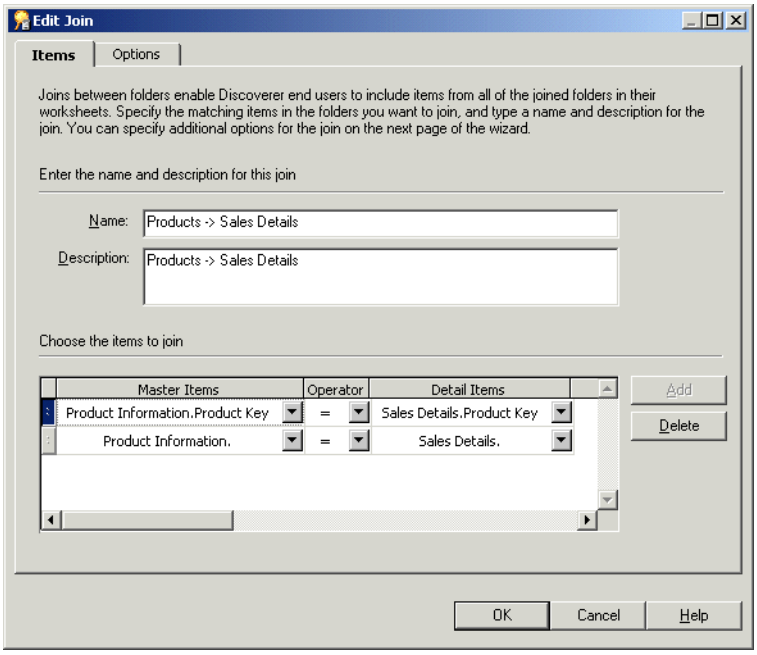
How to edit a join using the Edit Join dialog

You might want to edit a join using the Edit Join dialog.

To edit a join using the Edit Join dialog:

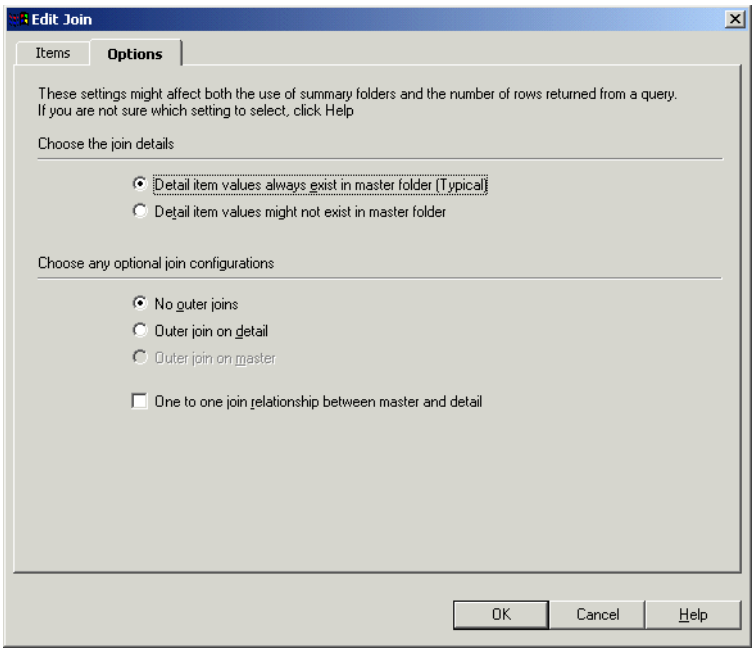
1. Select a join on the "Workarea: Data tab" and choose Edit | Edit... to display the "Edit Join dialog: Items tab".

Figure 10–13 Edit Join dialog: Items tab



2. Edit the join name, description, and join conditions as required.
3. Display the "Edit Join dialog: Options tab".

Figure 10–14 Edit Join dialog: Options tab



4. Edit the join options as required.
5. Click OK to save any changes you have made and close the dialog.

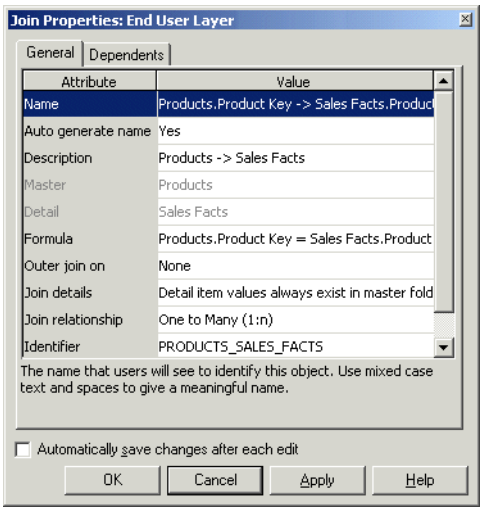
   To view or edit join properties using the Join Properties dialog:

How to edit a join using the Join Properties dialog

You might want to edit a join using the Join Properties dialog.

1. Select a join on the "Workarea: Data tab" and choose Edit | Properties to display the "Join Properties dialog".

Figure 10–15 Join Properties dialog: General tab



Tip: You can select more than one join at a time by holding down the Ctrl key and clicking another join. All properties that are common to each selected join are

displayed. If the value of a property is not common to all of the selected joins, the Value field is blank.

2. Make changes as required.
3. Click OK to save any changes you have made and close the Join Properties dialog.

How to delete a join

You might delete a join when it is no longer required. For example, you might want to prevent end users creating a worksheet that contains items from two previously joined folders.

Note: When you delete a join, other EUL objects (for example, complex folders) that use the join might also be affected. It is recommended that you export the EUL before you attempt to delete a join.

To delete a join:

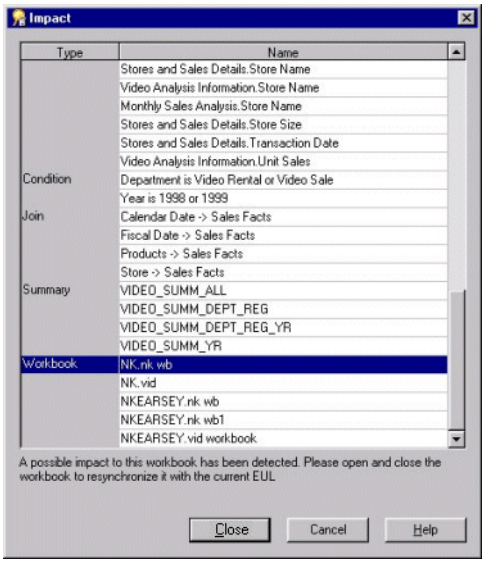
1. Select a join on the "Workarea: Data tab" and choose Edit | Delete to display the "Confirm Delete dialog".

   Tip: You can select more than one join at a time by holding down the Ctrl key and clicking another join.

2. (optional) To see the objects that might be affected by deleting this join:

   a. Click Impact to display the "Impact dialog".

Figure 10–16 Impact dialog



The Impact dialog enables you to review the other EUL objects that might be affected when you delete a join.

Note: The Impact dialog does not show the impact on workbooks saved to the file system (that is, in `.dis` files).

   b. (optional) Select a row in the Impact dialog to view text at the bottom of the list, indicating what affect the current action will have on the EUL object.

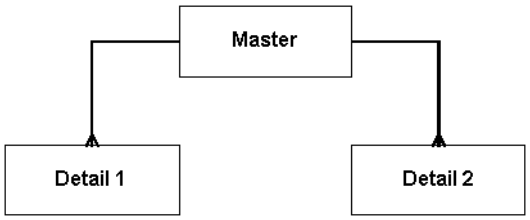
   c. Click Close to close the Impact dialog when you have finished reviewing the impact of deleting the join.

3. Click Yes if you still want to delete the selected join(s).

What are fan traps, and how does Discoverer handle them?

A fan trap is a group of joined database tables that might return unexpected results. The most common manifestation of a fan trap occurs when a master table is joined to two or more detail tables independently.

Figure 10–17 A simple fan trap schema



Although this construction is relationally correct, you are likely to return incorrect results if you use a straightforward SQL statement to aggregate data points.

However, if you use Discoverer to aggregate the data points, Discoverer will never return incorrect results, provided fan trap detection is enabled. Every query that Discoverer generates is interrogated for potential fan traps. If a fan trap is detected, Discoverer can usually rewrite the query using inline views to ensure the aggregation is done at the correct level. Discoverer creates an inline view for each master-detail aggregation, and then combines the results of the outer query.

For an example of how Discoverer will return correct results when a straightforward SQL statement will return incorrect results, see "Example of a fan trap".

In some circumstances, Discoverer will detect a query that involves an unresolvable fan trap schema, as follows:

- if the detail folders use different keys from the master for the join
- if there is a direct join relationship between the detail folders (thereby creating an ambiguous circular relationship)
- if non-aggregated values are chosen from more than one of the detail folders
- if more than one detail folder has a separate join relationship to a different master folder

In the above circumstances, Discoverer disallows the query and displays an error message.

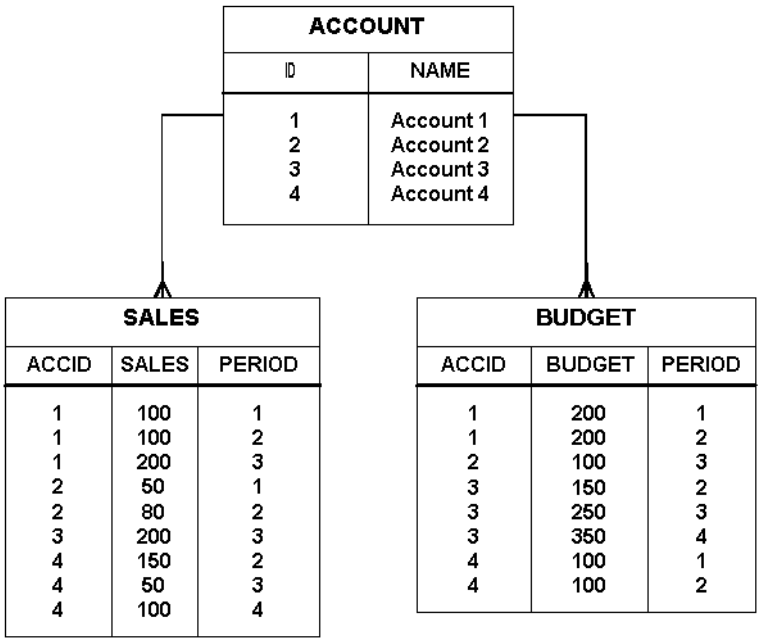
In addition, Discoverer controls which columns can be totalled. If a worksheet displays values of items from both the master folder and the detail folder, Discoverer will not total the values together. Instead, Discoverer will display a null to prevent incorrect or unexpected results.

For more information about enabling or disabling fan trap detection in Discoverer, see the *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Plus*.

Example of a fan trap

Consider an example fan trap schema that includes a master folder (ACCOUNT) and two detail folders (SALES and BUDGET), as shown below:

Figure 10–18 Example of a fan trap schema



Every account can have several sales figures and several budget figures for each period.

Imagine that a Discoverer end user wants to answer the question, "What is the total sales and total budget by account?". The aggregates (SUM) from the two detail tables come from the same master table (ACCOUNT).

This relatively simply query will produce:

- correct results if you use Discoverer (provided fan trap detection is enabled)
- incorrect results if you use a straightforward SQL statement

Producing correct results using Discoverer

To answer the question, "What is the total sales and total budget by account?", Discoverer:

- selects the name of the account (from ACCOUNT.NAME)
- calculates the sum of SALES (from SALES.SALES)
- calculates the sum of BUDGET (from BUDGET.BUDGET)

Discoverer returns correct results, as shown below:

Account	Sales	Budget
Account 1	400	400
Account 2	130	100
Account 3	200	750
Account 4	300	200

Discoverer interrogates the query, detects a fan trap, and rewrites the query to ensure the aggregation is done at the correct level. Discoverer rewrites the query using inline

views, one for each master-detail aggregation, and then combines the results of the outer query.

The following example shows the SQL that Discoverer uses to return the correct results:

```
SELECT inACC as Name, SUM(inSalesSum) as SALES_SUM, ,SUM(inBudgetSum) as BUDGET__
SUM,
FROM
(SELECT masterID AS OutMasterIDSales, SUM(SalesDetailsSales) AS inSalesSum
FROM
(SELECT ID AS masterID, NAME AS masterName FROM ACCOUNT) INLineAccount,
(SELECT ID AS SalesDetailId, ACCID AS SalesDetailAccID, SALES AS SalesDetailsSales
FROM SALES )INLineSales
WHERE(masterID = SalesDetailAccID(+))
GROUP BY masterID) inner1,
(SELECT masterID AS OutMasterIDBudget, SUM(BudgetDetailBudget) AS inBudgetSum,
masterName AS inACC
FROM
(SELECT ID AS masterID, NAME AS masterName FROM ACCOUNT) INLineAccount,
(SELECT ID AS BudgetDetailId, ACCID AS BudgetDetailAccID, BUDGET AS
BudgetDetailsSales FROM BUDGET )INLineBudget
WHERE(masterID = BudgetDetailAccID(+))
GROUP BY masterName, masterID ) inner2
WHERE ((OutMasterIDBudget = OutMasterIDSales))
GROUP BY inACC
```

The result is correct because each sale and each budget is summed individually (one for each master-detail aggregation) and is then combined with a join based on the master key(s).

Producing incorrect results using a straightforward SQL statement

To answer the question, "What is the total sales and total budget by account?", you might consider using a staightforward SQL statement such as the following:

```
SELECT Account.Name, SUM(sales), SUM(budget)
FROM
Account, Sales, Budget
Where
Account.id=Sales.accid
AND
Account.id=Budget.accid
GROUP BY
Account.Name
```

This straightforward SQL statement returns incorrect results, as shown below:

Account	Sales	Budget
Account 1	800	1200
Account 2	130	200
Account 3	600	750
Account 4	600	600

Although the results are relationally correct, they are obviously wrong. For example, the results indicate that the total sales figure for Account 1 is 800 but you can see from the SALES table that the total sales figure for Account 1 is 400 (that is, 100+100+200).

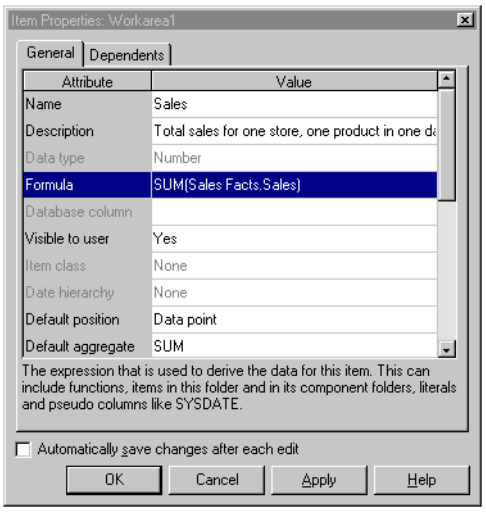
The incorrect results are based on a single query in which the tables are first joined together in a temporary table, and then the aggregation is performed. However, this approach causes the aggregates to be summed (incorrectly) multiple times.

What to do if you set up a fan trap inside a complex folder

Discoverer warns about fan trap join configurations in complex folders by displaying a message indicating that an invalid join configuration exists. To make sure that Discoverer returns correct results for complex folders, you can edit the Formula property of the detail item and explicitly specify the aggregate formula.

For example, you might set the Formula property of a Sales item in a complex folder, from Sales Fact.Sales to SUM(Sales Facts.Sales), as shown below:

Figure 10–19 Example of an aggregate formula specified for an item in a complex folder



What to do if you have a data type mismatch in a join

Discoverer does not allow joins between items of different data types (for example, varchar, numeric, or date). However, if you have upgraded from a previous version of Discoverer, an existing join might already exist between mismatched data types. If a join exists between two items with mismatched data types, Discoverer runs the query but displays an error message and does not complete the query. Discoverer also displays an error message if you try to edit a join that contains items that have mismatched data types.

You can create a join between two items that have mismatched data types by following the steps below:

- create a new item based on the first mismatched item and use conversion functions (for example, to_char(), to_date(), to_number()) to make the new item's data type compatible with the second item
- create a join between the new item and the second item

For more information, see "Example of how to create a join between two items that have mismatched data types".

Example of how to create a join between two items that have mismatched data types

In this example, you want to create a join between the Calendar Date folder and the Store and Sales Detail folder, using:

- the Day of Week item from the Calendar Date folder
- the Transaction Date item from the Store and Sales Detail folder

These two items have mismatched data types, as follows:

- the Day of Week item's data type is varchar
- the Transaction Date item's data type is date

To create a join between the two folders using these two items, you must perform the following steps:

- "Step 1: Create a new item that converts the Day of Week item from a varchar to a date data type"
- "Step 2: Create a join using the new item"

Step 1: Create a new item that converts the Day of Week item from a varchar to a date data type

The first step is to create a new item that converts the Day of Week item from varchar to a date data type as follows:

1. Select the Calendar Date folder from the Video Store Tutorial business area.
2. Choose Insert | Item to display the "New Item dialog".
3. Type `New Day of Week` in the **Item Name** field.
4. Select the **Functions** option to display the function folders.
5. Click the + symbol next to the **Conversion** folder to display the conversion functions.
6. Select the TO_DATE function and click PASTE>> to paste the TO_DATE function into the **Calculation** field for the new item.
7. Replace the text in the **Calculation** field between the brackets of the TO_DATE function with the following text:

   ```
   Day of Week,Day
   ```

   The **Calculation** field now displays the following text:

   ```
   TO_DATE(Day of Week,Day)
   ```

8. Click OK to create the new item.

You have now created a new item that is based on the Day of Week (varchar) item and that has been converted to a date data type.

Step 2: Create a join using the new item

Having created a new calculated item of the correct data type, the next step is to join the new item to the Transaction Date item from the Store and Sales Details folder, as follows:

1. Select the New Day of Week item from the Calendar Date folder.
2. Choose Insert | Join to display the "Join Wizard: Step 1 dialog".
3. Click the Detail Items drop down list to display the "New Join dialog".

The New Join dialog enables you to select the detail folder and item for the new join.

4. Click the + symbol next to the Store and Sales Details folder to expand the folder's items.
5. Select the Transaction Date item and click OK to close the New Join dialog.
6. Click Next to display the "Join Wizard: Step 2 dialog".
7. Click Finish to accept the default join options and close the Join Wizard: Step 2 dialog.

   Discoverer is able to join the Calendar Date folder with the Store and Sales Details folder using the New Day of Week item and the Transaction Date item because both items have the same data type.

11

Creating and Maintaining Calculated Items

This chapter explains how to create and maintain calculated items using Discoverer Administrator, and contains the following topics:

- "What are calculated items?"
- "What are derived items?"
- "What are aggregate calculated items?"
- "What restrictions apply to aggregate calculated items?"
- "What are the differences in behavior between analytic functions and aggregate calculated items?"
- "What are aggregate derived items?"
- "Example of an aggregate derived item"
- "How to create calculated items"
- "How to edit calculated item properties"
- "How to edit calculated items"
- "How to delete calculated items"
- "How to create a calculated item that enables end users to drill out from one worksheet to display another worksheet in Discoverer Viewer"
- "Why do you need PL/SQL functions?"
- "What are custom PL/SQL functions?"
- "About registering custom PL/SQL functions"
- "How to register custom PL/SQL functions automatically"
- "How to register custom PL/SQL functions manually"

What are calculated items?

Calculated items are items that use a formula to derive data for the item.

Calculated items enable Discoverer end users to apply business calculations to the data. For example, typical business calculations might include:

- profit margins
- average revenues per month
- expected sales

- percent of profit by product type

omission Calculated items (like other items in a folder) can be used in conditions, summary folders, lists of values, joins, and other calculated items.

As the Discoverer manager, you can create calculated items and make them available for inclusion in workbooks.

Creating calculated items provides the following benefits:

- Discoverer end users can include a complicated calculation in their worksheets simply by selecting a calculated item
- you can add new items to a folder that do not exist as columns in the underlying database tables

You create calculated items using expressions that can contain:

- existing items
- operators
- literals
- functions

There are three types of calculated items:

- derived items (for more information, see "What are derived items?")
- aggregate calculated items (for more information, see "What are aggregate calculated items?")
- aggregate derived items (for more information, see "What are aggregate derived items?")

You can obtain more information about calculated items in Discoverer from the following sources:

- for worked examples of calculated items, see the *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Plus*
- for information on function syntax, see the latest *Oracle SQL Reference* documentation

Notes

- You might want to create a calculation to concatenate two (or more) items. To concatenate items, insert ||CHR(10)|| between items. For example, to create a new worksheet column containing the Calendar Year item and the Department item, create a calculation as follows:

  Calendar Year||CHR(10)||Department

  Worksheets containing this item will display Calendar Year and Department in a single column.

  For example:

  2002 Sales Department

- You can create a calculated item (containing an internet address) and use the calculated item in a Discoverer Plus worksheet to enable end users to launch a pre-defined Discoverer Viewer worksheet in a Web browser (for more information, see "How to create a calculated item that enables end users to drill out from one worksheet to display another worksheet in Discoverer Viewer".

What are derived items?

Derived items are expressions used in calculated items that behave like any other item in a folder. Derived items can be axis items or data points and can be used anywhere that you would use an ordinary item. The value of a derived item remains the same regardless of which other items are included in a workbook.

The following are examples of derived items:

- `Sal*12+NVL(Comm,0)` - returns annual salary plus commission
- `Initcap(Ename)` - capitalizes the first letter of Ename
- `1` - returns the value 1
- `Sysdate-7` - returns today's date minus seven days

What are aggregate calculated items?

Aggregate calculated items are derived items (for more information, see "What are derived items?"), to which the GROUP function is applied (for example, SUM, COUNT, MAX, MIN, AVG, DETAIL). The value of an aggregated calculated item depends on which other items are included in a worksheet.

The following are examples of aggregate calculated items:

- `SUM(Sal)*12 - returns the sum of the annual salary`
- `SUM(Comm)/SUM(Sal) - returns the sum of commission divided by the sum of the salary`
- `AVG(Monthly Sales) - returns the average monthly sales`

How the axis items are grouped together affects the number of rows that are aggregated. This is particularly important in the case of calculations that are ratios of two aggregates.

For example, to calculate a margin, you would use the calculation SUM(Profit)/SUM(Sales) rather than Profit/Sales. Used in a query, the latter would result in SUM(Profit/Sales), which produces a different result from SUM(Profit)/SUM(Sales). The example uses the SUM aggregate, but the same can be applied for any of the other aggregates (for example, SUM, COUNT, MAX, MIN, AVG, DETAIL).

Note: If you want to compute the sum of a ratio of two data points, always sum the data points before computing the ratio.

What restrictions apply to aggregate calculated items?

When creating aggregate calculated items, note that several restrictions apply. Aggregate calculated items:

- must have their **Default Position** property set to data point
- must have their **Default Aggregate** property set to detail
- must reference items in the current folder only
- cannot be used in a join
- cannot be used in a mandatory condition
- cannot be used in a hierarchy

- cannot have an item class
- cannot be dragged into a complex folder
- cannot have further aggregation functions applied to them in Discoverer Plus

Aggregate calculated items do not influence the number of rows of data referenced by the folder they are in. They only influence the generated SQL when selected in worksheets.

What are the differences in behavior between analytic functions and aggregate calculated items?

Analytic functions are advanced mathematical and statistical calculations that you can use to analyze business intelligence data. For example, to answer questions such as:

- what are my best selling products?
- how do current sales compare with last year's sales?
- what is the average sales transaction amount in the region with the largest number of sales transactions per year?

Analytic functions behave differently from aggregate calculated items as follows:

- analytic functions are aggregated in the database
- because analytic functions are aggregated in the database, and not the memory cache, they have a performance overhead

For more information about:

- the restrictions that apply to both analytic functions and aggregate calculated items, see "What restrictions apply to aggregate calculated items?"
- analytic functions, see the *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Plus*.

Note: Discoverer only supports analytic functions when running against an Oracle Enterprise Edition database.

What are aggregate derived items?

Aggregate derived items are aggregate calculated items in a complex folder that aggregate another aggregate calculated item (in the same complex folder). In other words, an aggregate derived item is simply an aggregate calculated item nested inside another aggregate calculated item.

Aggregate derived items enable you to apply an aggregation (for example, AVG, SUM, COUNT) to the current level of aggregation to derive additional information.

Aggregate derived items behave in all respects like ordinary derived items. For more information, see:

- "What are derived items?"
- "Example of an aggregate derived item"

Example of an aggregate derived item

This example explains how you can use an aggregate derived item to display the average monthly sales per store over one year, for a video stores chain. The aggregate

derived item in this example uses an aggregate calculated item created in the same folder. For more information about aggregate calculated items, see "What are aggregate calculated items?".

This example uses two complex folders, Video Analysis and Monthly Sales Analysis, that you can create using the sample data (for more information, see the Chapter 27, "Installing the Discoverer Sample Data EUL, Data, and Workbook").

An aggregate derived item is created in the complex folder Monthly Sales Analysis. The Monthly Sales Analysis complex folder is built by dragging the following items from the Video Analysis complex folder:

- Department
- Region
- City
- Store Name
- Year
- Quarter
- Month

The complex folder Monthly Sales Analysis references a row of data for every store, for every month.

An aggregate calculated item (Monthly Sales Per Store) is created in the Monthly Sales Analysis complex folder using the following formula:

SUM(Video Analysis.Sales)

This item shows the total sales for a given store in a given month.

Figure 11–1 Result of query using the aggregate calculated item SUM(Video Analysis.Sales)

Month	Monthly Sales per Store SUM	Store Name
Jan	£26,091.99	Store No. 1
Feb	£20,483.19	Store No. 1
Mar	£25,258.85	Store No. 1
Apr	£32,459.99	Store No. 1
May	£30,766.77	Store No. 1
Jun	£22,529.44	Store No. 1
Jul	£13,735.11	Store No. 1
Aug	£14,027.78	Store No. 1
Sep	£12,931.60	Store No. 1
Oct	£11,810.50	Store No. 1
Nov	£10,011.17	Store No. 1
Dec	£10,414.49	Store No. 1
Jan	£2,914.94	Store No. 10

An aggregate derived calculated item (called Average Monthly Sales per Store), is created in the Monthly Sales Analysis complex folder using the following formula:

AVG(Monthly Sales Per Store)

This item shows the average total sales for a given store in a given month.

Figure 11–2 Result of query using the aggregate derived calculated item AVG(Monthly Sales Per Store)

Month	Average Monthly Sales per Store	Store Name
Jan	£2,174.33	Store No. 1
Feb	£1,706.93	Store No. 1
Mar	£2,104.90	Store No. 1
Apr	£2,705.00	Store No. 1
May	£2,563.90	Store No. 1
Jun	£1,877.45	Store No. 1
Jul	£1,144.59	Store No. 1
Aug	£2,337.96	Store No. 1
Sep	£2,155.27	Store No. 1
Oct	£1,181.05	Store No. 1
Nov	£1,668.53	Store No. 1
Dec	£1,735.75	Store No. 1
Jan	£264.99	Store No. 10

Notes

- The Average Monthly Sales per Store item shows the average monthly sales and can be analyzed over region, quarter, year, which is useful to compare trends. This form of nested aggregate is only possible by creating the aggregate item in a new folder. The aggregate item must be created in a new folder because the new folder now represents monthly sales, not the individual sales that were in the original complex folder.
- Aggregate derived items cause the SQL created by Discoverer to contain a GROUP BY clause that forces Discoverer end user queries to return one row for each combination of the non-aggregated items, regardless of whether the calculation is used in the query. This reduces the number of rows returned by the folder, because the rows are aggregated at the level of the other items.

How to create calculated items

You can create calculated items, derived items, aggregate calculated items and aggregate derived items using this task.

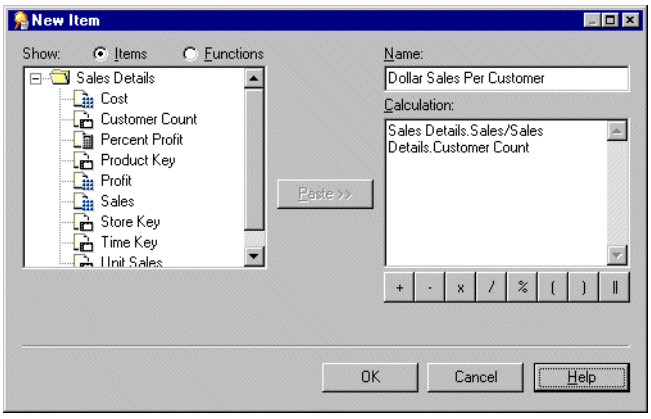
To create a new calculated item:

1. Select the folder that you want to contain the new calculated item on the "Workarea: Data tab".
2. Choose Insert | Item… to display the "New Item dialog".

   This dialog enables you to create a new calculated item and add it to the selected folder.

   Note: If you did not select a folder, Discoverer Administrator displays the "New Item dialog" where you can select a folder to contain your new calculation (you can select any folder from any open business area).

Figure 11–3 New Item dialog



3. Specify a name for the new calculated item.
4. Enter the calculation formula in the **Calculation** field.

   If you are familiar with calculation syntax, you type the formula in the **Calculation** field.

   Note: If you type a formula in the **Calculation** field, you must prefix the formula with an equals sign (=).

   If you prefer, you can build the calculation in stages using any of the following methods:

   - To add an item from the business area to the calculation, click the **Items** option and select an item from the **Show** list, then click Paste to copy the item into the **Calculation** field.
   - To add a function to the calculation, click the **Functions** option and select a function from the **Show** list, then click Paste to copy the function into the **Calculation** field.
   - To include a mathematical operator in the calculation, click the appropriate operator button below the **Calculation** field.

   Tip: Before pasting items in the **Calculation** field, position the cursor in the **Calculation** field to where you want to insert the item.

   Note: Calculations follow the standard Oracle calculation syntax. For a full description of this syntax, see the *Oracle SQL Language Reference Manual.*

   Note: Registered custom PL/SQL functions are displayed in the **Database** group. For more information, see "What are custom PL/SQL functions?"
5. Click OK when you have finished specifying details in the **Calculation** field.

   If there are no errors in the **Calculation** field, the new item is created. If there are errors in the **Calculation** field, Discoverer Administrator displays the first error and returns you to the New Item dialog so that you can correct the details.

You can now use the new calculated item to create joins or conditions, even new calculations. You can also include the new calculated item in other calculated items.

How to edit calculated item properties

To edit calculated item properties see "How to edit item properties" for more information.

How to edit calculated items

To edit an existing calculation:

1. Select the calculated item on the "Workarea: Data tab" and choose Edit | Edit… to display the "Edit Calculation dialog".
2. Change the calculation as required.

   For example:

   - change the name of the calculation
   - add or remove items, functions, or operators from the calculation text
3. Click OK to save the changes you have made and close the dialog.

How to delete calculated items

You can delete one or more calculated items. Note that when you delete a calculated item, other EUL objects might be affected if they use the calculated item you want to delete. The Impact dialog enables you to review the other objects that might be affected when you delete a calculated item.

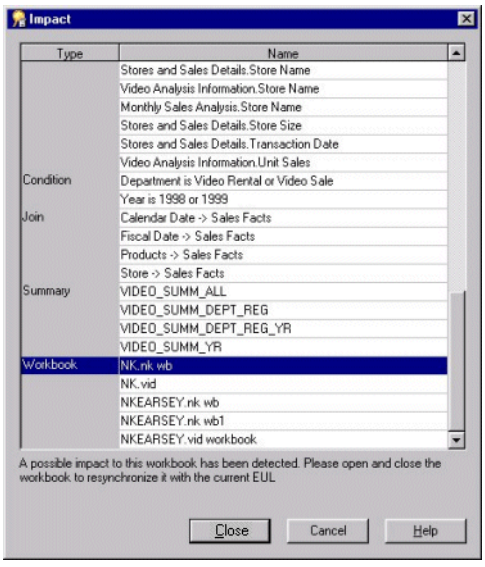
To delete a calculated item:

1. On the "Workarea: Data tab" select the calculated item that you want to delete.

   You can select more than one item at a time by holding down the Ctrl key and clicking another item.
2. Choose Edit | Delete to display the "Confirm Delete dialog".
3. (optional) To see the objects that might be affected by deleting this item:

   a. Click Impact to display the "Impact dialog".

Figure 11–4 The Impact dialog



The Impact dialog enables you to review the other EUL objects that might be affected when you delete an item.

Note: The Impact dialog does not show the impact on workbooks saved to the file system (that is, in `.dis` files).

b. (optional) Select a row to view text at the bottom of the list, indicating what affect the current action will have on the EUL object.

c. When you have finished reviewing the impact of deleting the item, click Close to close the Impact dialog.

4. Click Yes if you still want to delete the selected items.

How to create a calculated item that enables end users to drill out from one worksheet to display another worksheet in Discoverer Viewer

You might want to create a worksheet that end users can drill out from, to display additional or related information in another worksheet in Discoverer Viewer.

You can create a calculated item in Discoverer Administrator that includes an internet address (a URL), and include the same item in a worksheet. End users can click the item to display a pre-defined Discoverer Viewer worksheet.

To create a calculated item that enables end users to drill out from one worksheet (the source) to display another worksheet (the target) in Discoverer Viewer:

1. Create the target worksheet in Discoverer Plus or Discoverer Desktop and save it to the database.

   This is the pre-defined worksheet that end users will drill out to, from the source worksheet.

   For more information about creating worksheets, see the *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Plus*.

   Note: If you want the target worksheet to display context-sensitive information (that is, information related to the source worksheet row or column that end users drill out from), the target worksheet must use a method of filtering the data (for example, parameters or page items).

2. Use Discoverer Viewer to display the target worksheet that you created in Step 1.

3. Copy the URL of the target worksheet onto the clipboard.

   You will paste the URL of the target worksheet into a new calculated item in Discoverer Administrator, and then modify the formula of the calculated item.

4. Display the "New Item dialog" in Discoverer Administrator (see, "How to create calculated items").

   You will use the new calculated item in the source worksheet to drill out to the target worksheet in Discoverer Viewer.

5. Paste the URL (that you copied onto the clipboard) into the **Calculation** field of the "New Item dialog".

   You must now edit the URL in the new calculated item and replace each parameter value with its corresponding EUL item name. The EUL items supply the dynamic value that are used by the parameters in the target worksheet.

6. In the **Calculation** field of the "New Item dialog", enter a single quotation mark (') at the beginning and at the end of the URL.

   For example:

'http://mymachine.com/discoverer/viewer?&cn=cf_
a208&pg=1&wbk=PARAMETERS&wsk=26&qp_myRegion=CENTRAL'

Using single quotation marks enables Discoverer to treat the text of an URL correctly.

7. Edit the formula in the **Calculation** field to replace each parameter value in the URL with its corresponding EUL item name.

   For example, if the target worksheet uses a parameter named myRegion (that represents the EUL item Region), the URL that you paste into the **Calculation** field might appear as follows:

   'http://mymachine.com/discoverer/viewer?&cn=cf_
   a208&pg=1&wbk=PARAMETERS&wsk=26&qp_myRegion=CENTRAL'

   To replace part of the URL with a value determined from an EUL item, use the syntax '||<ItemName>||'. For example, in the URL above you might replace the value CENTRAL as follows:

   'http://mymachine.com/discoverer/viewer?&cn=cf_
   a208&pg=1&wbk=PARAMETERS&wsk=26&qp_myRegion='||Region||''

   Where Region is the corresponding EUL item that dynamically supplies the value required by the myRegion parameter in the target worksheet.

   Note: You use single quotation marks and the || operator to correctly build the resulting URL.

8. Enter a suitable name for the new calculated item in the **Name** field.

   For example, you could name the new calculated item Drill_to_myRegion.

9. Click OK to close the dialog and save your changes.

10. In the Workarea: Data tab, highlight the calculated item you just created and choose Edit | Properties.

    Discoverer displays the "Item Properties dialog" for the calculated item you just created.

11. Click the **Content Type** attribute and choose FILE from the drop down list.

    The **Content Type** attribute tells Discoverer to launch another application. In this case, Discoverer Plus, Discoverer Desktop or Discoverer Viewer will launch a Web browser to display the target worksheet in Discoverer Viewer.

12. Click OK to close the dialog and apply the changes you have made.

13. Start a new Discoverer Plus session (or reconnect to Discoverer Desktop).

14. Create a worksheet (the source worksheet) in Discoverer Plus or Desktop and include the Drill_to_myRegion calculated item (that you just created in Discoverer Administrator) in the worksheet.

    For more information about creating worksheets, see the *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Plus*.

    When an end user displays this source worksheet in Discoverer Plus, Discoverer Desktop or Discoverer Viewer, they can click the Drill_to_myRegion calculated item (that you just created) to display the target worksheet in Discoverer Viewer. The context-sensitive value for the EUL item Region is dynamically passed to the target worksheet using the myRegion parameter to display the correct results data.

The example URL used in this task can be broken down into the following components:

Section of internet address	What the section of the internet address represents
http://mymachine.com/discoverer/viewer?	the internet address (URL) of Discoverer Viewer
&cn=cf_a208	the connection string used to connect to the database
&wbk=PARAMETERS	the workbook identifier
&wsk=26	the worksheet identifier
&qp_myRegion	the parameter myRegion (created in Discoverer Plus or Discoverer Desktop)
=CENTRAL	the value of the target worksheet parameter myRegion (that is, the CENTRAL region)

Why do you need PL/SQL functions?

PL/SQL functions are one of Oracle's procedural extensions to SQL. PL/SQL functions offer access through PL/SQL references in the SQL, to PL/SQL functions that run in the Oracle server. PL/SQL functions enable you to compute values in the database. For more information about PL/SQL functions, see the *PL/SQL User's Guide and Reference*.

What are custom PL/SQL functions?

Custom PL/SQL functions are PL/SQL functions created by the Discoverer manager that are designed to meet additional Discoverer end user requirements (for example, to provide a complicated calculation). Custom PL/SQL functions supplement the PL/SQL functions provided by Oracle and are available to all database processes.

You create custom PL/SQL functions using SQL*Plus, or a procedural editor. You do not create custom PL/SQL functions directly in Discoverer Administrator. For more information see the *SQL*Plus User's Guide and Reference.*

Note: In Discoverer Plus, folders containing derived items (for more information, see "What are derived items?") that use PL/SQL functions will be visible only to users who have EXECUTE database privileges on those functions.

About registering custom PL/SQL functions

To access custom PL/SQL functions using Discoverer, you must register the functions in the EUL. When you have registered a custom PL/SQL function, it appears in the list of database functions in the "Edit Calculation dialog" and can be used in the same way as the standard Oracle functions.

You can register custom PL/SQL functions in two ways:

- Import automatically, by importing the functions (recommended)

  We recommend you register PL/SQL functions by importing automatically (especially if you have many functions to register), because it is easy to make mistakes when manually entering information about functions. When you import functions, all of the information about each function (for example, names, database links, return types, lists of arguments) is imported. Importing ensures correct information about the function, because the information does not have to be manually entered on a function-by-function basis.

- Manually

  Manual registration requires that you register each function individually by supplying all of the information about the function.

Note: To register a PL/SQL function you must have EXECUTE privilege on the function.

How to register custom PL/SQL functions automatically

To register PL/SQL functions automatically you must import them in the following way:

1. Choose Tools | Register PL/SQL Functions to display the "PL/SQL Functions dialog: Functions tab".
2. Click Import to display the "Import PL/SQL Functions dialog".

   This dialog enables you to select the PL/SQL functions that you want to import.
3. Select the functions that you want to import

   You can select more than one function at a time by holding down the Ctrl key and clicking another function.
4. Click OK.

   Discoverer imports the selected functions and displays the function details in the "PL/SQL Functions dialog: Functions tab".

   Information about the selected functions is imported automatically. In other words, you do not have to manually enter information or validate the information.
5. Click OK.

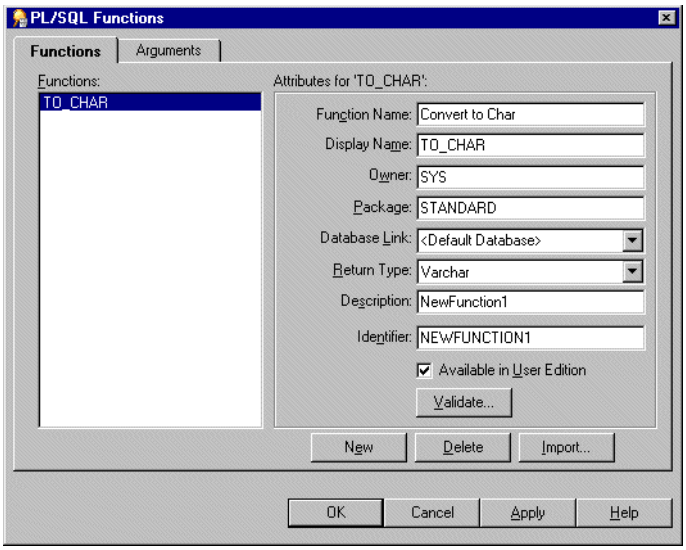
   The PL/SQL function is now registered for use in Discoverer.

How to register custom PL/SQL functions manually

To manually register a PL/SQL function for use in Discoverer:

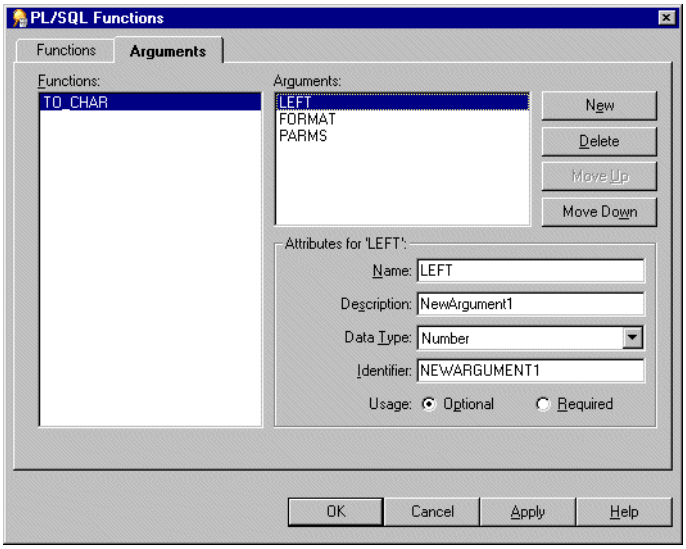
1. Choose Tools | Register PL/SQL Functions to display the "PL/SQL Functions dialog: Functions tab".

Figure 11–5 PL/SQL Functions dialog: Functions tab



2. Click New and specify the function attributes.
3. Click Validate to check the validity and accuracy of the information you have entered.
4. If the function is invalid, correct the attributes and click Validate again.
5. (optional) If the function accepts arguments:
   a. Display the "PL/SQL Functions dialog: Arguments tab".
   b. On the Arguments tab, click New and specify the argument attributes.

Figure 11–6 PL/SQL Functions dialog: Arguments tab



6. Click OK when you have finished defining the function.

The custom PL/SQL function is now registered for use in Discoverer.

12

Creating and Maintaining Conditions

This chapter explains how to implement conditions using Discoverer Administrator, and contains the following topics:

- "What are conditions?"
- "What are the different types of condition?"
- "How to create simple conditions"
- "How to create advanced conditions"
- "How to edit conditions"
- "How to edit condition properties"
- "How to delete conditions"
- "Example conditions"
- "About outer joins and the DisableAutoOuterJoinsOnFilters registry setting"
- "How to create row level security using a mandatory condition"
- "How to enable summary folders if a source folder includes a mandatory condition"

What are conditions?

Conditions filter worksheet data, enabling Discoverer end users to analyze only the data they are interested in. For example, you might want to give Discoverer end users access to data for 2007, but not 2006 or 2005.

You also use conditions to restrict access to sensitive data. By imposing mandatory conditions, only non-sensitive data is made available to Discoverer users (see "What are the different types of condition?"). You can make sure that Discoverer end users only see the data that you want them to see.

As a Discoverer Administrator, you can anticipate commonly used conditions and make them available to Discoverer end users so that they can apply them in worksheets, and work efficiently.

Note: Discoverer Plus users can also create their own conditions.

About condition categories

Conditions are categorized as follows:

- Simple conditions - these contain a single condition statement. For example, 'display data where year = 2001'.

- Advanced conditions - these contain two or more condition statements. For example:

  display data where year = 2001 AND quarter = 1 AND region = south.

- Nested conditions - these contain condition statements that are defined within other condition statements. For example:

  display data where year = 2001 AND (region = north OR region = south)

  here, the OR clause is nested within the AND clause.

- Advanced nested conditions - these contain two or more condition statements and also include condition statements defined within the advanced condition. For example:

  display data where year = 2001 AND quarter = 1 AND region = south AND (region = north OR region = south)

  here as in the nested example, the OR clause is nested within the AND clause)

As an alternative to creating advanced conditions, you might want to create two or more single conditions and apply them at the same time; Discoverer users can then be more selective about which parts of the condition they use.

Note: There can be subtle differences between applying advanced conditions and equivalent multiple single conditions (for more information, see *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Plus*).

How do conditions work in Discoverer?

Conditions work in Discoverer by matching condition statements against worksheet data so that:

- data matching your condition statements is displayed in workbooks
- data not matching your condition statements is not displayed in workbooks

For example, you might want to limit the display of data to the last two years of sales. Or, you might want to see the data for only two types of sales items. Each of these tasks involves filtering the data to find information that meets the conditions.

What are the different types of condition?

There are two types of condition:

- mandatory condition
- optional condition

You create mandatory and optional conditions in the same way. However, note the following:

- mandatory conditions are always applied to a worksheet that contains one or more items from the folder that contains the condition. Discoverer Plus users are not notified of mandatory conditions and cannot turn them off.

  For example, you might want to assign a mandatory condition to sales data for regional sales managers, limiting their view of sales to the region for which each manager is responsible.

- optional conditions can be turned on or off as required by Discoverer Plus users. They can also view a condition's formula, but they are not allowed to edit the formula.

For example, a Vice President responsible for all sales regions should be able to see all of the sales data, and also be able to apply conditions to see sales data relating to specific sales regions.

The table below shows further differences between mandatory and optional conditions:

Mandatory condition	Optional condition
Always applied to the results of a folder.	Only applied to the results of a folder if selected in Discoverer Plus.
Used by the Discoverer manager to permanently restrict the rows returned by a folder.	Provided by the Discoverer manager as a shortcut to help users build conditions more easily.
Invisible in Discoverer Plus.	Visible (but not editable) in Discoverer Plus.
When created in a complex folder, can reference items in the source folders.	When created in a complex folder, can only reference items in the complex folder.
Affects the result set (in the database) of the folder definition in the EUL.	Does not affect the result set (in the database) of the folder definition in the EUL (because an optional condition is only used when applied in Discoverer Plus).
When added, changed, or deleted, cause any summaries based on the folder to become invalid, because their result set no longer matches that of the folder. These summaries are set to "Refresh required" and must be refreshed to be made available again.	When added, changed, or deleted have no affect on summaries based on the folder.

Note: If you create a complex folder from items in a folder that contains a mandatory condition, the results in the complex folder are restricted by the mandatory condition on the original folder. You can see any mandatory conditions that impact a complex folder using the Components tab of the complex folder's Properties dialog.

How to create simple conditions

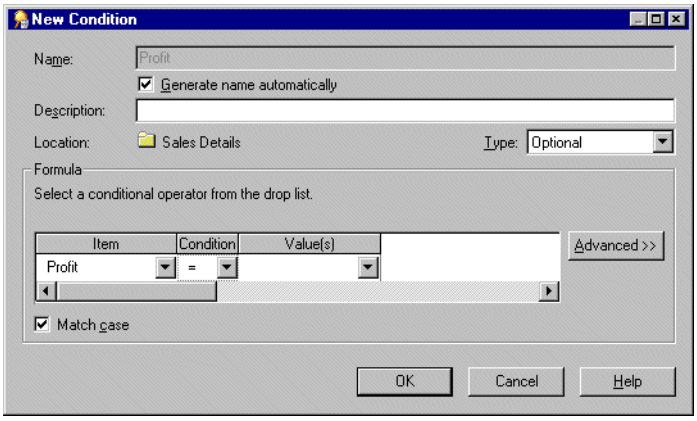
You create a simple condition when you want Discoverer end users to filter worksheets in a new way. You add the condition to a folder so that Discoverer end users can apply the condition when using workbooks based on the folder.

For example, you might want to create an optional condition that filters data to display results for the current year, because Discoverer end users might only be interested in data for that year. Or, you might want to restrict access to sensitive data by imposing a mandatory condition on a particular area of data (see "What are the different types of condition?").

To create a single condition:

1. On the "Workarea: Data tab", do one of the following:
   - select the folder in which you want to create the condition
   - select the item that you want to form part of your condition
2. Choose Insert | Condition to display the "New Condition dialog".

Figure 12–1 New Condition dialog



Note: If you choose Insert | Condition without first selecting a folder or item, Discoverer prompts you to choose a folder or item before displaying the dialog.

3. (optional) To have Discoverer generate a name for your conditions automatically, select the **Generate name automatically** check box.

   Note: By default, Discoverer Administrator creates a default condition name for the condition, based on the condition itself. However, you can specify your own name for the condition.

4. (optional) To specify your own name for the condition:

   a. Clear the **Generate name automatically** check box.

   b. Enter a name for the condition in the **Name** field.

5. (optional) Enter a brief description of the condition in the **Description** field.

   The text entered here is displayed when the condition is edited in Discoverer Administrator or when the condition is highlighted by end users.

6. Specify the type of condition from the **Type** drop down list as follows:

   - select **Optional** if you want Discoverer end users to be able to turn the condition on or off
   - select **Mandatory** if you want the condition to always apply

7. Define the condition statement in the Formula area as follows:

   a. Choose what item or calculation you want to filter the data on using the **Item** drop down list. For example, choose Year if you want to display data for a particular year. To create a calculation that you want to filter data on click **Create Calculation...** (for further information, see Chapter 11, "Creating and Maintaining Calculated Items").

   b. Choose how to match data against the item using the **Condition** drop down list. For example, choose the greater than (>) symbol to filter data where the item value is greater than a particular number.

   c. Define what data or items you want to match against using the **Values** field. For example, enter 2002 to look only at data for the year 2002. If you created a list of values for the item, these items appear in the drop down list (for more information about lists of values, see Chapter 9, "Maintaining Items and Item Classes"). To create a calculation that you want to filter data on click **Create Calculation....** To choose an item that you want to match against click **Select Item...** and select an item from the list.

8. Specify whether to match the case of text data using the **Match Case** check box as follows:
   - select the **Match Case** check box to make the condition case sensitive
   - clear the **Match Case** check box to make the condition case insensitive

   For example, when the **Match Case** check box is selected, the match value 'New York' would not return data for 'new york'.
9. Click OK do save the details and close the New Condition dialog.

The new condition is displayed on the "Workarea: Data tab". When Discoverer users access this business area, they will see this condition item in a folder. Note that seeing a condition in the folder does not mean that the folder is filtered. The end user must select and use the condition in a workbook.

Note: When you create a condition based on an analytic function (a function that computes aggregate values based on a group of rows), you must designate the condition Type as optional (for more information, see "What are the different types of condition?"). If you choose mandatory, a message is displayed informing you that analytic functions are not allowed in mandatory conditions.

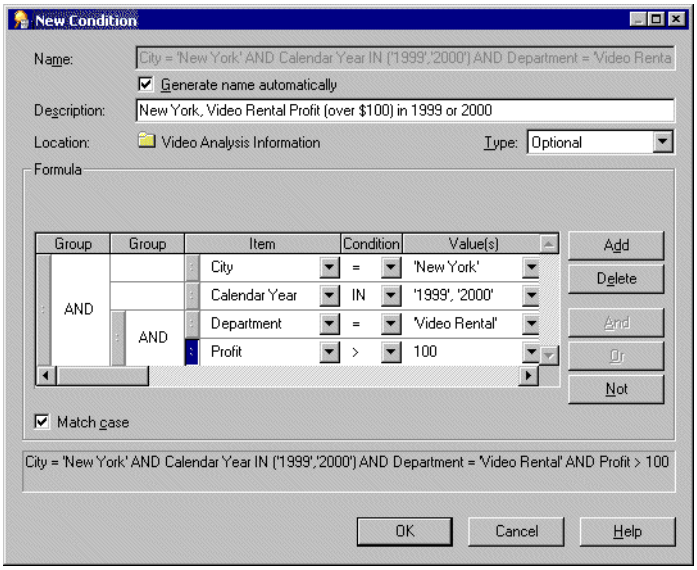
How to create advanced conditions

Advanced conditions are conditions that contain more than one condition statement. For example, if you want to filter data for the city New York in either 1999 or 2000, you might create the condition City = New York AND (Year = 1999 or 2000). You could then nest an existing condition within the existing advanced condition. For example, where Department = Video AND Rental Profit > $100. In Discoverer, it is easy to add as many condition statements as you want, enabling you to build powerful condition items.

To create an advanced condition:

1. Create the first condition statement by following the instructions in "How to create simple conditions"
2. To add more condition statements, click Advanced.

Figure 12–2 New Condition dialog (Advanced)



Discoverer adds buttons for Add, Delete, And, Or and Not. You use these buttons to create the advanced condition.

3. Build the advanced condition as follows:

   a. Click Add to insert a new condition statement.

   b. Specify the item for the new condition statement as follows:

   - Select the drop down list in the **Item** column and choose an item from the list of items displayed.
   - Select the drop down list in the **Item** column and choose the **Create Calculation** option to create a calculation to include in the advanced condition.
   - Select the drop down list in the **Item** column and choose the **Copy Condition** option to include a copy of an existing condition in the advanced condition. The copy can be edited as it is a copy of the original condition.
   - Select drop down list in the **Item** column and choose the **Select Condition** option to include an existing condition in the advanced condition. If you select an existing condition, it cannot be edited here.

   a. Specify the condition and value for the new condition statement.

   b. Specify how you want to combine the condition statements.

   Note: You can use the handles next to each condition statement to highlight a condition statement and perform the following actions:

   - click a group and click AND to specify that all condition statements must be met for the condition
   - click a group and click OR to specify that one of the condition statements must be met for the condition
   - click a group and click NOT to specify that no condition statements must be met for the condition
   - click Delete to remove condition statement lines from the condition.
   - drag and drop a handle (next to a condition statement) to reposition the condition statement in a nested hierarchy.
   - double click a group to change from AND to OR or vice versa

   Note: If you reposition a condition statement, it can affect the order in which the condition statement is applied within the advanced condition (that is, nested condition statements are applied first).

4. When you have finished, click OK to save the advanced condition and close the dialog.

The new condition is displayed on the "Workarea: Data tab". When Discoverer users access this business area, they will see this condition item in the business area folder.

How to edit conditions

You edit a condition to change the way that it behaves. For example, you might want to:

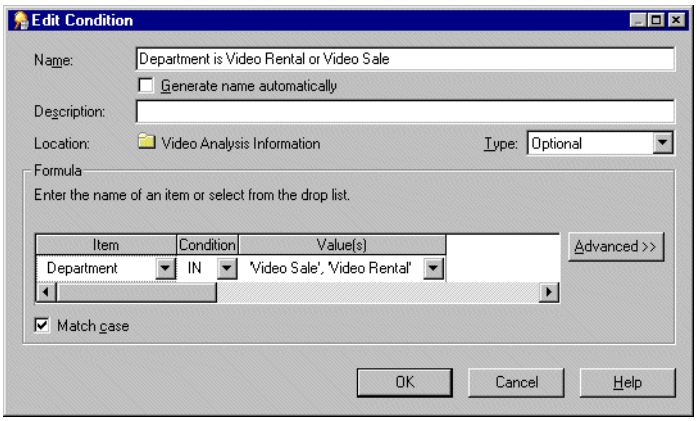
- change the name of a condition
- change the data being returned by the condition

- create a more advanced condition

To edit a condition:

1. On the "Workarea: Data tab", select the condition that you want to edit.
2. Choose Edit | Edit... to display the "New Condition dialog".

Figure 12–3 Edit Condition dialog



3. Edit the condition details as required.
4. Click OK to save the details and close the dialog.

The updated condition is displayed on the "Workarea: Data tab".

Note: You can also use the "Condition Properties dialog" to change conditions.

How to edit condition properties

You edit a condition's properties to change the way that it behaves, or change its identifier (for more information, see "What are identifiers?"), which is a unique Discoverer identification label. You can also change the way that a condition behaves by editing the condition itself (for more information, see "How to edit conditions").

To edit condition properties:

1. On the "Workarea: Data tab", select the condition that you want to edit.
2. Choose Edit | Properties to display the "Condition Properties dialog".
3. Edit the condition properties.
4. Click OK to save the details and close the dialog.

The "Workarea: Data tab" is updated to reflect any changes made to the condition.

How to delete conditions

You delete a condition when you want to remove it permanently from the business area. For example, you might have previously filtered data relating to the year 2000, and would now like Discoverer users to access data relating to all available years.

To delete a condition:

1. On the "Workarea: Data tab", select the condition that you want to delete.
2. Choose Edit | Delete to display the "Confirm Delete dialog".

3. Click Yes at the confirmation screen to remove the condition permanently.

The condition is removed from the business area.

Note: When Discoverer users next re-open workbooks that use a deleted condition, or refresh the worksheets using the deleted condition, previously filtered out data will be available to the Discoverer end users.

Example conditions

The following examples show how conditions are used in Discoverer Administrator.

For more examples of conditions, see the *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Plus*.

Example 1: Using a condition to find data for the year 2002

To create a condition that returns only data for the year 2002, enter the following in the Formula area of the New Condition dialog:

Item	Condition	Value
Year	=	2002

Example 2: Using a condition to find sales in the last seven days

To create a condition that only returns the sales in the last seven days (using the calculated item, "Transaction Age (in Days)"), enter the following in the Formula area of the New Condition dialog:

Item	Condition	Value
Transaction Age (in days)	<	7

Note that the Transaction Age calculated item has the following formula

FLOOR (SYSDATE - Transaction Date)

This type of condition is sometimes described as a "rolling window" condition because the "window" of rows it returns changes from day to day.

Example 3: Using a condition to find shipments in Quarter 3

To create a condition that only returns shipments made in quarter 3 (Q3) regardless of year (using the calculated item, 'Ship Quarter'), enter the following in the Formula area of the New Condition dialog:

Item	Condition	Value
Ship Quarter	=	'Q3'

Note that the Ship Quarter calculated item has the following formula:

EUL_DATE_TRUNC(Ship Date, "Q")

About outer joins and the DisableAutoOuterJoinsOnFilters registry setting

If you define an outer join between two tables, make sure you are aware of how conditions (filters) and the DisableAutoOuterJoinsOnFilters Discoverer registry setting can combine to affect the rows of data returned by an end user query.

You define an outer join between two tables to display:

- rows in a master table for which there are no corresponding rows in a detail table
- rows in a detail table for which there are corresponding rows in a master table

For example, you might want to display:

- department names and their employees, but also include the department names that have no employees
- employee names and their departments, but also include the employee names that do not belong to a department

In SQL, the outer join is signified by the plus (+) symbol.

Discoverer includes outer joins in SQL:

- when explicitly defined in Discoverer Administrator

  For more information, see the "Edit Join dialog: Options tab".
- automatically under some circumstances

  For example, Discoverer automatically creates outer joins in the SQL for end user queries that contain conditions.

When running a query that contains a condition, users will sometimes want the results to:

- include values from one table that have no corresponding values in a table to which it is joined by an outer join
- not include values from one table that have no corresponding values in a table to which it is joined by an outer join

The DisableAutoOuterJoinsOnFilters registry setting enables you to disable the use of automatically generated outer joins when conditions are used in end user queries. The table below summarizes the examples that follow:

Example No.	Condition applied?	Value of DisableAutoOuterJoinsOnFilters	All values displayed
Example 1	No	0 or 1	Yes
Example 2	Yes	0	No
Example 3	Yes	1	Yes

The following examples illustrate how outer joins, conditions, and the value of the DisableAutoOuterJoinsOnFilters registry setting can affect the rows of data returned from an end user query.

For more information about Discoverer registry settings, see Chapter 21, "Discoverer Registry Settings".

Example 1: No condition applied

This example illustrates the results returned when you execute a query against two tables, where the master and detail tables are joined with an outer join.

Discoverer displays:

- rows of data from the master table (dept) and detail table (emp)
- rows of data from the master table (dept) where no data exists for the detail table (emp)

The query is defined using the following SQL statement, where the outer join is signified by the plus (+) symbol:

```
select dname, ename, job from dept, emp where dept.deptno = emp.deptno(+);
```

DNAME	ENAME	JOB
SALES	GRIMES	DIRECTOR
SALES	PETERS	MANAGER
SALES	SCOTT	CLERK
SUPPORT	MAJOR	MANAGER
SUPPORT	SCOTT	CLERK
ADMIN		
MARKETING		
DISTRIBUTION		

The results returned from the query above will not change whether you switch the DisableAutoOuterJoinsOnFilters registry setting on or off.

Example 2: Condition applied to query and DisableAutoOuterJoinsOnFilters set to 1 (switched off)

This example applies a condition to the query in Example 1 and the DisableAutoOuterJoinsOnFilters registry setting is switched off.

Discoverer displays:

- the data specified in the condition

Discoverer does not display:

- master rows for which there is no detail data

The following SQL statement is used, where the outer join is signified by the plus (+) symbol:

```
select dname, ename, job from dept, emp where dept.deptno = emp.deptno(+) and job
= 'CLERK';
```

DNAME	ENAME	JOB
SALES	SCOTT	CLERK
SUPPORT	SCOTT	CLERK

Example 3: Condition applied to query and DisableAutoOuterJoinsOnFilters set to 0 (switched on)

This example applies a condition to the query in Example 1 and the DisableAutoOuterJoinsOnFilters registry setting is switched on.

Discoverer displays:

- the data specified in the condition
- master rows for which there is no detail data (Null values)

The following SQL statement is used, where the outer join is signified by the (+) symbol:

```
select dname, ename, job from dept, emp where dept.depno = emp.deptno(+) and job =
'CLERK';
```

DNAME	ENAME	JOB
SALES	SCOTT	CLERK
SUPPORT	SCOTT	CLERK
ADMIN		
MARKETING		
DISTRIBUTION		

Note: The database supports placing outer joins in IS NULL and IS NOT NULL clauses, but does not support placing outer joins in IN and OR clauses.

How to create row level security using a mandatory condition

You might want to restrict the data that end users can see in Discoverer workbooks.

For example, you have a single table with profit data for all regions. Each row of profit data applies to a transaction in a single region. You would like a manager in the West region to only access the rows with profit data for the West region.

REGION	PROFIT	DATE
East	$100	8/7
West	$50	8/7
South	$65	8/10
North	$100	8/6

To create row level security you must complete the following tasks:

- "Load the ALL_USERS table from the SYS view into the business area that contains the folder in which you want to apply row level security"
- "Create a new calculated item in the folder where you want to apply row level security"
- "Apply the list of values from the Username item (in the ALL_USERS table) to the new calculated item"
- "Create a mandatory advanced condition to define row-level security in a folder for specified database users"

Load the ALL_USERS table from the SYS view into the business area that contains the folder in which you want to apply row level security

This task enables you to obtain a list of all the database users to which you can subsequently apply conditions and achieve row level security.

To load the ALL_USERS table into the business area where you want to apply row level security:

1. Select the business area that contains the folder in which you want to create row level security.
2. Choose Insert | Folder | From Database to display the "Load Wizard: Step 1 dialog".
3. Select the **Online dictionary** check box and click Next to display the "Load Wizard: Step 2 dialog".
4. Select the SYS user from the **Select the users whose tables you want to load** list box and click Next to display the "Load Wizard: Step 3 dialog".

   The SYS user contains a view that holds the names of all database users.
5. Expand the SYS user in the **Available** list box and drag the ALL_USERS view into the **Selected** list box and click Next to display the "Load Wizard: Step 4 dialog".

   This loads the ALL_USERS view into the current business area. The ALL_USERS view contains the names of all database user accounts.
6. Select the **List of values for items of type** check box and the **Character** check box, leaving all the other check boxes in this area cleared.

   This will create a list of values of the names of all the database users.
7. Click Finish.

   This loads the ALL_USERS view from the SYS table into the current business area.
8. (optional) Edit the folder properties of ALL_USERS and set the **Visible to user** property to No (for more information about how to edit folder properties, see "How to edit folder properties").

   This makes sure that Discoverer does not display the ALL_USERS folder to end users.

Create a new calculated item in the folder where you want to apply row level security

You create a calculated item so that you can subsequently apply the list of values item class of all the database users from the SYS table.

To create a calculated item in the folder where you want to apply row level security:

1. Highlight the folder in which you want to create row level security (for example, the Video Analysis folder).
2. Choose Insert | Item.
3. Type Username into the **Name** field.
4. Type USER into the **Calculation** field.
5. Click OK to create the new calculated item.

Apply the list of values from the Username item (in the ALL_USERS table) to the new calculated item

To apply the list of values item class to the calculated item created in the previous task:

1. Highlight the folder in which you want to apply row level security (for example, the Video Analysis folder).
2. Click Insert | Item Class to display the "Item Class Wizard: Step 1 dialog".
3. Select **List of values** check box and click Next to display the "Item Class Wizard: Step 2 dialog (select the item that generates the LOV)".
4. Select the Username item from the All Users table that you loaded previously into the business area and click Next to display the "Item Class Wizard: Step 3 dialog (enter name and description)".
5. Select the calculated item Username (that you created in the previous step) from the **Available items:** list and drag it into the **Selected** list.
6. Click Finish to apply the list of values to the calculated item 'Username'.

Create a mandatory advanced condition to define row-level security in a folder for specified database users

You create a mandatory advanced condition so that you can apply data conditions to specified database users.

You must create a mandatory advanced condition that includes both:

- a condition statement defining the database user(s)
- one or more condition statements restricting data access to the specified database user(s)

To create a mandatory advanced condition to define row level security for the specified database user(s):

1. Highlight the folder in which you want to create row level security.
2. Choose Insert | Condition to display the "New Condition dialog".
3. (optional) Enter a description for the new condition.
4. Click the **Type** drop down list and choose Mandatory.

   The Type Mandatory specifies that a condition always applies to end users.
5. Click the **Item** drop down list and select the calculated item Username.
6. Click the **Values** drop down list and choose **Select Multiple Values** to display the Values dialog.
7. Select a check box for each database user that you want row level security to apply then click OK.

   Discoverer displays the selected database user(s) in the **Values** field.

   Note: You have now created a mandatory simple condition specifying the names of one or more database users. However, before you can apply row level security to the database user(s) in the current folder, you must specify the data conditions that you want to apply to the specified database user(s).

   The remaining steps describe how you can apply row level security to the specified database user(s) so that they can see only data from the West region.
8. Click the Advanced button and then the Add button.

9. (example) Click the **Item** drop down list and select Store.Region.

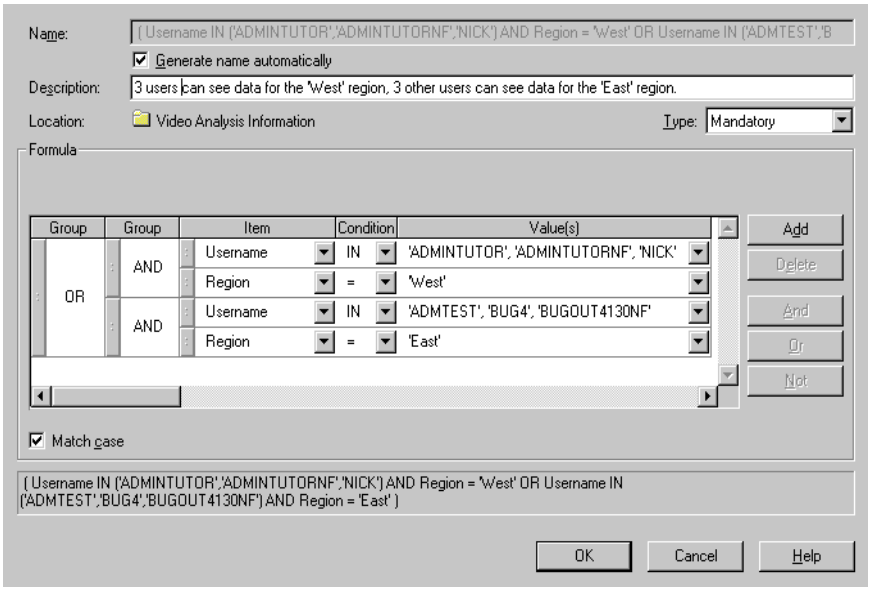
   This data condition will be applied to the specified database user(s).

10. (example) Click the **Values** drop down list and select the region West.

    Note: To associate the database users (Username) with the data condition (Region), the Username and Region condition statements must be grouped together by using the AND clause.

    Each Username/data condition statement must group using the AND clause. Pairs of Username/data condition statements, must group with other pairs using the OR clause. By grouping the pairs of Username/data condition statements using the OR clause ensures that each condition statement pair can be applied (see figure below).

Figure 12–4 Condition where one group of database users sees data from the 'West' region and the other group sees data from the 'East' region



11. Click OK.

    This creates a mandatory advanced condition that applies row level security to the database users specified (that is, binding a group of users either to the West or the East region). In the example above, the database user ADMTEST can view data from the West region only.

12. (optional) Edit the Properties of the new condition and set the **Visible to user** property to No (for more information about editing condition properties, see "How to edit condition properties").

    This ensures that Discoverer does not display the condition to end users, but it is always enforced.

How to enable summary folders if a source folder includes a mandatory condition

When you create a mandatory condition in a folder, database user queries must not use a summary folder that is based upon the folder that contains the mandatory

condition. This is because the data in the summary table will be only for the database user that created the summary folder.

To enable database user queries to use summary folders where the source folders use mandatory conditions (for example, with row level security), you must perform the following steps before you create the mandatory condition.

To enable summary folders for database user queries where the source folders contain a mandatory condition:

1. Create a summary folder based upon folders where no mandatory condition (for example, row level security) has yet been set up.

   For more information about creating summary folders, see Chapter 14, "Managing Summary Folders" and Chapter 15, "Creating Summary Folders Manually".

2. Set the summary property **Available for Queries** to 'No'.

   This summary folder references data for the database user that created it. You must set this property to No to prevent end user queries from accessing this summary folder.

3. (optional) Set the summary folder properties **Next Refresh** and **Refresh Interval** to suitable values.

   For more information, see the "Summary Properties dialog".

4. Create a database view against your summary folder.

   Ask your database administrator for more information as this is done outside Discoverer.

   Use a WHERE clause to apply the mandatory condition (for example, row level security) to the view just created.

   For example:

   SQL> `WHERE Userid='SMITH' AND Region='WEST'`

5. Register the view in Discoverer as an external summary.

   For more information, see "How to create summary folders based on external summary tables".

6. Set the summary property **Available for Queries** to Yes.

   You must set this property to Yes to enable database users to access this summary folder.

   The **Next Refresh** and **Refresh Interval** summary folder properties should be set to Never in Discoverer.

   For more information, see the "Summary Properties dialog".

7. Create the required mandatory condition (for example, row level security) in a folder in Discoverer Administrator (for more information, see "How to create row level security using a mandatory condition").

You now have two summary folders, one based on the data folder without the mandatory condition and one based on the view. By adding the mandatory condition to the folder after the first summary folder was created, subsequent queries will be rewritten to use the view-based summary folder, rather than the folder-based summary folder. For more information about summary rewrite, see Chapter 16, "Additional Information about Summary Folders".

Note: You cannot use analytic functions in external summary folders (for more information about analytic functions, see "analytic functions").

13

Creating and Maintaining Hierarchies

This chapter explains how to implement and maintain hierarchies using Discoverer Administrator, and contains the following topics:

- "What are hierarchies?"
- "What are item hierarchies?"
- "What are date hierarchies?"
- "How to create item hierarchies"
- "How to create date hierarchies and templates"
- "How to edit item hierarchies"
- "How to edit date hierarchy templates"
- "How to apply a date hierarchy template to a date item"
- "How to set the default date hierarchy template"
- "How to delete item hierarchies or date hierarchy templates"
- "How to modify default date hierarchies that use date format 'RR' following upgrade to Oracle Business Intelligence Discoverer Administrator"
- "About creating a hierarchy using the CONNECT BY clause in a custom folder"
- "How to create a hierarchy with a custom folder and the CONNECT BY clause, using the emp table from the scott schema"

What are hierarchies?

Hierarchies are default drill paths between items that you define in Discoverer Administrator. You create hierarchies between items in a business area to provide Discoverer end users with a default drill hierarchy.

There are two kinds of hierarchy:

- item hierarchies
- date hierarchies

Discoverer end users can use hierarchies to:

- drill up to a more general level of detail (for example, Store to City to Region to Country)
- drill down to a finer level of detail (for example, Country to Region to City to Store)

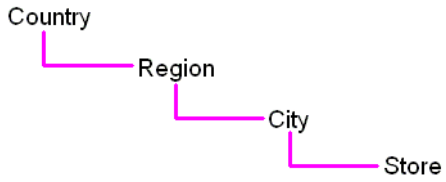
Hierarchies can link items in a business area where no relationship is defined in the database. For more information about business areas, see Chapter 5, "Creating and Maintaining Business Areas".

What are item hierarchies?

Item hierarchies are relationships between items other than dates.

An example of an item hierarchy:

Figure 13–1 Sales item hierarchy

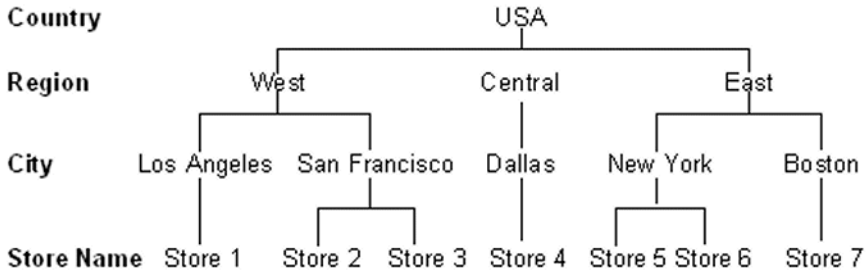


The Sales item hierarchy links a country with its regions, cities and stores.

To use this hierarchy a Discoverer end user could use a report that shows sales from a country perspective. The Discoverer end user could then drill down from country to see sales per region, sales per city or sales per store, and then drill back up to the country level.

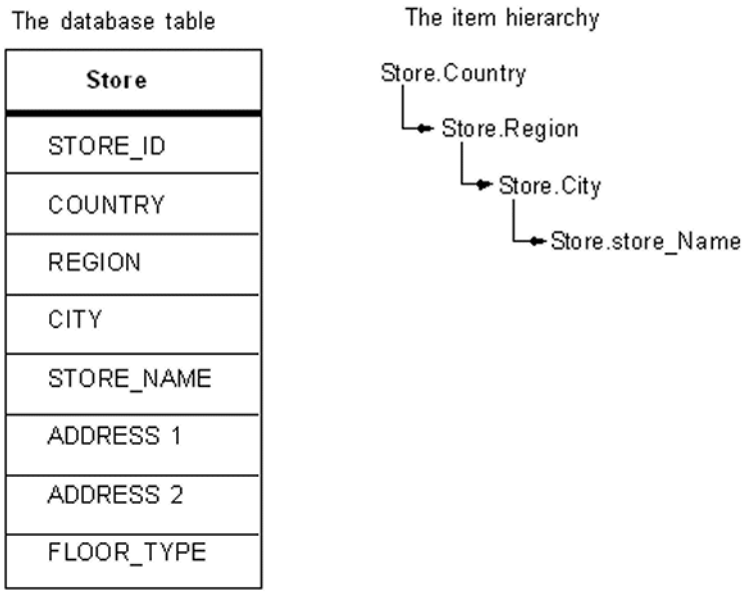
The Sales item hierarchy from a Discoverer end user perspective is shown below.

Figure 13–2 Sales item hierarchy - Discoverer end user perspective



The figure below shows the Sales item hierarchy from a database perspective.

Figure 13–3 Sales item hierarchy - database perspective



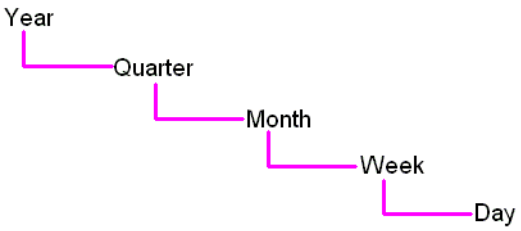
Note that you do not have to specify that Los Angeles is in the West. You only have to specify that City is under Region in your item hierarchy.

What are date hierarchies?

Date hierarchies are relationships between date items.

An example of a date hierarchy:

Figure 13–4 Sales date hierarchy

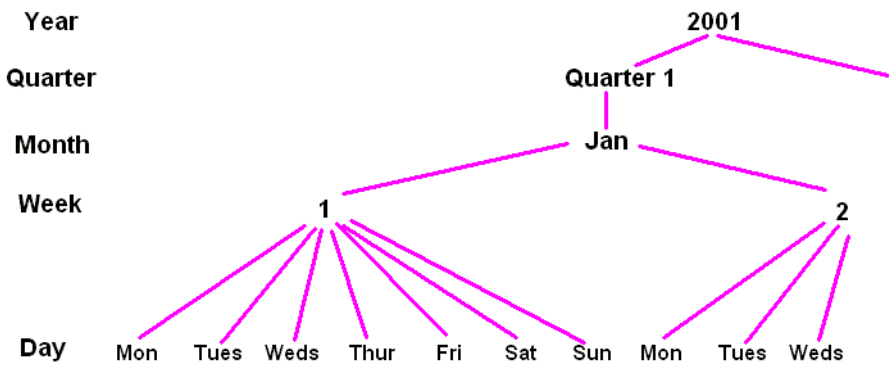


The Sales date hierarchy links a year with its quarters, months, weeks and days.

To use this hierarchy a Discoverer end user could use a report that shows total sales for each year. The Discoverer end user could then drill down from year to show sales per quarter, sales per month, sales per week and the sales per day, and then drill back up to sales per year.

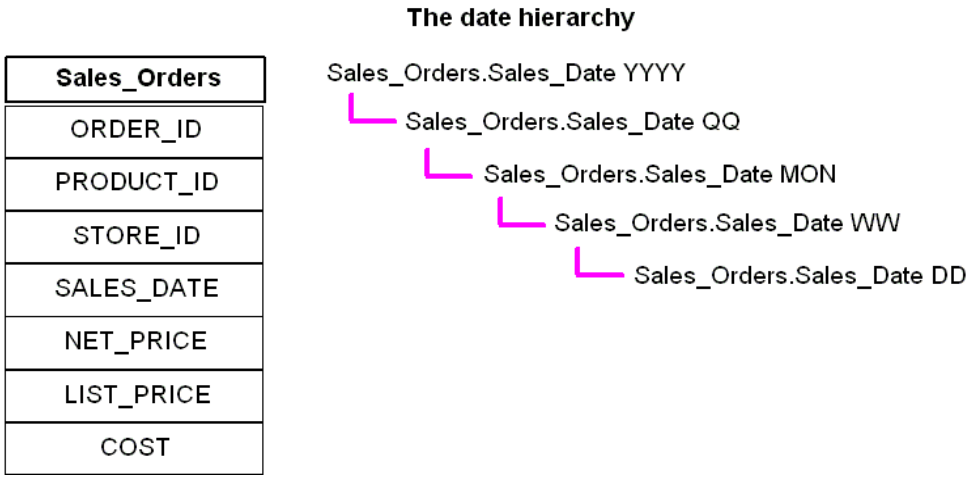
A section of the Sales date hierarchy from a Discoverer end user perspective is shown below.

Figure 13–5 Sales date hierarchy - Discoverer end user perspective



The figure below shows the Sales date hierarchy from a database perspective.

Figure 13–6 Sample date hierarchy - database perspective



Note: Each level in the date hierarchy is a calculation based on the Sales_ Orders.SALES_DATE column. The calculations are produced by a date hierarchy template (for more information, see "What are date hierarchy templates?").

What are date hierarchy templates?

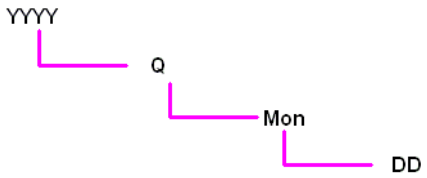
Date hierarchy templates enable you to define a date hierarchy that you can apply to date items. A date item uses information that specifies the date, month, year and time. Discoverer uses this information to calculate for example, quarter, week and days of the week. A date hierarchy template automatically creates items based on a date item, for example to represent the year or month

You will find it more efficient to reuse a date hierarchy template by applying it to date items rather than redefining the same date hierarchy repeatedly for each date item.

You can use the date hierarchy templates (supplied with Discoverer Administrator) to define many common date hierarchies, or you can create your own customized date hierarchies.

Discoverer Administrator includes a default date hierarchy template (see the Date hierarchy template figure below) that enables you to drill from year to quarter to month to day:

Figure 13–7 Date hierarchy template



About date hierarchies and performance

If you apply a date hierarchy to a date item from an indexed table, a query that includes one of these date items will not use the indexes (which can reduce performance). You can optimize performance in Discoverer Plus by applying date hierarchies to date items from tables that do not rely on indexes.

Example of how a date hierarchy can affect performance in Discoverer Plus

When you load a large fact table (that is, a table with many rows) that contains a date column (for example, transaction_date) Discoverer applies the default date hierarchy to the date item (for more information, see "Load Wizard: Step 4 dialog").

Discoverer creates a folder containing date items such as Year, Quarter and Month using the EUL_DATE_TRUNC function (for more information, see "About truncating date items and the EUL_DATE_TRUNC function"). When a Discoverer end user runs queries that include these items, any indexes that include the date item in the fact table are not used. Where indexes are not used, performance can be affected.

It is recommended therefore that you do not apply date hierarchies to date items in folders based on fact tables, as fact tables are likely to have indexes.

Example of how performance can be retained

To retain performance you should apply date hierarchies to a separate dimension table.

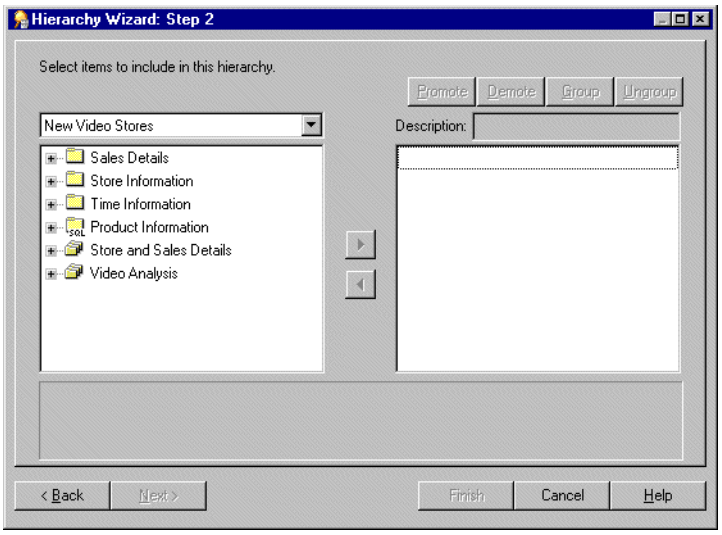
For example, a transaction_date item in a fact table might join to another dimension table (for example, Time Period) that specifies time periods. You can load this dimension table using the Load Wizard and apply date hierarchies to it. You can then create a complex folder containing items from both the dimension and fact tables, including the items created by the date hierarchy such as Year or Quarter. When a Discoverer end user uses queries that include date hierarchy items Discoverer can use the date column indexes on the fact table. This can considerably improve performance.

How to create item hierarchies

To create an item hierarchy:

1. Choose Insert | Hierarchy to display the "Hierarchy Wizard: Step 1 dialog".
2. Select the Item Hierarchy option and click Next to display the "Hierarchy Wizard: Step 2 dialog".

Figure 13–8 Hierarchy Wizard: Step 2 dialog



Here you select which items to use in this item hierarchy.

3. Move the items that you want to include in this item hierarchy from the list on the left to the list on the right.

   You can select more than one item at a time by holding down the Ctrl key and clicking another item.

   Note: The order of items in the hierarchy list determines the drill down sequence that the Discoverer end user will use to analyze the data. The item hierarchy is arranged in the order that you include the items. For example, Region - City - Store.

   Note: You can select items from multiple folders but the folders must be joined. If the folders are joined with more than one join, Discoverer will prompt you with the Choose Join dialog to select the correct join to use.

4. (optional) To move an item in the hierarchy to a different position, select the item in the right-hand list and click:

   - Promote to move the item higher in the hierarchy
   - Demote to move the item lower in the hierarchy

5. (optional) To group two or more items so that they appear on the same level of the hierarchy, select the items and click Group (for more information, see "Hierarchy Wizard: Step 2 dialog").

   You can select more than one item at a time by holding down the Ctrl key and clicking another item.

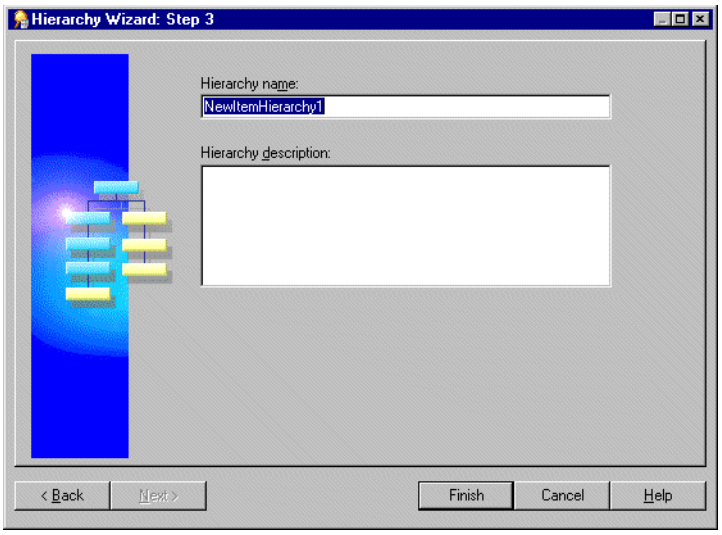
   Note: To ungroup a group of items in the hierarchy, select the group and click Ungroup.

6. (optional) To rename an item, click the item in the right hand list and specify a name in the **Description** field.

   The description you specify is the label the user sees in Discoverer Plus. If you don't specify a name, by default each level of the item hierarchy uses the item name.

7. Click Next to open the "Hierarchy Wizard: Step 3 dialog (name hierarchy)".

Figure 13–9 Hierarchy Wizard: Step 3 dialog



8. Specify a name and description for the new item hierarchy.
9. Click Finish to create the item hierarchy.

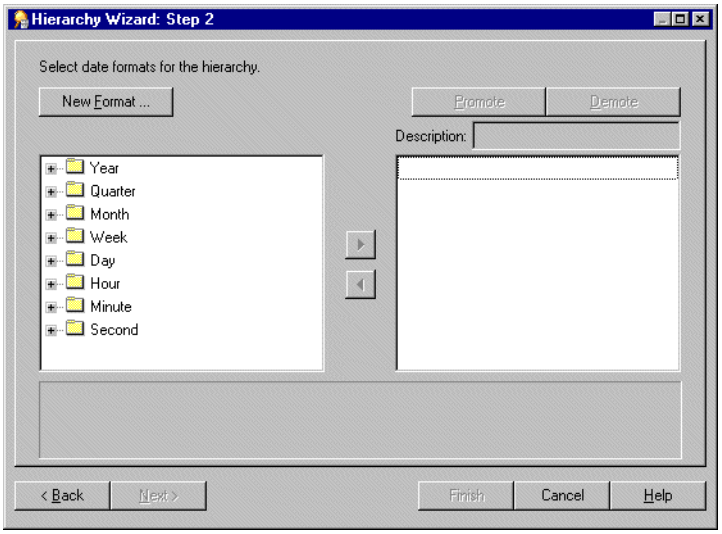
Discoverer displays the item hierarchy in the Hierarchies tab of the Workarea.

How to create date hierarchies and templates

To create a date hierarchy:

1. Choose Insert | Hierarchy to display the "Hierarchy Wizard: Step 1 dialog".
2. Select the Date Hierarchy option and click Next to open the "Hierarchy Wizard: Step 2 dialog".

Figure 13–10 Hierarchy Wizard: Step 2 dialog



3. (optional) To create a new date format click New Format... to display the "New Date Format dialog".

4. Move the date formats to include in this date hierarchy from the list on the left to the list on the right.

   You can select more than one date format at a time by holding down the Ctrl key and clicking another date format.

5. (optional) To move a date format in the hierarchy to a different position, select the date format in the list on the right and click:

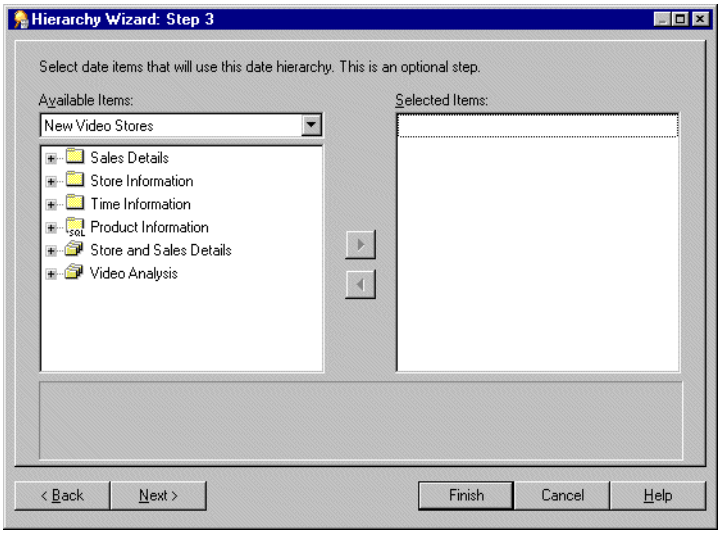
   - Promote to move the date format higher in the hierarchy
   - Demote to move the date format lower in the hierarchy

6. (optional) To rename a date format, click the date format in the list on the right and specify the new name in the **Description** field.

   The description you specify is the label the user sees in Discoverer Plus.

7. Click Next to display the "Hierarchy Wizard: Step 3 dialog".

Figure 13–11 Hierarchy Wizard: Step 3 dialog



   Here you select which date items will use this date hierarchy.

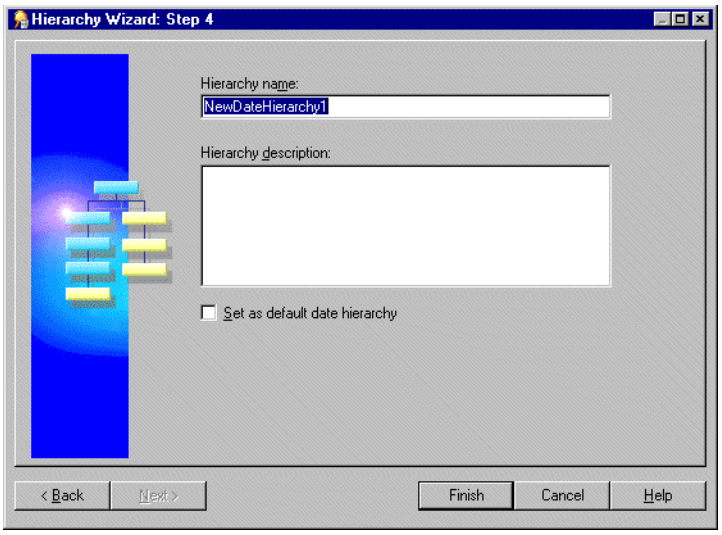
8. Move the date items that will use this date hierarchy from the **Available Items** list to the **Selected Items** list.

   You can select more than one item at a time by holding down the Ctrl key and clicking another item.

   Tip: To create just a date hierarchy template, do not select any date items on this page. Later, you can apply this template to date items by modifying their item properties (for more information, see "How to apply a date hierarchy template to a date item").

9. Click Next to open the "Hierarchy Wizard: Step 4 dialog (name hierarchy)".

Figure 13–12 Hierarchy Wizard: Step 4 dialog



10. Specify a name and description for the new date hierarchy.
11. (optional) To make this date hierarchy template the default, select the **Set as default date hierarchy** check box.

    If you select the **Set as default date hierarchy** check box, the date hierarchy template is displayed as the default in the "Load Wizard: Step 4 dialog" in the drop down list under the **Date hierarchies** check box.
12. Click Finish to create the date hierarchy and apply it to the date items that you selected in the Hierarchy Wizard: Step 3 dialog.

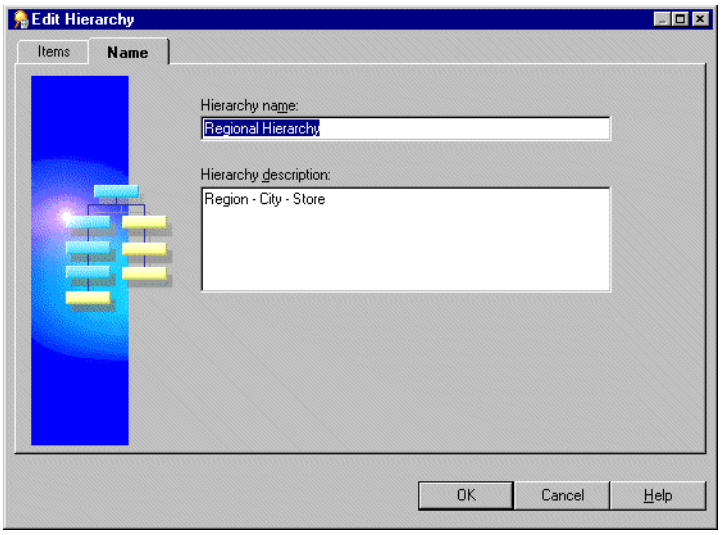
    The date hierarchies and the date hierarchy template now appear on the "Workarea: Hierarchies tab".

How to edit item hierarchies

To edit an existing item hierarchy:

1. Select a hierarchy on the Hierarchies tab and choose Edit | Edit…to display the "Edit Hierarchy dialog: Name tab".

Figure 13–13 Edit Hierarchy dialog: Name tab



2. Edit the Hierarchy as required.

   The Edit Hierarchy dialog is divided into two tabs.

   - Items

     Use this tab to add or remove the items that use this hierarchy.

   - Name

     Use this tab to edit the hierarchy's name and description.

   For more information about the above tabs see "Edit Hierarchy dialog: Name tab" or "Edit Hierarchy dialog: Items tab (select date items that will use this date hierarchy)".

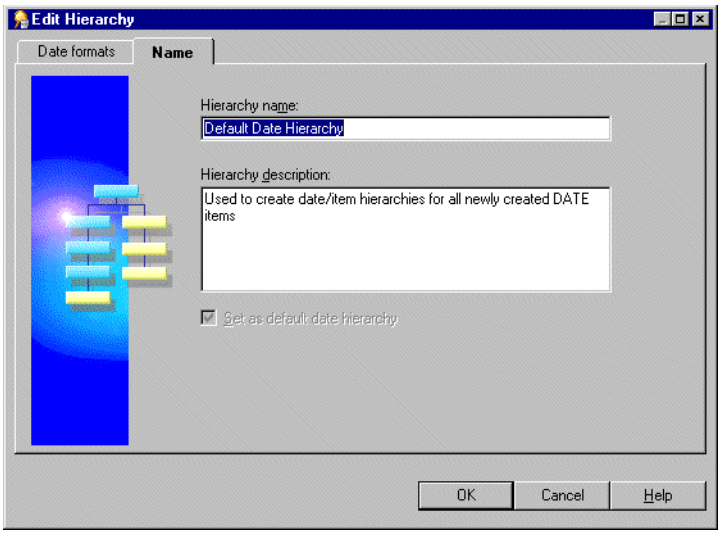
3. Click OK.

How to edit date hierarchy templates

This section describes how to edit an existing date hierarchy template. When you edit a date hierarchy template, all date items that use the date hierarchy template are modified to reflect the changes.

1. Click the date hierarchy template on the Hierarchies page and choose Edit | Edit… to display the "Edit Hierarchy dialog: Name tab".

Figure 13–14 Edit Hierarchy dialog: Name tab



2. Edit the hierarchy as required.

   The Edit Hierarchy dialog is divided in to two tabs:

   - Date formats

     Use this tab to change the date formats and their position in this date hierarchy template.

   - Name

     Use this tab to edit the date hierarchy template's name and description.

   For more information about the above tabs see "Edit Hierarchy dialog: Name tab" or "Edit Hierarchy dialog: Items tab (select date items that will use this date hierarchy)".

3. Click OK.

How to apply a date hierarchy template to a date item

This section describes how to apply a date hierarchy template to an existing date item.

When you apply a date hierarchy template to an existing date item, Discoverer Administrator automatically creates all the date items that are required to complete the date hierarchy. These new date items appear in the same folder as the original date item (prefixed with the name of the original date item). If you change the date hierarchy template that is applied to a date item, Discoverer creates new date items to reflect the new date hierarchy template. However Discoverer does not remove the date items from the previous date hierarchy. If you want to remove date items from a previous date hierarchy you must remove them manually.

For example, if you create the date hierarchy YY/QQ/MM and assign it to the date item Transaction Date, Discoverer creates the following items in the folder:

- Transaction Date YY
- Transaction Date QQ
- Transaction Date MM

If you then create a new date hierarchy WW/DD and assign it to Transaction Date, Discoverer creates the following additional items in the folder:

- Transaction Date WW
- Transaction Date DD

Discoverer does not delete the other three date items created previously.

To apply a date hierarchy template to a date item:

1. Click the date item on the Data tab and choose Edit | Properties to display the "Item Properties dialog".

   Tip: To apply a single date hierarchy template to more than one date item at a time, select all the date items before opening the Properties dialog. For more information, see "How to edit item properties".

2. Select the date hierarchy template for this date item to use from the drop-down list in the **Date Hierarchy** field.

   Select None to make the date item not use a date hierarchy template.

3. Click OK.

How to set the default date hierarchy template

The default date hierarchy template is displayed as the default selection in the Load Wizard step 4 in the **Date hierarchies, using:** drop down list. For more information see "Load Wizard: Step 4 dialog".

To set the default date hierarchy template:

1. Expand the Date hierarchy templates on the "Workarea: Hierarchies tab" to display all the date hierarchy templates.
2. Select the date hierarchy template you want to set as the default.
3. Choose Edit | Edit…to display the "Edit Hierarchy dialog: Name tab".
4. Select the **Set as default date hierarchy** check box on the Name tab.
5. Click OK.

How to delete item hierarchies or date hierarchy templates

To delete item hierarchies or date hierarchy templates:

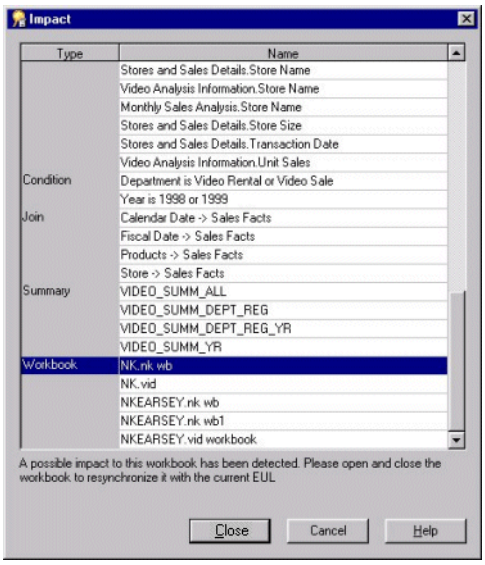
1. Select the item hierarchy or date hierarchy template on the "Workarea: Hierarchies tab".

   You can select more than one hierarchy at a time by holding down the Ctrl key and clicking another hierarchy.

2. Choose Edit | Delete to open the "Confirm Delete dialog".
3. (optional) To see the objects that might be affected by deleting this hierarchy or hierarchy template:

   a. Click Impact to display the "Impact dialog".

Figure 13–15 The Impact dialog



The Impact dialog enables you to review the other EUL objects that might be affected when you delete a hierarchy or hierarchy template.

Note: The Impact dialog does not show the impact on workbooks saved to the file system (that is, in `.dis` files).

b. (optional) Select a row to view text at the bottom of the list, indicating what affect the current action will have on the EUL object.

c. When you have finished reviewing the impact of deleting the hierarchy or hierarchy template, click Close to close the Impact dialog.

4. Click Yes to delete the selected hierarchies or hierarchy templates.

How to modify default date hierarchies that use date format 'RR' following upgrade to Oracle Business Intelligence Discoverer Administrator

After upgrading to Oracle Business Intelligence Discoverer Administrator, if a date format in a default date hierarchy uses the date format 'RR' you must modify it to 'YYYY' and then remove any affected date items (that is, date items that use the 'RR' date format) from the business area. This action is necessary to ensure that materialized views can be successfully created (for more information about materialized views, see "What are materialized views?").

To modify a default date hierarchy that uses the date format 'RR' so that it uses 'YYYY' you must complete the following tasks:

- "Modify default date hierarchy replacing the date format 'RR' with 'YYYY'"
- "Remove remaining date items that use the date format 'RR'"

Modify default date hierarchy replacing the date format 'RR' with 'YYYY'

To modify a default date hierarchy to use the date format 'YYYY':

1. Click the "Workarea: Hierarchies tab".

2. Expand **Date hierarchy templates** then highlight the default date hierarchy that uses the date format 'RR'.

3. Choose Edit | Edit... to display the "Edit Hierarchy dialog: Name tab".
4. Click the "Edit Hierarchy dialog: Items tab (select date items that will use this date hierarchy)" and replace each 'RR' date format with a 'YYYY' date format.

   Note: Repeat the above steps for each affected default date hierarchy.
5. Click OK to save your changes.

After you apply the 'YYYY' format to the affected default date hierarchy, you can remove remaining date items that use the date format 'RR'.

Remove remaining date items that use the date format 'RR'

To remove date items that use the date format 'RR':

1. Click the "Workarea: Data tab".
2. Highlight a date item that uses the date format 'RR'.
3. Choose Edit | Delete to delete the affected date item.
4. Repeat the above steps for each date item that still uses the date format 'RR'.

About creating a hierarchy using the CONNECT BY clause in a custom folder

A database table might contain a recursive hierarchy, that is where a relationship exists between different records in one table. This form of hierarchy is not unlike a series of self joins and it cannot be used directly by Discoverer (sometimes described as a value hierarchy). However, you can make Discoverer use a recursive hierarchy if you create a custom folder and use the CONNECT BY clause.

For example, if you look at the emp table in the Scott schema (supplied with Oracle databases), some of the numbers appear in both of the columns empno and mgr. The numbers appear in both columns because an employee's manager is identified by the employee number. This illustrates how a recursive hierarchy exists in the emp table.

The table below illustrates the relationships that exist between rows in the columns empno, ename and mgr from the emp table.

EMPNO	ENAME	MGR
7369	SMITH	7902
7499	ALLEN	7698
7521	WARD	7698
7566	JONES	7839
7654	MARTIN	7698
7698	BLAKE	7839
7782	CLARK	7839
7788	SCOTT	7566
7839	KING	
7844	TURNER	7698
7876	ADAMS	7788
7900	JAMES	7698

EMPNO	ENAME	MGR
7902	FORD	7566
7934	MILLER	7782

Discoverer cannot create a hierarchy directly using the above table. However, you can create a hierarchy from this table if you first use the CONNECT BY clause of the SELECT statement to create a custom folder. You can then use the custom folder as the basis of a hierarchy that Discoverer can use.

To create a hierarchy in Discoverer that uses the information in the above table, you would need a table that is similar to the following table that Discoverer might use to create a hierarchy:

TOP_LEVEL	2nd_LEVEL	Nth_LEVEL	EMPNO	ENAME
KING	CLARK		7934	MILLER

The above table displays the name of an employee (ename) and all the managers for that employee. In this table Miller has two levels of manager, his immediate manager being Clark.

To create a table like the one above (that is, based on columns from the emp table) and subsequently create a hierarchy between the levels, complete the following task:

- "How to create a hierarchy with a custom folder and the CONNECT BY clause, using the emp table from the scott schema"

How to create a hierarchy with a custom folder and the CONNECT BY clause, using the emp table from the scott schema

You might want to create a hierarchy based on values in a table (for example, the emp table in the scott schema). Discoverer Plus users will be able to create workbooks and use this hierarchy to drill up and down between the different levels of employees.

To create a hierarchy, with a custom folder and the CONNECT BY clause, using the emp table from the scott schema:

1. Create a custom folder and name it Recursive Hierarchy using the following SQL statement (for more information, see "How to create custom folders"):

```
SELECT DISTINCT empno, mgr, level
FROM scott.emp
CONNECT BY mgr = PRIOR empno
START WITH mgr IS NULL
```

   The above SQL statement creates a table that contains the following result set:

EMPNO	MGR	LEVEL
7369	7902	4
7499	7698	3
7521	7698	3
7566	7839	2
7654	7698	3

EMPNO	MGR	LEVEL
7698	7839	2
7782	7839	2
7788	7566	3
7839		1
7844	7698	3
7876	7788	4
7900	7698	3
7902	7566	3

Note the following points about the SQL statement in the custom folder you created in the above step:

- the column named Level

  This is a pseudo-column generated by the CONNECT BY function that is used to define the hierarchy in Discoverer.

- the word PRIOR used in the CONNECT BY statement

  This makes the SQL look for the next row in which the mgr column equals the value in the empno column in the prior row.

- the START WITH statement

  This instructs the SQL to start where mgr is null (that is, with the top manager).

For more information about the CONNECT BY statement, see the *Oracle Database SQL Reference Guide*.

2. Set the custom folder property **Visible to user** to No (for more information, see "How to edit folder properties").

   This makes sure that end users cannot access this custom folder.

   Note: Although the Level column provides the information needed to create a hierarchy, you first need to separate the rows by Level. You achieve this by creating a complex folder for each level.

3. Create a complex folder for each level (for more information, see "How to create complex folders").

   In this example, you create four complex folders.

   Tip: To create each complex folder, drag all three items (Empno, Mgr and Level) from the custom folder Recursive Hierarchy into each new complex folder in turn.

4. Name each of the four new complex folders Level1, Level2, Level3, Level4 respectively (for more information, see "How to edit folder properties")

5. Apply a mandatory condition to each complex folder (for more information, see "How to create simple conditions").

   Tip: For example, the condition you apply to the complex folder containing data at level 3 is:

   Level = 3.

6. Create joins to join the complex folders to each other (for more information, see "How to create joins").

   Tip: Use the empno and mgr items to do this. Create a join between the complex folder for Level1 and the folder for Level2 as follows:

   Level1.empno = Level2.mgr.

   Follow the above rule for joining the Level2 folder to the Level3 folder and the Level3 folder to the Level4 folder. These joins reflect the hierarchy you want to create.

7. Set the folder property **Visible to user** for each of these complex folders to No (for more information, see "How to edit folder properties").

8. Create another complex folder and give it an appropriate name (for example, Chain of Command).

   Note: This is the complex folder that end users will see.

9. Drag across into the Chain of Command folder, the Empno item from each of the four complex folders created in step 3 above and rename each one as soon as you have dragged it across.

   Tip: For each Empno item that you drag from one of the folders Level1, Level2, Level3 and Level4 you must rename each appropriately (for example, Empno1, Empno2 Empno3, Empno4).

   This gives you the following result set that Discoverer can use to build a hierarchy:

Empno1	Empno2	Empno3	Empno4
7839	7698	7499	
7839	7698	7521	
7839	7698	7654	
7839	7698	7788	
7839	7698	7844	
7839	7782	7900	
7839	7566	7902	7369

10. Create a hierarchy based on the items in this folder (for more information, see "How to create item hierarchies") represented by the columns in the table above.

    Discoverer Plus users will be able to create workbooks and use this hierarchy to drill up and down between the different levels of employees.

14

Managing Summary Folders

This chapter explains summary folders and how you manage them using Discoverer Administrator, and contains the following topics:

- "About folders and summary folders in Discoverer"
- "What are summary folders?"
- "What are Discoverer summary tables?"
- "What are materialized views?"
- "What is Automated Summary Management (ASM)"
- "How does ASM work?"
- "What are the prerequisites for creating summary folders with ASM?"
- "What are the different ways to run ASM and when do you use them?"
- "What is the ASM policy?"
- "Why must you refresh summary data?"
- "What happens when a summary folder is refreshed?"
- "How to run ASM using the Summary Wizard"
- "How to run ASM after bulk load using the Load Wizard"
- "How to run ASM using the command-line interface"
- "How to run ASM using a batch file and the operating system scheduler"
- "How to configure the database for summary folders"

About folders and summary folders in Discoverer

Discoverer uses two kinds of folders:

- folders - represent data

  Discoverer folders are classified as simple, complex, or custom. For more information, see Chapter 6, "Creating and Maintaining Folders".

- summary folders - represent data that has been queried and the results saved for reuse

  Discoverer uses summary folders to improve query response times for end users.

What are summary folders?

Summary folders are a representation of queried data (created in Discoverer Administrator) that has been saved for reuse. The data is stored in the database in one of the following (depending on the edition of Oracle):

- materialized views

  Discoverer uses materialized views to store summarized data in Oracle Enterprise Edition databases.

- tables

  Discoverer uses tables to store summarized data in Oracle Standard Edition databases.

  The tables created by Discoverer to store summarized data are called Discoverer summary tables. For more information about Discoverer summary tables, see "What are Discoverer summary tables?".

Summary folders improve the response time of a query because the query accesses pre-aggregated and pre-joined data rather than querying against the detail database tables.

You can also direct Discoverer to use summary folders based on tables containing summary data that have been created by another application. These tables are known as external summary tables. You can specify that Discoverer refreshes external summary tables.

You can create summary folders in one of two ways:

- using the Automated Summary Management (ASM) feature (for more information, see "What is Automated Summary Management (ASM)")
- manually (for more information, see "What is manual summary folder creation?")

The recommended method for creating summary folders in Discoverer is to use Automated Summary Management (ASM).

What are Discoverer summary tables?

Discoverer summary tables are database tables created by Discoverer Administrator that contain summarized data. Discoverer summary tables contain pre-aggregated and pre-joined data, and can improve query performance in Discoverer Plus and Discoverer Viewer.

Discoverer automatically recognizes when a summary table is available and rewrites the query to use the summary table. For more information, see "What is query rewrite?".

For example, when a query is run for the first time in Discoverer Plus it retrieves data from the detail tables. This may require a multiple table join and aggregation over thousands or millions of rows, which could take some time to complete. If Discoverer has created a suitable summary table, the same query retrieves data from the summary table and will return results in a few seconds. Both queries will produce the same results.

For more information about Discoverer and rewriting queries to summary tables with Oracle Standard Edition databases, see "Example illustrating the advantages of rewriting a query to use a summary table".

Note: Circumstances sometimes prohibit the creation of materialized views and result in the creation of Discoverer summary tables when running against Oracle databases

(Enterprise Edition release 9.2.0.7 or later). For more information, see "What is different between mapping external summary tables and views to EUL items, with Oracle Enterprise Edition databases?".

What are materialized views?

Materialized views are database objects that contain the results of a query created by an Oracle Enterprise Edition database. The query results contain pre-aggregated and pre-joined data and can improve query performance in Discoverer Plus and Discoverer Viewer.

Oracle Enterprise Edition databases automatically recognize when a materialized view can be used to satisfy a query request. The database rewrites the query to use the materialized view. Queries are then directed to the materialized view and not to the underlying detail tables or views.

Materialized views have the following characteristics:

- Materialized views consume storage space.

  Unlike ordinary views, materialized views contain data resulting from a query against one or more detail tables.

- Materialized views must be refreshed when data changes.

  The Oracle database maintains data in materialized views by refreshing the materialized views after changes are made to the detail tables.

  You can configure Discoverer:

  - to set the Refresh Type to incremental (that is, fast refresh, where only the changes made to the detail tables are refreshed) or full (that is, complete, where the database executes the defining subquery of the materialized view)
  - to set the Refresh to On demand (manually maintained by the Discoverer manager) or On commit (whenever a database transaction commits its changes to the detail tables), where the materialized view is in the same database as the detail tables

- Materialized views are transparent to Discoverer users.

  Query rewrite transforms a SQL statement expressed in terms of the detail table into a statement accessing one or more materialized views that are defined on the detail tables. For more information, see "What is query rewrite?".

Notes

- You do not need to register external materialized views with Discoverer for end user queries to use them, as the database knows whether a materialized view can satisfy the query. You only register an external materialized view with Discoverer if you want Discoverer to maintain the refresh for you (for more information about registering external summary tables/views, see "How to create summary folders based on external summary tables").
- The SQL Inspector/Explain Plan in Discoverer Plus indicates whether the SQL generated to run a query used a summary table or a materialized view (for more information, see "About viewing the SQL and execution plan for query rewrite in Discoverer").
- For an historical context about Discoverer's use of summary tables/materialized views, see "What is the context and future for Discoverer's use of summary tables/materialized views?".

For more information about the differences between Discoverer summary tables and materialized views, see:

- "What characteristics differ between summary folders in Oracle Standard Edition databases and Oracle Enterprise Edition databases?"
- "What is different about summary folders that are based on external summary tables?"
- "What is different between mapping external summary tables and views to EUL items, with Oracle Enterprise Edition databases?"

What is Automated Summary Management (ASM)

Automated Summary Management (ASM) is a Discoverer facility that creates and manages summary folders for you.

ASM simplifies the process of summary folder creation and maintenance by offering you a fully automated solution to summary folder management. When run periodically, ASM can automatically refine the summary folders it creates using query statistics gathered by Discoverer from user queries. ASM also provides guidance if you want to control the specification of default values during summary folder creation/maintenance.

How does ASM work?

ASM determines how to create summary folders by:

- analyzing your database tables
- using query statistics (when available)
- using default values known as the ASM policy (for more information, see "What is the ASM policy?")

ASM automatically creates and maintains the best set of summary folders based on the above combination.

ASM converts your summary policy into a list of recommended summary folder definitions. You can either implement these recommendations without further intervention (the actual set of summary tables dynamically adjusts with system usage) or execution can be stalled until you have specifically sanctioned one or more of the recommendations.

ASM requires table space to create summary folders but you can adjust how much space in the Summary Wizard (for more information, see "How to run ASM using the Summary Wizard").

Note: ASM works on the EUL as a whole, not just the currently selected business areas. So ASM can use folders from all business areas in the current EUL.

What are the prerequisites for creating summary folders with ASM?

To create summary folders with ASM, the following requirements must be met:

- The database must support PL/SQL.
- The DBMS_JOB package must be installed for scheduling summary folder creation and refresh (for more information, see "How to confirm that DBMS_JOB is installed for summary management").

- The User ID that you intend to use to create the summary folders must have the following database privileges (for more information, see "How to use SQL*Plus to grant the privileges required to create summary folders"):
  - CREATE TABLE
  - CREATE VIEW
  - CREATE PROCEDURE
  - SELECT ON V_$PARAMETER
  - CREATE/DROP/ALTER ANY MATERIALIZED VIEW (Oracle Enterprise Edition databases)
  - GLOBAL QUERY REWRITE (Oracle Enterprise Edition databases)
  - ANALYZE ANY
- The User ID that you intend to use to create summary folders must have sufficient quota in the tablespace for the summary tables to be created (for more information, see "How to determine and reset tablespace quotas").
- You must connect to Discoverer Administrator as the EUL owner.
- If you are using an Oracle Enterprise Edition database, your folders must not contain SET operators (for example, UNION, UNION ALL, MINUS, INTERSECT). If ASM finds a folder that contains a SET operator, summary data will not be created for that folder.

Note: For more information about Oracle SET operators, see the *Oracle Database SQL Reference Guide*.

Note: A database user created in Discoverer may need additional privileges to enable them to create summary folders. The conditions that determine when this is true are detailed in the following table, that illustrates when a database user created in Discoverer requires additional privileges to create summary folders:

Version of Discoverer and database version under which the database user was created	Does database user require further privileges to create summary folders?	What action is required?
Discoverer 3.1.	Yes, the database user requires further privileges to create summary folders.	You must explicitly grant the required privileges to the database user (for more information about how to grant these privileges, see "How to use SQL*Plus to grant the privileges required to create summary folders").
Discoverer 4*i* against an Oracle Standard Edition database).	Yes, the database user requires further privileges to create summary folders.	Same action as above.
Discoverer 4*i* against an Oracle Enterprise Edition database.	No, the database user requires no further privileges to create summary folders.	No action is required.

What are the different ways to run ASM and when do you use them?

The following table shows the different ways that you can run ASM and when to use them:

How to run ASM?	Why run ASM this way?	For information see
Using the Summary Wizard.	Discoverer leads you through the whole process.	"How to run ASM using the Summary Wizard".
Using the Load Wizard after bulk load.	Enables you to create summary folders during the load of a business area without having to access ASM independently.	"How to run ASM after bulk load using the Load Wizard".
Using the command-line interface.	Enables you to create summary folders without having to start Discoverer.	"How to run ASM using the command-line interface".
Using a batch file and the Operating System scheduler.	Automates the scheduling of ASM summary folder creation through the command line.	"How to run ASM using a batch file and the operating system scheduler".

What is the ASM policy?

The ASM policy is a set of user defined constraints and options that enable you to control how ASM behaves and what summary folders it produces.

The ASM policy is divided into space options and advanced settings. In many cases you will only need to set the space options.

For more information about space options and advanced settings, see:

- "Summary Wizard (ASM): Step 3 Allocate Space dialog"
- "Summary Wizard (ASM): List of dialogs"

Discoverer provides default settings that ensure suitable summary folders are created and maintained without your intervention.

The minimum information required for an ASM policy is a tablespace name and an allocated amount of disc space. The tablespace defaults to the user tablespace, and a default amount of disc space is used. Both of these values can be changed if required (for more information, see "Summary Wizard (ASM): Step 3 Allocate Space dialog").

Why must you refresh summary data?

You must refresh summary data regularly to keep summary tables and materialized views consistent with the database. If the database changes often, summary tables and materialized views need to be refreshed accordingly to keep their data current with the underlying database.

For information about refreshing summary folders see:

- "What happens when a summary folder is refreshed?"
- "How to manually refresh a summary folder"
- "About refresh options for Oracle Enterprise Edition databases"
- "About refreshing summary folders following import between Oracle databases"

Note: Sometimes it is useful to refresh a summary folder after a change has occurred (for example, the loading of data into a data warehouse). You can use the Discoverer command-line interface facility to automatically refresh a summary folder (for more information, see Chapter 22, "Discoverer Command-line Interface").

What happens when a summary folder is refreshed?

When a summary folder is refreshed (when running against Oracle Enterprise Edition databases), the database server's own refresh mechanism is used (this can be an incremental refresh) depending on your refresh settings.

Whenever a summary folder is refreshed, the following actions are performed by Discoverer:

- The summary folder is marked as unavailable.
- The materialized view or summary table associated with summary folder is reconciled against its EUL metadata and if necessary the definition is updated.
- All existing summary data that is about to be refreshed is deleted.
- The summary data is regenerated and inserted into the corresponding materialized views or summary tables.
- The summary folder is marked as available.

How to run ASM using the Summary Wizard

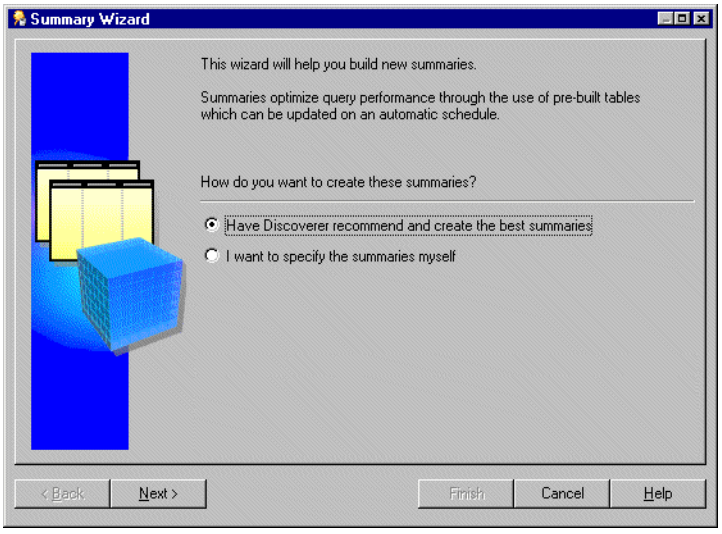
You need certain database privileges to run ASM (for more information about the privileges required to run ASM, see "What are the prerequisites for creating summary folders with ASM?").

To see a list of headings that point to more information about the Summary Wizard dialogs, see "Summary Wizard (ASM): List of dialogs".

To start the summary wizard:

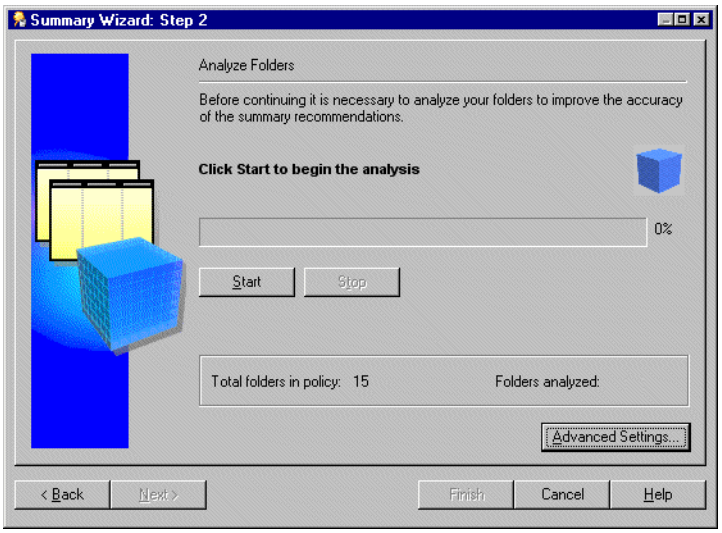
1. Choose Insert | Summary to display the "Summary Wizard: Step 1 dialog".

Figure 14–1 Summary Wizard dialog



2. Select the **Have Discoverer recommend and create the best summaries** option and click Next to display the "Summary Wizard: Step 2 dialog".

Figure 14–2 Summary Wizard: Step 2 dialog



Note: To determine which summary folders to create Discoverer analyzes every folder that is to be involved in the summary folder process. Depending on the number and size of folders to be analyzed this could take some time to complete. Discoverer enables you to start and stop this process at your own pace.

3. Click the Start button to begin the analysis:

   Your progress will be displayed during the analyze process.

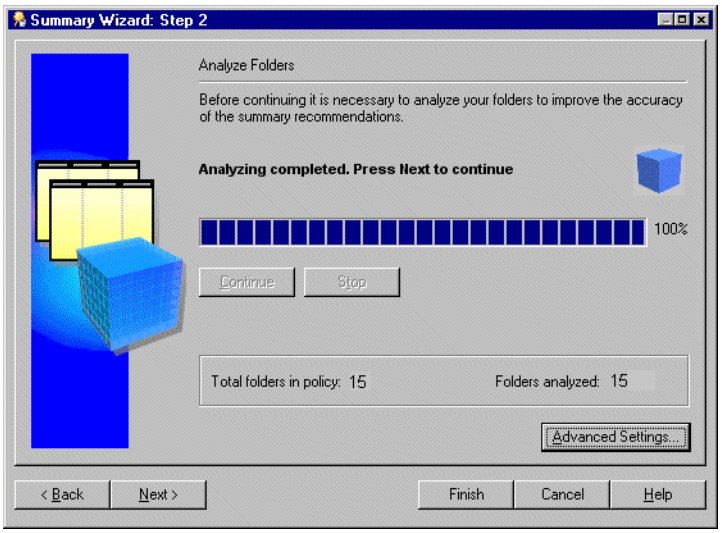
4. (optional) Click the Stop button to pause the analysis.

   You might want to pause the analysis to make changes to the default settings (using the Advanced Settings button) before resuming table analysis.

5. (optional) Click the Continue button to resume the analysis.

   The analysis always resumes from the same point in the process at which the Stop button was clicked.

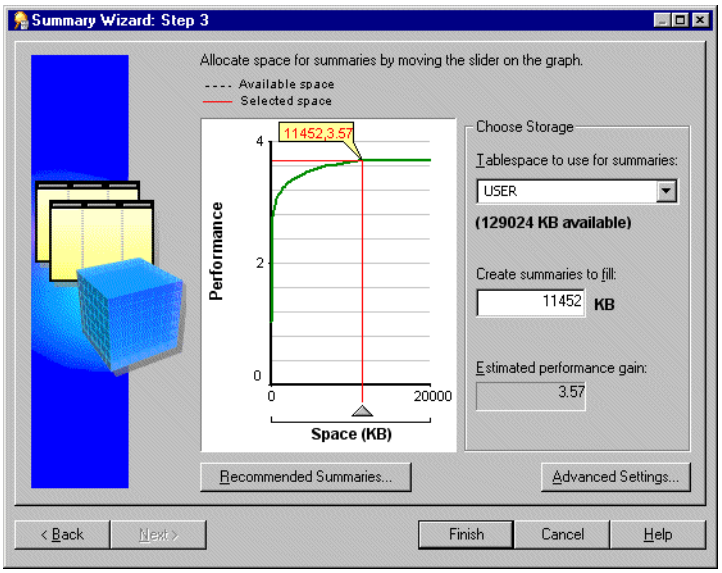
Figure 14–3 Summary Wizard: Step 2 dialog



Note: If some folders cannot be analyzed Discoverer displays the "Not Analyzed dialog".

6. When analysis is complete click Next to allocate space for summaries.

Figure 14–4 Summary Wizard: Step 3 dialog



The graph plots the expected performance gain from allocating a certain amount of space for summary folders.

The information displayed here is calculated during folder analysis (see previous step). If you make changes using any of the tabs in the Change Default Settings dialog Discoverer might recalculate the graph.

For more information about settings see "Summary Wizard (ASM): Change default settings: List of dialog tabs".

7. Select the tablespace in which to store summary data in the **Tablespace to use for summaries** list box.

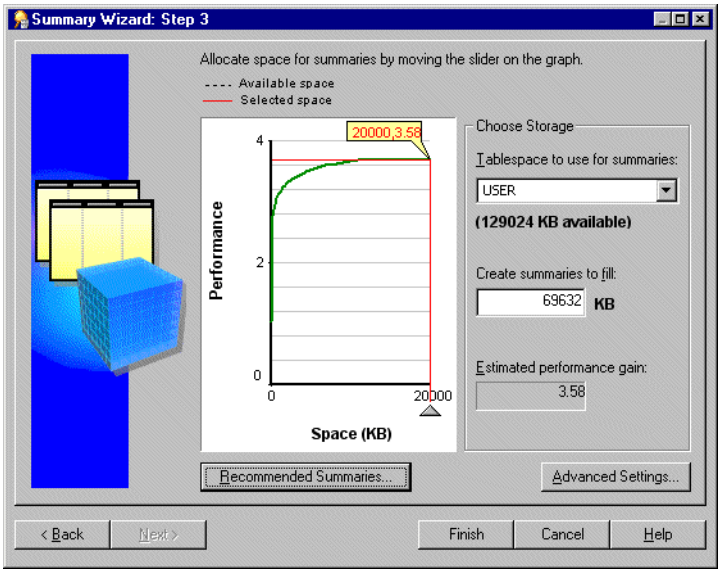
   Note: We recommend you place summary data in a separate tablespace specifically intended for it. If such a tablespace does not exist, we strongly recommend you do not use the SYSTEM or TEMP tablespaces. For more information, ask your database administrator.

8. Specify the amount of space to allocate for summary data in one of the following ways:

   - click the graph area and drag the pointer/red line to select the space you want to allocate for summaries
   - specify a figure in the **Create summaries to fill** field

   Note: The value beneath the **Tablespace to use for summaries** field can be less than the value specified in the **Create summaries to fill** field. This does not matter if you have set your tablespace to autoextend. With your tablespace set to autoextend the extra space needed will be added automatically to the database. If your tablespace is not set to autoextend the value **Space (KB)** must be less than the available space.

Figure 14–5 Summary Wizard: Step 3



9. (optional) To view the summary folders that ASM will create/remove for you, click the Recommended Summaries button.

   For more information about recommended summaries, see the "Recommended Summaries dialog".

10. (optional) To display the Change default settings dialog, click the Advanced Settings button.

    For more information about advanced settings, see "Summary Wizard (ASM): Change default settings: List of dialog tabs".

11. Click Finish to generate summary folders based on the current settings.

    These settings include those made at the Recommended Summaries dialog or the Change Default Settings dialog.

Notes

- To view all the summary folders in the current EUL, display the "Workarea: Summaries tab".

How to run ASM after bulk load using the Load Wizard

When you use the Load Wizard to load a business area into the current EUL, you can choose whether to create a set of summary folders for this new business area.

If you take this option then suitable summaries will be created after bulk load.

To run ASM after bulk load using the Load Wizard:

1. Choose Insert | Business Area | From Database to start the Load Wizard (for more information about using the Load Wizard, see "What is the Load Wizard?").

2. In step 4 of the Load Wizard click the option **Summaries based on folders that are created**.

   For more information, see "Load Wizard: Step 4 dialog".

Notes

- The summary folders created during bulk load of a business area are derived from analyzing the tables and using the default summary policy.

  For more information about the ASM policy, see "What is the ASM policy?"

- When database tables have just been loaded in the bulk load process, query statistics will not be available. Where Discoverer has been in use for a while, query statistics will have been gathered by Discoverer. Where query statistics are available they will be used by ASM to create more suitable summary folders.
- You do not need to make any changes to summary policy settings for a bulk load ASM process. The default settings which are used should be adequate. If changes are made however, these settings then become the defaults.

How to run ASM using the command-line interface

To run ASM using the command-line interface:

1. From the Start menu choose Run.
2. Type in the appropriate command.

   For more information about the command-line interface, see Chapter 22, "Discoverer Command-line Interface". For more information about ASM commands and command modifiers see and "/asm".

How to run ASM using a batch file and the operating system scheduler

You can run ASM through the batch file/scheduler facility provided by your operating system. This way you specify when you want ASM to run including the scheduled intervals when you want to repeat the process.

By using the command-line syntax within a batch file, the process can be run automatically overnight or on a weekend.

Before you can run ASM from a batch file, you must do two things:

1. Create a text file in a text editor (for example, Notepad).
2. Using the correct command-line syntax, enter the command-line details as text into the batch file.

   For more information about ASM command-line syntax, see "/asm".

3. Save the file as a `.bat` file (for example, asmsched.bat).
4. Use the correct operating system commands to schedule the batch file.

   To learn how to schedule a batch file see your operating system documentation or help.

How to configure the database for summary folders

The summary management feature in Discoverer uses native features in the Oracle database management system (DBMS). This feature uses the same highly scalable and reliable processing procedures as the workbook scheduling capability and the setup for both features is similar. These procedures use standard packages in the DBMS called DBMS_JOB.

To enable the processing procedures for summary management in Discoverer you can check the following tasks:

- "How to confirm that DBMS_JOB is installed for summary management"
- "How to use SQL*Plus to grant the privileges required to create summary folders"
- "How to determine and reset tablespace quotas"
- "How to check object/schema name"

How to confirm that DBMS_JOB is installed for summary management

To confirm that DBMS_JOB is installed for summary management:

1. Start SQL*Plus (if it is not already running) and connect as the database administrator.

   For example, if SQL*Plus is already running, you might type the following at the command prompt:

   ```
   SQL> CONNECT dba_user/dba_pw@database;
   ```

   Where dba_user is the database administrator and dba_pw is the database administrator password.

2. Type the following at the command prompt:

   ```
   SQL> select * from all_objects where object_name='DBMS_JOB' and object_type =
   'PACKAGE';
   ```

   If the statement returns no rows, use your database administrator to create the necessary packages.

To install DBMS_JOB and create the necessary packages for summary management, for Oracle databases (version 9.2.0.7 or later):

1. Start SQL*Plus (if it is not already running) and connect as the SYS user, or a user to which the sysdba privilege has been granted.

   For example, if SQL*Plus is already running, you might type the following at the command prompt:

   ```
   SQL> CONNECT sys/sys_pw@database AS SYSDBA;
   ```

   Where sys is the SYS user and sys_pw is the SYS user password.

2. Type the following at the command prompt:

   ```
   SQL> start <ORACLE_HOME>/rdbms/admin/dbmsjob.sql;
   SQL> start <ORACLE_HOME>/rdbms/admin/prvtjob.plb;
   ```

How to use SQL*Plus to grant the privileges required to create summary folders

You can use SQL*Plus to grant the privileges required to create summary folders in the following ways:

- "How to use SQL*Plus to manually grant the privileges required to create summary folders"
- "How to use SQL*Plus and the eulasm.sql script to grant the privileges required to create summary folders"

Notes

- The <user> below is the database user for the person using Discoverer Administrator.

How to use SQL*Plus to manually grant the privileges required to create summary folders

To use SQL*Plus to manually grant the privileges required to create summary folders, for Oracle databases (version 9.2.0.7 or later):

1. Start SQL*Plus (if it is not already running) and connect as the SYS user, or a user to which the sysdba privilege has been granted.

   For example, if SQL*Plus is already running, you might type the following at the command prompt:

   ```
   SQL> CONNECT sys/sys_pw@database AS SYSDBA;
   ```

   Where sys is the SYS user and sys_pw is the SYS user password.

2. Type the following at the command prompt:

   ```
   SQL> grant CREATE TABLE to <user>;
   SQL> grant CREATE VIEW to <user>;
   SQL> grant CREATE PROCEDURE to <user>;
   SQL> grant CREATE ANY MATERIALIZED VIEW to <user>;
   SQL> grant DROP ANY MATERIALIZED VIEW to <user>;
   SQL> grant ALTER ANY MATERIALIZED VIEW to <user>;
   SQL> grant GLOBAL QUERY REWRITE to <user> with admin option;
   SQL> grant ANALYZE ANY to <user>;
   SQL> grant SELECT ON V_$PARAMETER to <user>;
   ```

   Note: To grant SELECT on v_$parameter you must log in as the SYS user. If you are unable to login as the SYS user or are unsure about the SYS user name and password, see your database administrator.

How to use SQL*Plus and the eulasm.sql script to grant the privileges required to create summary folders

To use SQL*Plus and the eulasm.sql script to grant the privileges required to create summary folders:

1. Start SQL*Plus (if it is not already running) and connect as the database administrator.

   For example, if SQL*Plus is already running, you might type the following at the command prompt:

   ```
   SQL> CONNECT dba_user/dba_pw@database;
   ```

   Where dba_user is the database administrator and dba_pw is the database administrator password.

2. Type the following at the command prompt:

   ```
   SQL> @'<ORACLE_HOME>\discoverer\util\eulasm.sql'
   ```

3. When the script prompts you, enter the database user to which the script is to grant the privileges.

   ```
   ENTER value for username: <username>
   ```

Note: To grant SELECT on v_$parameter you must log in as the SYS user. If you are unable to login as the SYS user or are unsure about the SYS user name and password, see your database administrator.

4. Start SQL*Plus (if it is not already running) and connect as the SYS user, or a user to which the sysdba privilege has been granted.

   For example, if SQL*Plus is already running, you might type the following at the command prompt:

   ```
   SQL> CONNECT sys/sys_pw@database AS SYSDBA;
   ```

   Where sys is the SYS user and sys_pw is the SYS user password.

5. Type the following at the command prompt:

   ```
   SQL> grant SELECT ON V_$PARAMETER to <user>;
   ```

How to determine and reset tablespace quotas

A database user must have enough quota in their default tablespace to create summary tables. The following tasks enable you to determine and tablespace quotas, if necessary.

To determine tablespace quotas, for Oracle databases (version 9.2.0.7 or later):

1. Start SQL*Plus (if it is not already running) and connect as the SYS user, or a user to which the sysdba privilege has been granted.

   For example, if SQL*Plus is already running, you might type the following at the command prompt:

   ```
   SQL> CONNECT sys/sys_pw@database AS SYSDBA;
   ```

   Where sys is the SYS user and sys_pw is the SYS user password.

2. Type the following at the command prompt:

   ```
   SQL> select * from dba_ts_quotas where username = <user>;
   ```

   where <user> is the userid of the person using Discoverer Administrator.

To reset tablespace quotas:

1. Reset the tablespace quotas by executing the following SQL statement:

   ```
   SQL> alter user <user> quota <n> on <tablespace>;
   ```

   where <user> is the userid of the person using Discoverer Administrator

   where <n> is the quota in K(ilobytes) or M(egabytes) or Unlimited

   where <tablespace> is the default tablespace name for example, USERS

How to check object/schema name

A user must not have an object in their schema with the same name as their user name. This task shows you how to look for any objects in your schema that have the same name as your database user name.

To check whether there are any objects in your schema with the same name as your user name, do the following:

1. Start SQL*Plus (if it is not already running) and connect as the database user.

For example, if SQL*Plus is already running, you might type the following at the command prompt:

```
SQL> CONNECT jchan/tiger@database;
```

Where jchan is the database user and tiger is the database user password.

2. Type the following at the command prompt:

```
SQL> select object_name from user_objects where object_name = <user>;
```

where <user> is the same as the login used to connect to SQL*Plus.

15

Creating Summary Folders Manually

This chapter explains how you create summary folders manually by using Discoverer Administrator (instead of by using Automated Summary Management), and contains the following topics:

- "What is manual summary folder creation?"
- "What are the prerequisites for creating summary folders manually in Discoverer?"
- "What are summary combinations?"
- "What to consider when defining summary combinations?"
- "Guidelines for setting up summary combinations"
- "When will an expression use a summary folder?"
- "How to create summary folders based on items in the EUL"
- "How to create summary folders based on users' queries"
- "How to create summary folders based on external summary tables"
- "How to manually refresh a summary folder"
- "How to edit the properties of summary folders"
- "How to edit summary folders"
- "How to edit database storage properties of summary combinations for a summary folder"
- "How to delete summary folders"
- "How to view the status of the summary tables/materialized views for a summary folder"

What is manual summary folder creation?

Manual summary folder creation is the process of creating summary folders yourself, instead of using Discoverer's Automated Summary Management (ASM) functionality (for more information, see Chapter 14, "Managing Summary Folders"). It is recommended that you use ASM to create summary folders. However, you might choose to create summary folders yourself, if you want to:

- manually select the combination of EUL items (for example, when you know the items to use in the summary folder)
- use query performance statistics to choose from a selection of summary folder suggestions (based on queries that have been run)

- use a summary table or view created or maintained by an external application (for example, an external summary table)

You choose whether to create summary folders using ASM or manually in the first step of the Summary Wizard. To create summary folders manually you select the option **I want to specify the summaries myself** and complete one of the following tasks:

- "How to create summary folders based on items in the EUL"
- "How to create summary folders based on users' queries"
- "How to create summary folders based on external summary tables"

For information about summary folders and how Discoverer creates and maintains them automatically see Chapter 14, "Managing Summary Folders".

What are the prerequisites for creating summary folders manually in Discoverer?

To create summary folders, the following requirements must be met:

- The database must support PL/SQL.
- The DBMS_JOB package must be installed for scheduling summary folder creation and refresh. For more information see "How to confirm that DBMS_JOB is installed for summary management".
- The User ID that you intend to use to create the summary folders must have the following database privileges:
  - CREATE TABLE
  - CREATE VIEW
  - CREATE PROCEDURE
  - SELECT ON V_$PARAMETER
  - CREATE/DROP/ALTER ANY MATERIALIZED VIEW (Oracle databases Enterprise Edition release 9.2.0.7 or later)
  - GLOBAL QUERY REWRITE (Oracle Enterprise Edition databases)

  For more information, see "How to use SQL*Plus to grant the privileges required to create summary folders".
- The User ID that you intend to use to create the summary folders must have sufficient quota in their default tablespace. For more information, see "How to determine and reset tablespace quotas".

Notes

- If a database user was created in Discoverer 3.1 against an Oracle Enterprise Edition database, it must have additional privileges granted to enable them to create summary folders (for more information, see "What are the prerequisites for creating summary folders with ASM?").
- If you want Discoverer to use external summary tables, the EUL owner:
  - must have SELECT WITH GRANT access to the external summary tables
  - must have been granted SELECT WITH GRANT access explicitly (that is, not through a database role)

What are summary combinations?

Summary combinations are groupings of items that make up a summary folder. A summary combination maps directly to a materialized view or summary table in the database. Discoverer creates materialized views or summary tables based on the summary combinations you create. Each summary combination defines a different way of combining two or more items in a summary folder. If a Discoverer Plus user executes a query with a combination of items that closely matches those specified in a particular combination, the query will be run against a summary table or materialized view instead of the detail data, resulting in improved response times.

For example, you might create a summary folder against two folder items, Product Key and Product Type.

You might want the summary folder to be used only when the Product Key and Product Type items are used together.

For this example you would not add any summary combinations but accept the default combination, as follows:

Combinations	Combination 1 (default)
Product Key	selected
Product Type	selected

Alternatively, you might want the summary folder to be used for any of the following combinations:

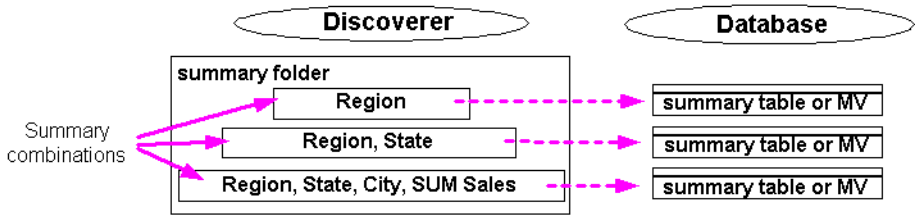
- Product Key and Product Type (Combination 1)
- Product Key (Combination 2)
- Product Type (Combination 3)

For this example you would add two summary combinations and select the check box next to the items that you want to use as follows:

Combinations	Combination 1 (default)	Combination 2	Combination 3
Product Key	selected	selected	not selected
Product Type	selected	not selected	selected

You can define as many combinations as you need for each summary folder using the Summary Wizard.

Figure 15–1 The relationship between summary combinations, summary folders and summary tables/materialized views



The diagram above illustrates that for every summary combination, Discoverer creates a materialized view or summary table in the database.

If you add multiple summary combinations, Discoverer (where possible) builds the higher level combinations (that is, combinations with a greater number of items) by using the lower level combinations (that is, combinations with fewer items). This improves performance because:

- the detail tables do not have to be queried so often
- summary folders are refreshed more quickly

For example, a summary folder might contain two summary combinations:

- month, region and revenue
- year, region and revenue.

Discoverer aggregates the data for the revenue by month and region by accessing the detail data directly. Discoverer then uses data aggregated for the first combination to aggregate the data for the second combination, saving both processing and CPU overhead.

Note: Summary combinations are only available when Discoverer manages the refresh of a summary folder.

What to consider when defining summary combinations?

There are three things to consider when defining summary combinations:

- how much database space is required to store summary data?
- how quickly do you want a query to run?
- how often is a query run?

The key to good summary folder design is to create the most appropriate summary combinations for the pattern of system usage.

Typically you will want queries that are run most often to run the most quickly, even if this requires more database space. Similarly, it is usually desirable for queries that run less frequently to use less database space, even if this means the queries run more slowly.

When creating summary combinations, look for:

- summary combinations for popular and frequent queries

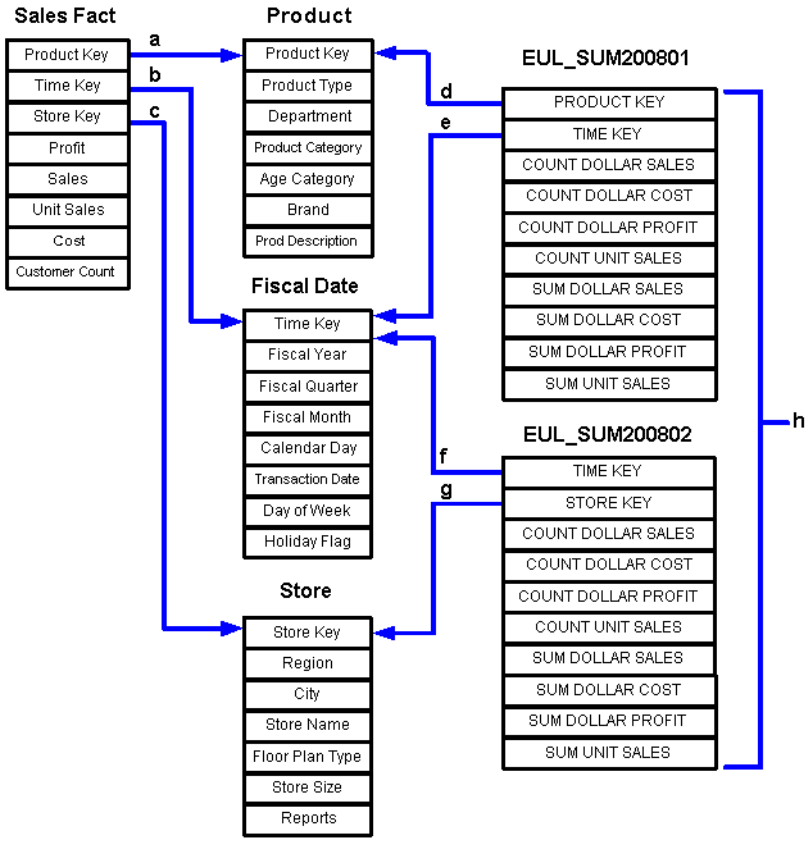
  If you are creating a summary combination for a popular query, include all the items and joins used in the query. Note that such a summary combination might require considerable database space.

- summary combinations that meet ad hoc, less frequent queries

  Summary combinations for a more ad hoc environment (where queries are far less predictable) are typically based on different combinations of keys in the main fact table.

For example, in the summary tables below, the columns EUL_SUM200801 and EUL_SUM200802 are mapped to appropriate items in the Sales Fact folder.

Figure 15–2 Sample summary tables and joins to fact and dimension tables



Key to the figure above:

a. join from the Sales Fact table to Product table using the Product Key
b. join from the Sales Fact table to Fiscal Date table using the Time Key
c. join from the Sales Fact table to Store table, using the Store Key
d. join from the summary table EUL_SUM200801 to the Product table using the Product Key
e. join from the summary table EUL_SUM200801 to the Fiscal Date table using the Time Key
f. join from the summary table EUL_SUM200802 to the Fiscal Date table using the Time Key
g. join from the summary table EUL_SUM200802 to the Store table using the Store Key
h. EUL_SUM200801 and EUL_SUM200802 represent summary tables that Discoverer creates in the database

Depending on the query, Discoverer joins a summary table to one or more of the dimension tables (that is, Store, Product, or Fiscal Date). The dimension table must be joined to the fact table by items defined in the EUL, and the summary table must contain the foreign key items in the fact folder.

For example, if a user requests Product Category, Month and SUM(Dollar Profit), Discoverer will join EUL_SUM200801 to Product and Fiscal Date to obtain results. Discoverer knows about the foreign and primary keys between the Sales Fact table and Product and Fiscal Date, and can apply them to EUL_SUM200801.

Guidelines for setting up summary combinations

We suggest that you build summary combinations in stages. Concentrate first on frequent queries, then on less frequent queries, and finally create a catch all summary combination. Guidelines for setting up summary combinations are as follows:

Query coverage	Number of items	Notes
Frequent queries	3-4	Create many summary combinations that combine only three or four axis items (dimension values). This minimizes space and maximizes performance gain.
Less frequent queries	5-7	Create less summary combinations that combine, for example five to seven axis items. More space is required but large performance gains are still realized. The more items you create in a summary combination the wider the variety of queries that is served.
A catch all	all	When you choose to specify summaries yourself, create one summary combination that contains all of the items in a summary folder (the total number must be less than the number of items in the source folder(s)). Although the speed of the query results is slower, performance is still better than if the detailed tables are queried. Discoverer Administrator creates this summary combination automatically

Include the following in summary combinations:

- data point items

  Additional data point items take up little extra room in the summary tables.

- aggregates (with the possible exception of STDEV and VARIANCE, which are rarely used)

  Multiple aggregates do not require much space and can improve performance significantly. Remember that AVG requires the inclusion of SUM and COUNT, which Discoverer uses to calculate the average.

Notes

- You do not have to include items at all levels of a hierarchy in a summary combination. If you include items at the bottom level, queries that use items higher up in the hierarchy can still use the summary table. However, for this to work the summary folder must contain a foreign key to the folder that contains the hierarchy. Creating a summary combination for all levels in a hierarchy achieves only a marginal performance gain. For example, the hierarchy from Year to Quarter only saves a 4:1 aggregation because quarters are added up to years.

When will an expression use a summary folder?

An expression will use a summary folder except under specific conditions. For this reason it is useful to be able to identify when an expression will use a summary folder. The following examples show when an expression will use a summary folder:

- if the summary folder contains the item SUM(Salary) and SUM(Comm)
- if the expression is a COUNT(DISTINCT, X)

Expression	Use summary table	Notes
SUM(Salary + Comm)	No	This expression will not use a summary folder even though SUM(Salary) and SUM(Comm) are available as summarized items. This occurs because SUM(Salary + Comm) is not relationally equal to SUM(Salary) + SUM(Comm). Because the results could be wrong, the expression will not be used.
SUM(Salary) * 12	Yes	As SUM(Salary) is calculated it uses the summary folder.
NVL(SUM(Comm),0)	Yes	Expressions that use SQL functions such as NVL(SUM(Comm),0) will use a summary because SUM(Comm) is available in a summary.
SUM(NVL(Comm,0))	No	An expression such as SUM(NVL(Comm,0)) will not use a summary, because no direct match exists between a part of the expression and the available summarized item, SUM(Comm).
COUNT(DISTINCT, <folder_name.item_name>)	Yes	An expression such as COUNT(DISTINCT, STORE.STORE_NAME), will use a summary folder only if the summary folder contains the item that the COUNT(DISTINCT) expression is based on, rather than the COUNT(DISTINCT) expression itself. For example, if you consider a query that includes: count(distinct Store.Store name), sum(Sales Facts.Sales), count(Sales Facts.Sales) The summary folder should include: Store.Store name, sum(Sales Facts.Sales), count(Sales Facts.Sales).

In essence, an expression will only use a summary folder when the expression or parts of it and the summarized expression are relationally equal.

How to create summary folders based on items in the EUL

Use this option to manually select combinations of EUL items that you want to include in a summary folder.

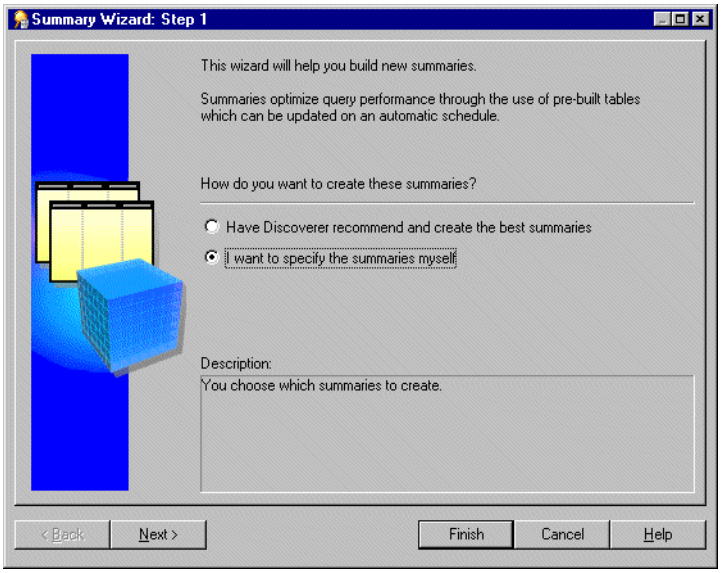
You might select this option if, for example:

- you have switched off the **Collect Query Statistics** privilege (for more information, see "How to specify the tasks a user or role (responsibility) can perform")
- you want to manually select the combinations of EUL items that make up a summary folder

To create summary folders based on items in the EUL.

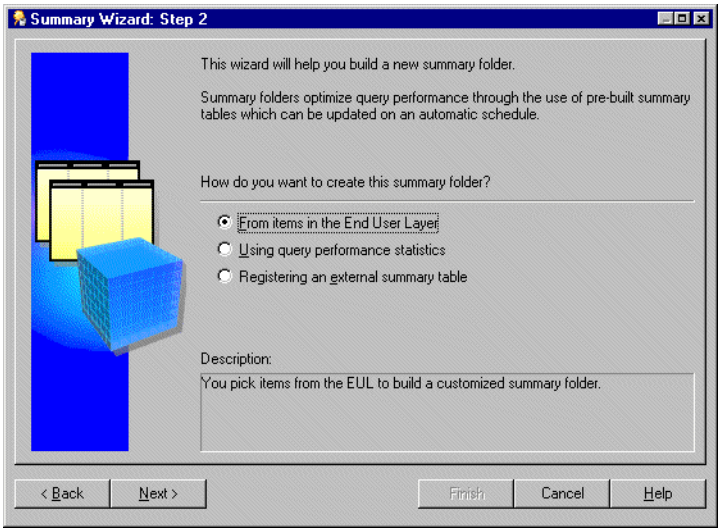
1. Select Insert | Summary to display "Summary Wizard: Step 1 dialog".

Figure 15–3 Summary Wizard: Step 1 dialog



2. Select the **I want to specify the summaries myself** option and click Next to display "Summary Wizard: Step 2 dialog".

Figure 15–4 Summary Wizard: Step 2 dialog

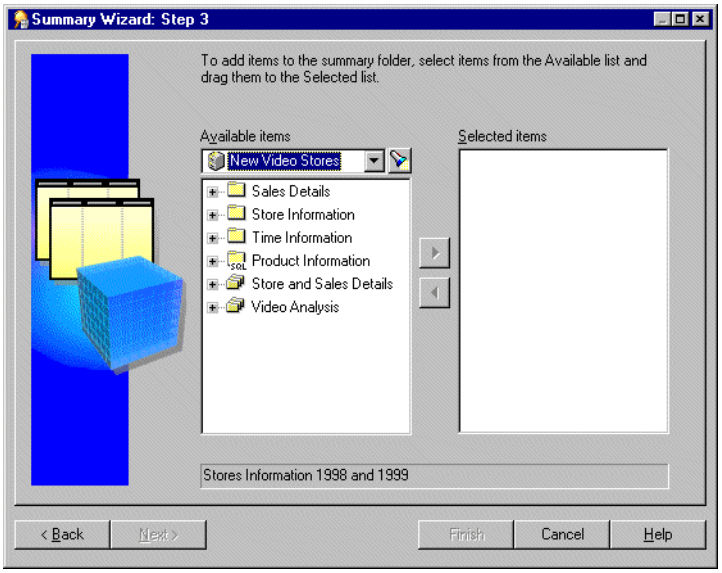


3. Select **From items in the End User Layer** to create a summary folder.

   This option is only available if the summary folders feature is enabled. For more information, see "How to configure the database for summary folders".

4. Click Next to display the "Summary Wizard: Step 3 dialog (add items to summary folder)".

Figure 15–5 Summary Wizard: Step 3 dialog



5. Move the items that you want to include in the new summary folder from the **Available items** list to the **Selected item**s list.

   You can select more than one item at a time by holding down the Ctrl key and clicking another item.

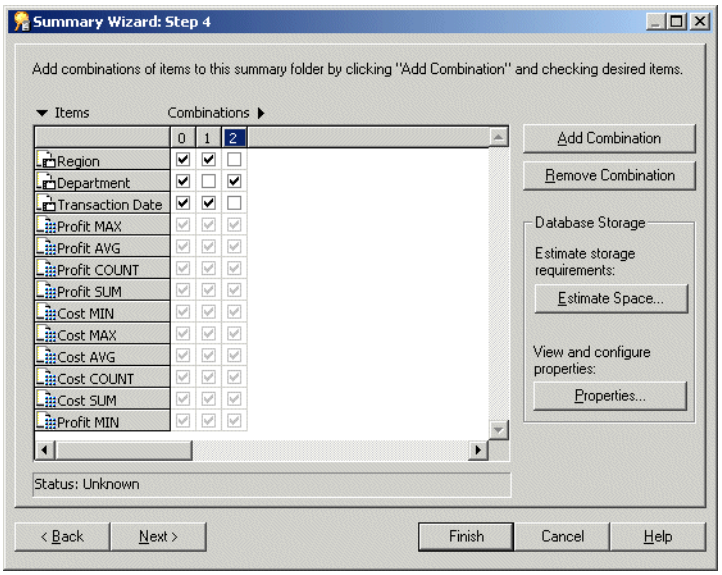
   Remember to include:

   - all aggregate functions for each data point item - for more information, see "Guidelines for setting up summary combinations".
   - items from complex folders (where necessary) - for more information, see "What are the conditions for query rewrite by Discoverer?".
   - derived items (where necessary) - for more information, see "What are the conditions for query rewrite by Discoverer?".

   Note: You can select any items and math functions. However, if you select items from different folders, a join must already exist between the folders.

6. Click Next to display the "Summary Wizard: Step 4 dialog (add combinations of items)" to define the summary combinations in the new summary folder.

Figure 15–6 Summary Wizard: Step 4 dialog



The Summary Wizard: Step 4 dialog enables you to define the summary combinations in the new summary folder.

By default, all the items you selected in the Summary Wizard: Step 3 are included in the first summary combination (in column 0).

7. Click Add Combination to add a new summary combination.

   The summary combination appears in a new numbered column.

8. Select the relevant check boxes to include items in the summary combination.

9. Add as many summary combinations as necessary

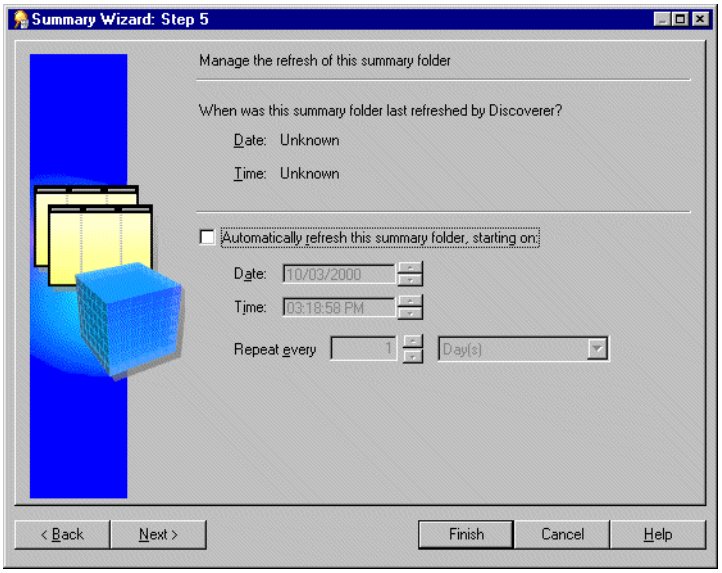
   For more information, see "What are summary combinations?"

   Tips:

   - If you are not sure whether the performance gains offered by using the specified summary combinations are outweighed by the amount of tablespace they occupy, click Estimate Space.
   - You can view and edit database storage properties for a selected summary combination by clicking Properties. For more information, see "How to edit database storage properties of summary combinations for a summary folder".
   - To remove an unwanted summary combination, select the relevant column number and click Remove Combination.

10. Click Next to display the "Summary Wizard: Step 5 dialog (refresh summary folder)" to specify a refresh schedule for the summary folder.

Figure 15–7 Summary Wizard: Step 5 dialog



11. Select the **Automatically refresh this summary folder** check box to specify the date, time and frequency that Discoverer will automatically refresh this summary folder.

    Tip: Do not select this check box if the data is static and will not change, or if you want to refresh the summary folder manually. For more information about manually refreshing summary folders, see "How to manually refresh a summary folder".

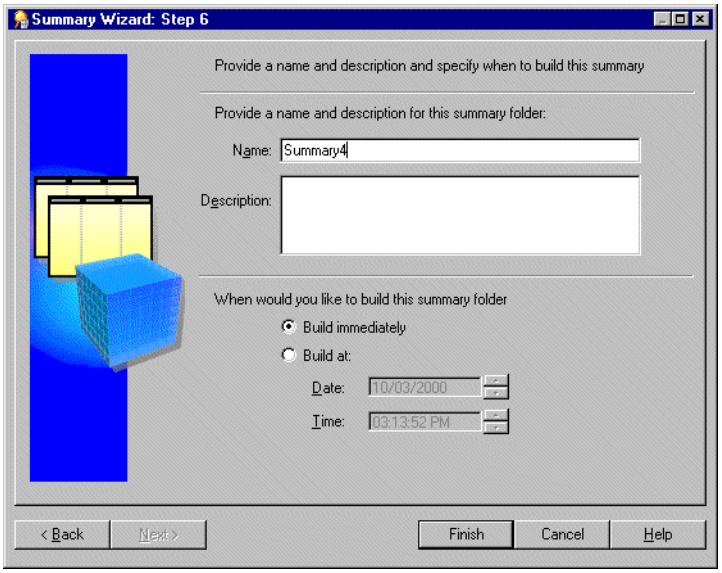
12. Set the date and time you want Discoverer to start the first refresh.

13. Set the **Repeat every** fields for the refresh interval you want.

    The refresh period you specify here is the period that will elapse before Discoverer refreshes and updates the data. This refresh pattern will continue until you change the settings.

14. Click Next to display the "Summary Wizard: Step 6 dialog (name summary folder)".

Figure 15–8 Summary Wizard: Step 6 dialog



15. Specify a name and description for the summary folder.
16. Specify when you want to build this summary folder as follows:
    - select the **Build immediately** option if you have smaller summary tables, or if you want to build the summary tables immediately.
    - Select the **Build at** option if you have larger summary tables that are best built at off-peak hours. Enter the time and date you want to build the summary tables.
17. Click Finish.

When Discoverer builds the summary folder, it creates:

- a summary folder and summary tables (Oracle Standard Edition databases)
- a summary folder and materialized views (Oracle Enterprise Edition databases)

The build process generates the summary data and marks the summary table/materialized view as Ready to use.

When the process completes Discoverer displays the new summary folder in the "Workarea: Summaries tab".

How to create summary folders based on users' queries

Query performance statistics are automatically generated when the **Collect Query Statistics** privilege is switched on for users (for more information, see "How to specify the tasks a user or role (responsibility) can perform").

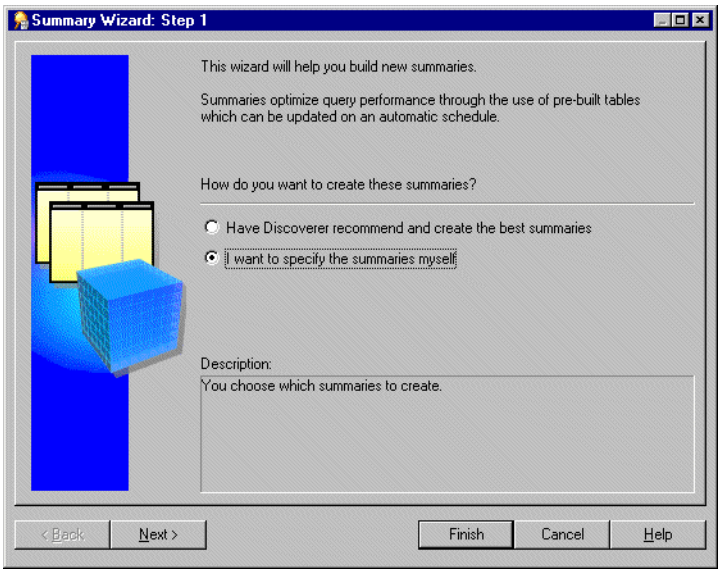
You can create a new summary folder based on query performance statistics rather than choosing the items yourself. Discoverer suggests the summary folder items for you based on the query performance statistics that are generated from Discoverer end user queries.

You might select this option if you know that you want to create one or more summary folders based upon specific queries and you do not necessarily want Discoverer to create any other summary folders.

To create summary folders based on query performance statistics:

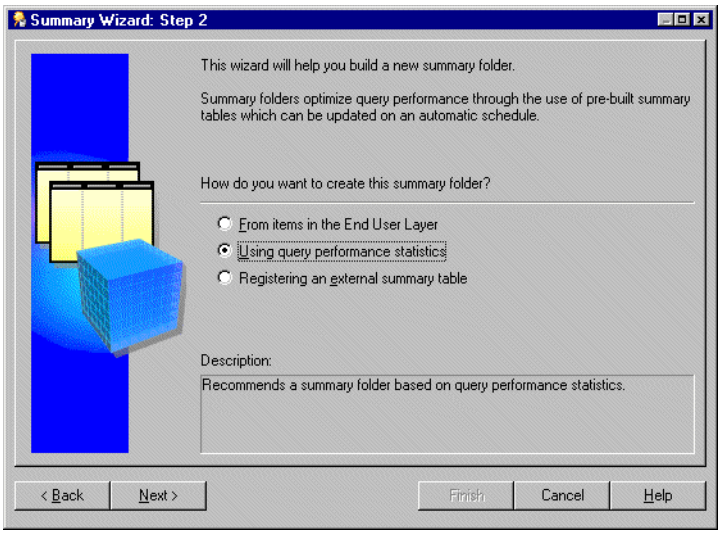
1. Choose Insert | Summary to display "Summary Wizard: Step 1 dialog".

Figure 15–9 Summary Wizard: Step 1 dialog



2. Select the **I want to specify the summaries myself** option and click Next to display "Summary Wizard: Step 2 dialog".

Figure 15–10 Summary Wizard: Step 2 dialog

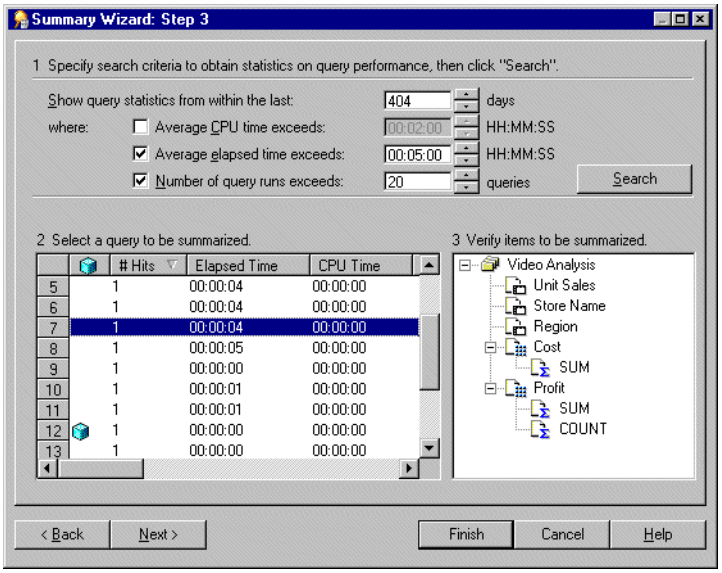


3. Select the **Using query performance statistics** option.

   This option creates a summary table or materialized view. It is only available if the summary management feature is enabled. For more information see "How to configure the database for summary folders".

4. Click Next to display the "Summary Wizard: Step 3 dialog".

Figure 15–11 Summary Wizard: Step 3 dialog



The Summary Wizard: Step 3 dialog is divided into three sections as follows:

Section number	Purpose
Section 1	**Specify search criteria to obtain statistics on query performance.** This section enables you to specify search criteria to obtain statistics on query performance.
Section 2	**Select a query to be summarized.** This section shows queries that meet the search criteria.
Section 3	**Verify items to be summarized.** This section shows a selected query's folders, joins and items.

5. Specify the values in Section 1 that you want to use to search for previously run queries.
6. Click Search.

   If the search time is significant, Discoverer displays a progress bar.

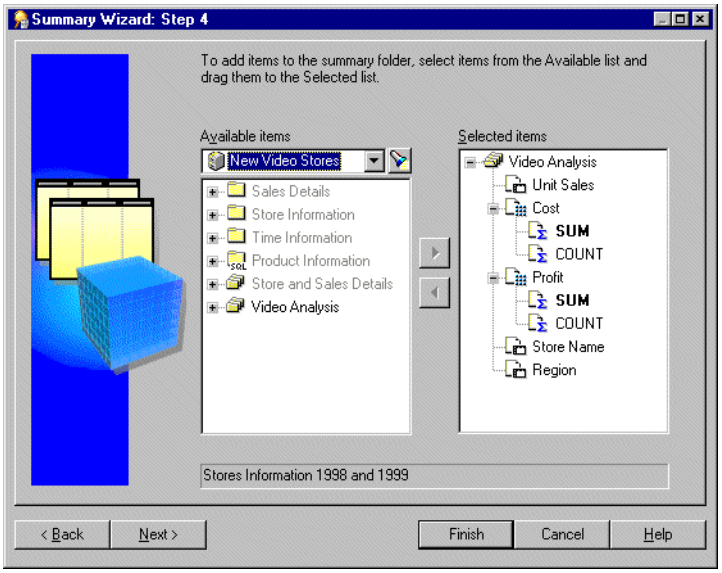
   All the queries that match the threshold values in Section 1 are displayed in Section 2. To narrow or expand this list further, re-specify the threshold values.

   If a query in the list uses items that are already summarized, a cube icon appears beside the query.

   To sort the display order of items in a column in Section 2, click the relevant column heading.
7. Select the row that represents the query you want to summarize from the list in Section 2.

   The query's folders, joins, and items appear in Section 3.
8. Click Next to display the "Summary Wizard: Step 4 dialog (add items to summary folder)".

Figure 15–12 Summary Wizard: Step 4 dialog



The Summary Wizard: Step 4 dialog enables you to select items to include in the summary folder. By default, the **Selected items** list contains the items from the query you selected on the previous page of the Summary Wizard.

9. Move the items that you want to include in the new summary folder from the **Available items** list to the **Selected items** list.

   You can select more than one item at a time by holding down the Ctrl key and clicking another item.

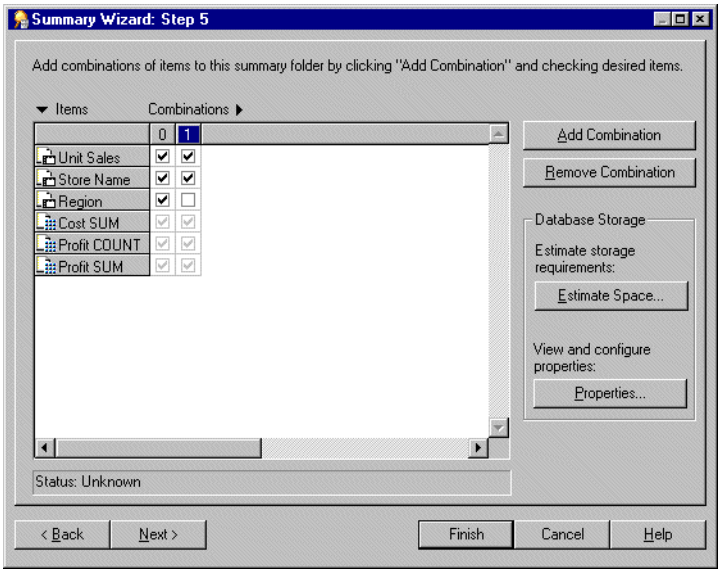
   Remember to include:

   - all aggregate functions for each data point item (for more information, see "Guidelines for setting up summary combinations")
   - items from complex folders, where necessary (for more information, see "What are the conditions for query rewrite by Discoverer?")
   - derived items, where necessary (for more information, see "What are the conditions for query rewrite by Discoverer?")

   Note: You can select any items and math functions. However, if you select items from different folders, a join must already exist between the folders.

10. Click Next to display the "Summary Wizard: Step 5 dialog (add combinations of items)".

Figure 15–13 Summary Wizard: Step 5 dialog



The Summary Wizard: Step 5 dialog enables you to define the summary combinations in the new summary folder.

By default, all the items you selected in Summary Wizard: Step 4 are included in the first summary combination (in column 0).

11. Click Add Combination to add a new summary combination.

    The summary combination appears in the new numbered column.

12. Select the relevant check boxes to include items in the new summary combination.

13. Add as many summary combination as necessary.

    For more information, see "What are summary combinations?".

14. Click Estimate Space to help you decide whether the performance gains offered by using the specified summary combinations are outweighed by the amount of tablespace they occupy.

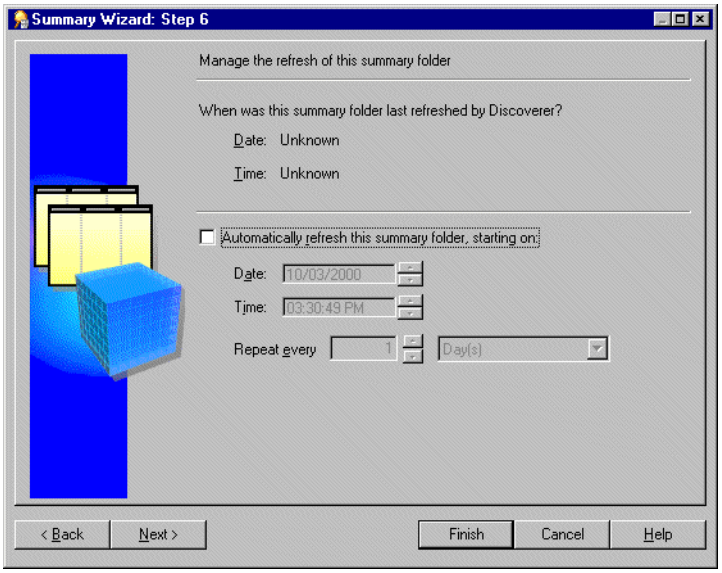
15. Click OK.

    Note: You can view and edit database storage properties for a selected Summary Combination by clicking Properties. For more information, see "How to edit database storage properties of summary combinations for a summary folder".

    Tip: To remove an unwanted summary combination, select the relevant column number and click Remove Combination.

16. Click Next to display the "Summary Wizard: Step 4 dialog (refresh summary folder)" to specify a refresh schedule for the summary folder.

Figure 15–14 Summary Wizard: Step 6 dialog



17. Select the **Automatically refresh this summary folder** check box to specify the date, time and frequency of automatic refresh for this summary.

    Tip: Do not select the check box if the data is static and will not change, or if you want to refresh the summary folder manually. For more information about manually refreshing summary folders, see "How to manually refresh a summary folder".

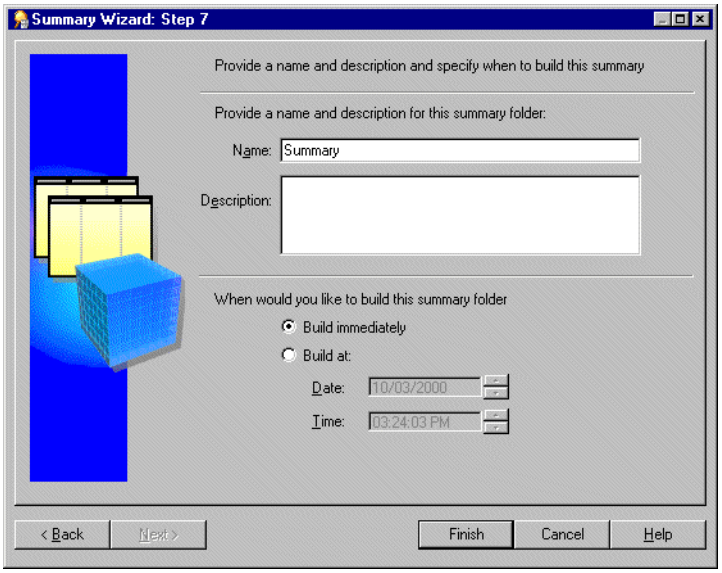
18. Set the **Date** and **Time** you want Discoverer to start the first refresh.

19. Set the **Repeat every** fields for the refresh interval you want.

    The refresh period you specify here is the period that will elapse before Discoverer refreshes and updates the data. This refresh pattern will continue until you change the specification.

20. Click Next to display the "Summary Wizard: Step 7 dialog (name summary folder)".

Figure 15–15 Summary Wizard: Step 7 dialog



21. Specify a name and description for the summary folder.
22. Specify when you want to build this summary folder.
23. Click Finish.

    When Discoverer builds the summary folder, it creates:

    - a summary folder and summary tables (Oracle Standard Edition databases)
    - a summary folder and materialized views (Oracle Enterprise Edition databases)

    The build process generates the summary data and marks the summary table/materialized view as 'Ready to use'.

When the process is complete Discoverer displays the new summary folder in the "Workarea: Summaries tab".

Notes

The business area named Query Statistics that is supplied with Discoverer includes a workbook that analyzes the following:

- query usage
- the items most frequently used in queries
- the folders containing the items
- query execution times

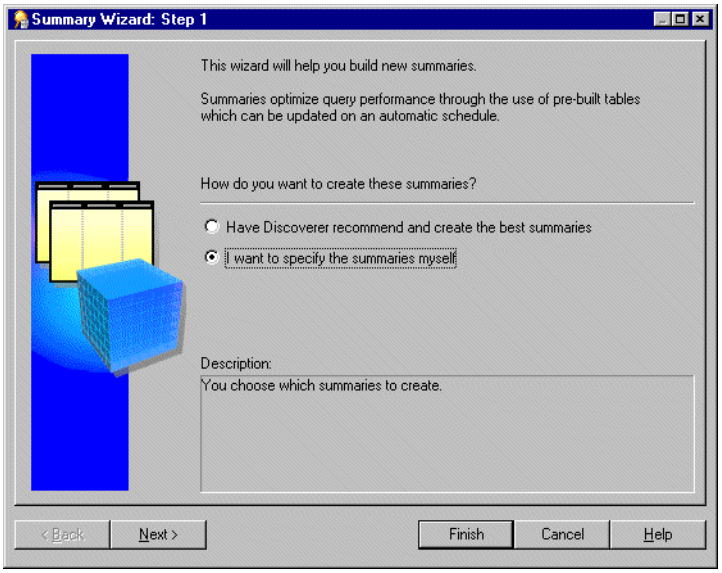
How to create summary folders based on external summary tables

This section describes how to create a new summary folder based on summary tables created by an application other than Discoverer. Summary tables created by an application outside Discoverer are called external summary tables. Note that this task also applies to creating summary folders based on external views.

To create summary folders based on external summary tables:

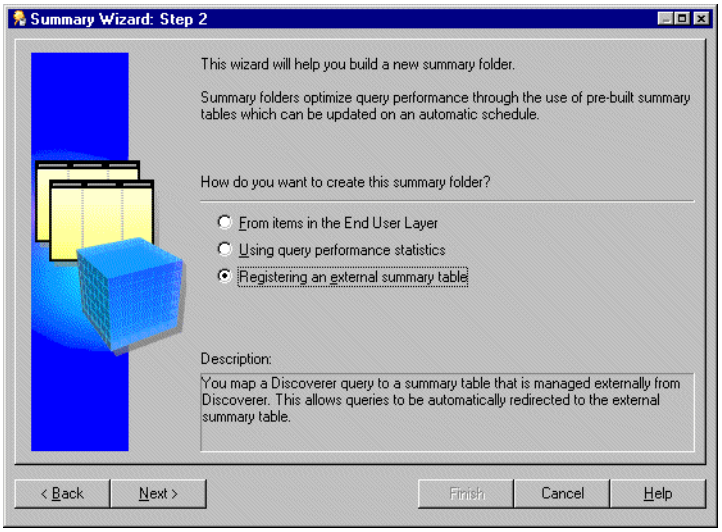
1. Choose Insert | Summary to display "Summary Wizard: Step 1 dialog".

Figure 15–16 Summary Wizard: Step 1 dialog



2. Select the option **I want to specify the summaries myself** and click Next to display "Summary Wizard: Step 2 dialog".

Figure 15–17 Summary Wizard: Step 2 dialog



3. Select the **Registering an external summary table** option.

   The result of completing this task is that the database will create a materialized view from the summary table created by the external application.

   Note that Discoverer will continue to create summary tables under the following conditions:

   - If you run Discoverer against an Oracle Standard Edition database.

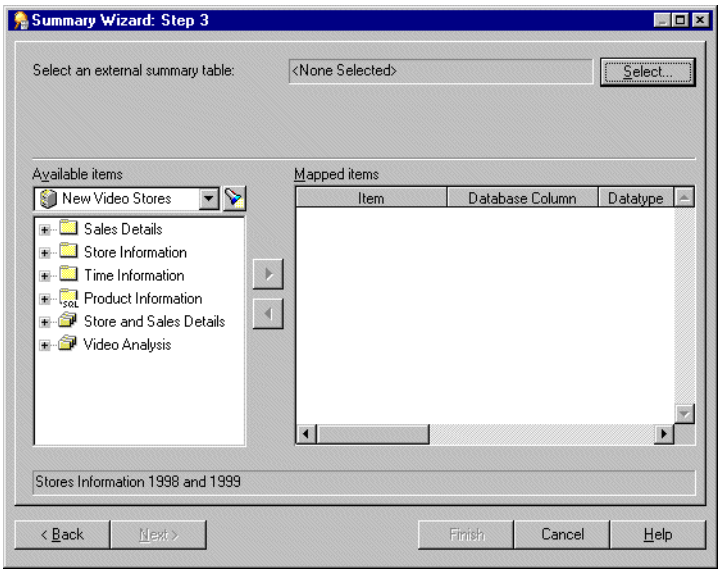
     For more information, see "What is different about summary folders that are based on external summary tables?".

   - If you map an external view to EUL items against an Oracle Enterprise Edition database.

For more information, see "What is different between mapping external summary tables and views to EUL items, with Oracle Enterprise Edition databases?".

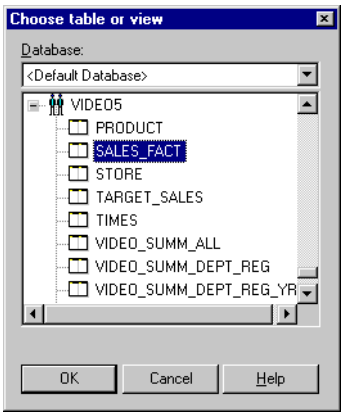
4. Click Next to display the "Summary Wizard: Step 3 dialog".

Figure 15–18 Summary Wizard: Step 3 dialog



5. Click Select to display the "Choose user or table/view dialog".

Figure 15–19 Choose table or view dialog



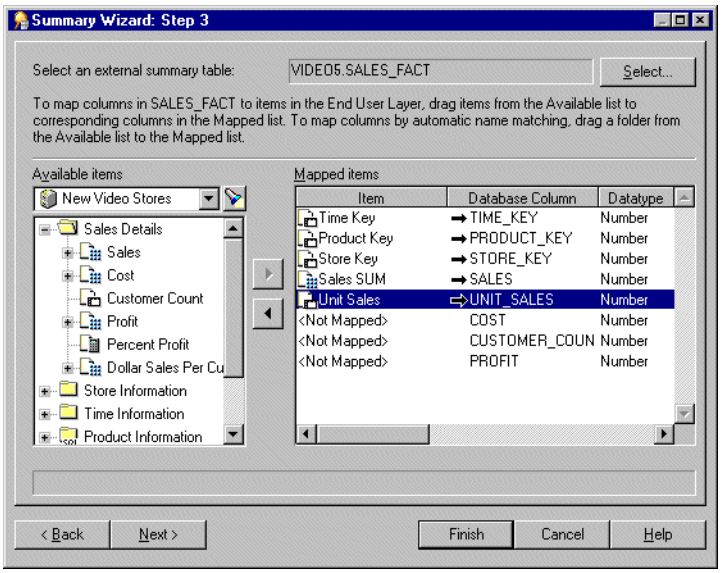
6. Select the database (from the drop down list) that contains the external summary table that you want to register.

   Note: When connected to an Enterprise Edition database, Oracle prevents a user from registering an external summary over a database link. This is because the database does not allow a materialized view to be created over a database link. However, this may be achieved by creating a view in the database that the EUL is in and referencing the external summary in the view. This view may then be registered within Discoverer as an external summary.

7. Select the external summary table that you want to register with Discoverer Administrator.

8. Click OK to display all the database columns found in the external summary table in the mapped items list.

Figure 15–20 Summary Wizard: Step 3 dialog



You now map each database column in the external summary table to a corresponding item in the EUL.

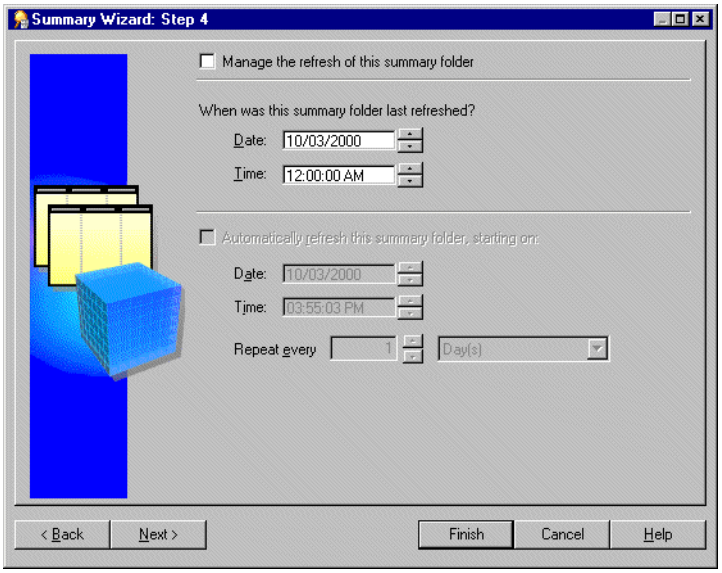
9. For each database column, drag the corresponding item from the **Available items** list onto the database column in the **Mapped items** list

   Tip: If several items from the same folder correspond to columns in the external summary table, you can drag and drop the folder onto an item in the **Mapped items** list. Discoverer Administrator attempts to map the correct items to the database columns using the item names. Note that you will have to map items to any columns for which Discoverer Administrator cannot identify corresponding items.

   Tip: To remove the mapping between a database column in the external summary table and an item in the EUL, select the relevant row in the **Mapped items** list and click the left arrow button.

10. Click Next to display the "Summary Wizard: Step 4 dialog (refresh summary folder)" to specify a refresh schedule for the summary folder.

Figure 15–21 Summary Wizard: Step 4 dialog

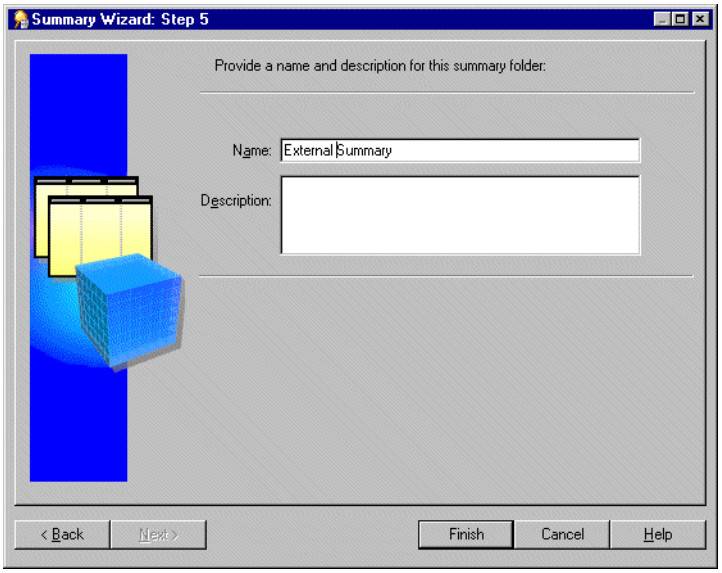


11. Select the **Manage the refresh of this summary** check box if you want Discoverer to manage the refresh of this external summary table.
12. Select the **Automatically refresh this summary folder** check box to specify the date, time and frequency of automatic refresh for this summary.

    Tip: Do not select the check box if the data is static and will not change, or if you want to refresh the summary folder manually. For more information about manually refreshing summary folders, see "How to manually refresh a summary folder".
13. Set the Date and Time you want Discoverer to start the first refresh.
14. Set the **Repeat every** fields for the refresh interval you want.

    The refresh period you specify here is the period that will elapse before Discoverer refreshes and updates the data. This refresh pattern will continue until you change the specification.
15. Click Next to display "Summary Wizard: Step 5 dialog (name summary folder)".

Figure 15–22 Summary Wizard: Step 5 dialog



16. Specify a name and description for the summary folder
17. Click Finish to create the summary folder in the business area and register the external summary table with Discoverer.

    When the process is complete, Discoverer displays the new summary folder in the "Workarea: Summaries tab".

Notes

- Summary combinations are only available when Discoverer manages the refresh of a summary folder. When Discoverer uses external summary tables, summary combinations are not available.
- Discoverer might display the message 'Cannot create summary against external table. A summary already exists' (for more information, see "Why can you register only one materialized view against a single external summary table in Oracle Enterprise Edition databases?").

How to manually refresh a summary folder

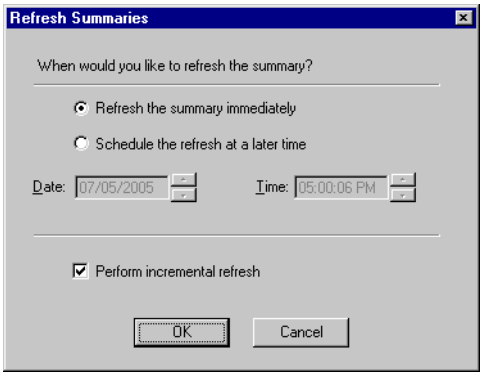
This section describes how you can refresh a summary folder. You might need to refresh a summary folder if the database has changed.

To manually refresh a summary folder:

1. Select the summary folder that you want to refresh in the "Workarea: Summaries tab".
2. Choose Tools | Refresh Summaries to display the "Refresh Summaries dialog".

   Note: Discoverer does not display the Refresh Summaries dialog for externally managed summary folders.

Figure 15–23 Refresh Summaries dialog



3. Specify when you want to refresh the selected summary folder as follows:
   - select the **Refresh the summary immediately** option if you want to refresh the summary folder immediately
   - select **Schedule the refresh at a later time** option if you want to refresh the summary folder at a specified time
4. If you selected **Schedule the refresh at a later time**, specify the date and time when you want the refresh to begin.
5. To perform an incremental refresh, select the check box.

   You might want to perform an incremental refresh when the detail data in the database tables has changed little since the last refresh. Performing an incremental refresh saves time, as it updates only those changes committed to the database since the last refresh.

   For further information on the conditions required for incremental refresh, see *Oracle Database Data Warehousing Guide*.

Notes

- Sometimes you will want to refresh a summary folder when a process outside Discoverer has completed (for example, the loading of data into a data warehouse). You can refresh a summary folder from a batch command file using the Discoverer's command-line interface option (for more information, see "/refresh_summary").

For more information about refreshing summary folders, see:

- "About refresh options for Oracle Enterprise Edition databases"
- "About refreshing summary folders following import between Oracle databases"

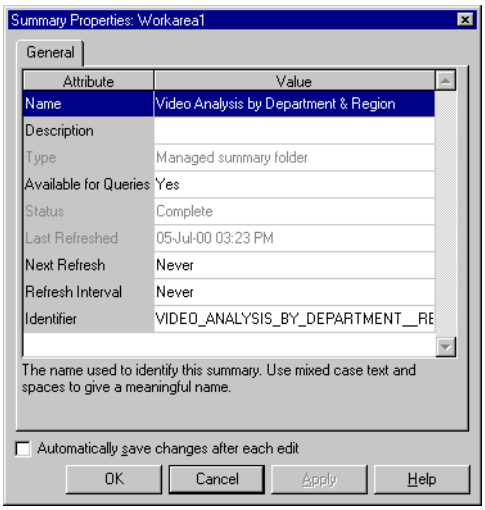
How to edit the properties of summary folders

This section describes you how to edit the properties of a summary folder.

To edit the properties of a summary folder:

1. Select one or more summary folders in the "Workarea: Summaries tab"
2. Choose Edit | Properties to display the "Summary Properties dialog".

Figure 15–24 Summary Properties dialog



Tip: You can select more than one summary folder at a time by holding down the Ctrl key and clicking another summary folder. If all the selected folders have the same value for a particular property, that value is shown. If the selected folders have different values for a particular property, no value is shown for the property. Any changes you make here are applied to all selected summary folders.

3. Make your changes as required.
4. Click OK to save the changes you have made.

How to edit summary folders

You might want to edit a summary folder to:

- change its name or description
- view or edit its properties
- refresh it
- alter its composition (for example, change items or combinations)
- view or modify database storage properties
- investigate the composition of a broken summary folder and remove broken folders

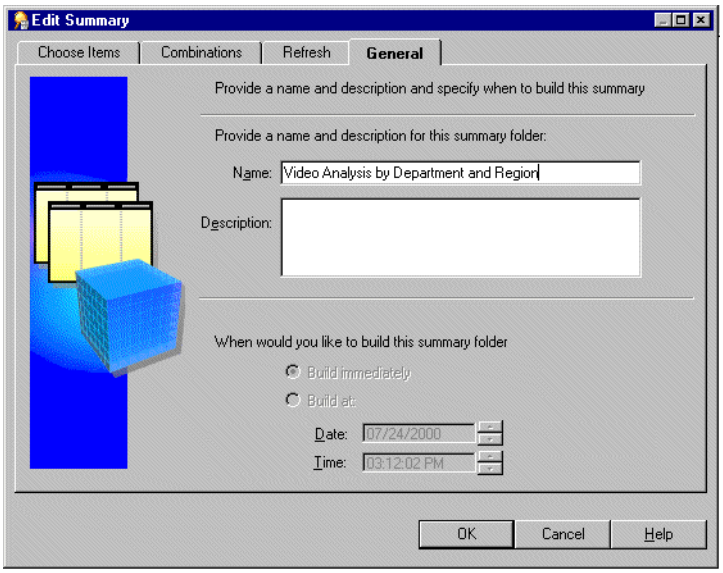
Notes

- You can edit summary folders, regardless of whether they are valid or broken.

To edit a summary folder:

1. Display the "Workarea: Summaries tab".
2. Select the + symbol next to a business area to display its available summary folders.
3. (optional) Choose View, and then Validate Summaries to display diagnostic summary folder information, if required.
4. Click the summary folder and choose Edit | Edit...

Figure 15–25 Edit Summary dialog: General tab



5. Edit the summary folder as required.

   The Edit Summary dialog is divided into four tabs. Each tab corresponds to a step of the Summary Wizard as follows:

   - "Edit Summary dialog: Choose Items tab" - use this tab to specify the items in a summary folder.
   - "" - use this tab to edit, add, or delete summary combinations. You can also use this tab to view and configure database storage properties of materialized views or summary tables (depending on database version).

     Note: The Combinations tab is not displayed for summary folders that are based upon external summary tables.
   - "Edit Summary dialog: Refresh tab" - use this tab to set the refresh and refresh interval of the summary folder.
   - "Edit Summary dialog: General tab" - use this tab to edit the name, description and to view the build time of the summary folder.

6. Click OK.

Notes

- If a summary folder is broken, you can view the status of folders within the summary folder by choosing View | Validate Summaries. If Discoverer detects a problem with a folder within a summary folder, an error message is displayed beside the folder.
- If a summary folder remains broken following an edit, any modifications made in Discoverer are not written to the materialized view or summary table. Where a summary folder is valid following an edit, any modifications made in Discoverer are also written to the materialized view/summary table.

How to edit database storage properties of summary combinations for a summary folder

You can use Discoverer Administrator to control how summary combinations are stored in the database by editing the database storage properties.

Note: Database storage properties are not available for summary folders that are based on external summary tables. For more information, see "What is different about summary folders that are based on external summary tables?".

To edit the database storage properties of summary combinations for a summary folder:

1. Select a summary folder from the "Workarea: Summaries tab".
2. Choose Edit | Edit... to display the Edit Summary dialog.
3. Display the "".
4. Select the summary combination with database storage properties that you want to edit.
5. Click Properties to display the Database Storage Properties dialog (see "Database Storage Properties dialog: List of tabs").
6. Display the appropriate tab and edit the properties as required.

For more information about the Database Storage Properties dialog tabs, see:

- "Database Storage Properties dialog: Materialized Views tab"
- "Database Storage Properties dialog: Mappings tab"
- "Database Storage Properties dialog: Properties tab"
- "Database Storage Properties dialog: Tablespaces tab"

How to delete summary folders

This section describes how you can delete a summary folder. When you delete a summary folder, the underlying summary tables or materialized views are also deleted.

To delete a summary folder:

1. Select the summary folder that you want to delete from the "Workarea: Summaries tab".

   Tip: You can select more than one summary folder at a time by holding down the Ctrl key and clicking another summary folder.

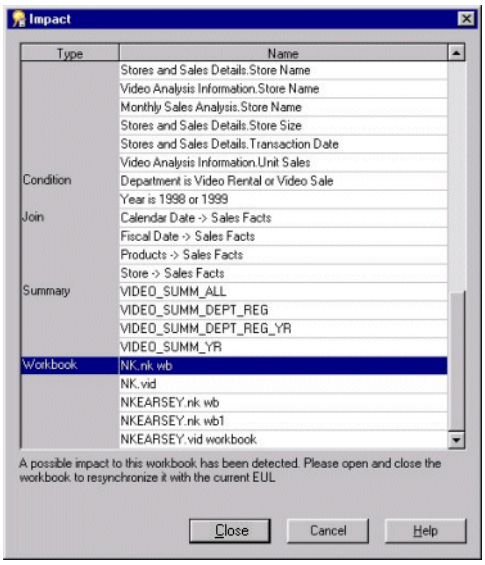
2. Choose Edit | Delete to display the "Confirm Delete dialog".

   You can review the objects that might be affected by deleting this summary folder.

3. (optional) To see the potential impact of the deletion:

   a. Click Impact to display the "Impact dialog".

Figure 15–26 Impact dialog



The Impact dialog enables you to review the other EUL objects that might be affected when you delete a summary folder.

Note: The Impact dialog does not show the impact on workbooks saved to the file system (that is, in `.dis` files).

b. (optional) Select a row to view text at the bottom of the list, indicating what affect the current action will have on the EUL object.

c. When you have finished reviewing the impact of deleting the summary folder, click Close to close the Impact dialog.

4. If you still want to delete the selected summary folder click Yes.

Discoverer Administrator deletes the selected summary folder from the EUL and drops the summary table/materialized view from the database.

How to view the status of the summary tables/materialized views for a summary folder

This section describes how you can view the status of the summary table/materialized view for a summary folder.

To view the status of the summary table/materialized view for a summary folder:

1. Select the summary folder that contains the summary table or materialized view you are interested in from the "Workarea: Summaries tab".

2. Choose Edit | Edit... to display the Edit Summary dialog

3. Display the "".

4. Select the numbered column heading for the summary combination that corresponds to the summary table materialized view you are interested in.

Discoverer displays the status of the summary table/materialized view in the status bar at the bottom of the dialog.

5. When you have finished viewing the status of the summary table/materialized view (represented by the summary combination), click OK to close the Edit Summary dialog.

Notes

- The status is not available for summary folders that are based upon external summary tables.
- To see additional diagnostic information in the "Workarea: Summaries tab" use the View | Validate Folders option. This displays any errors that exist within the folders of a summary folder.

  For more information about validating folders and summary status messages, see:

  - "Summary Properties dialog"
  - "How to validate folders in a business area"

16

Additional Information about Summary Folders

This chapter provides additional information about Discoverer summary folders and contains the following topics:

- "What is the context and future for Discoverer's use of summary tables/materialized views?"
- "What is query rewrite?"
- "What are the conditions for query rewrite by Discoverer?"
- "About viewing the SQL and execution plan for query rewrite in Discoverer"
- "About configuring how Discoverer displays SQL in the SQL Inspector dialog"
- "Examples of execution plan (in Discoverer) using/not using a materialized view"
- "Example of the SQL (in Discoverer) where Discoverer rewrites the query"
- "Example illustrating the advantages of rewriting a query to use a summary table"
- "What characteristics differ between summary folders in Oracle Standard Edition databases and Oracle Enterprise Edition databases?"
- "What is different about summary folders that are based on external summary tables?"
- "What is different between mapping external summary tables and views to EUL items, with Oracle Enterprise Edition databases?"
- "Why can you register only one materialized view against a single external summary table in Oracle Enterprise Edition databases?"
- "About refresh options for Oracle Enterprise Edition databases"
- "About refreshing summary folders following import between Oracle databases"

What is the context and future for Discoverer's use of summary tables/materialized views?

Discoverer created the concept of rewriting a query to use a summary table. The idea of creating a summary table and having the SQL automatically rewritten was patented by Oracle.

It became clear that this functionality would be useful for all database users, so Oracle moved the functionality to the database. Discoverer uses materialized views and query rewrite whenever possible and still supports its original query rewrite to Discoverer summary tables if not.

The long term direction is to work with the server query rewrite mechanism and gradually remove the Discoverer-specific mechanism.

What is query rewrite?

Discoverer uses query rewrite under the following database conditions:

- With Oracle Enterprise Edition databases Discoverer sends a query to the database and the database decides whether a suitable materialized view exists for the query rather than accessing the detail data tables. If one does exist, the database rewrites the query to use the materialized view.
- With Oracle Standard Edition databases. Discoverer rewrites the query to use a suitable summary table rather than accessing the detail data tables.

  With Oracle Enterprise Edition databases, when mapping a view to items in the EUL, Discoverer rewrites the query to use a suitable summary table.

Query rewrite is transparent to the Discoverer end user and provides the same results as queries that run against the detail tables but returns the results in far less time.

Note: Before query rewrite can be used, the option to use summary folders must be set in Discoverer Plus (for further information, see the *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Plus*).

For more information about the rules regarding Oracle Enterprise Edition database rewrite scenarios, see the *Oracle Database Data Warehousing Guide*.

What are the conditions for query rewrite by Discoverer?

Discoverer rewrites a query to use a summary table instead of the detail data when all of the following conditions are met:

- All the items specified in a query must either:
  - exist in a single summary combination

    For more information, see "What are summary combinations?".
  - be able to be joined to a summary table with the help of foreign keys that exist in a summary combination
- Where derived items are used, you must include in the summary combination:
  - the derived items
  - the components used to create the derived items

    For more information about derived items, see "What are derived items?".
- Where items are from complex folders, create another summary folder using the same combination of items, but from the source (simple) folders.

For more information about complex folders, see "What are complex folders?".

- Join paths specified in the query must match those specified in the summary combination that satisfies the query. This ensures that the summary result set data matches that in the detail data tables.

  However, you can define queries using fewer joins than specified in the summary table, if you select the **Detail item values always exist in the master folder** option in the "Edit Join dialog: Options tab".
- The summary folder must have the **Available for Queries** property set to Yes

For more information about summary folder properties, see "How to edit the properties of summary folders".

- The conditions specified on the Query Governor tab of the Options dialog in Discoverer Plus must be met.

  For more information, see the *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Plus*.

- The Discoverer end user running the query must have database SELECT access to the summary table.

  For more information about the privileges required to create summary folders, see "What are the prerequisites for creating summary folders manually in Discoverer?".

About viewing the SQL and execution plan for query rewrite in Discoverer

To view the SQL sent to the database server and the execution plan that the database server uses to return the results data from a query, you use the SQL Inspector dialog in Discoverer Plus. The SQL Inspector dialog displays the SQL and includes the name of the materialized view or the summary table used. For more information about the SQL Inspector dialog, see the *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Plus*.

About configuring how Discoverer displays SQL in the SQL Inspector dialog

In Oracle Business Intelligence Discoverer Plus and Oracle Business Intelligence Discoverer Desktop, end users can look at SQL being generated by Discoverer to create worksheets. The SQL that is shown in the SQL Inspector is not necessarily the same as that which is sent to the RDBMS.

Discoverer always sends SQL that contains inline views to the RDBMS. Inline views can be difficult for end users to read; so you can configure Discoverer to reformat ('flatten') SQL so that it becomes easier to read.

To configure how Discoverer displays SQL, edit the SQLType registry setting (for more information, see Chapter 21, "Discoverer Registry Settings" and "How to edit Discoverer Administrator and Discoverer Desktop registry settings").

Note that although the inline view SQL is passed to the RDBMS, it is not all executed in the database. The RDBMS optimizer strips the SQL from all columns of inline views. The only columns that are returned by the database are those in the outer select statement. For example, in the following SQL statement:

```
select dname from

(select dname, deptno, manager_id, manager_name, location,
address, phone, zip from departments)
```

the RDBMS optimizer converts the SQL to:

```
select dname from departments
```

In the above SQL statement, the only column returned to Discoverer is the dname column.

To see the SQL that is executed in the database, look at the flattened SQL in the SQL Inspector dialog in Discoverer Plus or Discoverer Desktop.

Examples of execution plan (in Discoverer) using/not using a materialized view

You can tell whether a query is subject to query rewrite by invoking the SQL Inspector dialog in Discoverer Plus. The table below illustrates how the server execution plan might be displayed when used in a query for which no suitable materialized view exists. In this example the server completes a full table scan of three VIDEO5 data tables to return the result set.

An SQL statement that Discoverer displays in the SQL Inspector dialog: Plan tab
SELECT STATEMENT SORT GROUP BY TABLE ACCESS FULL VIDEO5.Sales TABLE ACCESS FULL VIDEO5.Product TABLE ACCESS FULL VIDEO5.Time

The table below illustrates how the server execution plan might be displayed when used in a query for which a suitable materialized view exists. In this example the server uses the materialized view to return the result set.

An execution plan that Discoverer displays in the SQL Inspector dialog: Plan tab
SELECT STATEMENT SORT GROUP BY TABLE ACCESS FULL NICK.EUL5_MV101510

The SQL statement in the table above illustrates how the server can rewrite a query to use a suitable materialized view.

The materialized view is identified in the execution plan by the table name EUL5_MV{identifier}

Example of the SQL (in Discoverer) where Discoverer rewrites the query

When Discoverer runs against an Oracle Standard Edition database, Discoverer controls query rewrite to use a suitable summary table. Discoverer displays the SQL sent to the database server in the SQL Inspector dialog: SQL tab.

The table below displays the SQL statement used for a Discoverer worksheet using items from the Video Analysis folder (for more information, see Chapter 27, "Installing the Discoverer Sample Data EUL, Data, and Workbook"). The SQL statement shows that the summary table EUL5_SUM100750 is referenced.

An SQL statement that Discoverer Plus might display in the SQL Inspector dialog: SQL tab
SELECT EUL5_SUM100750,"Department", EUL5_SUM100750, "Region", EUL5 _SUM100750,"Calendar Date Year", SUM(EUL5_SUM100750,"Profit SUM") FROM ADMINTUTORNF806.EUL5_SUM100750 EUL5_SUM100750 GROUP BY EUL5_SUM10075."Department", EUL5_SUM10075."REgion", EUL5 _SUM10075."Calendar Date Year";

Discoverer automatically chooses the most appropriate summary table to process the query efficiently. This action is completely transparent to the Discoverer end user.

The next table below displays the SQL statement for the same Discoverer worksheet as above, except that the end user has now drilled down from Year to Month.

The SQL statement shows that Discoverer has rewritten the first part of the query to the summary table EUL5_SUM100750 (as above). However, Discoverer has rewritten the second part of the query (the drill down) to the summary table EUL5_SUM100774.

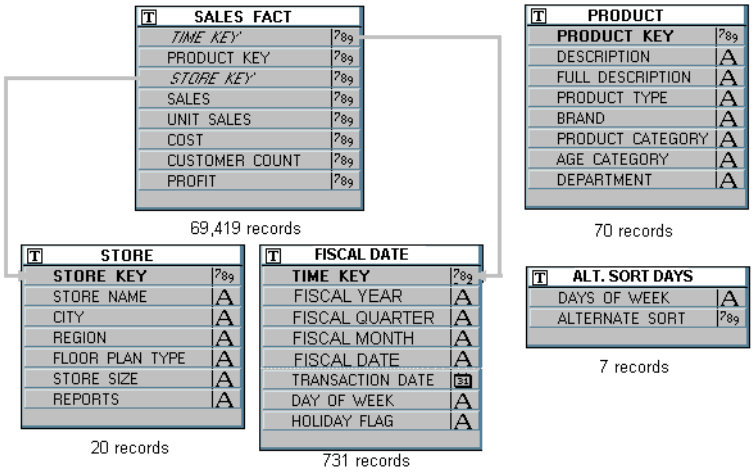
An SQL statement that Discoverer Plus might display in the SQL Inspector dialog: SQL tab following a drill down

```
SELECT EUL5_SUM100750,"Department", EUL5_SUM100750, "Region", EUL5
_SUM100750,"Calendar Date Year", SUM(EUL5_SUM100750,"Profit SUM")
FROM ADMINTUTORNF806.EUL5_SUM100750 EUL5_SUM100750
GROUP BY EUL5_SUM100750."Department", EUL5_SUM100750."Region", EUL5
_SUM100750."Calendar Date Year";
SELECT EUL5_SUM100774,"Department", EUL5_SUM100774, "Region", EUL5
_SUM100774,"Calendar Date Month", EUL5_SUM100774,"Calendar Date Year", SUM(EUL5
_SUM100774,"Profit SUM")
FROM ADMINTUTORNF806.EUL5_SUM100774 EUL5_SUM100774
WHERE (EUL5_SUM100774."Calendar Date Year" = TO
_DATE('200001011000000','YYYYMMDDHH24MISS')
GROUP BY EUL5_SUM100774."Department", EUL5_SUM100774."Region", EUL5
_SUM100774,"Calendar Date Month", EUL5_SUM100774."Calendar Date Year";
```

Example illustrating the advantages of rewriting a query to use a summary table

This example consists of five tables, one of which has almost 70,000 records (for more information, see the figure below). The schema and data are taken from the tutorial data.

Figure 16–1 Example schema and data



Consider a query requiring the following items:

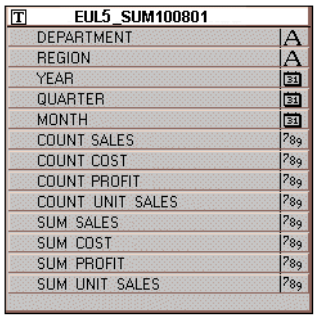
- Region - (from the STORE table)
- Department - (from the PRODUCT table)

- Fiscal Year - (from the FISCAL DATE table)
- SUM (Dollar_Profit) - (from the SALES FACT table)

This would require a four-table join and an aggregation of all matching rows in SALES_FACT (the table with almost 70,000 rows). Producing results for the query could take several minutes depending on the capability of the server.

On the other hand, if the query could be rewritten to use a single table that already contains the data for Region, Department, Fiscal Year, and SUM (Profit) (see the Sample summary table figure), then the query would produce an almost instantaneous response.

Figure 16–2 Sample summary table



The Sample summary table above stores the information needed by the query at the month level, and only has to be aggregated to the year level. Discoverer therefore uses a single table rather than aggregating from a four table join and performing a full table scan.

What characteristics differ between summary folders in Oracle Standard Edition databases and Oracle Enterprise Edition databases?

Several characteristics differ between summary folders when using different database versions and are compared in the following table:

For more information about summary folders, see "About folders and summary folders in Discoverer" and Chapter 15, "Creating Summary Folders Manually". The following table compares summary folders in Oracle Standard Edition databases, and Oracle Enterprise Edition databases:

Question?	Oracle Standard Edition databases	Oracle Enterprise Edition databases
How are summary folders stored in the database?	Stored as summary tables	Stored as materialized views or summary tables
How are summary folders refreshed?	Full refresh only	Full or incremental refresh
What kind of refresh is available?	Refresh is On Demand only	Refresh can be On Demand/On Commit
How is refresh performed?	Discoverer performs the refresh	The server performs the refresh
What performs the summary rewrite?	Discoverer performs the summary rewrite	The server performs the query rewrite

Question?	Oracle Standard Edition databases	Oracle Enterprise Edition databases
What are the terms used to define summary folders?	Summary folders are defined in terms of items and folders	Summary folders are defined in terms of tables and columns
Can other applications take advantage of them?	No, only Discoverer	Yes, other applications can take advantage of materialized views

Notes

- Since materialized views are stored in the server, they are available for refresh by other client applications. For example, a materialized view created when using Discoverer can be refreshed through SQL*Plus using the supplied DBMS_MVIEW package.

What is different about summary folders that are based on external summary tables?

Discoverer creates summary folders based on:

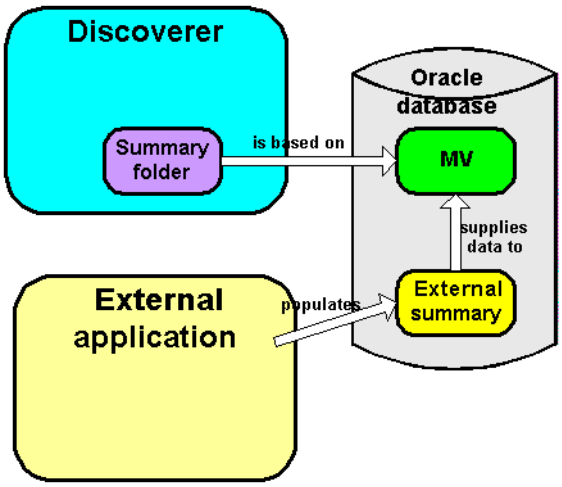
- Discoverer summary tables or materialized views
- external summary tables

The main differences between summary folders based on Discoverer summary tables/materialized views and summary folders based on external summary tables are outlined below.

Question?	Summary folders based on Discoverer summary tables/materialized views	Summary folders based on external summary tables
How are they populated and maintained?	Automatically by Discoverer Administrator or the Oracle Enterprise Edition database.	Using another application (for example, SQL*Plus).
How are they created?	Using Discoverer Administrator.	Using another application.
How are they refreshed?	Automatically at regular intervals (defined by the Discoverer manager in Discoverer Administrator).	Using another application.

The figure below illustrates how Discoverer creates a summary folder that is based on a Materialized View. The Materialized View is supplied with data from an external summary, which is populated by an external application.

Figure 16–3 Discoverer using external summaries



When you create a summary using Discoverer Administrator, you specify how the summary is refreshed, which is in one of the following ways:

- by Discoverer: The **Manage the refresh of this summary** check box has been selected on the "Edit Summary dialog: Refresh tab"
- by an external application: The **Manage the refresh of this summary** check box has been cleared on the "Edit Summary dialog: Refresh tab"

External summary tables are useful when:

- you are working with existing warehouse applications that have already generated the summary tables using some other method and you want to maintain them externally

What is different between mapping external summary tables and views to EUL items, with Oracle Enterprise Edition databases?

You can create summary folders in Discoverer Administrator by mapping external summary tables or views to EUL items, with Oracle Enterprise Edition databases. However, when you map a view to EUL items, materialized views are not created. This is a restriction imposed by Oracle Enterprise Edition databases. Where materialized views are not created, query rewrite to Discoverer summary tables is used instead. For more information about query rewrite, see "What is query rewrite?".

The differences in Mapping external summary tables or views to EUL items with Oracle Enterprise Edition databases are highlighted in the table below:

Mapping a table	Mapping a view
Where an external summary table is mapped to EUL items, a materialized view definition is created. In this case the materialized view definition is used for the Oracle Enterprise Edition database's query rewrite.	Where an external view is mapped to EUL items, a materialized view is not created. In this case summary folders behave in the same manner as for Oracle Standard Edition databases where Discoverer rewrites queries to use Discoverer summary tables.

Why can you register only one materialized view against a single external summary table in Oracle Enterprise Edition databases?

When you register an external summary folder in Discoverer Administrator, a materialized view is created in the database (for more information, see "How to create summary folders based on external summary tables"). The name of the materialized view is always identical to the name of the external summary table. This restriction of the Create Materialized View DDL command (within the Database server) means that only one materialized view can be registered against a single table. When you attempt to register more than one external summary folder against the same table you will receive an error message informing you of this restriction.

To register more than one external summary folder against a single summary table, you create a database view on top of the summary table and register the database view as an external summary within Discoverer Administrator. Under this scenario a materialized view is not created in the database, and the Discoverer summary management/query rewrite mechanism is used instead (for more information, see "What is query rewrite?"). For more information about creating database views, ask your database administrator.

About refresh options for Oracle Enterprise Edition databases

Oracle Enterprise Edition databases support incremental refresh (when available) enabling you to work with large data warehouses/databases. Parallelism (for more information, see below) is also supported for the refresh operation.

For further information on the conditions required for incremental refresh, see *Oracle Database Data Warehousing Guide*.

About refreshing summary folders following import between Oracle databases

Export from an Oracle Standard Edition database to an Oracle Enterprise Edition database

If you export a business area with summary folders from an Oracle Standard Edition database and then import it into an Oracle Enterprise Edition database, materialized views need to be created for these summary folders. For the database server to create the materialized views, you must refresh the summary folders in Discoverer.

Export from an Oracle Enterprise Edition database to an Oracle Standard Edition database

If you export a business area with summary folders from an Oracle Enterprise Edition database and then import it into a Oracle Standard Edition database, you must refresh the summary folders, so that Discoverer can create summary tables based on the summary folders.

17

Using Discoverer with Oracle Applications

This chapter explains how Discoverer supports access to Oracle Applications databases using Oracle Applications security and contains the following topics:

- "What are Oracle Applications?"
- "What are Oracle Applications responsibilities?"
- "What features does Discoverer support for Oracle Applications users?"
- "What are the prerequisites for using Discoverer with Oracle Applications?"
- "What is different about running Discoverer in Oracle Applications mode?"
- "How to configure the Connect dialog for Oracle Applications users"
- "How to create an Oracle Applications EUL"
- "Which user should maintain an Oracle Applications EUL?"
- "How to enable an Oracle Applications user to maintain an Oracle Applications EUL"
- "How to specify the Oracle Applications users/responsibilities who can access a business area"
- "How to specify the business areas that an Oracle Applications user/responsibility can access"
- "How to specify the tasks an Oracle Applications user or responsibility can perform"
- "How to specify the Oracle Applications users/responsibilities who can perform a specific task"
- "How to display your Oracle Applications database user name and responsibility in a workbook"

What are Oracle Applications?

Oracle Applications are Oracle's integrated enterprise resource planning (ERP) and customer relationship management (CRM) solutions. Oracle Applications enable companies to run and manage their worldwide operations from a central site.

What are Oracle Applications responsibilities?

Oracle Applications responsibilities are akin to database roles. They are an abstraction to which privileges can be assigned and which can apply to many users. Oracle

Applications responsibilities are used to control Oracle Applications users functional and data access.

An Oracle Applications user connects to an Oracle Applications database and chooses a single Oracle Applications responsibility. Each Oracle Applications responsibility can have a set of privileges associated with it. So an Oracle Applications user, by default, assumes the task privileges granted to the chosen responsibility (for more information see "How to specify the Oracle Applications users/responsibilities who can perform a specific task"). To change the responsibility but keep the same user you must reconnect.

Notes

- If you encounter anomalies in Discoverer items available to users (for example, there is a difference between folders or items visible in Discoverer Administrator and Discoverer Plus for the same Appsuserid or Responsibility), this might be caused by how Oracle Applications security is set up. For more information about Oracle Applications security, contact the Oracle Applications administrator.

What features does Discoverer support for Oracle Applications users?

Discoverer supports the following features for Oracle Applications users:

- Ad-hoc query access to Oracle Applications databases using Oracle Applications user names, passwords and responsibilities
- Oracle Applications mode EULs

  An Oracle Applications mode EUL is a Discoverer End User Layer based on an Oracle Applications schema (containing the Oracle Applications FND (Foundation) tables and views). Oracle Applications EULs employ Oracle Applications user names and responsibilities whereas standard EULs use database users and roles.

  The only database user (that is, non-Oracle Applications user) that can connect to an Oracle Applications mode EUL is the EUL owner. The EUL owner is the database user that is used to create the EUL. However, the EUL owner can grant administration privileges to Oracle Applications users. The authorized Oracle Applications users can then connect to the Oracle Applications mode EUL using Discoverer Administrator.
- Oracle Applications row level security

  Many Oracle Applications tables and views are user-sensitive, and will return different results depending on which user/responsibility is used to access these tables/views. Discoverer correctly runs queries that respect these user-sensitive tables and views.
- Oracle Applications multiple reporting currencies

  When connecting to Discoverer as an Oracle Applications user/responsibility, Discoverer will automatically connect to the correct schema (either APPS or APPS_MRC) to support Oracle Applications instances that have implemented the multiple reporting currencies feature.
- Oracle Applications multiple organizations

  Using Discoverer with Oracle Applications multiple organizations support enables you to work with data from more than one organization. Discoverer end users can query and analyze data from a set of organizations to which they have

been granted access. The folders in the EUL you are connecting to must be based on Oracle Business Views (available in Oracle Applications 11i).

These features are only available when Discoverer is running in Oracle Applications mode. In other words, when Discoverer is running with an Oracle Applications mode EUL against an Oracle Applications database.

What are the prerequisites for using Discoverer with Oracle Applications?

To start Discoverer as an Oracle Applications user the following conditions must be met:

- Oracle Applications must be installed before Discoverer can be used in applications mode
- Discoverer must be running against one of the following Oracle Applications versions:
  - Release 10.7
  - Release 11
  - Release 11i

What is different about running Discoverer in Oracle Applications mode?

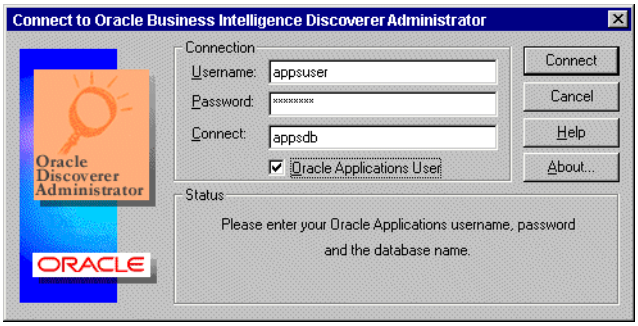
The following differences apply in Discoverer when running in Oracle Applications mode:

- "Differences with the Discoverer Connect dialog in Oracle Applications mode"
- "Differences with Discoverer security in Oracle Applications mode"
- "Differences with Discoverer summary folders in Oracle Applications mode"
- "Differences with Discoverer and secure views/language settings in Oracle Applications mode"

Differences with the Discoverer Connect dialog in Oracle Applications mode

When you run Discoverer in Oracle Applications mode the "Connect to Oracle Business Intelligence Discoverer Administrator dialog (for Oracle Applications users)" will either display or not display the Oracle Applications user check box.

Figure 17–1 Connect to Oracle Business Intelligence Discoverer Administrator dialog (for Oracle Applications users)



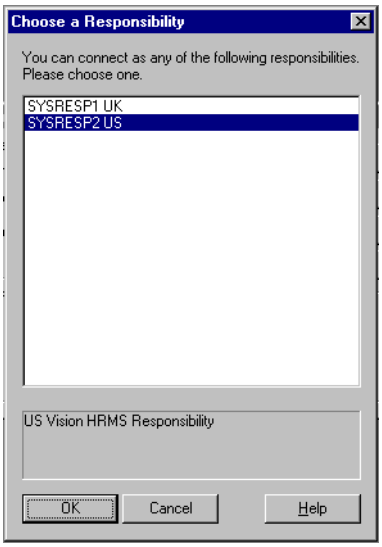
For more information, see "How to configure the Connect dialog for Oracle Applications users".

The following conditions apply when the Connect dialog is configured for Oracle Applications users:

- if the Oracle Applications user check box is not displayed you connect to Discoverer as an Oracle Applications database user
- if the Oracle Applications user check box is displayed, you select the check box to connect to Discoverer as an Oracle Applications user. Alternatively, clear the Oracle Applications user check box to connect as an Oracle database user.

After you enter details in the Connect dialog and click OK, Discoverer displays a Responsibilities dialog and you can choose the responsibility with which to connect (if the Oracle Applications user you are connecting with has more than one responsibility).

Figure 17–2 Choose a Responsibility dialog



You can bypass the Choose a Responsibility dialog by entering both the Oracle Applications user and the responsibility into the **Username** field in the form 'user:responsibility'.

Differences with Discoverer security in Oracle Applications mode

When you run Discoverer Administrator as an Oracle Applications user, then the Discoverer Privileges and Security dialogs display Oracle Applications user names and responsibilities. You can assign privileges and security to Oracle Applications user names and responsibilities. When you run Discoverer Administrator as a database user then the Discoverer Privileges and Security dialogs display database users and database roles.

For more information about using privileges to control access to information, see Chapter 7, "Controlling Access to Information".

Differences with Discoverer summary folders in Oracle Applications mode

As the Discoverer manager of an Oracle Applications mode EUL you must be aware of the following:

- Some Oracle Applications database views contain row-level security and return differing result sets depending upon the currently active responsibility. So

materialized views (summary tables in Oracle Standard Edition databases) contain different data depending on the responsibility of the user refreshing the external summary folder.

- A summary folder based on an Oracle Applications secure view or Oracle Applications business view must be registered in Discoverer as an external summary folder (for more information, see "How to create summary folders based on external summary tables").
- Where an external summary folder is mapped against a table or view with Oracle Applications row level security, it is your responsibility as Discoverer manager to make sure the external table or view provides secure access. If you are not sure, ask your database administrator.
- If a managed summary folder is found that satisfies a query (based on data with Oracle Applications row level security), Discoverer informs the end user that no rows satisfy the query criteria. Discoverer does this to ensure that end users do not see data they should not have access to.
- If a managed summary folder is found that satisfies a query (based on data without Oracle Applications row level security), Discoverer returns the rows unaffected. Discoverer does this because the data can be safely accessed by all end users.
- Some Oracle Applications views with row-level security support "public" rows (particularly Human Resources).

Differences with Discoverer and secure views/language settings in Oracle Applications mode

When a Discoverer end user uses a workbook that accesses Oracle Applications secure views, the user might see different results on different machines (even when using the same connection information) if the machines have different local language (NLS) settings.

When using Oracle Applications secure views, the local language setting of the machine affects the data retrieved by Discoverer. Discoverer will display data consistently across machines with the same language setting.

To change a machines local language setting (on Windows), choose Start | Settings | Control Panel | Regional Settings and change the language value.

For more information on secure views, see "How to use query prediction with secure views".

You can also define a language setting (NLS) for a user, responsibility, application or site using the Profiles setting in Oracle Applications. For more information see the Oracle Applications documentation.

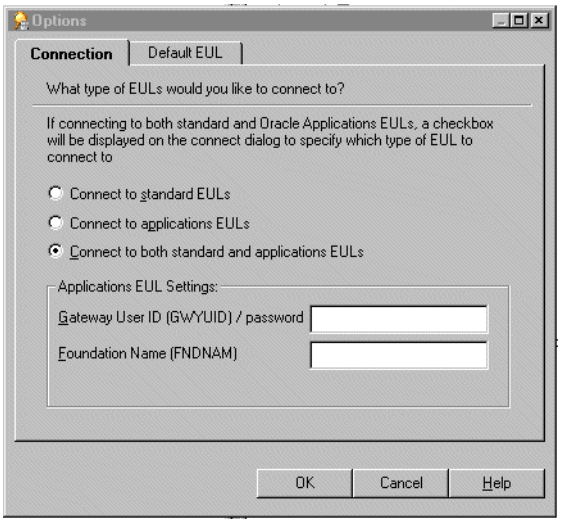
How to configure the Connect dialog for Oracle Applications users

Before you connect to Discoverer as an Oracle Applications user, you must configure the Connect dialog to default to Oracle Applications users.

To configure the Connect dialog for Discoverer Administrator and Discoverer Desktop:

1. Select Tools | Options to display the "Options dialog: Connection tab":

Figure 17–3 The Options dialog: Connection tab



2. Specify the type of EUL to connect to by selecting one of the following option:

Option	Use this option to:
Connect to standard EULs	The **Oracle Applications User** check box is not displayed in the Connect dialog and Discoverer expects standard database users.
Connect to applications EULs	The **Oracle Applications User** check box is not displayed in the Connect dialog but Discoverer expects users to connect using an Applications user id/password and Oracle Applications database TNS alias.
Connect to both standard and applications EULs	The **Oracle Applications User** check box is displayed in the Connect dialog and (depending on whether the check box is cleared or selected) you can connect to either standard or Oracle Applications database EULs.

Notes

- To configure the Connect dialog for Discoverer Desktop, repeat the steps described above for Discoverer Administrator, but within Discoverer Desktop.
- To configure the Connect dialog for Discoverer Plus and Viewer to validate Oracle Applications user names and passwords, see the *Oracle Fusion Middleware Configuration Guide for Oracle Business Intelligence Discoverer*.

About entering details into the fields GWYUID/Password and FNDNAM

When you use the Options dialog: Connections tab and you select either the **Connect to applications EULs** option or the **Connect to both standard and applications EULs** option you can enter values into these fields, but Discoverer uses default values if you do not. The fields and default values are as follows:

- Gateway User ID (GWYUID)/Password

  You can enter your Gateway User ID and Password here (the default value used is 'applsyspub/pub' if you enter nothing here).

- Foundation Name (FNDNAM)

  You can enter the Foundation Name (the default value used is 'apps' if you enter nothing here).

If you do not know the values to enter into the above fields contact your Oracle Applications database administrator.

How to create an Oracle Applications EUL

You create an Oracle Applications EUL in two ways:

- using the Create EUL dialog
- using the command-line interface

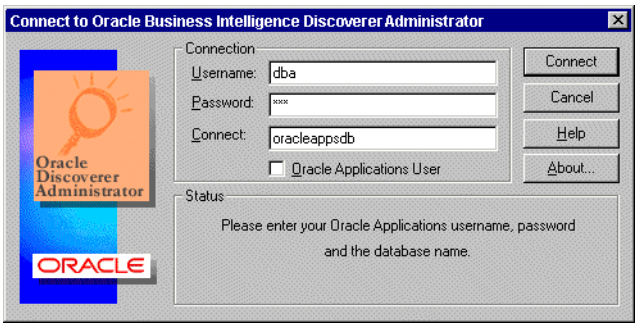
To create an Oracle Applications EUL using the Create EUL dialog:

1. Start Discoverer Administrator and display the "Connect dialog".
2. Enter the user name, password and TNS alias for a DBA user.

   For example, dba/dbapassword@oracleappsdb.

   Note: You must not specify the user name of an Oracle Applications user. The EUL owner is always a database user.

Figure 17–4 Connect to Oracle Business Intelligence Discoverer Administrator dialog



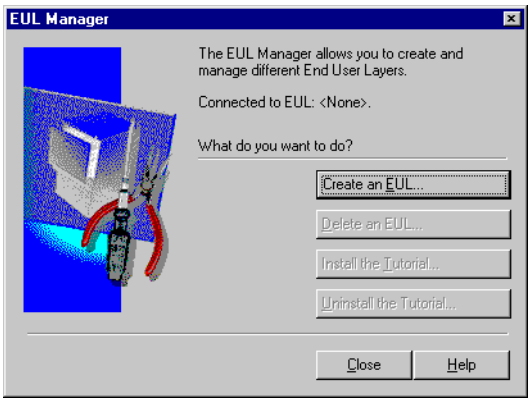
   Note: The Oracle Applications user Connect dialog might display the **Oracle Applications User** check box. For more information see "How to configure the Connect dialog for Oracle Applications users".

3. Clear the **Oracle Applications User** check box (if the check box is displayed).
4. Click Connect.

   If no EULs exist Discoverer displays a dialog for you to choose whether to create an EUL now.

5. Click Yes.
6. Discoverer displays the "EUL Manager dialog".

Figure 17–5 EUL Manager dialog



7. Click Create an EUL to display the "Create EUL Wizard dialog".

   This is where you create a new database user and Oracle Applications EUL.

Figure 17–6 Create EUL Wizard dialog

8. Specify whether an existing or new user is to own the Oracle Applications EUL by selecting one of the following options:

   - **Select an existing user**

     then select a user from the drop down list in the **User** field

   - **Create a new user**

     then enter a user name, password/confirmation for the new user

   Note: The EUL owner is always a database user. Please specify a database user.

9. (optional) Clear the **Grant EUL access to PUBLIC** check box.

   Tip: We recommend that you clear the **Grant EUL access to PUBLIC** check box to restrict public access to your EUL tables. If you do not select the **Grant EUL access to PUBLIC** check box, but still want other database users to have access to your EUL tables, you will need to grant access to your EUL tables manually.

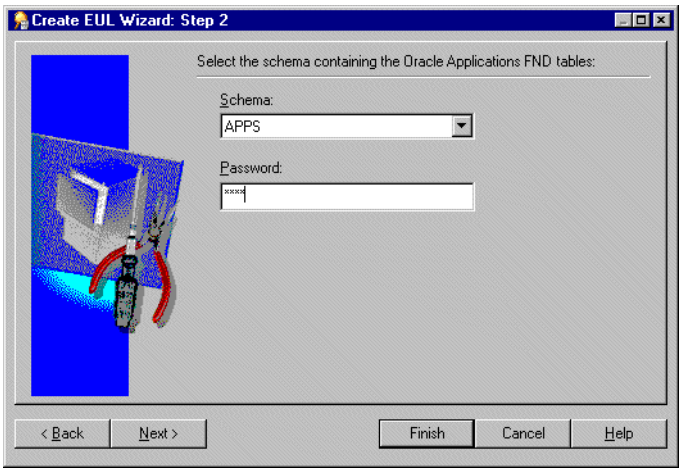
   If you want to grant all database users access to your EUL tables you must select the **Grant EUL access to PUBLIC** check box.

10. Select the **New EUL is for Oracle Applications users ONLY** check box to create an Oracle Applications mode EUL.

    Note: The choice that you make here is final. You cannot change an Oracle Applications EUL into a standard EUL (and vice versa).

11. Click Next to display the "Create EUL Wizard: Step 2 dialog" where you select the Oracle Applications schema and enter the schema password.

Figure 17–7 Create EUL Wizard: Step 2 dialog

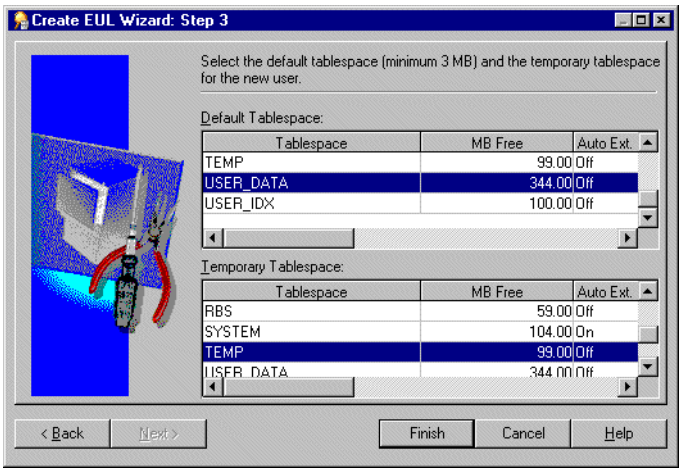


12. Use the **Schema** drop down list to select the Oracle Applications schema containing the Oracle Applications FND tables.

13. Enter the password for the Oracle Applications schema and click Next.

14. (if creating a new user) If you are creating a new user Discoverer displays the "Create EUL Wizard: Step 3 dialog" where you select the default and temporary tablespaces for the new database user/schema.

Figure 17–8 Create EUL Wizard Step 3 dialog



15. (if creating a new user) Highlight the required Default and Temporary tablespaces you want to use for the Oracle Applications EUL owner.

    Tip: Ask your Oracle Applications database administrator if you are not sure.

16. Click Finish to create the tables and views for the new Oracle Applications mode EUL and populate them with default data.

    Discoverer displays a dialog to confirm the creation of the new EUL:

17. Click OK to close the confirmation dialog.

    Discoverer displays a dialog that gives you the option to install tutorial data into the new EUL.

18. Click Yes or No to specify whether to install the tutorial data.

    Discoverer displays a dialog that gives you the option to reconnect to the database as the owner of the new Oracle Applications EUL you have just created, or to remain connected as the DBA.

Notes

- Having created an Oracle Applications EUL you can now:
  - Grant task privileges to an Oracle Applications user so that they have the ability to perform tasks in Discoverer Administrator or Discoverer Plus using this Oracle Applications EUL (for more information, see "How to specify the tasks an Oracle Applications user or responsibility can perform").
  - Create a new business area using the Oracle Applications tables (for further information, see Chapter 5, "Creating and Maintaining Business Areas").
  - Grant access to the tutorial business area to Oracle Applications users and responsibilities (for more information, see "How to specify a user or role (responsibility) that can access a business area"). Granting access to the tutorial business area enables Oracle Applications users and responsibilities to access the sample data.
  - If you did not install the sample data into the Apps Schema, you must grant the select privilege on the sample data tables to the APPS schema owner (for more information about granting privileges, see the *Oracle Database SQL Reference Guide*. The select privilege is required because the APPS schema owner is the database user that is used as the proxy by applications users. Therefore, APPS schema owner must have select access to the sample data tables.
- You must not use a database user (for example, the EUL owner) to maintain an Oracle Applications EUL (for more information, see "Which user should maintain an Oracle Applications EUL?".
- When you create a new Oracle Applications business area, the schema objects you load into the business area must be based on secure views. This retains the row-level security associated with a specific Oracle Applications responsibility. Ask your Oracle Applications database administrator for further information.
- You can also create an Applications mode EUL from the command line (for more information see "/create_eul /apps_mode").

Which user should maintain an Oracle Applications EUL?

When you maintain an Oracle Applications EUL in Discoverer Administrator, it is advisable that you do not use a database user (for example, the EUL owner). You should use an Oracle Applications user (for example, SYSADMIN) or Responsibility (for example, System Administrator). When you use an Oracle Applications user (instead of a database user) as the EUL administrator, Discoverer provides correct

access to the necessary Oracle Applications objects (for example, when refreshing, importing, creating, business areas and folders).

For information about how to grant the necessary privileges required to enable an Oracle Applications user to maintain an Oracle Applications EUL, see "How to enable an Oracle Applications user to maintain an Oracle Applications EUL".

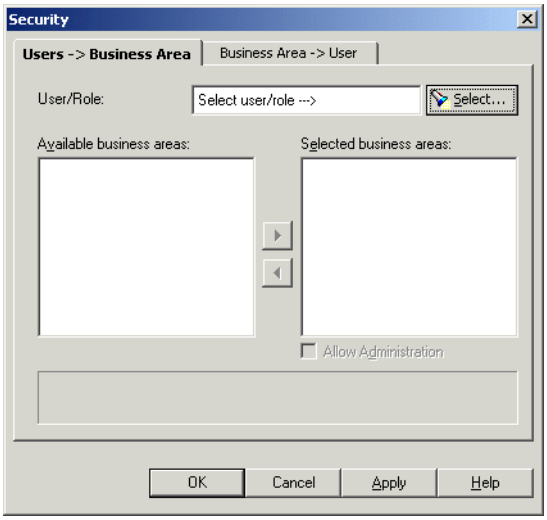
How to enable an Oracle Applications user to maintain an Oracle Applications EUL

The Oracle Applications user that maintains an Oracle Applications EUL must have the Administration privilege to provide correct access to the necessary Oracle Applications objects (for example, when refreshing, importing and creating business areas and folders).

To enable an Oracle Applications user to maintain an Oracle Applications EUL:

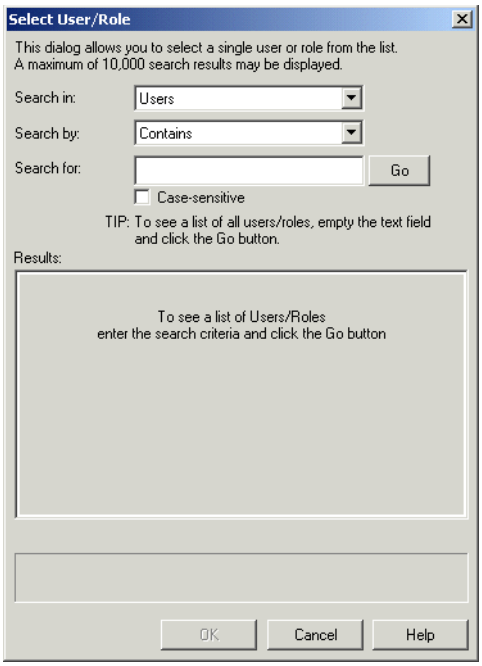
1. Connect to Discoverer Administrator in Applications mode as the EUL owner (for more information, see "What is different about running Discoverer in Oracle Applications mode?").
2. Choose Tools | Security to display the "Security dialog: Business Area - > User tab".

Figure 17–9 Security dialog: Users-> Business Area tab



3. Click Select to display the "Select User/Role dialog" where you can search for and select the Oracle Applications user to which you want to grant access.

Figure 17–10 Select User/Role dialog



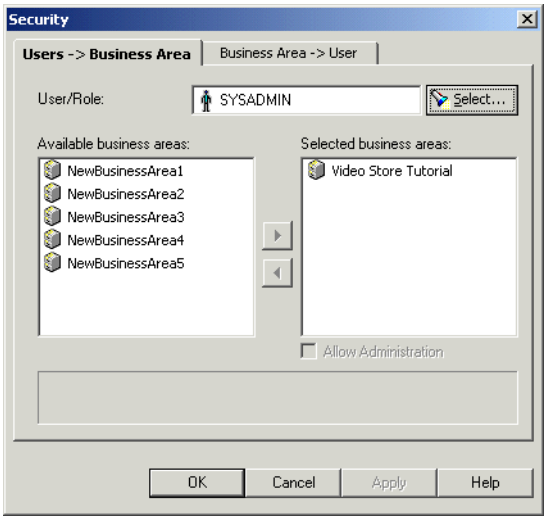
4. Enter the search criteria in the **Search For** field and click Go.

   Discoverer Administrator displays the search results in the **Results** list.

5. Select the Oracle Applications user from the **Results** list.

6. Click OK to display the "Security dialog: Users - > Business Area tab" with the business areas for the selected Oracle Applications user.

Figure 17–11 Security dialog: Users-> Business Area tab



7. Move the business areas that you want the selected Oracle Applications user to have access to from the **Available business areas** list to the **Selected business areas** list.

   You can select more than one business area by pressing the Ctrl key and clicking another business area.

8. For each new business area you add to the **Selected business areas** list, follow the instructions below to specify whether the selected Oracle Applications user has administration access to the business area:

   a. Click the business area in the **Selected business areas** list.

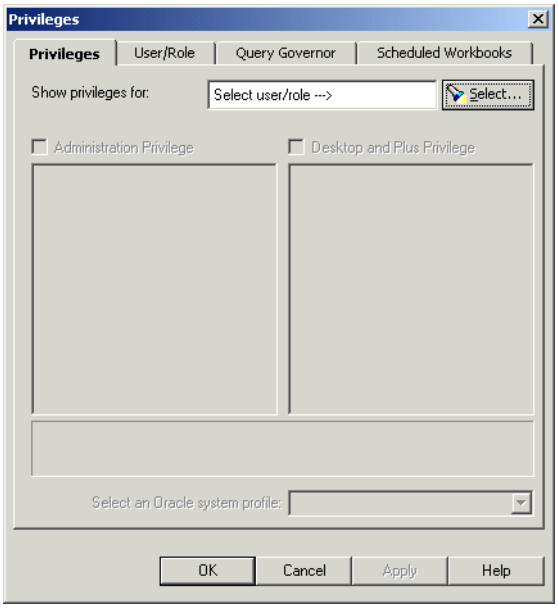
   b. Select the **Allow Administration** check box as required.

   The setting of a user's **Allow Administration** privilege controls which administration tasks the Oracle Applications user can perform. For more information, see "How to specify the tasks a user or role (responsibility) can perform".

9. Click OK to save the changes you have made and close the Security dialog.

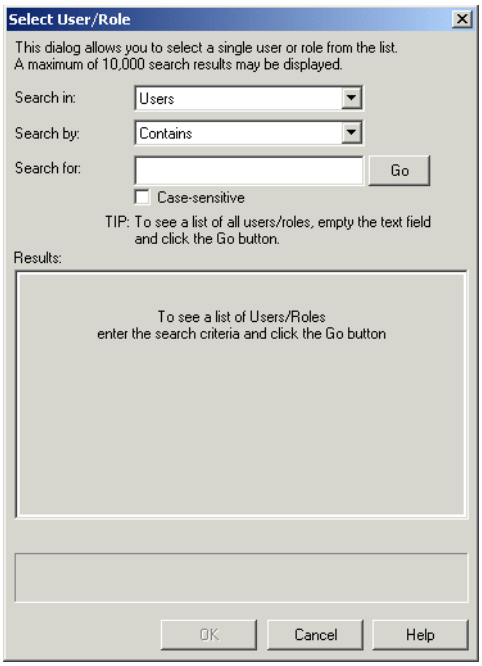
10. Choose Tools | Privileges and display the "Privileges dialog: Privileges tab".

Figure 17–12 Privileges dialog: Privileges tab



11. Click Select to display the "Select User/Role dialog" where you can search for and select the Oracle Applications user to which you want to grant Administration privileges.

Figure 17–13 Select User/Role dialog



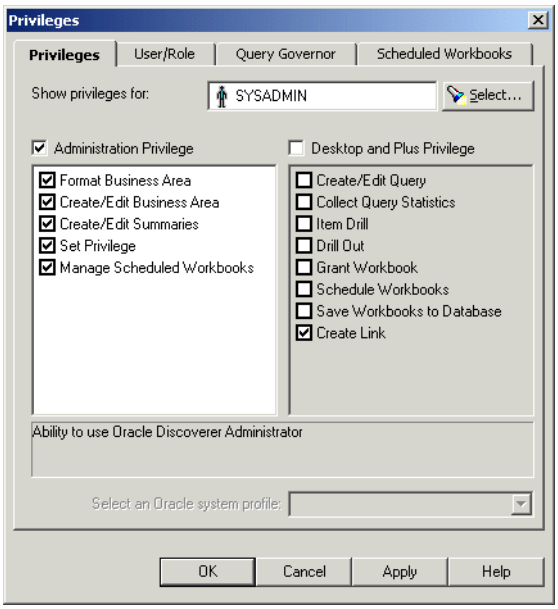
12. Enter the search criteria in the **Search For** field and click Go.

    Discoverer Administrator displays the search results in the **Results** list.

13. Select the required Oracle Applications user from the **Results** list.

14. Click OK to display the "Privileges dialog: Privileges tab" for the selected Oracle Applications user.

Figure 17–14 Privileges dialog: Privileges tab



15. Grant task privileges for the Oracle Applications user by selecting the Administration Privilege check box and the check boxes in the **Administration Privilege** list.

Note: To grant these privileges, you must first grant the parent privilege using the **Administration Privilege** check box. For more information, see "How to specify the tasks a user or role (responsibility) can perform".

Tip: Click a privilege in the **Administration Privilege** list or the **Desktop and Plus Privilege** lists to see a brief description of that privilege in the area below the lists.

16. Click OK to save the changes you have made and close the Privileges dialog.

    You can now reconnect to Discoverer Administrator as the Oracle Applications user and perform maintenance tasks on the Oracle Applications EUL (for example, refreshing, importing and creating, business areas and folders).

How to specify the Oracle Applications users/responsibilities who can access a business area

This task describes how to grant (or deny) access permission for business areas to specific users or responsibilities.

For information about Oracle Applications responsibilities, see "What are Oracle Applications responsibilities?".

Note: When completing the following task there is a notable difference between what Oracle database users and Oracle Applications users will see in the dialog:

- Oracle database users will see the words Users and Roles
- Oracle Applications database users will see the words Users and Responsibilities

For more information about this task see "How to specify a user or role (responsibility) that can access a business area".

How to specify the business areas that an Oracle Applications user/responsibility can access

This task describes how to specify which business areas a specific Oracle Applications user or responsibility can access.

For information about Oracle Applications responsibilities, see "What are Oracle Applications responsibilities?"

Note: When completing the following task there is a notable difference between what Oracle database users and Oracle Applications users will see in the dialog:

- Oracle database users will see the words Users and Roles
- Oracle Applications database users will see the words Users and Responsibilities

For information about this task see "How to specify the business areas a user or role (responsibility) can access".

How to specify the tasks an Oracle Applications user or responsibility can perform

This section describes how to specify the tasks a specific user or responsibility can perform.

For information about Oracle Applications responsibilities, see "What are Oracle Applications responsibilities?".

Note: When completing the following task there is a notable difference between what Oracle database users and Oracle Applications users will see in the dialog:

- Oracle database users will see the words Users and Roles
- Oracle Applications database users will see the words Users and Responsibilities

For information about this task see "How to specify the tasks a user or role (responsibility) can perform".

How to specify the Oracle Applications users/responsibilities who can perform a specific task

This section describes how to specify the users or responsibilities that can perform a specific task.

For information about Oracle Applications responsibilities, see "What are Oracle Applications responsibilities?".

Note: When completing the following task there is a notable difference between what Oracle database users and Oracle Applications users will see in the dialog:

- Oracle database users will see the words Users and Roles
- Oracle Applications database users will see the words Users and Responsibilities

For information about this task see "How to specify a user or role (responsibility) to perform a specific task".

How to display your Oracle Applications database user name and responsibility in a workbook

You can use a custom folder to display the name of your Oracle Applications database user and responsibility in a Discoverer workbook. You might want to do this because Discoverer workbooks can display different results depending on the Oracle Applications database user and responsibility that runs the workbook. This task enables you to identify which Oracle Applications database user and responsibility has run a particular Discoverer workbook.

To display your Oracle Applications database user name and responsibility in a Discoverer workbook using a custom folder:

1. Start Discoverer Administrator and display the "Connect dialog".
2. Enter your Oracle Applications database user name, password and TNS alias.

   For example, apps1/apps1password@oracleappsdb:
3. If the Oracle Applications database user has more than one responsibility, choose a responsibility from the **Responsibility** list displayed in the "Responsibilities dialog".
4. Choose Tools | Register PL/SQL Functions to display the "PL/SQL Functions dialog: Arguments tab".

   Note: The PL/SQL functions FND_GLOBAL.USER_NAME and FND_GLOBAL.RESP_NAME must be available in the "PL/SQL Functions dialog: Arguments tab" before you can subsequently use them in a custom folder.
5. If either of the functions FND_GLOBAL.USER_NAME and FND_GLOBAL.RESP_NAME do not appear in the functions list you can import them.

To import the PL/SQL functions:

a. Click Import to display the "Import PL/SQL Functions dialog".

b. Choose both PL/SQL functions from the list and click OK to close the import PL/SQL Functions dialog.

Note: Each PL/SQL function is prefixed with the default Oracle Applications user, Apps (for example, Apps.FND_GLOBAL.USER_NAME).

c. Click OK to close the PL/SQL Functions dialog: Functions tab and apply the changes.

6. (optional) If you do not want to import the PL/SQL functions FND_GLOBAL.USER_NAME and FND_GLOBAL.RESP_NAME, you can create them.

Note: You might choose to create these two PL/SQL functions (instead of importing them), if the database takes a long time to display information.

To create the PL/SQL functions:

a. Click New to create a new PL/SQL function, and populate the fields with default data.

b. Enter `FND_GLOBAL.USER_NAME` into the **Function Name** field.

c. Enter `FND_GLOBAL.USER_NAME` into the **Display Name** field.

d. Enter `APPS` into the **Owner** field.

e. Choose Varchar in the **Return Type** field.

f. Enter some meaningful text into the **Identifier** field.

g. Click Apply to save the changes.

h. Repeat the above steps to create another PL/SQL function for FND_GLOBAL.RESP_NAME (that is, replace FND_GLOBAL.USER_NAME with FND_GLOBAL.RESP_NAME in step b).

i. Click OK to close the dialog and save the changes.

7. Create a new business area or open an existing business area.

For more information, see Chapter 5, "Creating and Maintaining Business Areas".

Note: In the following steps you will create a custom folder that contains the items User Name and Resp Name, and then you will include these items in a workbook. To make the custom folder readily available to other Oracle Applications business areas, you can create a new business area to contain just the custom folder.

8. Choose Insert | Folder | Custom to display the "Custom Folder dialog".

9. Enter a meaningful name for the custom folder (for example, UserResp_Name).

10. Enter the following SQL statement into the **Enter the SQL to define the custom folder** field:

```
Select fnd_global.user_name, fnd_global.resp_name from dual;
```

The SQL statement above creates a custom folder containing the two items, User Name and Resp Name. Discoverer will use the PL/SQL functions (that you previously imported or created) to display the Oracle Applications database user name and responsibility represented by User Name and Resp Name.

For more information, see "How to create custom folders".

11. Connect to Discoverer Plus or Discoverer Desktop using your Oracle Applications database user and responsibility name.

    For more information about using:

    - Discoverer Plus, see the *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Plus*.
    - Discoverer Desktop, see the *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Desktop*.

12. Open an existing workbook or create a new workbook.
13. Create a new worksheet that contains just the custom folder items User Name and Resp Name.

    Note: Because this custom folder is not joined to other folders, the items User Name and Resp Name must be the only items on the worksheet.

14. Run the workbook in Discoverer Plus, Discoverer Desktop or Discoverer Viewer.

    The Discoverer workbook will contain a worksheet that displays your Oracle Applications database user name and responsibility name.

18

Using Discoverer with Components of Oracle Fusion Middleware

This chapter explains how to use Discoverer with components of Oracle Fusion Middleware, such as Oracle Web Cache and Oracle Portal, and contains the following topics:

- "Using Discoverer with Oracle Fusion Middleware Control"
- "Using Discoverer with Oracle Reports"
- "Using Discoverer with Oracle Web Cache"
- "Using Discoverer with Oracle Warehouse Builder"
- "Using Discoverer with OracleAS Single Sign-On Server"
- "Using Discoverer with Oracle Portal"

Using Discoverer with Oracle Fusion Middleware Control

Oracle Fusion Middleware Control provides a common look and feel, behavior and security infrastructure to configure the middle tier web components of Oracle Fusion Middleware with a single tool. Using a single tool for all Oracle Fusion Middleware components reduces the time spent on administration and configuration. You can use Oracle Fusion Middleware Control to configure Discoverer's middle tier web components.

For more information, see:

- *Oracle Fusion Middleware Configuration Guide for Oracle Business Intelligence Discoverer*
- Oracle Fusion Middleware Control Discoverer help

Using Discoverer with Oracle Reports

Discoverer users can share workbooks, export them to Oracle Reports (V7.0 and later) enabling Reports users to open a Discoverer workbook. The workbook SQL, additional formatting and calculations are passed to Oracle Reports using an XML based workbook. The workbook is translated into an Oracle Reports-compatible format that can be modified using Oracle Reports.

In Oracle Reports the look and feel of the original Discoverer workbook is retained so that the Oracle Reports user can continue to work on the Report in a standalone fashion. To further emphasize this point: no further interaction with the Discoverer server is required for the Reports user to enhance the file

For more information, see the *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Plus*.

Using Discoverer with Oracle Web Cache

Oracle Web Cache helps e-businesses improve Web site performance issues. Oracle Web Cache is a content-aware server accelerator that improves the performance, scalability and availability of Web sites that run on Oracle Fusion Middleware and Oracle databases (version 9.2.0.7 or later). High accessibility is achieved at high speed by applying the latest caching techniques provided by Oracle Web Cache.

By storing frequently accessed URLs in memory, Oracle Web Cache eliminates the need to repeatedly process requests for those URLs on the application Web server. Unlike legacy proxy servers that handle only static documents, Oracle Web Cache caches both static and dynamically generated content from one or more application Web servers. Because Oracle Web Cache is able to cache more content than legacy proxy servers, it provides optimal performance by greatly reducing the load on application Web servers.

For more information, see the *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Plus* and *Oracle Fusion Middleware Configuration Guide for Oracle Business Intelligence Discoverer*.

Using Discoverer with Oracle Warehouse Builder

Oracle Warehouse Builder (OWB) can generate Discoverer metadata. You can use OWB and Discoverer Bridge to create a Discoverer EUL in OWB's metalayer, and then create a Discoverer export file (.EEX file). The .EEX file can be imported into a Discoverer EUL using Discoverer Administrator (for more information, see "How to import EUL objects from a file using the Import Wizard"). The Discoverer EUL retains the folder and item lineage from OWB. You can display the folder and item lineage from OWB by using a Discoverer Lineage workbook.

To install the lineage workbook for use with Oracle Warehouse builder:

1. Login to Discoverer Administrator as the Discoverer EUL schema owner.
2. Import the lineage.eex file.
3. Login to SQL*Plus as the Discoverer EUL schema owner.

   For example:

   ```
   > SQLPLUS myeul/myeul@myconnection
   ```

4. Run the lineage.sql file.

   For example:

   ```
   SQL> start d:\<ORACLE_HOME>\discoverer\lineage.sql
   ```

   This script will ask you to input and verify the following:

   - the OWB URL Machine Name.Domain Name:Port

     For example, http://myserver.us.mycompany.com:7777

   - the OWB Virtual path to mod_plsql (the default is pls)

     For example, pls

   - the OWB Database Access Descriptor DAD (the default is portal30)

     For example, portal30

- the OWB Browser schema

  For example, myowbinstall

- the OWB Host name (that is, the name of the machine that runs the OWB repository)

  For example, myserver

  Note that the name must be the same as used in the OWB browser registration.

- the OWB SID (that is, the database instance name)

  For example, ASdB

- the OWB Schema where the OWB repository resides

  For example, owbrep

5. Login to Oracle BI Discoverer Plus, Oracle BI Discoverer Viewer, or Oracle BI Discoverer Desktop as the EUL schema owner and open the Lineage workbook.

If you export and re-import the EUL, you must run lineage.sql again.

If you have previously imported EUL5.eex, the Lineage workbook would already be saved in the database. If this is the case, all you need to do is run lineage.sql.

Using Discoverer with OracleAS Single Sign-On Server

The OracleAS Single Sign-On Server provides a framework which allows any web-based client, inside or outside of Oracle Portal, to use Oracle's Single Sign-On services. OracleAS Single Sign-On is intended for use with an LDAP server which provides the means for storing and managing all the user credentials.

Using Discoverer with Oracle Portal

You can publish Discoverer workbooks and worksheets to Oracle Portal quickly and easily. Oracle Portal's intuitive user interface guides you through the publishing process step by step, enabling you to create powerful business intelligence portals with ease.

For more information about publishing to Oracle Portal, see the *Oracle Fusion Middleware Guide to Publishing Oracle Business Intelligence Discoverer Portlets*.

19

EUL Status Workbooks

This chapter explains how to use Discoverer Administrator's EUL status workbooks and contains the following topics:

- "What are EUL status workbooks?"
- "About the Discoverer EUL V5 business area"
- "How to install the standard EUL status workbooks"
- "How to install Oracle Applications EUL status workbooks"
- "How to run Oracle Applications EUL status workbooks"
- "How to uninstall the Discoverer EUL V5 business area"
- "About the EUL Data Definition workbook"
- "About the EUL Query Statistics workbook"
- "About the EUL Access workbook"
- "About the EUL Workbook Management workbook"
- "Notes on EUL status workbooks and the table DBA_JOBS_RUNNING"

What are EUL status workbooks?

EUL status workbooks are Discoverer workbooks that provide useful reports for managing and documenting Discoverer End User Layers (EULs). The EUL status workbooks query information from folders in the Discoverer EUL V5 business area. You can analyze EUL status workbooks in Discoverer Plus or Discoverer Viewer.

You can give any Discoverer user access to the EUL status workbooks. However, the EUL status workbooks are intended primarily for administrative purposes.

The following EUL status workbooks are supplied with Discoverer:

- EUL Data Definition - this workbook contains information about data in the EUL
- EUL Query Statistics - this workbook contains query statistics collected by Discoverer
- EUL Access - this workbook contains information on users, access to database objects, security
- EUL Workbook management - this workbook contains information about the workbooks and worksheets saved to the EUL

Instructions explaining how to use each workbook are contained within individual worksheets.

Although the EUL status workbooks are supplied with Discoverer, they are not installed by default. How to install the workbooks depends on the type of EUL as follows:

- if you run Discoverer against a standard EUL, follow the instructions in "How to install the standard EUL status workbooks"
- if you run Discoverer against an Oracle Applications EUL, follow the instructions in "How to install Oracle Applications EUL status workbooks"

The EUL status workbooks are installed into the <ORACLE_HOME>\discoverer directory.

Having installed the EUL status workbooks, you can:

- edit the Discoverer EUL V5 business area
- edit the supplied EUL status workbooks
- create your own EUL status workbooks

About the Discoverer EUL V5 business area

You can edit the workbooks or the Discoverer EUL V5 business area to suit your requirements. You can also create your own EUL status workbooks.

The Discoverer EUL V5 business area is similar to any other business area in the EUL. The folders within Discoverer EUL V5 business area include:

Folder	Description
BA & Folders	Business areas and folders defined in the EUL
Folders & Items	Folders and items defined in the EUL
Users queries	Users queries recorded in the EUL
Joins	The structure of joins defined in the EUL
Conditions	The structure of mandatory and optional conditions in the EUL
Hierarchies	The structure of hierarchies
Item Classes	The structure of Item Classes or LOVs
Summary Mappings	Mapping of summary tables to folders
Security	Users access to business areas
Privileges	Users Discoverer privileges
Workbook Management	List of workbooks saved to the database and who can access them

You can use the folders in the Discoverer EUL V5 business area to build your own workbooks to analyze and document the structure of your Discoverer business areas.

Note that certain folders in the Discoverer EUL V5 require the EUL owner to have SELECT access to the DBA_JOBS_RUNNING database table. For more information, see "Notes on EUL status workbooks and the table DBA_JOBS_RUNNING".

If you want to modify the supplied EUL status workbooks, we recommend you save a copy with a different name and modify the copy. Otherwise, any changes you make could be lost because the supplied EUL status workbooks are replaced with each new version of Discoverer.

How to install the standard EUL status workbooks

Follow these steps if you run Discoverer against a standard EUL.

Note: You must have an EUL installed (for more information, see Chapter 4, "Creating and Maintaining End User Layers").

To install the standard EUL status workbooks:

1. Start SQL*Plus (if it is not already running) and connect as the EUL owner.

   For example, if SQL*Plus is already running, you might type the following at the command prompt:

   ```
   SQL> connect jchan/tiger@database;
   ```

   Where jchan is the EUL owner and tiger is the EUL owner password.

2. Run the SQL file eul5.sql

   For example you might type the following at the command prompt:

   ```
   SQL> start d:\<ORACLE_ HOME>\discoverer\util\eul5.sql
   ```

   Where <ORACLE_HOME> is where Discoverer Administrator is installed.

   The eul5.sql file creates some custom PL/SQL functions required by the Discoverer EUL V5 business area.

3. Exit the SQL*Plus session.
4. Start Discoverer Administrator.
5. Import the file eul5.eex as follows:
   a. Choose File | Import to display the "Import Wizard: Step 1 dialog"
   b. Click Add File to display the Open dialog
   c. Select the file <ORACLE_HOME>\discoverer\eul5.eex
   d. Click Open to return to the "Import Wizard: Step 1 dialog".

      The selected SQL file eul5.eex appears in the Import file list.

   e. Click Next to display the "Import Wizard: Step 2 dialog".

      The default settings are acceptable.

   f. Click Next to display the "Import Wizard: Step 3 dialog,".

      This dialog enables you to start the import and monitor its status as each EUL object is processed.

   g. Click Start to begin importing the EUL status workbooks.

      When the import is complete, the 'Import Successful' message is displayed.

   h. Click Finish to close the "Import Wizard: Step 3 dialog,".

Having imported the EUL status workbooks you can now open them using Discoverer Plus or Discoverer Viewer.

Notes

- If you have upgraded from Discoverer Release 4, the EUL might contain a business area called EUL for Discoverer V4. This business area is no longer required, so it can be deleted. Having deleted the EUL for Discoverer V4 business area remove the associated PL/SQL functions:

EUL4_GET_ANALYZED
EUL4_GET_COMPLEX_FOLDER
EUL4_GET_HEIRLVL
EUL4_GET_HIERORD
EUL4_GET_ITEM
EUL4_GET_ITEM_NAME
EUL4_GET_OBJECT
EUL4_GET_OBJECT_NAME
EUL4_GET_SIMPLE_FOLDER

Tip: For more information about how to remove PL/SQL functions, see the appropriate steps contained in "How to uninstall the Discoverer EUL V5 business area").

How to install Oracle Applications EUL status workbooks

Follow these steps if you run Discoverer against an Oracle Applications EUL.

Note: You must have an Oracle Applications EUL installed (for more information, see Chapter 17, "Using Discoverer with Oracle Applications").

To install the Oracle Applications EUL status workbooks:

1. Start SQL*Plus (if it is not already running) and connect as the EUL owner.

   For example, if SQL*Plus is already running, you might type the following at the command prompt:

   ```
   SQL> connect jchan/tiger@database;
   ```

   Where jchan is the EUL owner and tiger is the EUL owner password.

2. Run the SQL file eul5.sql

   For example you might type the following at the command prompt:

   ```
   SQL> start d:\<ORACLE_ HOME>\discoverer\util\eul5.sql
   ```

   Where <ORACLE_HOME> is where Discoverer Administrator is installed.

   The eul5.sql file creates some custom PL/SQL functions required by the Discoverer EUL V5 business area.

3. Run the SQL file eul5_apps.sql

   For example you might type the following at the command prompt:

   ```
   SQL> start d:\<ORACLE_ HOME>\discoverer\util\eul5_apps.sql
   ```

   Where <ORACLE_HOME> is where Discoverer Administrator is installed.

   The eul5_apps.sql file creates some custom PL/SQL functions required by the Discoverer V5 EUL business area.

   You are prompted for the username of the Oracle Applications FNDNAM schema.

4. Enter the username of the FNDNAM schema.

   Note: Only enter the FNDNAM schema's username. Do not enter a password

   You are prompted to check the username you entered.

5. Make sure the username you entered is correct.

   If the name is not correct, re-run the script.

6. Start Discoverer Administrator.
7. Import the file eul5.eex as follows:
   a. Choose File | Import to display the "Import Wizard: Step 1 dialog"
   b. Click Add File to display the Open dialog
   c. Select the file <ORACLE_HOME>\discoverer\eul5.eex.
   d. Click Open to return to the "Import Wizard: Step 1 dialog".

      The selected SQL file eul5.eex appears in the Import file list.
   e. Click Next to display the "Import Wizard: Step 2 dialog".

      The default settings are acceptable.
   f. Click Next to display the "Import Wizard: Step 3 dialog,".

      This dialog enables you to start the import and monitor its status as each EUL object is processed.
   g. Click Start to begin importing the EUL status workbooks.

      When the import is complete, the 'Import Successful' message is displayed.
   h. Click Finish to close the "Import Wizard: Step 3 dialog,".

Having imported the EUL status workbooks you can now open them using Discoverer Plus or Discoverer Viewer.

How to run Oracle Applications EUL status workbooks

To run the EUL status workbooks with an Oracle Applications EUL in Discoverer Plus, you must connect as an Oracle Applications User or Responsibility. You cannot run the EUL status workbooks as the EUL owner.

To run Oracle Applications EUL status workbooks:

1. Start Discoverer Administrator as the EUL owner
2. Grant access to the EUL5 business area to either an Oracle Applications User or an Oracle Applications Responsibility.

   For more information about granting access to business areas, see Chapter 7, "Controlling Access to Information".
3. Start Discoverer Plus or Discoverer Viewer as the User or Responsibility to which you granted access.

Notes

- The EUL status workbooks are shared with the PUBLIC user and are owned by the EUL owner. In other words, all users who can access the Discoverer EUL V5 business area can successfully run both the EUL Data Definition and Query Statistics workbooks.

How to uninstall the Discoverer EUL V5 business area

To uninstall the Discoverer EUL V5 business area:

1. Connect to Discoverer Plus as the EUL Owner and delete the following workbooks:
   - EUL Data Definition

- EUL Query Statistics
- EUL Access
- EUL Workbook Management

Note: If the EUL status workbooks are installed in an Oracle Applications EUL, you cannot connect to Discoverer Plus as the EUL Owner to delete the workbooks. Instead, use the Discoverer Administrator command-line interface to delete the workbook by typing the following at the command prompt:

```
<ORACLE_HOME1>\bin\dis51adm.exe /connect <eulowner>/password>@<database>
/delete /workbook "<workbook name>"
```

where "<workbook name>" is either "EUL Data Definition", "EUL Query Statistics", "EUL Access" or "EUL Workbook Management".

2. Start Discoverer Administrator as the owner of the EUL containing the Discoverer EUL V5 business area
3. Open the Discoverer EUL V5 business area.
4. Highlight the Discoverer EUL V5 Business Area in the workarea.
5. Choose Edit | Delete to display the Confirm Business Area Delete dialog.
6. Select **Delete this Business Area and its Folders**.
7. Click Yes to delete the Discoverer EUL V5 business area and its folders.

   You can now remove the PL/SQL functions associated with the Discoverer EUL V5 business area.
8. Choose Tools | Register PL/SQL Functions to display the PL/SQL Functions dialog.
9. Highlight functions that have the following Function Names:

   EUL5_GET_ANALYZED
   EUL5_GET_APPS_USERRESP
   EUL5_GET_AUTOGEN_ITEM_NAME
   EUL5_GET_COMPLEX_FOLDER
   EUL5_GET_DATEHIER_TMPLT_NAME
   EUL5_GET_EUL_DETAILS
   EUL5_GET_FOLDERNAME
   EUL5_GET_FORJ_ITEMID
   EUL5_GET_HIER_EXPID
   EUL5_GET_HEIRLVL
   EUL5_GET_HIERNODE_EXPID
   EUL5_GET_HIERORD
   EUL5_GET_ISITAPPS_EUL
   EUL5_GET_ITEM
   EUL5_GET_ITEM_NAME
   EUL5_GET_JOIN
   EUL5_GET_JOIN_EXPID
   EUL5_GET_LINURL
   EUL5_GET_OBJECT
   EUL5_GET_OBJECT_NAME
   EUL5_GET_SIMPLE_FOLDER
   eul5_post_save_document
10. Click Delete for each of the functions to delete the Custom PL/SQL Functions associated with the Discoverer EUL V5 business area.

You have now successfully removed the EUL status workbooks.

About the EUL Data Definition workbook

The EUL Data Definition workbook provides reports on the objects contained in the EUL. You would use the EUL Data Definition workbook to learn more about how EUL objects are configured. The workbook consists of the following worksheets:

Worksheet	Description
EUL Version	The version of the Discoverer EUL you are currently using.
Business Areas and Folders	The folders in each business area
Folders and Items	The items in each folder in each business area
Joins	The joins defined in each business area.
Conditions	The conditions defined in each business area.
Hierarchies	The hierarchies defined in each business area.
Item Classes - LOVs	The List of Values defined in each business area.
Security	Access to business areas, by Users/Roles/Responsibilities.
Privileges	Access privileges, by Users/Roles/Responsibilities.
Summary Mappings	Mapping of folders to summaries, by business area.

About the EUL Query Statistics workbook

The EUL Query Statistics workbook displays statistical information about the queries that end users have run. You would use the EUL Query Statistics workbook to learn more about the nature of end user queries. The workbook consists of the following worksheets:

Worksheet	Description
Query Statistics	The version of the Discoverer EUL to which you are currently connected.
Workbooks Queried by User	Workbooks queried by user.
Workbook Query Statistics	Query statistics about each workbook.
Workbooks that have used summaries.	Which workbooks have used summaries.
Ad-hoc Queries by User	Shows the User and the Folders and Items queried but not saved to the database.
Ad-hoc Queries by Workbook	Shows the workbooks queried but not saved to the database.
Ad-hoc Queries that used a Summary	Shows the queries not saved to the database that used a summary.
Advanced Query Statistics	Allows users to tune workbooks and worksheets. **Note:** This worksheet is aimed at the more advanced user of the EUL Query Statistics workbook.

About the EUL Access workbook

The EUL Access workbook provides the following information about a user's database access privileges to database objects:

- the EULs and schemas this user has access to
- the database objects this user can access
- the privileges given on the database objects owned by this users
- the access rights this user has over other users objects

The workbook consists of the following worksheets:

Worksheet	Description
Access to EULs	EULs in this and other database schemas that this user can access.
Access to Database Objects	Schemas and objects accessible by this user.
Access Privileges given On My Objects	Access given to other users on the database objects that this user owns.
Access Privileges on Other Users Objects	Access privileges on other users objects.

About the EUL Workbook Management workbook

The EUL Workbook Management workbook provides information about the workbooks and worksheets saved to the EUL. The workbook consists of the following worksheets:

Worksheet	Description
EUL version	The version of the Discoverer EUL to which you are currently connected.
Workbook Access	Workbooks saved to the database and who can access them.
Worksheet SQL Inspector	Worksheets SQL saved to the database.
Workbook Dependency	Workbooks and worksheets items, joins and conditions dependency.
Workbook Dependency - Folders and Items lookup	Look up the Identifier of the folders and items that currently exist in your EUL.
Workbook Dependency - Joins lookup	Look up the Identifier of the joins that currently exist in your EUL.
Workbook Dependency - Conditions lookup	Look up the Identifier of the conditions that currently exist in your EUL.

Notes on EUL status workbooks and the table DBA_JOBS_RUNNING

Certain folders (specifically the EUL5_DBA_JOBS_RUNNING folder) in the Discoverer EUL V5 business area require the EUL owner to have SELECT access to the DBA_JOBS_RUNNING database table. Without SELECT access to this table, the ORA-01031 message regarding insufficient privileges is displayed.

To grant SELECT access to DBA_JOBS_RUNNING:

1. Start SQL*Plus (if it is not already running) and connect as a user with dba privilege.

   For example, if SQL*Plus is already running, you might type the following at the command prompt:

   ```
   SQL> connect dba_user/dba_password@database;
   ```

   Where dba_user is a user with the dba privilege and dba_pw is the password.

2. Grant SELECT access to DBA_JOBS_RUNNING to the EUL owner by typing the following at the command prompt:

   ```
   SQL> grant select on dba_jobs_running to <EUL owner>;
   SQL> commit;
   ```

To confirm that the EUL owner has select access to the DBA_JOBS_RUNNING database table:

1. Start SQL*Plus (if it is not already running) and connect as the EUL owner.

   For example, if SQL*Plus is already running, you might type the following at the command prompt:

   ```
   SQL> connect jchan/tiger@database;
   ```

   Where jchan is the EUL owner and tiger is the EUL owner password.

2. Describe the DBA_JOBS_RUNNING database table by typing the following at the command prompt:

   ```
   SQL> desc DBA_JOBS_RUNNING
   ```

   If the EUL owner has select access to DBA_JOBS_RUNNING, a list of columns in the table is displayed. Otherwise, a message indicating the object does not exist is displayed.

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Predicting Query Performance

This chapter explains how to use query prediction in Discoverer Administrator and contains the following topics:

- "About predicting query performance"
- "How does query prediction work in Discoverer Plus?"
- "Why might query prediction not be available?"
- "About improving the speed and accuracy of query prediction"
- "How to make the necessary database views available for query prediction"
- "How to verify and change the timed_statistics parameter for query prediction"
- "How to analyze data tables"
- "How to verify and change the optimizer_mode parameter for query prediction"
- "How to reduce long query prediction times"
- "How to use query prediction with secure views"
- "How to delete old query prediction statistics"

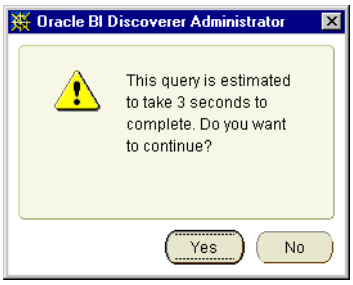
About predicting query performance

Discoverer includes functionality to predict the time required to retrieve the information in a Discoverer query. The query prediction appears before the query begins, enabling Discoverer users to decide whether to run the query. This is a powerful facility that enables Discoverer users to control how long they wait for large reports.

Query Prediction uses the Cost-Based Optimizer (CBO) in the Oracle RDBMS. Therefore query prediction is not available when running against databases running with the Rule-Based Optimizer (RBO).

How does query prediction work in Discoverer Plus?

Discoverer end users can specify that they be informed when a query is predicted to take longer than a defined time. A dialog displays the query prediction details and the option to cancel the query.



If the user chooses to cancel the query they can schedule the workbook for Discoverer to run the query later, for example, overnight so that the user can open the worksheet the next morning (for more information about scheduling workbooks in Discoverer Plus, see the *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Plus*). For more information about enabling end users to schedule workbooks using Discoverer Administrator, see Chapter 8, "Scheduling Workbooks".

Why might query prediction not be available?

Discoverer end users might find that query prediction is not available when running a worksheet. To see possible reasons (in Discoverer Administrator), choose Help | Database Information to display the "Database Information dialog". Query prediction might not be available for any of the following reasons:

Reason	Solution
Connection to a database that does not support query prediction (for example, Oracle 7.1.x)	Upgrade the database.
Views required for query prediction are not available.	See "How to make the necessary database views available for query prediction"
The timed-statistics parameter in init<sid>.ora is set to FALSE (the default value).	See "How to verify and change the timed_statistics parameter for query prediction"
Data tables have not been analyzed.	See "How to analyze data tables"
The optimizer mode parameter in init<sid>.ora is set to RULE instead of CHOOSE	See "How to verify and change the optimizer_mode parameter for query prediction"

About improving the speed and accuracy of query prediction

When users have confidence in the speed and accuracy of query prediction, they will be more likely to schedule long-running queries to run later. With accurate query prediction, the load placed on the server is typically reduced and query performance is improved for all users.

To implement query prediction effectively:

- Analyze the tables that users will query using the ANALYZE TABLE command. Use the Business Areas and Folders worksheet of the EUL Data Definition workbook to display when the folders in the EUL were analyzed. For information about how to analyze data tables, see "How to analyze data tables".
- Grant your users access to the system view V_$SQL (for more information, see "How to use query prediction with secure views")

How to make the necessary database views available for query prediction

Various database views must have the SELECT privilege granted to the public user before query prediction is enabled in Discoverer. For more information, see the Oracle10*g* documentation.

To make the necessary views available for query prediction, for Oracle databases (version 9.2.0.7 or later):

1. Start SQL*Plus (if it is not already running) and connect as the SYS user, or a user to which the sysdba privilege has been granted.

   For example, if SQL*Plus is already running, you might type the following at the command prompt:

   ```
   SQL> CONNECT sys/sys_pw@database AS SYSDBA;
   ```

   Where sys is the SYS user and sys_pw is the SYS user password.

2. Grant SELECT access on the views necessary for query prediction by typing the following at the command prompt:

   ```
   SQL> grant select on v_$session to public;
   SQL> grant select on v_$sesstat to public;
   SQL> grant select on v_$parameter to public;
   ```

   Note: To grant SELECT on v_$parameter you must log in as the SYS user. If you are unable to login as the SYS user or are unsure about the SYS user name and password, see your database administrator.

How to verify and change the timed_statistics parameter for query prediction

The timed_statistics parameter found in the database view v_$parameter must be set to TRUE to enable query prediction in Discoverer.

To verify that timed_statistics is set to TRUE:

1. Start SQL*Plus (if it is not already running) and connect as the database administrator.

   For example, if SQL*Plus is already running, you might type the following at the command prompt:

   ```
   SQL> CONNECT dba_user/dba_pw@database;
   ```

   Where dba_user is the database administrator and dba_pw is the database administrator password.

2. Type the following at the command prompt:

   ```
   SQL> select value from v$parameter where name = 'timed_statistics';
   ```

   If the query returns the value TRUE, timed_statistics is set correctly for query prediction. If the query returns the value FALSE, query prediction will not be available unless you change the value of the timed_statistics parameter in the init<sid>.ora file.

   Note: v$parameter is a synonym (that is, a pointer) to the view v_$parameter.

To edit the init<sid>.ora file:

1. Locate the INIT<SID>.ORA file.

The INIT<SID>.ORA file is held in <ORACLE_HOME>\database. The default name of the file is INITORCL.ORA, where ORCL is the <SID> name.

2. Edit the file to include the following line:

```
timed_statistics = TRUE
```

3. For the change to take effect, shut down and restart the database.

How to analyze data tables

Discoverer uses the results of data table analysis for query prediction. Data table analysis generates information about the database tables (for example, the size of a table). For more information, see the Oracle10*g* database documentation.

To analyze data tables:

1. Start SQL*Plus (if it is not already running) and connect as the owner of the data tables you want to analyze.

   For example, if SQL*Plus is already running, you might type the following at the command prompt:

   ```
   SQL> connect tab_owner/tab_pw@database;
   ```

   Where tab_owner is the username and tab_pw is the password of the data table owner.

2. Type the following query:

   ```
   SQL> analyze table <tabowner.tablename> compute statistics for all columns;
   ```

Notes

- If you expect the table contents to change significantly over time, analyze the data tables at regular intervals.
- If your end users find that query prediction itself takes a long time (say, more than 10 seconds) this suggests that the tables have not been analyzed. For example, if it takes 25 seconds or so for Discoverer to display the query prediction but the query runs in less than 2 seconds.

How to verify and change the optimizer_mode parameter for query prediction

To verify that the optimizer_mode parameter is set to CHOOSE:

1. Start SQL*Plus (if it is not already running) and connect as the database administrator.

   For example, if SQL*Plus is already running, you might type the following at the command prompt:

   ```
   SQL> CONNECT dba_user/dba_pw@database;
   ```

   Where dba_user is the database administrator and dba_pw is the database administrator password.

2. Type the following at the command prompt:

   ```
   SQL> select value from v$parameter where name = 'optimizer_mode';
   ```

Note: v$parameter is a synonym (that is, a pointer) to the view v_$parameter.

If the query returns the value CHOOSE, optimizer_mode is set correctly for query prediction. The system will use the Cost Based Optimizer if the tables have been analyzed, and the Rule Based Optimizer if the tables have not.

If the query returns the values FIRSTROWS or ALLROWS, optimizer_mode is also set correctly for query prediction

Both FIRSTROWS and ALLROWS force the use of the Cost Based Optimizer, even if the tables have not been analyzed.

If the query returns the value RULE, query prediction will not be available unless you change the value of the optimizer_mode parameter in the init<sid>.ora file.

To edit the init<sid>.ora file:

1. Locate INIT<SID>.ORA.

   The INIT<SID>.ORA file is held in <ORACLE_HOME>\database. The default name of the file is INITORCL.ORA, where ORCL is the <SID> name.

2. Edit the file to include the following line:

   ```
   optimizer_mode = CHOOSE
   ```

3. For the change to take effect, shut down and restart the database.

How to reduce long query prediction times

You can reduce the time it takes to complete the query prediction process.

Discoverer uses the Cost-Based Optimizer within the query prediction process. Note that the Cost-Based Optimizer only parses the query statements, and that query execution is usually governed by the server's default optimizer mode.

In a large schema environment (for example, Oracle Applications), the database can take a long time to parse a statement using the Cost-Based Optimizer. The query prediction process might therefore take several minutes to complete.

If users are having to wait a long time before the query prediction process is complete, consider the following solutions:

- You could turn off query prediction using the appropriate Discoverer registry setting, as follows:
  - For Discoverer Desktop

    In the Windows registry, set the DWORD value of the `HKEY_CURRENT_USER\Software\Oracle\Discoverer 10\Database\QPPEnable` registry key to 0 (zero).

    If you subsequently decide to re-enable query prediction, either remove the registry key or set it to 1.

    For more information about Discoverer registry settings stored in the Windows registry, see "About Discoverer Administrator and Discoverer Desktop registry settings".

  - For Discoverer Plus and Discoverer Viewer

    Change the value of the QPPEnable registry setting in the in the pref.txt file. For the changes to take effect, you must 'apply' the preferences. The new value is then written to the reg_key.dc file (for more information about how to set preferences, see the *Oracle Fusion Middleware Configuration Guide for Oracle*

Business Intelligence Discoverer). If QPPEnable is set to 1, query prediction is turned on. To turn query prediction off, set QPPEnable to 0.

For more information about Discoverer registry settings stored in the `.reg_key.dc file`, see "About Discoverer Plus and Discoverer Viewer registry settings".

- You could make sure that query prediction does not enforce the use of the Cost-Based Optimizer using the appropriate Discoverer registry setting, as follows:
  - For Discoverer Desktop

    In the Windows registry, set the DWORD value of the `HKEY_CURRENT_USER\Software\Oracle\Discoverer 10\Database\QPPCBOEnforced` registry key to 0 (zero).

    When this registry key is set to zero, use of the Cost-based Optimizer (CBO) is not enforced and will follow the normal rules of the database server.

    If you subsequently decide that you want query prediction to force the use of the Cost-Based Optimizer, either remove the registry key or set it to 1.

    For more information about Discoverer registry settings stored in the Windows registry, see "About Discoverer Administrator and Discoverer Desktop registry settings".
  - For Discoverer Plus and Discoverer Viewer

    Change the value of the QPPCBOEnforced registry setting in the in the pref.txt file. For the changes to take effect, you must 'apply' the preferences. The new value is then written to the reg_key.dc file (for more information about how to set preferences, see the *Oracle Fusion Middleware Configuration Guide for Oracle Business Intelligence Discoverer*). If QPPCBOEnforced is set to 1, query prediction will enforce the use of the cost-based optimizer. To specify that query prediction is to use the default optimizer, set QPPCBOEnforced to 0.

    For more information about Discoverer registry settings stored in the `.reg_key.dc` file, see "About Discoverer Plus and Discoverer Viewer registry settings".
- You could tune the way the Cost-Based Optimizer uses indexes. For example, you could adjust the following database parameters:
  - optimizer_index_cost_adj
  - optimizer_index_caching

  For more information about database parameters, see the Oracle11*g* documentation.
- You could delete the existing statistics out of the statistics table.

  For more information, see "How to delete old query prediction statistics".

How to use query prediction with secure views

Discoverer's query prediction feature uses the EXPLAIN PLAN statement to analyze queries. However, EXPLAIN PLAN cannot analyze queries against secure views, with the result that query prediction is not normally able to work in these environments. To work around this limitation, grant your users access to the system view V_$SQL.

To grant your users access to the system view V_$SQL, for Oracle databases (version 9.2.0.7 or later):

1. Start SQL*Plus (if it is not already running) and connect as the SYS user, or a user to which the sysdba privilege has been granted.

   For example, if SQL*Plus is already running, you might type the following at the command prompt:

   ```
   SQL> CONNECT sys/sys_pw@database AS SYSDBA;
   ```

   Where sys is the SYS user and sys_pw is the SYS user password.

2. Grant SELECT access on the views necessary for query prediction by typing the following at the command prompt:

   ```
   SQL> grant select on v_$sql to public;
   ```

Notes

- To grant SELECT on v_$sql you must log in as the SYS user. If you are unable to login as the SYS user or are unsure about the SYS user name and password, see your database administrator.
- You can also grant your users access to the system view V_$SQL by running the following script in SQL*Plus:

  <ORACLE_HOME>\discoverer\util\eulsuqpp.sql

  You must know the SYSTEM password to use this script.

How to delete old query prediction statistics

Query prediction statistics can become obsolete for many reasons. You can delete all query prediction statistics that were created before a specified date.

To delete old query prediction statistics from the database:

1. Start SQL*Plus (if it is not already running) and connect as the EUL owner.

   For example, if SQL*Plus is already running, you might type the following at the command prompt:

   ```
   SQL> connect jchan/tiger@database;
   ```

   Where jchan is the EUL owner's username and tiger is the EUL owner's password.

2. Run the SQL file eulstdel.sql.

   For example you might type the following at the command prompt:

   ```
   SQL> start <ORACLE_ HOME>\discoverer\util\eulstdel.sql
   ```

   Where <ORACLE_HOME> is where Discoverer Administrator is installed.

   A summary of the query statistics stored in the database is displayed. You are given the option to delete query statistics older than a specified number of days.

3. (optional) Enter the number of days after which query statistics will be deleted (or leave it blank if you do not want to delete any statistics).

   If you do not specify the number of days, no query statistics are deleted.

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Discoverer Registry Settings

This chapter describes the Discoverer registry settings, and contains the following topics:

- "What are Discoverer registry settings?"
- "About Discoverer Plus and Discoverer Viewer registry settings"
- "About Discoverer Administrator and Discoverer Desktop registry settings"
- "Which registry settings improve Discoverer Desktop performance?"
- "What are the Discoverer Administrator and Discoverer Desktop registry settings?"
- "How to edit Discoverer Administrator and Discoverer Desktop registry settings"

What are Discoverer registry settings?

Discoverer registry settings control how Discoverer behaves under certain conditions. A Discoverer registry setting comprises:

- the name of the registry setting, which is usually a character string (for example, QPPEnable)
- the value of the registry setting (for example, 1, 0, a character string)

By default, each registry setting is set to the most commonly required value. However, in some cases you might want to change the value of a registry setting.

The location of Discoverer registry settings depends on the Discoverer product you are using:

- Discoverer Plus and Discoverer Viewer registry settings are held on the middle tier in a registry file called `.reg_key.dc`
- Discoverer Administrator and Discoverer Desktop registry settings are held in the Windows registry

About Discoverer Plus and Discoverer Viewer registry settings

Discoverer Plus and Discoverer Viewer use registry settings stored in a file called `.reg_key.dc`. The `.reg_key.dc` file is located on the middle tier server machine and is updated indirectly by applying changes to a file called pref.txt.

When an end user changes a preference in Discoverer Plus or Discoverer Viewer, Discoverer writes the change (for the current user) to the `.reg_key.dc` file.

For more information about the Discoverer Plus and Discoverer Viewer registry settings, see the *Oracle Fusion Middleware Configuration Guide for Oracle Business Intelligence Discoverer*.

About Discoverer Administrator and Discoverer Desktop registry settings

Discoverer Administrator and Discoverer Desktop use registry settings stored in the Windows registry.

When an end user changes a user preference in Discoverer Administrator or Discoverer Desktop, Discoverer writes the change (for the current user) to the Windows registry under the following registry key:

\\HKEY_CURRENT_USER\Software\Oracle\Discoverer 11\

If you want to change Windows registry settings:

- take a copy of the Windows registry before making any changes
- be careful not to make any unintended modifications
- if in any doubt about what to do, contact your system administrator

Which registry settings improve Discoverer Desktop performance?

The following registry settings can affect the performance of Discoverer Desktop:

- BusinessAreaFastFetchLevel
- ObjectsAlwaysAccessible

For more information about these settings, see the appropriate entry in "What are the Discoverer Administrator and Discoverer Desktop registry settings?".

What are the Discoverer Administrator and Discoverer Desktop registry settings?

The following table contains the Discoverer Administrator and Discoverer Desktop registry settings in the Windows registry that you might need to change.

Tip: To change the value of a registry setting or to add a registry setting that is not visible in the Windows Registry Editor, see "How to edit Discoverer Administrator and Discoverer Desktop registry settings". The following table displays Discoverer Administrator and Discoverer Desktop registry settings:

Registry setting name	Directory	Description	Default value	Valid values
AggregationBehavior	Application	This setting determines the default aggregation behavior (applied to all Discoverer Desktop worksheets) when a Discoverer Desktop user selects the check box **Use the default aggregation behavior** in the Desktop Options dialog: Aggregation tab. If you set this Registry setting value to 0 and a Discoverer Desktop user selects the check box **Use the default aggregation behavior** in the Desktop Options dialog: Aggregation tab, Discoverer Desktop uses the value selected in the field **Show the values that cannot be aggregated option** in the Desktop Options dialog: Formats tab. If you set this Registry setting value to 1 and a Discoverer Desktop user selects the check box **Use the default aggregation behavior** in the Desktop Options dialog: Aggregation tab, Discoverer Desktop shows the sum of the values displayed in the contributing cells. **Note:** When a Discoverer Desktop user clears the check box **Use the default aggregation behavior** in the Desktop Options dialog: Aggregation tab, this registry setting will have no effect on the current workbook. Instead, the aggregation behavior for the current worksheet is determined by the option that the user selects (for more information, see the Discoverer Desktop Help). **Note:** The AggregationBehavior registry setting does not apply to Discoverer Plus. For more information about specifying the default aggregation behavior for Discoverer Plus, see the *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Plus*.	0	0 - Discoverer Desktop displays the value selected in the **Show the values that cannot be aggregated option** selected in the Desktop Options dialog: Formats tab. 1 - Discoverer Desktop displays the sum of the values displayed in the contributing cells.
ArchiveCacheFlushInterval	Database	This setting controls the interval between EUL cache flushes during Export and Import of EEX files. Used to avoid excessive memory usage during the export or import of a very large archive	1000	>=0 The number of objects that are processed between EUL cache flushes when importing and exporting EEX files

Registry setting name	Directory	Description	Default value	Valid values
AutogenNameOnCreate	Database	This setting determines the default value of the Auto-Generate name property for: ▪ newly loaded secondary elements ▪ newly created secondary elements ▪ imported EEX files that are imported using Oracle Business Intelligence Discoverer command-line interface (or the Oracle Business Intelligence Discoverer EUL Command Line for Java Interface) and the /auto_gen_name command modifier For more information, see "About generating and updating EUL item names automatically".	0	0 - Do not generate the names of secondary elements. 1 - Generate the names of secondary elements.
BusinessAreaFastFetchLevel	Database	This setting controls the amount of pre-caching that occurs for folders and items whenever a business area is fetched. In general terms, the lower the value, the fewer folders and items are immediately fetched into the Navigator dialog.	1	0 - No Fast Fetch 1 - Fast Fetch the folders within each business area 2 - Fast Fetch folders within each business area and items in Discoverer Desktop only 3 - Fast Fetch folders within each business area and items in Discoverer Administrator only 4 - Fast Fetch folders and items within each business area
CreateJoinInOtherBAs	Administrator	This setting enables you to control the extent to which Discoverer Administrator generates joins when you load or refresh a folder. By default, joins are only generated automatically between folders within the same business area. However, you can specify that joins are created automatically across business areas as well. This setting controls that option.	0	0 - Do not generate/check joins to folders outside the current business area. >0 - Generate/check joins to folders outside the current business area.
DefaultPreserveDisplayPropertyForRefresh	Database	When refreshing, specifies whether an updated item description is discarded and replaced with the original description, or whether the updated description is retained	0	0 - Use updated description 1 - Use original description

Registry setting name	Directory	Description	Default value	Valid values
DisableAlternateSort Optimisation		This setting specifies whether Discoverer writes optimized Alternate Sort queries. **Tip**: Set to 1 only if you use external registered summaries.	0	0 - Do not write optimized Alternate Sort queries 1 - Do write optimized Alternate Sort queries
DisableAutoOuterJoin sOnFilters	Database	This setting toggles the behavior of Discoverer when running queries involving an outer join with a condition (or conditions) applied. The effect of this setting is explained in an example in Chapter 10, "Creating and Maintaining Joins"	0	0 - Do not disable outer joins on filters 1 - disable outer joins on filters
DisableMultiJoinDete ction	Database	This setting toggles multiple join path detection when creating worksheets in Desktop. If this setting is set to 1, Desktop selects all join options when creating a worksheet. If this setting is set to 0 and multiple joins exist, Desktop displays the Join Folders dialog where you choose the join(s) to use for the worksheet. **Note:** It is recommended that Desktop users select all available joins for Discoverer to display accurate results data.	0	1 - Disable multiple join detection. 0 - Do not disable multiple join detection.
EnableTriggers	Database	Specifies whether database triggers are disabled. For example, Discoverer attempts to make a database call for every new column found during a refresh. If this value is set to 0, Discoverer will not make the database call.	0	0 - Disable database triggers 1 - Enable database triggers
EULUpgradeForceCo mmitForAllSteps	Database	This affects the commit processing and hence rollback space usage during the upgrade of a previous version EUL. If you are having problems upgrading an EUL due to limited rollback space, it is possible to commit more frequently using this setting.	0	
EULUpgradeRollback Segment	Database	If this setting is defined then it should be the name of the rollback segment that you want to be used for the duration of the upgrade. In other words, if set to "Large_RB1", a "SET TRANSACTION USE ROLLBACK SEGMENT Large_RB1" statement would be issued.	No default	
ExportJoinFromMaste r	Database	When exporting a business area, specifies whether joins from the master folder are also exported.	0	0 - Do export joins from Master Folder Any value other than 0 = Do not export joins from the Master Folder

Registry setting name	Directory	Description	Default value	Valid values
FormatXML	Database	Set the value to 1 if you want the XML export file to include spaces that make the file more readable, but larger. If the value is 0 or the entry is not present, the export file will not use indentation thus reducing file size.	0	0 = not use indentation 1 = include spaces
MaxNumberJoinPredicates	Database	During bulk load you have an option to create an automatic join based on column names (rather than primary/foreign keys). If you have the same table already loaded, then a join will be created that matches every column in the table. You can stop these being created by specifying the maximum number of predicates in one join using matching column names during bulk load.	20	
ObjectsAlwaysAccessible	Database	Specifies (in Discoverer Desktop) whether to display Business Area objects and items even when the underlying database tables they are built on do not exist (or are inaccessible for some other reason). Disabling this verification speeds up the display of Business Area objects and items. When a user executes a query, if the database objects do not exist or the user does not have access to them and this setting is set to 1, Desktop displays an error (for example, "ORA 942 Table or View does not exist").	1	0=verify 1=do not verify and assume that the objects and items exist
QPPCBOEnforced	Database	Will use cost-based optimizer if set to 1. Will use default optimizer if set to 0. Query Prediction must parse statements to obtain their cost. The cost is only available when parsing with the cost based optimizer (it is not produced if parsing with the rule based optimizer). The default behavior in Discoverer is to force the use of the cost based optimizer when parsing these statements. If this registry setting is set to 0 Discoverer will use the default optimizer for the database and for the tables involved in the query. In other words if the default optimizer is rule-based and the tables have not been analyzed, query prediction will not be available.	1	0 - use the default query optimizer 1 - use the cost based optimizer

Registry setting name	Directory	Description	Default value	Valid values
QPPCreateNewStats	Database	Records new statistics if set to 1. These statistics are used by Query Prediction If you set this to zero, Discoverer does not create any new statistics for query prediction.	1	0 - false 1 - true
QPPEnable	Database	Enables you to turn Query Prediction on or off. Uses Query Prediction (QPP) if set to 1.	1	0 - false 1 - true
RdbFastSQLOff	Database	This only applies to Discoverer against RDB. If set to 1, it turns off "fast sql" on the RDB server. Only use this registry setting if errors are encountered against Oracle Rdb because it might help avoid some types of problems. See Chapter 23, "Discoverer Support for Non-Oracle Databases and Oracle Rdb" for further information about support for Oracle Rdb.	1	0 - false 1 - true
SetNULLItemHeadingOnBulkLoad	Database	When performing a bulk load, specifies whether item headings are set to the same value as item display names, or set to null	0	0 - Set item headings to item display names 1 - Set item headings to null
ShowReadOnlyPrompt	Application	You can set the operating system privilege for a file-based workbook to read-only. In this instance, when a user opens the workbook they get a warning message informing them that the workbook cannot be opened for read/write and to save any changes to another workbook. This registry setting enables you to switch this warning on and off.	0	0 - false 1 - true
SQLFlatten	Database	Controls whether Discoverer attempts to flatten the SQL, minimizing the use of inline views in the query SQL.	1	1 - enabled 0 - disabled
SQLItemTrim	Database	Controls whether Discoverer attempts to trim the SQL for irrelevant or unused items.	1	1 - enabled 0 - disabled
SQLJoinTrim	Database	Controls whether Discoverer attempts to remove the joins from the SQL (for more information, see "What effect do joins have on query results and query performance?").	1	1 - enabled 0 - disabled

Registry setting name	Directory	Description	Default value	Valid values
SqlTrace	Database	Creates an Oracle server trace file and all Discoverer SQL statements sent to the database server are written to the trace file. The default locations for the server trace files (extension `trc`) are as follows: <ORACLE_HOME>\rdbms\trace (on Windows machines) $ORACLE_HOME/log (on UNIX machines) **Note:** After the trace file is created and the required SQL statements are written to the trace file, you must reset the value of SqlTrace to the numeric value zero (0) to stop any further SQL statements being written to the file. Resetting the value of SqlTrace to zero (0) avoids unnecessary processing after the trace file is written. **Note:** The database user must have the dba privilege to use Discoverer with this setting enabled. For more information, see Chapter 26, "Using SQL Files and Trace Files".	0	1 - enabled
SQLType	Database	Determines how SQL is displayed in the SQL Inspector dialog. For more information, see "About configuring how Discoverer displays SQL in the SQL Inspector dialog".	0	0 - flattened SQL, (standard Oracle format) 2 - native SQL (Discoverer SQL sent to the kernel, with inline views) 3 - flattened SQL (standard Oracle format) without object aliases

Registry setting name	Directory	Description	Default value	Valid values
SummariesAlwaysAccessible	Database	Displays summary folders quickly from the Summaries tab and makes them all appear to be accessible (regardless of whether they are or not). This setting avoids validation and checks (which can be slow) and enables users to display/modify summary folders quickly. Only setups with large numbers of summary folders are likely to need to use this setting. **Note:** Be aware that if you enable this setting, invalid summary folders are not shown as being invalid in the UI and the UI will not reflect this until this setting is disabled. This might cause the Discoverer manager to miss required action. Set this to "1" for faster display of summary folders from the Summaries tab. Set this to "0" to validate summary folders before displaying them at the Summaries tab.	0	0 = false 1 = true
MaxNumListRows	Administrator	Specifies a maximum number of users/roles to display. For example, if your system has one million users, it might take a long time to display all of these users and might also use a lot of memory. If the limit specified by this registry setting is exceeded, Discoverer displays an error message informing you that the maximum number of results have been retrieved. To enable Discoverer to display more results, you must increase the number of rows specified by this registry setting. **Note:** You can use this registry setting with the UserRoleFilter registry setting to refine the list of users or roles displayed.	If not set, the result limit defaults to 100,000 rows.	

Registry setting name	Directory	Description	Default value	Valid values
UserRoleFilter	Administrator	Enables Discoverer Administrator to display only users and roles that start with the value used for this setting. This setting is case sensitive. This setting can improve the time it takes for Discoverer to display very large lists of database users and roles in the Privileges and Security dialogs. For example, if you set the value to SYS, Discoverer will only display users and roles that begin with the letters SYS (for example, SYS, SYSMAN, SYSTEM). For changes to take effect, you do not have to restart Discoverer Administrator. It is sufficient to just close the Security or Privileges dialog, update the registry, and display the dialog. When this setting has no value (default), Discoverer displays all users and roles. **Note:** This setting does not affect display of users, roles that are granted a privilege, or the PUBLIC user; they are displayed regardless of this setting. **Note:** You can use this registry setting with the MaxNumListRows registry setting to refine the list of users or roles displayed.	No default	

How to edit Discoverer Administrator and Discoverer Desktop registry settings

You edit Discoverer Administrator and Discoverer Desktop registry settings using the Windows registry editor.

How to start the Registry Editor and edit registry settings will depend on the environment you are using.

To start the Registry Editor and edit Discoverer Administrator and Discoverer Desktop registry settings in a Windows environment:

1. Choose Run from the Windows Start menu.
2. In the Run dialog box, type `regedt32` and click OK.
3. Open the \\HKEY_CURRENT_USER\Software\Oracle\Discoverer 10\ registry key to view the Discoverer Administrator and Discoverer Desktop registry settings.
4. If you want to edit the value of a Discoverer Administrator or Discoverer Desktop registry setting shown in the Registry Editor:
   a. Double-click the registry setting in the right-hand pane of the Registry Editor to display the DWORD Editor dialog.

b. Replace the existing value of the registry setting with a new value and click OK.

5. If you want to edit the value of a Discoverer Administrator or Discoverer Desktop registry setting and the registry setting is not currently shown in the Registry Editor:

a. Click the key name below which the registry setting should appear.

For example, if you want to set QPPEnable to 0, and QPPEnable does not appear in the Registry Editor, click the \\HKEY_CURRENT_USER\Software\Oracle\Discoverer 10\Database\ key to select it. For more information about the registry key for a particular registry setting, see "What are the Discoverer Administrator and Discoverer Desktop registry settings?".

b. Choose Edit | Add Value to display the Add Value dialog.

c. Enter the name of the Discoverer registry setting you want to add (for example, QPPEnable) and click OK.

The String Editor dialog appears.

Note: Discoverer Administrator Registry settings must be in the case specified in the table in the section "What are the Discoverer Administrator and Discoverer Desktop registry settings?".

d. Enter the value you want the Discoverer registry setting to have (for example, 1) and click OK.

The registry setting appears in the Registry Editor with the value you specified.

6. Choose Registry | Exit to close the Registry Editor.

22

Discoverer Command-line Interface

This chapter introduces the Oracle Business Intelligence Discoverer command-line interface and contains the following topics:

- "Which Discoverer command-line interfaces are available?"
- "What is the Oracle Business Intelligence Discoverer command-line interface?"
- "What are the differences between the Discoverer command-line interface and the Discoverer EUL command line for Java"
- "What is a Discoverer command-line interface command?"
- "What is a Discoverer command-line interface command modifier?"
- "About using the Discoverer command-line interface"
- "What privileges are required to run the Discoverer command-line interface?"
- "Notes on using commands"
- "What command syntax conventions does this guide use?"
- "What is the syntax for commands?"
- "Examples of commands"
- "What is a command file?"
- "How to create a command file"
- "How to run a command file"
- "Examples of command files"
- "Quick guide to Discoverer Administrator commands"
- "Discoverer Administrator command reference"
- "Discoverer Administrator command modifier reference"
- "Discoverer Desktop command reference"

Which Discoverer command-line interfaces are available?

Discoverer has the following command-line interfaces:

- Oracle Business Intelligence Discoverer command-line interface

  For more information, see "What is the Oracle Business Intelligence Discoverer command-line interface?".

- Oracle Business Intelligence Discoverer EUL command line for Java

For more information, see the *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer EUL Java Command Line*.

What is the Oracle Business Intelligence Discoverer command-line interface?

The Oracle Business Intelligence Discoverer command-line interface is a set of text based commands that enable you to create and manipulate Discoverer EULs.

Note: You use Heterogeneous Services to connect to non-Oracle databases, although the EUL is stored in the Oracle database. For more information about using non-Oracle databases, see Chapter 23, "Discoverer Support for Non-Oracle Databases and Oracle Rdb".

The Discoverer command-line interface runs only on a Windows platform.

The Discoverer command-line interface enables you to perform tasks without running the Discoverer Administrator or Discoverer Desktop graphical user interface (GUI). For example, using the Discoverer command-line interface you can:

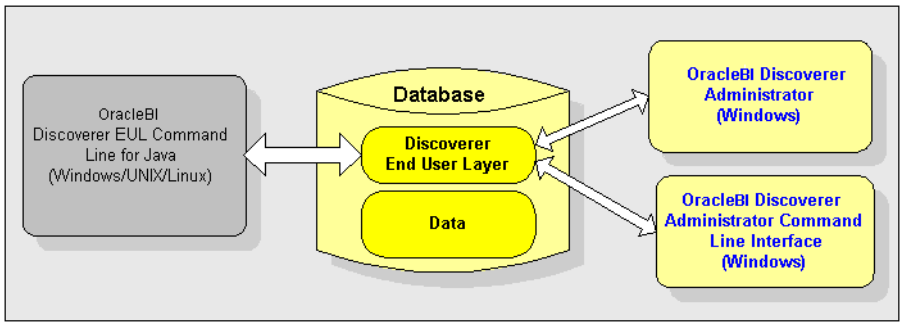
- import EUL objects
- export EUL objects
- refresh EUL objects

In addition, you can create command files that contain multiple commands (much like MS-DOS batch files or UNIX script files) to perform groups of administrative tasks automatically.

The figure below shows three different ways in which you can manipulate Discoverer EULs:

- using the Oracle Business Intelligence Discoverer EUL Command Line for Java Interface on either a Windows, UNIX, or Linux machine
- using Oracle Business Intelligence Discoverer Administrator on a Windows machine
- using the Oracle Business Intelligence Discoverer Administrator Command-line Interface on a Windows machine

Figure 22–1 Discoverer interfaces to the Discoverer EUL



For a list of Discoverer command-line interface commands, see "Discoverer Administrator command reference" and "Discoverer Desktop command reference".

What are the differences between the Discoverer command-line interface and the Discoverer EUL command line for Java

Much of the Discoverer command-line interface is compatible with the Discoverer EUL command line for Java. If you have commands and scripts written for the Discoverer command-line interface, you can easily convert them to run on the Discoverer EUL command line for Java.

The Discoverer command-line interface and the Discoverer EUL command line for Java differ as follows:

- The Discoverer EUL command line for Java runs on any platform. The Discoverer command-line interface runs only on Windows.

  Note: You do not need to have Discoverer Administrator installed to run the Discoverer EUL Command Line for Java.

- Discoverer EUL command line for Java commands are prefixed with eulapi.
- Some Discoverer command-line interface commands have minor differences in syntax (for more information, see the *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer EUL Java Command Line*).
- Discoverer EUL command line for Java modifiers are prefixed by a dash. The Discoverer command-line interface command modifiers are prefixed with a slash (/) character.

What is a Discoverer command-line interface command?

A Discoverer command-line interface command is an instruction that manipulates a Discoverer EUL in some way. For example:

- the /CONNECT command connects to a database using the username, password, and database name specified, for example:

  ```
  dis51adm.exe /connect myname/mypassword@database
  ```

- the /IMPORT command imports EUL objects into the current EUL from a specified Discoverer export file (EEX) file, For example to import EUL objects from the file c:\data\sales.eex:

  ```
  dis51adm.exe /connect myname/mypassword@database /import c:\data\sales.eex
  ```

Note: Commands are not case-sensitive (for more information, see also "Notes on using commands").

What is a Discoverer command-line interface command modifier?

A Discoverer command-line interface command modifier is an instruction that qualifies or refines a command. For example:

- the /LOG command modifier creates a log file to store processing information during the execution of a command

  ```
  dis51adm.exe /connect myname/mypassword@database /import c:\data\sales.eex /log
  sales_import_logfile
  ```

- The /ITEM command modifier used with the command /DELETE specifies which EUL item to remove from an EUL

  ```
  dis51adm.exe /connect myname/mypassword@database /delete /item sales.profit
  ```

About using the Discoverer command-line interface

You can run Discoverer commands in the following ways:

- Enter a command in the Windows Run dialog box, which you display by selecting Run from the Windows Start menu).
- Enter a command at the DOS command prompt. For example, to display all the available commands available in Discoverer Administrator.
- Store a series of commands in a text file (known as a command file) and run the text file as a single argument to the Discoverer executable file.

  For example, to run commands stored in the text file `import.txt`, enter the following command at the command prompt:

  ```
  dis51adm.exe /cmdfile import.txt
  ```

What privileges are required to run the Discoverer command-line interface?

To use the Discoverer command-line interface, you require the same Discoverer privileges as you do to use the Discoverer graphical user interface.

If you want to perform an operation on an EUL using the Discoverer command-line interface, you must have the correct privileges. If you do not have the correct privileges, the operation will fail.

When using the Discoverer command-line interface, you can explicitly specify an EUL using the modifier `/eul` (for more information, see "/eul") or if you do not specify an EUL, Discoverer will identify the default EUL for the database user.

Notes on using commands

When using the Discoverer command-line interface, the following rules apply:

- You can display all the commands available in Discoverer Administrator by entering the command `dis51adm.exe /?` in the Windows Run dialog.
- Commands are not case-sensitive - you can use either upper-case or lower-case characters interchangeably.
- Commands can appear in any order, if their arguments immediately follow them in the order defined.
- Command modifiers can appear in any order, if their arguments immediately follow them in the order defined.
- If you do not specify an object name where one is required (for example, an EUL or business area) Discoverer defaults to the Discoverer manager-owned object.
- When specifying Discoverer EUL objects, you can use either a display name or an identifier. For example, if a Discoverer folder has the display name Sales, and the identifier SALES_132388, you can specify this folder as an argument to the `/refresh_folder` command in two ways:
  - /refresh_folder Sales
  - /refresh_folder SALES_132388 /identifier

For more information about identifiers, see "What are identifiers?".

When specifying an object's display name or identifier that contains a special character (for example, a space), enclose the entire string in double quotation marks (" "). For example, enter the name of the folder object Sales Figures as /folder "Sales Figures".

- When using commands, execute them one at a time. If you try to run more that one command at a time, you might cause errors.
- If you use the /connect command to bypass the "Connect dialog", arguments that begin with a slash (/) must be enclosed in double-quotes. For example:

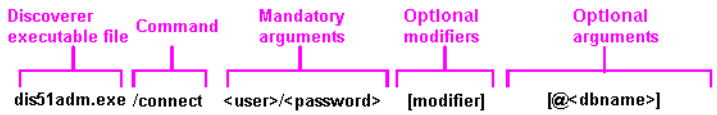
  /connect "/[@<dbname>]"
- If you want to use the Discoverer Desktop command-line interface to open a workbook from the database (using the `/opendb` command), the workbook name must not contain a period.

What command syntax conventions does this guide use?

This guide uses the following command syntax conventions:

- Discoverer commands and modifiers are shown in plain type.
- Mandatory command arguments are enclosed in angle brackets < >.
- Optional command arguments are enclosed in square brackets [ ].
- Where command arguments are separated by a pipe character (|), enter one from the list. For example, for the command '/refresh | /rename', enter either '/refresh' or '/rename'.

Figure 22–2 Command conventions used in this guide



What is the syntax for commands?

Use this syntax for the Discoverer command-line interface (typed in a single line with no line breaks or carriage returns):

```
dis51adm.exe
[/connect <user>/<password>[@<dbname>]]
/<command> [/<argument(s)>]
[/<modifier(s)> [/<argument(s)>]]
```

Where:

- dis51adm.exe - the name of the Discoverer executable file. The name depends on the version of Discoverer you are using, as follows:
  - Discoverer 3.1 - dis31adm.exe
  - Discoverer 4.1 - dis4adm.exe
  - Discoverer 9.0.4/10.1.2 - dis51adm.exe
- [/connect <userid>/<passwd>[@<dbname>]] - this optional command argument enables you to bypass the "Connect dialog".

- /<command> [/<argument(s)>] - a valid Discoverer command name followed by any required arguments.
- [/<modifier(s)> [/<argument(s)>]] - one or more valid Discoverer modifiers followed by any required arguments.

Examples of commands

Example 1

To delete the Sales folder and Sum1 summary from the eul_sales EUL you would use the following command:

```
dis51adm.exe /connect me/mypassword@database /delete /folder "Sales" /summary
"Sum1" /eul eul_sales /log del.log
```

Example 2

To refresh the Sales1 and Sales2 folders you would use the following command:

```
dis51adm.exe /connect me/mypassword@database /refresh_folder "Sales1, Sales2" /log
refsum.log
```

Example 3

To create an Applications Mode EUL in the database and grant access to it you would use the following command:

```
dis51adm.exe /connect eul_owner:appsresp/appspwd@appsdb /create_eul /apps_mode
/apps_grant_details apps/apps
```

What is a command file?

Command files are text files that contain one or more Discoverer commands that can be run automatically from the command line. Command files work in a similar way to MS-DOS batch files and UNIX script files.

The commands in a command file are treated as though they were entered directly on the command line. Carriage returns embedded in the text file are ignored.

A command file can in turn invoke other command files. This provides a convenient work around for the Microsoft Windows imposed limitation of restricting a command line to not more than 255 characters in length.

How to create a command file

You can create a command file using a text editor. Type the command into the text editor and save the file using the extension `txt`.

How to run a command file

To run a command file, start the Discoverer Administrator executable (for example, dis51adm.exe) with the name of the command file as an argument to the `/cmdfile` command. For example, to run commands stored in the text file Import.txt, type:

```
dis51adm.exe /cmdfile Import.txt
```

You can also run more than one command file by repeating the `/cmdfile` command. For example, to run commands stored in the text file Login.txt, then commands in Import.txt, type:

```
dis51adm.exe /cmdfile Login.txt /cmdfile Import.txt
```

Examples of command files

Command files are a convenient way to store modular commands, which can then be used in different combinations. For example, the following three command files contain the following commands:

- connect.txt

  contains the line `/connect me/mypassword@mydatabase`

- create.txt

  contains the line `/create eul /log create.log`

- delete.txt

  contains the line `/delete eul /log delete.log`

These three files can then be run from the command line in any of the following three combinations:

- `dis51adm.exe /cmdfile connect.txt`

  This would be a simple connect from the command line.

- `dis51adm.exe /cmdfile connect.cmd /cmdfile create.txt`

  This would connect and create an EUL for the connected user, storing all output into a log file named create.log.

- `dis51adm.exe /cmdfile connect.cmd /cmdfile delete.txt`

  This would connect and delete the EUL owned by the connected user, storing all output into a log file named delete.log.

Quick guide to Discoverer Administrator commands

Use the table below to find a brief description of a Discoverer Administrator command:

Command	Description
/?	Display online help.
/apps_fndnam <foundation name>	Override connection details.
/apps_gwyuid <gateway user id/password>	Override connection details.
/apps_user	Connect as Oracle Applications user.
/asm <modifier(s)>	Automate summary management ASM
/cmdfile	Run command files
/connect <user-name>/<password> [@<database>]	Connect to an EUL.
/create_eul	Create an EUL.
/create_eul /apps_mode	Create an APPS EUL.

Command	Description
/delete <modifier(s)>	Delete EUL objects.
/delete_bus_area <business area>	Delete a business area.
/delete_eul	Delete an EUL.
/export (EUL objects) <export file> <modifier(s)>	Export EUL objects.
/import (Business Area) <business area>	Import a business area.
/import (EUL objects) <import file(s)> <modifier(s)>	Import EUL objects.
/load <business_area>	Load a business area.
/refresh_bus_area <bus area name(s)>	Refresh business areas.
/refresh_folder <folder name(s)>	Refresh folders.
/refresh_summary <summary name(s)> <bus area name>	Refresh summary folders.

Use the table below to find out which command to use for a particular task:

How to:	Use this command
Automate summary management (ASM)	/asm <modifier(s)>
Connect as Oracle Apps user.	/apps_user
Connect to an EUL.	/connect <user-name>/<password> [@<database>]
Create an EUL.	/create_eul
Create an APPS EUL.	/create_eul /apps_mode
Delete a Business Area.	/delete_bus_area <business area>
Delete an EUL.	/delete_eul
Delete EUL objects.	/delete <modifier(s)>
Display on-line help.	/?
Export EUL objects.	/export (EUL objects) <export file> <modifier(s)>
Import a Business Area.	/import (Business Area) <business area>
Import EUL objects.	/import (EUL objects) <import file(s)> <modifier(s)>
Load a Business Area.	/load <business_area>
Override connection details.	/apps_fndnam <foundation name>
Refresh Business Areas.	/refresh_bus_area <bus area name(s)>
Refresh Folders.	/refresh_folder <folder name(s)>
Refresh Summaries.	/refresh_summary <summary name(s)> <bus area name>
Run command files	/cmdfile <command file name(s)>

Discoverer Administrator command reference

This section contains detailed reference information about each command in the Discoverer Administrator command-line interface. Note the following:

- commands are listed in alphabetical order
- commands can be refined by command modifiers (for more information, see "Discoverer Administrator command modifier reference")

/?

This command displays a list of Discoverer commands and their syntax and arguments.

Information	Details
■ Syntax:	/?
■ Modifiers:	None
■ Notes:	None
■ Restrictions:	None
■ Example:	dis51adm.exe /?

/apps_fndnam

This command overrides the values for the fields FNDNAM in the Connection tab of the Options dialog.

Information	Details
■ Syntax:	/apps_fndnam <foundation name>
■ Syntax:	/apps_gwyuid <gateway user id>/<password>
■ Example:	dis51adm.exe /connect appsuser:appsresp/appspwd@appsdb /apps_fndnam apps /apps_gwyuid applsyspub/pub

/apps_gwyuid

This command overrides the values for the field GWYUID (including Gateway User ID password) in the Connection tab of the Options dialog.

Information	Details
■ Syntax:	/apps_gwyuid <gateway user id>/<password>
■ Example:	dis51adm.exe /connect appsuser:appsresp/appspwd@appsdb apps /apps_gwyuid applsyspub/pub

/apps_user

This command enables you to connect to Discoverer as an Oracle Applications user.

Information	Details
■ Syntax:	/apps_user
■ Modifiers	/apps_responsibility /apps_security_group

Information	Details

■ Example	`dis51adm.exe /connect appsuser/appspwd@appsdb /apps_user /apps_responsibility "UK_Purchasing" /apps_security_group "UK _Managers"`
	Or
	`dis51adm.exe /connect appsuser:UK_Purchasing/appspwd@appsdb /apps_user /apps_security_group "UK_Managers"`

/asm

This command enables you to execute Discoverer's Automated Summary Management facility (ASM).

Information	Details
■ Syntax:	`/asm [/asm_space <bytes> | /asm_space <bytes> /asm_tablespace <tablespace name>]`
■ Modifiers:	`/asm_space, /asm_tablespace`
■ Restrictions:	If you specify an /asm_tablespace argument, you must specify an asm_space argument.
■ Example:	`dis51adm.exe /connect me/mypassword@database /asm /asm_space 2182 /asm_tablespace user_data`

/cmdfile

This command enables you to run Discoverer commands stored in a text file automatically.

Information	Details
■ Syntax:	`/cmdfile <file name>`
■ Notes:	To create a command file, create a text file containing one or more Discoverer commands using a standard text editor. To run the command(s) in the text file, at the command line, enter: `dis51adm.exe /cmdfile <file name>` For more information, see "What is a command file?".
■ Example:	To run command(s) stored in the text file myFile, type the following command at the command line: `dis51adm.exe /connect me/mypassword@database /cmdfile myFile`

/connect

This command enables you to connect to an EUL without having to enter a user name and password at the "Connect dialog".

Information	Details
■ Syntax:	`/connect <userid>/<passwd>[@<dbname>]]`

Information	Details
■ Modifiers:	/eul <eul> /apps_user /apps_responsibility <responsibility> /apps_gwyuid <gwyuid> /apps_fndnam <fndnam> /apps_security_group <security_group>
■ Notes:	See also Chapter 17, "Using Discoverer with Oracle Applications"
■ Example:	dis51adm.exe /connect user/password@database

/create_eul

This command enables you to create a Discoverer EUL.

Information	Details
■ Syntax:	/create_eul
■ Modifiers:	/apps_mode /apps_grant_details /default_tablespace /eul_language <language> /log /overwrite /password /private /show_progress /temporary_tablespace /user
■ Notes:	When using the /create_eul command, note the following: ■ Specify a user name and password for the owner of the new EUL. Not specifying a user name and password causes the ownership to default to your user ID. ■ Specify whether to overwrite any existing EUL owned by the intended owner of the new EUL. ■ Specify whether the new EUL should be public (default) or private. For more information about the creation and deletion of End User Layers, see Chapter 4, "Creating and Maintaining End User Layers."
■ Example:	To create a private EUL for a user named, "Bob", whose password is welcome, overwriting any existing EUL and recording all log entries in a file named create.log, enter: dis51adm.exe /connect me/mypassword@database /create_eul /overwrite /user bob /password welcome /private /log create.log

/create_eul /apps_mode

This command enables you to create an Oracle Applications Mode EUL using the Discoverer command-line interface. This command starts Discoverer Administrator (in Oracle Applications mode), creates the Applications Mode EUL in the database, and connects you to it. The example also includes the specification of schema/password.

Information	Details
■ Syntax:	/create_eul /apps_mode

Information	Details
■ Modifiers:	/apps_grant_details
■ Example	dis51adm.exe /connect system/manager /create_eul /apps_mode /apps_grant_details apps/apps

/delete

This command enables you to remove EUL objects from the database. You can also remove an entire EUL using the "/delete_eul" command.

Information	Details
■ Syntax:	/delete <modifier(s)> [/identifier]
■ Modifiers:	Modifiers for configuring the deletion: /log <log file name> [/log_only] /show_progress Modifiers for defining which EUL object(s) to delete: /asm_policy <asm policy> /business_area <business area> /ba_link <business area> <folder> /condition <folder>.<condition> /folder <folder> /function <PL/SQL function> /hierarchy < hierarchy> /hier_node <hierarchy>.<hierarchy_node> /identifier /item <folder>.<item> /item_class <item class> /join <join name> /parameter <folder>.<parameter> /summary <summary> /workbook <workbook>
■ Notes:	You can delete one or more EUL objects at a time, (see examples below). Parameters (for example, business areas, folders) must be named explicitly, wildcards are not allowed.
■ Example:	To delete two Business Areas named Test BA and Final BA, residing in an EUL named eul_sales, and write to a log file named delba.log, enter: dis51adm.exe /connect me/mypassword@database /delete /business_area "Test BA, Final BA" /eul eul_sales /log delba.log To delete a Folder named "Sales", and a Summary named "Sum1", residing in an EUL named eul_sales, and write to a log file named del.log, enter: dis51adm.exe /connect me/mypassword@database /delete /folder Sales /summary Sum1 /eul eul_sales /log del.lo

/delete_bus_area

This command enables you to remove a Discoverer business area from the database. See also "/delete_eul" and "/delete".

Information	Details
■ Syntax:	/delete_bus_area <business area>

Information	Details
■ Modifiers:	Modifiers for configuring the deletion: /keep_folder /log <log file name> [/log_only] /show_progress
■ Notes:	This command has been superceded by the "/delete" command, and is included for backward compatibility. For more information about the /delete command, see "/delete".
■ Example:	To delete the Business Areas named Test BA and Final BA, and write to a log file named delba.log, enter: dis51adm.exe /connect me/mypassword@database /delete_bus_area "Test BA, Final BA" /log delba.log

/delete_eul

This command enables you to delete the current Discoverer EUL. You can also selectively remove individual EUL objects using the "/delete" command.

Information	Details
■ Syntax:	/delete_eul
■ Example:	To delete the current eul, and write to a log file named deleul.log, enter: dis51adm.exe /connect me/mypassword@database /delete_eul /log deleul.log

/export (EUL objects)

This command enables you to export EUL objects to a Discoverer export file (EEX file). You can selectively export individual EUL objects (for example, folders, business areas, functions) or entire EULs (using the /all modifier). When you import multiple files, Discoverer automatically resolves references between the files. For example, you can export the Emp folder in fileA.eex and the Dept folder in fileB.eex. If Emp and Dept are joined, the join information will actually be in both files, but neither file contains the information for both folders. If you import both files, the join is re-created when the second file is processed.

Information	Details
■ Syntax:	/export <filename> [<*bus_area_name*>] Or /export <filename> <modifier(s)> [/identifier]

Information	Details
■ Modifiers:	/all /asm_policy <asm policy> /audit_info <audit details> /business_area <business area> /external_element <filename> (this filename refers to an xml file, not the export filename) /folder <folder> /function <function> /hierarchy <hierarchy> /identifier /item_class <item_class> /log <log file name> [log_only] /summary <summary> /set_created_by <creator name> /set_updated_by <updated name> /show_progress /workbook <workbook> [XML_workbook] /xmlworkbook (takes no parameters)
■ Notes:	<filename> - The name of the target *.EEX file. If a directory path is not specified, the target file is created in the default Discoverer folder. To override the default target directory setting, specify a directory path for the file, for example c:\data\sales.eex. Note that the directory path must be an absolute path, not a relative path. Wildcards are not allowed for parameters (for example, business areas, folders) these must be named explicitly. [<bus_area_name>] - Use this option to export an entire business area and its contents (that is, all EUL objects in the business area). If you only want to export the business area definition and metadata for the contents, use the /business_area modifier. When you export a business area using the /business_area modifier, Discoverer exports only business area definitions (for example, business area name and description) and links to the folders in the business area. Discoverer will export the folders and workbooks only when they are specified by name. <modifiers> - When specifying EUL objects, you can use either their Display Name or Identifier. To maintain data relationships, you must also export linked (or joined) objects.
■ Example:	To export two business areas named Test BA and Final BA, residing in an EUL named eul_sales, into a file named export.eex, and write to a log file named export.log, enter: dis51adm.exe /connect me/mypassword@database /export export.eex /business_area "Test BA" /business_area "Final BA" /all /eul eul_sales /log import.log

/import (Business Area)

This command enables you to import a Discoverer business area into the database from an EEX file. For more information about selectively importing Discoverer EUL objects, see "/import (EUL objects)".

Information	Details
■ Syntax:	/import <file name>

Information	Details
■ Modifiers:	/log <log file name> [log_only] /rename <rename-policy> /show_progress
■ Notes:	This command has been superseded by the /import *(EUL objects)* command, and is included for backward compatibility. For more information about the /import command, see "/import (EUL objects)".
■ Example:	To import the business area in the file myBA.eex, and write to a log file named impba.log, enter: dis51adm.exe /connect me/mypassword@database /import myBA.eex /log impba.log

/import (EUL objects)

This command enables you to import EUL objects from one or more Discoverer export files (EEX files). Discoverer export files are created using the /export command, and contain EUL objects (for example, folders, business areas, functions, or an entire EUL).

Information	Details
■ Syntax:	/import <"source*filename1.eex sourcefilename2.eex ...*"> <modifier(s)> [/identifier]
■ Modifiers:	/eul<EUL> /identifier /keep_format_properties /log <log file name> [log_only] /preserve_workbook_owner /refresh | /rename /show_progress /auto_gen_name
■ Notes:	<source filename(s)> - the name(s) of the source *.EEX file(s). You must specify the full path name for the file (for example, 'c:\data\sales.eex'). Note that the directory path must be an absolute path, not a relative path. Wildcards are not allowed for parameters (for example, business areas, folders) these must be named explicitly. Where multiple files are being imported, all files must be encapsulated in one pair double quotes and separated by spaces (for example, see below).
■ Example	dis51adm.exe /connect me/mypassword@database /import "file1.eex file2.eex"

/load

This command enables you to bulk load data from a database into a Discoverer business area.

Information	Details
■ Syntax:	/load <*bus_area*>

Information	Details
■ Modifiers:	/aggregate<aggregate> /auto_gen_name /capitalize /date_hierarchy <date_hier> /db_link <db_link> /description <descrip> /eul <eul_name> /insert_blanks /join <join_policy> /log <log_file> /lov <lov> /object <obj_name> /remove_prefix /show_progress /sort_folders /sort_items /source <source> /user <user_id>
■ Notes:	When using the /load command, note the following: ■ Specify the source of the data (default is the current database server). If you are loading data from an EUL Gateway, the source name must exactly match the EUL Gateway name. ■ Specify an EUL in which to load the objects (default is the Discoverer manager's own EUL). If you specify the EUL, you must have access privileges to the named EUL in order for the operation to succeed. ■ Specify an alternative database link from which to fetch the data (default is the current connection). ■ Filter the load by schema name (/user) (default is that no filter is used). ■ Filter the load by object name (default is that no filter is used). ■ Specify pre-formatting of the data with respect to capitalization, prefixes and blank spaces (default is that no pre-formatting is done). ■ Specify a date hierarchy (default is the Discoverer default date hierarchy). ■ Specify which datatypes should have an associated list of values (default is that datatypes have no associated list of values). ■ Specify the default aggregate to use on data points (default is SUM). ■ Provide a description for the new Business Area (default is NULL). ■ Specify the join policy (default is primary key) and a log file. ■ **Note:** When doing a bulk load from an Oracle database (version 9.2.0.7 or later), constraints on views are also considered when Discoverer creates joins.

Information	Details
■ Example:	You want to bulk load into an EUL named eul_sales from a source on the current connection, creating a new business area named Test BA that: ■ contains tables matching the pattern test% owned by user Bob ■ pre-formats columns to remove prefixes, remove blanks, and capitalize them ■ contains no date hierarchy ■ contains lists of values for CHAR, INTEGER, and DECIMAL, using AVG as the aggregate ■ writes to a log file named load.log To perform the above bulk load, enter: `dis51adm.exe /connect me/mypassword@database /load "Test BA" /source "Designer - bobsworkarea" /eul eul_sales /user bob /object test% /capitalize /remove_prefix /replace_blanks /date_hierarchy "" /lov "CHAR, INTEGER, DECIMAL" /aggregate AVG /log load.log /description "Test BA"`

/refresh_bus_area

This command enables you to refresh one or more Discoverer Business Areas, by retrieving an up-to-date EUL structure from the database.

Information	Details
■ Syntax:	`/refresh_bus_area <bus_area>`

■ Modifiers:	`/db_link`
	`/eul`
	`/log`
	`/schema`
	`/source`
	`/show_progress`

■ Notes:	When using the `/refresh_bus_area` command, note the following: ■ Specify the data source from which to refresh the named Business Area(s). ■ Specify an EUL in which to find the business area(s) to refresh. The Discoverer manager's own EUL is the default. If you specify the EUL, you must have access privileges to the named EUL in order for the operation to succeed. ■ Filter the refresh by schema name. By default, no filter is used. ■ Specify a log file.
■ Example:	To refresh two Business Areas named Test BA and Final BA that reside in an EUL named eul_sales, from a source on the current connection that contains tables matching the pattern test% owned by user Bob, and summarize information in a log file named refba.log, enter: `dis51adm.exe /connect me/mypassword@database /refresh_bus_area "Test BA, Final BA" /source "<sourcename> - bobsworkarea" /eul eul_sales /user bob /log refba.log`

/refresh_folder

This command enables you to refresh one or more Discoverer folders. The query on which the folder is based is re-run to retrieve up-to-date data.

Information	Details
■ Syntax:	`/refresh_folder <folder>`

■ Modifiers:	`/log`
	`/show_progress`
	`/source`
	`/user <username>`

■ Notes:	When using the `/refresh_folder` command, note the following: ■ The Discoverer manager's own EUL is the default EUL for the search. ■ Specify a log file path (optional). ■ A status message indicating the success or failure of the operation will be output to the specified log file path, or the default log file if one is not specified.
■ Example:	To refresh two folders named Sales1 and Sales2, found in an EUL named eul_sales, and write to a log file named reffol.log, enter: `dis51adm.exe /connect me/mypassword@database /refresh_folder "Sales1, Sales2" /eul eul_sales /log reffol.log`

/refresh_summary

This command enables you to refresh one or more Discoverer Summary folders. The query on which the summary is based is re-run to retrieve up-to-date data.

Information	Details
■ Syntax:	`/refresh_summary <summary> <bus_area>`
■ Modifiers:	`/log` `/show_progress`
■ Notes:	When using the `/refresh_summary` command, note the following: ■ Specify in which EUL the Business Area can be found. The Discoverer manager's own EUL is the default EUL for the search. If you specify the EUL, you must have access privileges to the named EUL in order for the operation to succeed. ■ It is necessary to name at least one summary folder and explicitly name the Business Area in which the summary resides. ■ Specify a log file path (optional). ■ A status message indicating the success or failure of the operation will be output to the specified log file path, or the default log file if one was not specified.
■ Example:	To refresh two summaries named Summary1 and Summary2, found in an EUL named eul_sales, and write to a log file named refsum.log, enter: `dis51adm.exe /connect me/mypassword@database /refresh_summary "Summary1, Summary2" /eul eul_sales /log refsum.log /eul eul31`

Discoverer Administrator command modifier reference

This section contains detailed reference information about optional Discoverer Administrator command modifiers available in the Discoverer command-line

interface. Command modifiers are used to refine or qualify commands. Note the following:

- Command modifiers are listed in alphabetical order.
- For more information about commands, see "Discoverer Administrator command reference".

/aggregate

The /aggregate modifier enables you to specify the default aggregate to be used by a command.

Information	Details
■ Syntax:	/aggregate <SUM|MAX|MIN|COUNT|AVG|DETAIL>

/all

The /all modifier enables you to select every object in an EUL for import, export or deletion.

Information	Details
■ Syntax:	/all

/apps_grant_details

The /apps_grant_details modifier enables you to specify an Oracle Applications schema and password when creating an Oracle Applications mode EUL. For example, to specify the Oracle Applications foundation name and password (<fndnam>/<password>).

Information	Details
■ Syntax:	/apps_grant_details <schema>/<password>

/apps_responsibility

The /apps_responsibility modifier enables you to specify an Oracle Applications responsibility when connecting as an Oracle Applications database user. This can also be included immediately following a colon (:) placed after the Oracle Applications user name but before the password.

Information	Details
■ Syntax:	/apps_responsibility <"Oracle Applications responsibility name">

/apps_security_group

The /apps_security_group modifier enables you to specify an Oracle Applications security group when connecting as an Oracle Applications database user.

Information	Details
■ Syntax:	/apps_security_group <"Oracle Applications security group name">

/asm_space, /asm_tablespace

The /asm_tablespace modifier ignores any tablespace value set in the ASM policy and uses this tablespace constraint instead. The /asm_space modifier ignores any space value set in the ASM policy and uses this space constraint instead. The following are valid combinations of tablespace and space values:

- No command-line modifiers - The ASM policy tablespace and space will be used.
- /asm_space - The ASM policy tablespace will be used with the specified value of space.
- /asm_tablespace /asm_space - The specified values of tablespace and space will be used. An error will be raised if you specify an invalid tablespace.

Information	Details
■ Syntax:	`/asm [/asm_space <bytes> | /asm_space <bytes> /asm_tablespace <tablespace name>]`

/audit_info

The /audit_info modifier enables you to export audit fields with every object, (Created By, Created Date, Updated By, Updated Date). You can override the Created By and Updated By fields using the additional modifiers `/set_created_by` and `/set_updated_by`.

Information	Details
■ Syntax:	`/audit_info [:/set_created_by<name of creator>] [:/set_updated_by<name of updater>]`

/auto_gen_name

The /auto_gen_name modifier enables you to set the Auto-Generate name property of all imported secondary elements to Yes (only if the AutogenNameOnCreate Registry setting is present in the registry and its value is set to 1). For more information, see "What are primary and secondary elements?".

For example, you might export a business area called Performance to an EEX file. If you subsequently import the Performance business area from the EEX file and specify this command modifier, Discoverer sets the Auto-Generate name property of all imported secondary elements to Yes, irrespective of the value that exists in exported file. For more information, see "About generating and updating EUL item names automatically".

Information	Details
Syntax:	`/auto_gen_name`
Used with:	/import (EUL objects)

/ba_link

The /ba_link modifier enables you to specify a business area and folder for deletion.

Information	Details
■ Syntax:	/ba_link <business area>.<folder>

/business_area

The /business_area modifier enables you to specify a business area for import, export or deletion

Information	Details
■ Syntax:	/business_area <*business area*>
■ Notes:	When used with the /export command, this modifier only exports the business area definition (for example, business area name and description). If you want to export the entire business area (including folders, item classes, hierarchies, and so on), use with the /all modifier also.

/capitalize

The /capitalize modifier enables you to request that folder names have initial capital letters when they are generated from their respective column names during a bulk load.

Information	Details
■ Syntax:	/capitalize

/condition

The /condition modifier enables you to specify a condition for deletion.

Information	Details
■ Syntax:	/condition <condition>

/date_hierarchy

The /date_hierarchy modifier enables you to specify the date hierarchy to be used during a bulk load.

Information	Details
■ Syntax:	/date_hierarchy <*date_hier*>
■ Notes:	Any valid date hierarchy name or “”. If you set <*date_hier*> to "", Discoverer Administrator will not create a hierarchy for dates during bulk load.

/db_link

The /db_link modifier enables you to specify the database link to be used by a command.

Information	Details
■ Syntax:	/db_link <*db_link*>
■ Notes:	<db_link> can be any valid database link.

/description

The /description modifier enables you to specify a description for an object.

Information	Details
■ Syntax:	/description <*description*>
■ Notes:	<description> can be any string.

/eul

The /eul modifier enables you to specify an EUL on which to run a command. You must have access privileges to the specified EUL. If not specified, the default EUL for the database user is used.

Information	Details
■ Syntax:	/eul <*EUL*>
■ Notes:	<EUL> must be the name of a valid EUL.

Note that this does not change the default EUL for the user.

/eul_language

The /eul_language modifier used (currently by Oracle Applications) with the /create_eul command, enables you to specify a language for the EUL.

Information	Details
■ Syntax:	/eul_language <*language*>

/external_element

The /external_element modifier is used only with the /export command. The external_element modifier enables you to place XML code from a specified file at the top of the export file.

Information	Details
■ Syntax:	/external_element <*filename*>
■ Notes:	To use this modifier you enter the XML (that you want to place at the top of the export file) into a separate file then include this filename as the <filename> argument. The /external_element modifier can be used multiple times in the same export operation (see example below). <filename> is the name of the file containing the XML that you want to include in the .eex file.
■ Example	dis51adm.exe /connect me/mypassword@database /export myBA.eex bus_area1 /external_element custom1.xml /external_element custom2.xml This places the XML from the files custom1.xml and custom2.xml into the top of the export file myBA.eex.

/folder

The /folder modifier enables you to specify a folder for import, export or deletion.

Information	Details
■ Syntax:	`/folder <folder>`

/function

The /function modifier enables you to specify a function for import, export or deletion.

Information	Details
■ Syntax:	`/function <PL/SQL function>`

/hier_node

The /hier_node modifier enables you to specify a node in a hierarchy for deletion.

Information	Details
■ Syntax:	`/hier_node <hierarchy>.<hierarchy node>`

/hierarchy

The /hierarchy modifier enables you to specify a hierarchy.

Information	Details
■ Syntax:	`/hierarchy <hierarchy>`

/identifier

The /identifier modifier enables you to specify EUL objects by identifier, rather than by display name. If not specified, the object is identified by display name by default.

Information	Details
■ Syntax:	`/identifier <identifier>`

/insert_blanks

The /insert_blanks modifier enables you to request that folder names have spaces instead of underscore characters when they are generated from their respective column names during a bulk load.

Information	Details
■ Syntax:	`/insert_blanks`

/item

The /item modifier enables you to specify an item for deletion.

Information	Details
■ Syntax:	/item <item>

/item_class

The /item_class modifier enables you to specify an item class for import, export or deletion.

Information	Details
■ Syntax:	/item_class <*item class*>

/join

The /join modifier has two applications depending on which command you use it with:

- Used with the "/load" command, the join modifier enables you to specify how Discoverer Administrator creates joins during a bulk load.
- Used with the "/delete" command, the /join modifier enables you to remove a specific join.

Information	Details
■ Syntax:	Used with the /load command: /join <NONE|COLUMN_NAME|PRIMARY_KEY> Used with the /delete command: /join <join name>

/keep_folder

The /keep_folder modifier enables you to leave the folders in place when deleting a business area. If not specified, the folders are removed along with the business area.

Information	Details
■ Syntax:	/keep_folder

/keep_format_properties

The /keep_format_properties modifier enables you to keep existing format properties (for example, display names, descriptions) on import. The default is to change format properties.

Information	Details
■ Syntax:	/keep_format_properties

/log

The /log modifier enables you to specify a name for the log file that stores command status messages. After each command is executed, Discoverer Administrator writes a status message indicating whether the command was successful. You can override the name and location of the log file using the /log modifier.

Information	Details
■ Syntax:	/log <*filename*>
■ Notes:	Any valid filename (dependent on the operating system).

/log_only

The /log_only modifier enables you to simulate a command and generate a log, without changing your data. This option enables you to check for errors and exceptions before changing your data.

Information	Details
■ Syntax:	/log <*filename*> [/log_only]
■ Notes:	Any valid filename (dependent on the operating system). The optional log_only argument enables you to simulate an import and generate a log, without importing the data. This option enables you to check for import errors before changing your data

/lov

The /lov modifier enables you to specify the data types for which a list of values should be generated during a bulk load.

Information	Details
■ Syntax:	/lov [CHAR|DATE|DECIMAL|INTEGER|KEY]

/object

The /object modifier enables you to specify an object for bulk load, import, export or deletion.

Information	Details
■ Syntax:	/object <*mask*>
■ Notes:	Any valid object name. You can use wildcard characters.

/overwrite

The /overwrite modifier enables you to overwrite an existing EUL owned by the intended owner. If omitted, the default is to not overwrite an existing EUL.

Information	Details
■ Syntax:	/overwrite

/parameter

The /parameter modifier enables you to specify a parameter for deletion. When specifying parameters, you can use either their Display Name or Identifier.

Information	Details
■ Syntax:	/parameter <folder>.<parameter>

/password

The /password modifier enables you to specify a new password to be used by the operation.

Information	Details
■ Syntax:	`/password <password>`
■ Notes:	Any valid password associated with the value specified by the /user modifier.

/private

When you create an EUL, the /private modifier enables you to define its status as private to the Discoverer manager. If omitted, the status defaults to 'public'.

Information	Details
■ Syntax:	`/private`

/refresh

The /refresh modifier enables you to merge imported objects with existing objects. By default, merged objects are matched on display name. Use the "/identifier" modifier to match on identifier.

Information	Details
■ Syntax:	`/refresh`

/remove_prefix

The /remove_prefix modifier enables you to request that item names do not include the column name prefix when they are generated from their respective column names during a bulk load.

Information	Details
■ Syntax:	`/remove_prefix`
■ Example:	Columns: EMP_EMPNO EMP_ENAME Items: EMPNO ENAME

/rename

The /rename modifier enables you to specify which objects are renamed when importing objects that match existing objects.

Information	Details
■ Syntax:	`/rename <NEW|OLD|NONE>`

Information	Details
■ Notes:	NEW - rename the imported objects that match the existing objects. OLD - rename the existing objects that match the imported objects. NONE - stop the operation without importing the objects.

/schema

The /schema modifier enables you to specify a schema (user) for the operation.

Information	Details
■ Syntax:	`/schema <schema>`

/show_progress

The /show_progress modifier enables you to monitor a command in operation.

Information	Details
■ Syntax:	`/show_progress`

/sort_folders

The /sort_folders modifier enables you to specify that Discoverer will alphabetically sort folders during a bulk load.

Information	Details
■ Syntax:	`/sort_folders <ON|OFF>`
■ Notes:	ON is the default

/sort_items

The /sort_items modifier enables you to specify that Discoverer will alphabetically sort items during a bulk load.

Information	Details
■ Syntax:	`/sort_items <ON|OFF>`
■ Notes:	OFF is the default

/source

The /source modifier enables you to specify the source for the operation.

Information	Details
■ Syntax:	`/source <server|gateway>`
■ Notes:	<server> is the name of a native Oracle database <gateway>is the name of the gateway. The gateway name must exactly match the gateway name displayed in the Load Wizard.).

/summary

The /summary modifier enables you to specify a summary for import, export or deletion.

Information	Details
■ Syntax:	/summary <*summary*>

/user

The /user modifier enables you to specify the user ID to be used for the operation.

Information	Details
■ Syntax:	/user <*user_id*>
■ Notes:	Any valid user ID.

/workbook

The /workbook modifier enables you to specify a workbook for import, export or deletion.

Information	Details
■ Syntax:	/workbook <*workbook*>

/xmlworkbook

The /xmlworkbook modifier (used with the /export command) forces all workbooks to be exported both in XML format and binary large object (BLOB) format. The /xmlworkbook modifier enables you to view exported workbooks in an XML browser.

Information	Details
■ Syntax:	/xmlworkbook
■ Notes:	Takes no parameters.

Discoverer Desktop command reference

This section contains detailed reference information about each command in the Discoverer Desktop command-line interface. Note that commands are listed in alphabetical order.

/?

This command displays a list of Discoverer Desktop commands.

Information	Details
■ Syntax:	/?
■ Modifiers:	None
■ Notes:	None

Information	Details
■ Restrictions:	None
■ Example:	`dis51usr.exe /?`

/apps_fndnam

This command overrides the values for the fields FNDNAM in the Connection tab of the Options dialog.

Information	Details
■ Syntax:	`/apps_fndnam <foundation name>`
■ Syntax:	`/apps_gwyuid <gateway user id>/<password>`
■ Example:	`dis51usr.exe /connect appsuser:appsresp/appspwd@appsdb /apps_fndnam apps /apps_gwyuid applsyspub/pub`

/apps_gwyuid

This command overrides the values for the field GWYUID (including Gateway User ID password) in the Connection tab of the Options dialog.

Information	Details
■ Syntax:	`/apps_gwyuid <gateway user id>/<password>`
■ Example:	`dis51usr.exe /connect appsuser:appsresp /appspwd@appsdb apps /apps_gwyuid applsyspub/pub`

/apps_user

This command enables you to connect to Discoverer as an Oracle Applications user.

Information	Details
■ Syntax:	`/apps_user`
■ Modifiers	`/apps_responsibility`

■ Example	`dis51usr.exe /connect appsuser/appspwd@appsdb /apps_user /apps_responsibility "UK_Purchasing"`
	Or
	`dis51usr.exe /connect appsuser:UK_Purchasing /appspwd@appsdb /apps_user`

/batch

This command enables you to run workbooks without delaying the processing of subsequent workbooks.

Information	Details
■ Syntax:	`/batch`
■ Modifiers:	None

Information	Details
■ Notes:	Causes the UI not to wait for end user input before continuing. This is intended to allow subsequent workbooks/sheets to be processed even if an earlier one fails.
■ Restrictions:	None

/cmdfile

This command enables you to run Discoverer commands stored in a text file automatically.

Information	Details
■ Syntax:	`/cmdfile <file name>`
■ Notes:	To create a command file, create a text file containing one or more Discoverer commands using a standard text editor. To run the command(s) in the text file, at the command line, enter: `dis51usr.exe /cmdfile <file name>` For more information, see "What is a command file?".
■ Example:	To run command(s) stored in the text file myFile, type the following command at the command line: `dis51usr.exe /connect me/mypassword@database /cmdfile c:\myFile`

/connect

This command enables you to connect directly to Discoverer Desktop without having to use the Connect dialog.

Information	Details
■ Syntax:	`/connect <username>/<password>[@<database>]`
■ Modifiers:	None
■ Notes:	Connects you to the database with the specified username and password. This command skips the Connect dialog, if the username/passoword@database information is correct.
■ Restrictions:	If the login details are insufficient to connect to the database Desktop displays the Connect dialog with the information you specified in the Discoverer command-line interface. For example if the Discoverer command-line interface specifies: `username@dbname` Discoverer displays the Connect dialog, the user field displays 'username', the database field displays 'dbname' and the password field is empty.
■ Example:	`dis51usr.exe /connect jchan/jchan@dbname`

/export

This command enables you to export the results of a workbook to a specified file.

Information	Details
■ Syntax:	`/export <format> <export-file>`
■ Modifiers:	None

Information	Details
■ Notes:	Exports the results of a workbook to the specified file (that is, wks, sylk, dif, csv, text, html, xls).
■ Restrictions:	If the end user does not specify a sheet on the Discoverer command-line interface, only the active sheet is exported to the file. If the end user specifies a sheet in the Discoverer command-line interface, only that sheet is exported. If the end user specifies all sheets in the Discoverer command-line interface, each is exported to a separate file, named <file> <sheet-name>.<ext>
■ Example:	dis51usr.exe /export wks worksheet2.wks

/open

This command enables you to open a workbook from a .dis file.

Information	Details
■ Syntax:	/open <file-workbook>
■ Modifiers:	None
■ Example:	dis51usr.exe /open workbook1.dis

/opendb

This command enables you to open a workbook from the database.

Information	Details
■ Syntax:	/opendb <db-workbook>
■ Modifiers:	None
■ Example:	dis51usr.exe /opendb workbook1.dis

/parameter

This command enables you to set a specified parameter to a specified value.

Information	Details
■ Syntax:	/parameter <parameter name> <parameter value>
■ Modifiers:	None
■ Restrictions:	If the end user does not specify a value for a parameter in a workbook then Discoverer uses a default value.
■ Example:	dis51usr.exe /parameter year 2001

/p

This command enables you to print a workbook from a file to a default printer.

Information	Details
■ Syntax:	/p <file>

Information	Details
■ Modifiers:	None
■ Notes:	Print options are saved as part of the workbook.

/pt

This command enables you to print a workbook from a file to a specified printer with specified printer driver and port.

Information	Details
■ Syntax:	`/pt <file> <printer> <driver> <port>`
■ Modifiers:	None

/savedb

This command enables you to copy a workbook from the file system to the database.

Information	Details
■ Syntax:	`/savedb <file system-workbook>`
■ Modifiers:	/batch
■ Notes:	Copies `.dis` files from the file system and saves them in the database.

■ Example:	Copy the workbook sales.dis from the file system to the database as follows:
	`dis51usr.exe /connect user/password@database /savedb "c:\myworkbooks\sales.dis"`
	
	Copy the workbook sales.dis from the file system to the database but do not display Discoverer Desktop, use the /batch modifier as follows:
	`dis51usr.exe /connect user/password@database /savedb "c:\myworkbooks\sales.dis" /batch`
	
	Copy multiple workbooks (for example, 2001_sales.dis, 2002_sales.dis and 2003_sales.dis) from the file system to the database as follows:
	`dis5usr.exe /connect user/password@database /savedb "c:\myworkbooks\2001_sales.dis" /savedb "c:\myworkbooks\2002_sales.dis" /savedb "c:\myworkbooks\2003_sales.dis"`
	
	Tip: The multiple workbooks example above is particularly useful if you are moving from Discoverer Desktop to Discoverer Plus and need to copy lots of workbooks from the file system to the database.

/sheet

This command enables you execute a query for the specified sheet(s).

Information	Details
■ Syntax:	`/sheet {<sheet-name>|<sheet-number>|ALL}`
■ Modifiers:	None

Information	Details
■ Notes:	Discoverer executes a query for: ■ the sheet name <sheet-name> ■ the specified sheet number <sheet-number> ■ all sheets (ALL).

Discoverer Desktop command modifier reference

This section contains detailed reference information about optional Discoverer Desktop command modifiers available in the Discoverer command-line interface. Command modifiers are used to refine or qualify commands. Note the following:

- Command modifiers are listed in alphabetical order.
- For more information about commands, see "Discoverer Desktop command reference".

/all

The /all modifier enables you to select every object in an EUL for import, export or deletion.

Information	Details
■ Syntax:	`/all`

/apps_responsibility

The /apps_responsibility modifier enables you to specify an Oracle Applications responsibility when connecting as an Oracle Applications database user. This can also be included immediately following a colon (:) placed after the Oracle Applications user name but before the password.

Information	Details
■ Syntax:	`/apps_responsibility <"Oracle Applications responsibility name">`

/eul

The /eul modifier enables you to specify an EUL on which to run a command. You must have access privileges to the specified EUL. If not specified, the default EUL for the database user is used.

Information	Details
■ Syntax:	`/eul <`*`EUL`*`>`
■ Notes:	<EUL> must be the name of a valid EUL.

Note that this does not change the default EUL for the user.

23

Discoverer Support for Non-Oracle Databases and Oracle Rdb

This chapter contains information about using Discoverer with non-Oracle databases and Oracle Rdb, and contains the following topics:

- "What are Heterogeneous Services?"
- "About using generic connectivity to connect to non-Oracle databases and Oracle Rdb"
- "About using the Transparent Gateway to connect to non-Oracle databases and Oracle Rdb"

What are Heterogeneous Services?

Heterogeneous Services are the common architecture and administration mechanisms provided with the Oracle database to enable you to connect to non-Oracle databases and Oracle Rdb.

You connect to non-Oracle databases and Oracle Rdb using Heterogeneous Services in two ways:

- using generic connectivity (for more information, see "About using generic connectivity to connect to non-Oracle databases and Oracle Rdb")
- using the Transparent Gateway (for more information, see "About using the Transparent Gateway to connect to non-Oracle databases and Oracle Rdb")

For more information about Heterogeneous Services, see the *Oracle Database Heterogeneous Connectivity Administrator's Guide*.

About using generic connectivity to connect to non-Oracle databases and Oracle Rdb

Generic connectivity is one of the mechanisms supported by the Oracle database Heterogeneous Services feature for accessing non-Oracle databases and Oracle Rdb.

Discoverer users can use generic connectivity to access ODBC or OLE DB (object linking and embedding database) databases.

The non-Oracle database must comply sufficiently with the ODBC standard (for more information about ODBC and OLE DB connectivity requirements, see the *Oracle Database Heterogeneous Connectivity Administrator's Guide*).

This section contains the following topics:

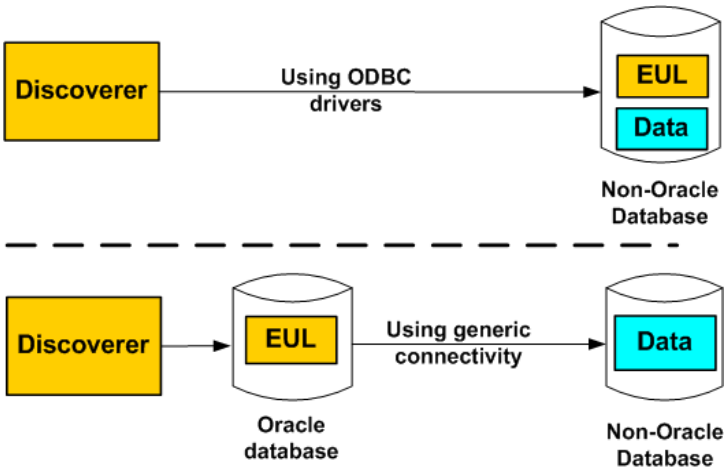
- "What is the difference between using generic connectivity and ODBC drivers to connect to non-Oracle databases?"
- "What are the advantages of using generic connectivity?"
- "About setting up generic connectivity for Discoverer"
- "How to migrate an EUL from a non-Oracle database (accessed using native ODBC drivers) to an Oracle database (to support generic connectivity)"
- "About ORA-3113 Errors when Using Heterogeneous Data Services with Discoverer Administrator"

What is the difference between using generic connectivity and ODBC drivers to connect to non-Oracle databases?

In previous versions of Discoverer, users could connect to non-Oracle databases using ODBC drivers. The major difference between using ODBC drivers to connect to a non-Oracle database using the Oracle database generic connectivity feature is the location of the EUL, as follows:

- with ODBC drivers, the EUL is stored in the non-Oracle database
- with generic connectivity, the EUL is stored in the Oracle database

Figure 23–1 EUL location using ODBC drivers versus using generic connectivity



The above diagram illustrates the following:

- when Discoverer connects to a non-Oracle database using ODBC drivers, both the EUL and the data reside on the non-Oracle database
- when Discoverer connects to a non-Oracle database using generic connectivity, the data continues to reside on the non-Oracle database but the EUL must be located on the Oracle database

Discoverer no longer supports the use of native ODBC drivers to connect to non-Oracle databases. You must now use generic connectivity to retrieve data from the non-Oracle database. In other words, the EUL must be stored in an Oracle database. To find out how to move an EUL from a non-Oracle database to an Oracle database, see "How to migrate an EUL from a non-Oracle database (accessed using native ODBC drivers) to an Oracle database (to support generic connectivity)".

What are the advantages of using generic connectivity?

Using Discoverer with the Oracle database's generic connectivity feature rather than native ODBC drivers to connect to a non-Oracle database has the following advantages:

- enables connections to a greater number of ODBC databases

  Generic connectivity provides access to any ODBC database that is compliant with the ODBC standard. Compliance varies with both databases and ODBC drivers.

- enables Discoverer end users to query data from multiple different databases simultaneously

  For example, you can create a single business area with folders based on tables held in Sybase, DB2 and Oracle databases. An end user query can return data joined across multiple databases.

- enables query prediction with ODBC data

  Discoverer's query prediction uses query statistics that are generated when end users run queries and which are saved in the EUL. Because the EUL is in the Oracle database, Discoverer is able to perform query prediction for the ODBC data on the Oracle database.

- enables batch support for scheduling workbooks

  Discoverer uses the batch scheduler in the Oracle database. Because the EUL is in the Oracle database, Discoverer is able to schedule workbooks with ODBC data.

- enables you to apply Oracle analytical functions (and other Oracle functions) to data provided from an ODBC database

  Because the data is brought into the Oracle database you can apply the full set of Oracle functions to the data, instead of being restricted to the functions supported by the non-Oracle database.

About setting up generic connectivity for Discoverer

Before you can use generic connectivity, you must configure the Oracle database to support generic connectivity.

Note: You should work with your database administrator to set up generic connectivity for Discoverer.

For more information about generic connectivity, see the *Oracle Database Heterogeneous Connectivity Administrator's Guide*.

How to migrate an EUL from a non-Oracle database (accessed using native ODBC drivers) to an Oracle database (to support generic connectivity)

To migrate an EUL from a non-Oracle database to an Oracle database:

1. Export the EUL objects from the non-Oracle database to an EEX file.

   For more information, see "Which export/import method to use".

   Note: This must be carried out using a version of Discoverer that supports a direct ODBC connection (that is, 9.0.4 or earlier).

2. Set up generic connectivity in the Oracle database that will contain the EUL.

   For more information, see "About setting up generic connectivity for Discoverer".

3. Create an EUL on the Oracle database.

   For more information about how to create an EUL, see Chapter 4, "Creating and Maintaining End User Layers".

4. Import the EEX file you created in step 1 into the Oracle database.

   For more information, see "Which export/import method to use".

5. Resolve any mappings (that is, Discoverer Business areas and underlying objects).

   a. Choose View | Validate | Folders

   b. Select the first folder that displays an error and choose Edit | Properties to display the "Folder Properties dialog".

   c. Click the Database field to display the "Choose user or table/view dialog".

   d. Select the database link that you created in the "About setting up generic connectivity for Discoverer" task.

   e. Select the correct user on the non-Oracle database.

   f. Click OK to close the Choose user dialog.

   g. Click OK to apply the new value in the Database field and close the Folder Properties dialog.

   h. Repeat steps a) to g) for each folder that displays an error.

6. Set up security on the Oracle database for database users.

   For more information, see Chapter 7, "Controlling Access to Information".

   Discoverer users can now connect to the non-Oracle database using generic connectivity and continue to use their existing workbooks and worksheets.

About ORA-3113 Errors when Using Heterogeneous Data Services with Discoverer Administrator

If you are accessing data from a non-Oracle database using Discoverer Administrator (for example to create a business area) and ORA-3113 errors are displayed, do one of the following:

- Use a more recent version of the Oracle database (version 9.2.0.7 or later).
- Contact Oracle Support to determine the availability of patches for earlier versions of the Oracle database.

About using the Transparent Gateway to connect to non-Oracle databases and Oracle Rdb

The Transparent Gateway is one of the mechanisms supported by the Oracle database Heterogeneous Services feature for accessing non-Oracle databases and Oracle Rdb.

Discoverer users can use an Oracle Transparent Gateway with Heterogeneous Services to access a particular, vendor-specific, non-Oracle database, and Oracle Rdb. For example, you would use the Oracle Transparent Gateway for Sybase on Solaris to access a Sybase database that was operating on a Sun Solaris platform.

You must have the appropriate Oracle Transparent Gateway software installed.

For more information about the Oracle Transparent Gateway and how to set it up, see the *Oracle9i Database Installation Guide*.

24

Upgrading the EUL from Earlier Versions of Discoverer

This chapter explains how to upgrade the End User Layer from earlier versions of Discoverer and contains the following topics:

- "About Discoverer versions and EUL versions"
- "Upgrading from earlier versions to Discoverer 10.1.2"

About Discoverer versions and EUL versions

Specific versions of Discoverer are compatible with particular EUL versions.

Discoverer end users will be unable to connect to an EUL that is not compatible with the version of the Discoverer product that they are using.

The following table provides Discoverer release and version numbers and the EUL version numbers to which they correspond.

Discoverer Release/Version Number	EUL Version Number
Version 11.1.1.1.0	Version 5.1.x.x
Version 10.1.2.x	Version 5.1.x.x
Version 9.0.4.x	Version 5.0.2.x
Version 9.0.2.53 and later	Version 5.0.2.x
Version 9.0.2.52 and earlier	Version 5.0.0.x
Release 4.1.x	Release 4.1.x
Release 3.1.x/3.3.x	Release 3.1.x

About upgrading from Discoverer Version 10.1.2 to Version 11.1.1.1.0

Discoverer Version 11.1.1.1.0 uses the same EUL version as Discoverer 10.1.2; therefore, no EUL upgrade is required. If you are using a version of Discoverer earlier than 10.1.2, then use the information in this chapter to upgrade to 10.1.2.

For information about upgrading Discoverer Version 10.1.2 to Version 11.1.1.1.0, see the *Oracle Fusion Middleware Upgrade Guide for Oracle Portal, Forms, Reports, and Discoverer*.

Upgrading from earlier versions to Discoverer 10.1.2

This section describes how to upgrade the End User Layer for use with Discoverer 10.1.2. After you upgrade the EUL for use with Discoverer 10.1.2, you can also it with with Discoverer 11.1.1.1.0.

This section contains the following topics:

- "Which upgrade path to take for Discoverer Version 10.1.2"
- "What are the prerequisites for upgrading from earlier versions to Discoverer Version 10.1.2?"
- "An overview of the upgrade process for Discoverer Version 10.1.2"
- "Upgrading from Discoverer Release 3.1 (or earlier) to Discoverer Version 10.1.2"
- "Upgrading from Discoverer Release 4.1 to Discoverer Version 10.1.2"
- "Upgrading from Discoverer Version 9.0.x to Discoverer Version 10.1.2"
- "Notes about upgrading to Discoverer Version 10.1.2"
- "About scheduled workbooks and compatibility between Discoverer 10.1.2 and pre-Oracle9i database releases"

If you attempt to connect to a Release 4.1.x EUL or a Version 5.0.x.x EUL (Discoverer Version 9.0.2 or 9.0.4) using Discoverer Administrator Version 10.1.2, then you will be prompted to upgrade the EUL to Version 5.1.x.x. Note that this EUL upgrade option is destructive.

Throughout this chapter, references to Discoverer Version 10.1.2 apply to all 10.1.2.*x* versions including 10.1.2.0.0, 10.1.2.1, and 10.1.2.2

Which upgrade path to take for Discoverer Version 10.1.2

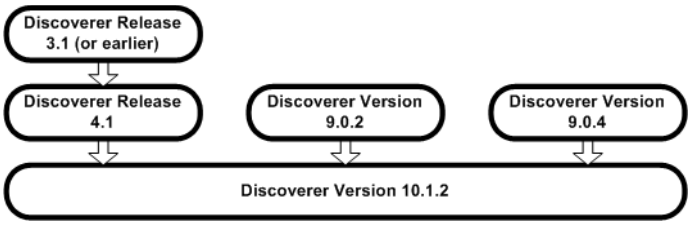
The appropriate upgrade path depends on the version of Discoverer from which you are upgrading, as described in the following list:

- if you are upgrading from Release 3.1 or earlier, then you must first upgrade to Release 4.1 (for more information, see "Upgrading from Discoverer Release 3.1 (or earlier) to Discoverer Version 10.1.2")
- if you are upgrading from Release 4.1, then you can upgrade straight to Version 10.1.2 (for more information, see "Upgrading from Discoverer Release 4.1 to Discoverer Version 10.1.2")
- if you are upgrading from Version 9.0.2 or Version 9.0.4, then you can upgrade straight to Version 10.1.2 (for more information, see "Upgrading from Discoverer Version 9.0.x to Discoverer Version 10.1.2")

  Note that the EUL upgrade is destructive for this option.

The various upgrade paths are shown in Figure 24–1.

Figure 24–1 Discoverer upgrade paths



What are the prerequisites for upgrading from earlier versions to Discoverer Version 10.1.2?

Before you can upgrade to Discoverer Version 10.1.2, Discoverer Administrator Version 10.1.2 must already be installed.

In addition, to upgrade End User Layers, the EUL owners must have the following database privileges:

- CREATE PROCEDURE
- CREATE SESSION
- CREATE TABLE
- CREATE VIEW
- CREATE SEQUENCE

If upgrading Discoverer to an Oracle9*i* (or later) Enterprise Edition database, summaries are implemented as materialized views and the EUL owners therefore require the following privileges:

- CREATE ANY MATERIALIZED VIEW
- DROP ANY MATERIALIZED VIEW
- ALTER ANY MATERIALIZED VIEW
- GLOBAL QUERY REWRITE

Important: To maintain the consistency of data transferred to upgraded EULs, it is very important that no Discoverer Administrator sessions are opened on the earlier version of the EUL while the upgrade is in progress.

An overview of the upgrade process for Discoverer Version 10.1.2

During the upgrade process, you perform numerous steps. Some of these steps depend on the version of Discoverer from which you are upgrading.

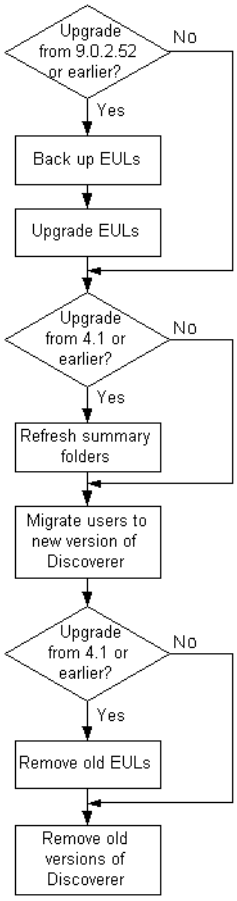
The following list provides an overview of the steps that you follow:

- Use the database export utility to take a backup of each EUL that you must upgrade. Ensure that you take a database export instead of an EUL export to include the EUL tables themselves (including workbook definitions that are saved to the database and query statistics) and the EUL metadata.
- Upgrade EULs by opening each EUL in the version of Discoverer Administrator to which you are upgrading. When you log on to Discoverer Administrator as the owner of a Release 4.1 or Version 5.0.x.x EUL, Discoverer Administrator automatically prompts you to upgrade the EUL to Version 5.1.x.x.
- Refresh summary folders.

- Migrate users to the new version of Discoverer. Users of older versions of Discoverer will not be able to access upgraded EULs. Note that:
  - users of Discoverer Release 4.1 will still be able to access an original Release 4.1 EUL, but any changes that they make will not be visible in the upgraded Version 5.1.x.x EUL.
  - users of Discoverer Version 9.0.2 and Version 9.0.4 who accessed a Version 5.0.x.x EUL will not be able to access that EUL when the EUL has been upgraded to Version 5.1.x.x.
- Remove the old EULs from the database **(not required when upgrading from Version 9.0.x)**. Initially you will probably want to just prevent access to the original EULs and allow users to access only the upgraded EULs. When you are confident that all users are successfully accessing the upgraded EULs, you will remove the old EULs.
- Remove old versions of Discoverer from client machines. When you are confident that all users are successfully accessing the upgraded EULs with the latest version of Discoverer, you will typically want to remove old versions of Discoverer.

The steps that are described in the previous list are depicted visually in the flowchart in Figure 24–2.

Figure 24–2 Discoverer upgrade steps



Depending on how the Discoverer system has been set up, there might be other issues to consider (for more information, see "Notes about upgrading to Discoverer Version 10.1.2").

Upgrading from Discoverer Release 3.1 (or earlier) to Discoverer Version 10.1.2

There is no direct upgrade path from Discoverer Release 3.1 (or earlier) to Discoverer Version 10.1.2. Instead, use the following upgrade path:

- if upgrading from a version of Discoverer earlier than Release 3.1, upgrade to Discoverer Release 3.1 (for more information, see *Oracle Discoverer 3.1 Installation and Upgrade Guide*)
- upgrade from Discoverer Release 3.1 to Discoverer Release 4.1 (for more information, see *Oracle Discoverer 4.1 Installation and Upgrade Guide*)
- upgrade from Discoverer Release 4.1 to Discoverer Version 10.1.2 (for more information, see "Upgrading from Discoverer Release 4.1 to Discoverer Version 10.1.2")

Upgrading from Discoverer Release 4.1 to Discoverer Version 10.1.2

This section explains how to upgrade to Discoverer Version 10.1.2 from Release 4.1 and includes the following topics:

- "About upgrading from Discoverer Release 4.1 to Discoverer Version 10.1.2"
- "Upgrade step 1: Back up the Release 4.1 EUL"
- "Upgrade step 2: Upgrade the Release 4.1 EUL"
- "Upgrade step 3: Refresh summary folders"
- "Upgrade step 4: Migrate users to Discoverer Version 10.1.2"
- "Upgrade step 5: Remove the Release 4.1 EULs"
- "Upgrade step 6: Remove Discoverer Release 4.1 products from client machines"

About upgrading from Discoverer Release 4.1 to Discoverer Version 10.1.2

Before you do anything else, take a backup of the Release 4.1 EUL as described in the following upgrade step:

- "Upgrade step 1: Back up the Release 4.1 EUL"

To use Discoverer Version 10.1.2, Discoverer users must have access to a Discoverer Version 5.1 End User Layer (EUL). If users have been using a Discoverer Release 4.1 EUL, that EUL must be upgraded before the users can access it using Discoverer Version 10.1.2.

The EUL upgrade process creates new Version 5.1 EUL tables and copies metadata from the Release 4.1 EUL tables into the new tables. Existing users can continue working with Discoverer Release 4.1 during the upgrade process, because the upgrade process is nondestructive (that is, the Release 4.1 EUL tables are not deleted).

Follow the upgrade steps below to upgrade the EUL using Discoverer Administrator:

- "Upgrade step 2: Upgrade the Release 4.1 EUL"
- "Upgrade step 3: Refresh summary folders"

When you are satisfied that all Release 4.1 EULs have been successfully upgraded, follow the upgrade steps below:

- "Upgrade step 4: Migrate users to Discoverer Version 10.1.2"
- "Upgrade step 5: Remove the Release 4.1 EULs"

When you have upgraded all users and removed all Release 4.1 EULs, follow the final upgrade step:

- "Upgrade step 6: Remove Discoverer Release 4.1 products from client machines"

Upgrade step 1: Back up the Release 4.1 EUL

Before you can upgrade a Discoverer Release 4.1 EUL to a Discoverer Version 5.1 EUL, back up the EUL tables by exporting the EUL owner using the standard database export utility.

How to export the EUL owner will depend on:

- the version of the Oracle client software that is installed on the machine
- the version of the Oracle database on which the Release 4.1 EUL resides

The version of the Oracle database and the version of the Oracle database client software that is installed on the machine should be the same. If the versions are not the same (for example, if the EUL is on an Oracle9*i* database and Oracle10*g* client software is installed on the machine), then you might not be able to follow the instructions in this chapter. If you cannot export the EUL, contact the database administrator who can export the EUL for you.

To back up a Release 4.1 EUL (assuming the EUL resides on an Oracle9*i* database and you are using a machine on which you have installed Oracle Developer Suite), follow the steps as described in "How to export an EUL using the standard database export utility".

Upgrade step 2: Upgrade the Release 4.1 EUL

After you back up the Release 4.1 EUL, you can upgrade it to Version 5.1. To upgrade an EUL, you simply open the EUL in the newer version of Discoverer Administrator by following the instructions in this section. The same database user that owned the Release 4.1 EUL will own the Version 5.1 EUL.

Note that Release 4.1 end users are not affected by the upgrade and can continue using the Release 4.1 EUL. However, any changes (for example, modifications to workbooks) that end users make in the Release 4.1 EUL after the upgrade process has started will not be present in the Version 5.1 EUL.

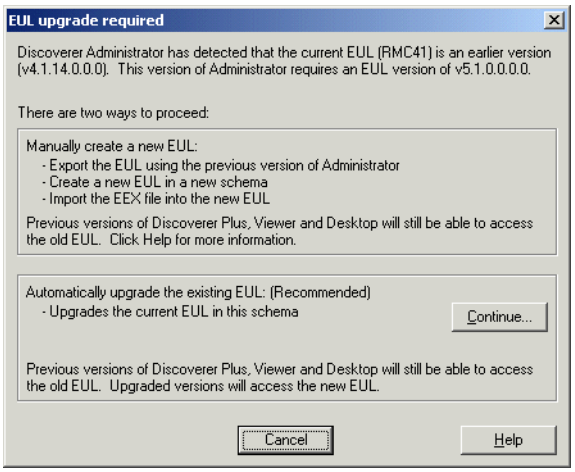
Important: To maintain the consistency of data that is transferred to the Version 5.1 EUL, ensure that no Discoverer Administrator sessions are opened on the Release 4.1 EUL while the upgrade is in progress.

To upgrade a Release 4.1 EUL to Version 5.1:

1. From the Windows Start menu, choose Programs | Oracle Business Intelligence - <BI TOOLS HOME NAME> | Discoverer Administrator to display the Connect to Oracle Business Intelligence Discoverer Administrator dialog.
2. Enter the database user name and password of the owner of the Discoverer Release 4.1 EUL that you want to upgrade.
3. Click OK.

   The EUL upgrade required dialog is displayed.

Figure 24–3 EUL upgrade required dialog

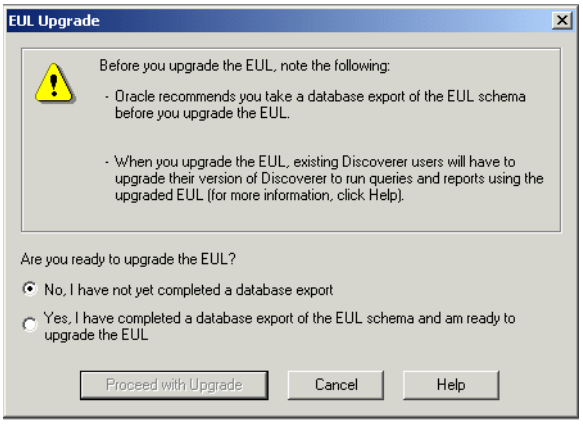


Notes:

- If you have not already exported the Release 4.1 EUL, then click Cancel and export the EUL (for more information, see"Upgrade step 1: Back up the Release 4.1 EUL").
- If the EUL Upgrade dialog is not displayed, then the Version 4.1 EUL has already been upgraded. You do not need to upgrade the EUL again, so go straight to "Upgrade step 3: Refresh summary folders".

4. Click Continue to display the EUL Upgrade dialog

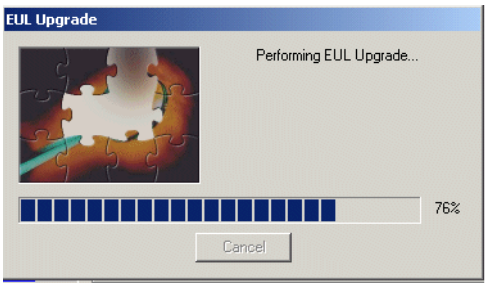
Figure 24–4 EUL Upgrade dialog



5. Select the **Yes, I have completed a database export and am ready to upgrade the EUL** option to confirm that you have exported the Discoverer Release 4.1 EUL.
6. Click Proceed with Upgrade to create a new Version 5.1 EUL using data copied from the Release 4.1 EUL.

   The EUL Upgrade progress window displays the status of the upgrade.

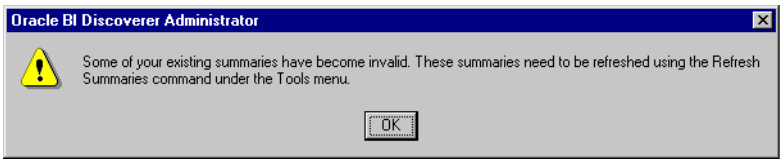
Figure 24–5 EUL Upgrade progress window



Any messages that are output during the upgrade process are shown in the End User Layer Upgrade Log dialog, which is displayed at the end of the process. For more information about messages that refer to invalid characters in identifiers, see "Notes about upgrading identifiers that contain invalid characters for Discoverer Version 10.1.2".

If there are summary folders in the upgraded EUL, the following message dialog is displayed, indicating that the summary folders are invalid and must be refreshed.

Figure 24–6 Invalid summaries warning message dialog



7. If the message dialog in Figure 24–6 is displayed, click OK.

   The Load Wizard is displayed.

8. Click Cancel to close the Load Wizard.

   The EUL upgrade is complete. You can use this EUL to connect to the database using Discoverer Administrator Version 10.1.2.

Upgrade step 3: Refresh summary folders

If there are summary folders in the EUL that you have upgraded, then you must refresh the summary folders.

The definitions of any Release 4.1 summary folders are copied into the new Version 5.1 EUL and the status of any upgraded summary folders is changed to “Refresh Required”. The database tables or materialized views on which the upgraded summary folders are based are not actually created until the summary folders are refreshed.

When you refresh upgraded summary folders:

- on Oracle Standard Edition databases, Discoverer creates summary tables
- on Oracle9*i* (or later) Enterprise Edition databases, Discoverer creates materialized views

When the summary tables or materialized views have been created, Discoverer can use the summary folders to optimize queries.

For more information about summary folders, summary tables, and materialized views, see Chapter 14, "Managing Summary Folders".

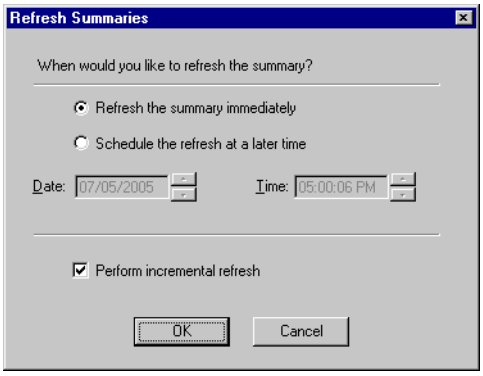
To refresh upgraded summary folders:

1. Connect to Discoverer Administrator as the owner of the upgraded EUL.
2. Open the business area that contains the summary folders that you want to refresh.
3. Display the Summaries tab of the Workarea.
4. Select the summary folders that you want to refresh.

   You must refresh all of the summary folders before Discoverer can use them. However, depending on the amount of data, you might not want to refresh all the summary folders at the same time.
5. Select Tools | Refresh Summaries.

   For any summary folders that are not based on external summary tables, the Refresh Summaries dialog is displayed.

Figure 24–7 Refresh Summaries dialog



6. Specify refresh options as required.

   You can refresh summary folders immediately or specify a time for the refresh. Depending on the amount of data, you might want to schedule the refresh for an off-peak time.
7. Click OK to refresh the summary folders.

Notes

- If an upgraded EUL contains summary folders that are based on external summary tables, you must also refresh those summary folders. During the refresh, Discoverer updates EUL metadata for summary folders based on external summary tables. If you are using Oracle9*i* (or later) Enterprise Edition databases, Discoverer creates a materialized view that references the external summary table.

Upgrade step 4: Migrate users to Discoverer Version 10.1.2

When you have upgraded all Release 4.1 EULs and you are satisfied that the upgraded EULs are ready for use, migrate Discoverer users to Discoverer Version 10.1.2.

While you are rolling out the migration across the organization, users can continue to work with Discoverer Release 4.1 (accessing the original EUL) or with Discoverer Version 10.1.2 (accessing the upgraded EUL). However, note that any changes that

you make using one version of Discoverer Administrator will not be available to users of the other version of Discoverer.

How to migrate Discoverer users to Discoverer Version 10.1.2 will depend on the Discoverer tools that they use.

To migrate Discoverer Plus and Discoverer Viewer users

1. Install Oracle Business Intelligence Discoverer.
2. Follow the instructions in *Oracle Application Server 10g Upgrading to 10g (10.1.2)* to upgrade the Discoverer components on the middle tier

To migrate Discoverer Desktop users:

1. Install Discoverer Desktop on client machines using the CD that is supplied with Oracle Business Intelligence Tools.

   The Oracle Installer installs Discoverer Desktop Version 10.1.2 in a separate directory from Discoverer Release 4.1.

Notes

When a user logs into Discoverer for the first time (by using Discoverer Plus, Discoverer Desktop, or Discoverer Viewer), Discoverer searches for any Version 5.1 EULs that the user has access to, as follows:

- If a valid EUL is found, then the user can connect and can start work in Discoverer Version 10.1.2.
- If no valid EUL is found, then Discoverer alerts the user that they cannot connect to the database. At this point, the user must contact the Discoverer manager because it is likely that an EUL has not yet been upgraded. Note that the user can still use Discoverer Release 4.1 against an existing Release 4.1 EUL.

Upgrade step 5: Remove the Release 4.1 EULs

When you have upgraded the Release 4.1 EULs and migrated all users to Discoverer 10.1.2, you can remove the Release 4.1 EULs.

Initially you will probably want to just prevent access to the original EULs and only allow users to access the upgraded EULs. When you are confident that all users are successfully accessing the upgraded EULs, you can remove the old EULs.

A SQL script called eul4del.sql is shipped with Discoverer that enables you to remove Release 4.1 EULs and associated tables (including summary tables/materialized views).

Note the following:

- When you run the eul4del.sql script, you are prompted for the password of the SYSTEM user. If you are not sure of the password of the SYSTEM user, then contact the database administrator. Rather than give you the SYSTEM user's password, the database administrator might prefer to run the script for you.
- The eul4del.sql script will not complete successfully if there are any summary folders owned by users other than the EUL owner. The script will list any such summary folders and their owners. The summary folder owners must delete their summary folders before you can remove the Release 4.1 EUL.
- If you have access to Discoverer Administration Edition Release 4.1, then you can delete EULs using the EUL Manager instead of using the eul4del.sql script.

- If users have modified the Release 4.1 EUL since you upgraded it, then their changes will not be in the Version 10.1.2 EUL. If you think significant changes might have been made, then consider taking another backup of the Release 4.1 EUL before removing it (for more information, see "Upgrade step 1: Back up the Release 4.1 EUL").

To remove a Release 4.1 EUL using the eul4del.sql script:

1. Choose ORACLE | Application Development | SQL*Plus from the Windows Start menu to display the SQL*Plus Log On dialog.
2. Enter the database user name, password, and database for the owner of the Discoverer Release 4.1 EUL that you want to remove.
3. Type the following at the command prompt to start the Release 4.1 EUL deinstallation script:

   ```
   SQL> @<ORACLE_HOME>\discoverer\util\eul4del.sql
   ```

   The deinstallation script removes a specified Release 4.1 EUL and any associated database objects, including summary tables/materialized views.

   A summary of the deinstallation script is displayed:

   ```
   Removing summary refresh jobs ...
   Discoverer End User Layer Database Tables (4.x Production) deinstallation
   This script will remove a version 4.x EUL and any associated database objects.
   It will:
   1.  Ask you to enter the ORACLE SYSTEM password and connect string.
   2.  Ask you to enter the name and password of the 4.x EUL owner.
   3.  Confirm that you wish to drop the 4.x EUL.
   4.  Check for database jobs for users other than the 4.x EUL owner.
   5.  Confirm whether to drop 4.x tutorial tables (if any).
   6.  Log in as the 4.x EUL owner and remove any database jobs for it.
   7.  Remove all summary database objects for the 4.x EUL.
   8.  Remove all scheduled workbook database objects for the 4.x EUL.
   9.  Remove the 4.x EUL tables.
   10. Remove user and public synonyms (if any) for the 4.x EUL tables.
   ```

4. When prompted, enter the password and database TNS alias for the SYSTEM user.

   If you are not sure of the password of the SYSTEM user, then contact the database administrator.

5. Enter the name and password of the owner of the Release 4.1 EUL.

   The following text is displayed:

   ```
   Preparing to remove EUL 4.x owned by <username> at <today's date>
   If you continue, the specified 4.x End User Layer will be PERMANENTLY dropped.
    All End User Layer information and workbooks stored in the database will be
   deleted.
   Any 5.x End User Layer tables will NOT be affected by this process.
   THIS PROCESS IS NON-REVERSIBLE.
   Do you wish to continue [N]:
   ```

   Note that the EUL removal process is not reversible.

6. Type `Y` to confirm that you want to drop the Release 4.1 EUL.

   If the script detects the Release 4.1 tutorial tables, then you are prompted to confirm whether to delete the tables.

During the process of dropping the Release 4.1 EUL, the script will check whether there are any summary folders owned by users other than the EUL owner.

- If there are no summary folders owned by other users, then the Release 4.1 EUL is dropped. You will see several messages showing the various stages of the drop process, as follows:

```
Removing summary refresh jobs ...
Dropping internally managed summary data ...
Removing scheduled workbook jobs ...
Dropping scheduled workbook data ...
Dropping 4.x End User Layer Tables  ...
Removing public synonyms (if any) ...
Connected.

Finished removing 4.x End User Layer.
```

- If there are summary folders owned by users other than the EUL owner, then the script will halt and display the following text:

```
The following users have managed summaries which must be dropped before
 this EUL can be deinstalled:
User: SCOTT, Summary: Scott's Summary
User: FRED, Summary: Fred's Summary
...
Quitting - no changes made.
```

If this message appears, then the specified users must log in to Discoverer Administration Edition Release 4.1 and remove the specified summary folders (for more information, see "How to delete summary folders"). When these summary folders have been removed, re-run the script eul4del.sql to remove the Release 4.1 EUL.

Note: In Discoverer 4i, workbook scheduling privileges could be granted to roles. In Discoverer 9.0.4 and 10.x, workbook scheduling privilges can be granted to users, but not to roles. When upgrading from Discoverer 4.1 to 10.x, the old workbook scheduling privileges would remain in the EUL. You can delete the workbook scheduling privileges manually by running the `del_shd_wbk_rol_priv.sql` script.

Upgrade step 6: Remove Discoverer Release 4.1 products from client machines

When you and your users have connected successfully to Discoverer Version 10.1.2 and you are confident that summary folders are working correctly, you can remove Discoverer Release 4.1 products (that is, Discoverer Administration Edition and Discoverer Desktop Edition) from client machines.

To remove Discoverer Release 4.1 products from client machines:

1. Insert the CD from which you installed Discoverer Release 4.1 products into the computer.

   The Oracle Installer starts automatically. If the Installer does not start automatically, then access the CD-ROM with Windows Explorer and run setup.exe from the CD root directory.

2. Use the Oracle Installer dialogs to remove Discoverer Release 4.1 products.

Note that any workbooks that were created in Discoverer Release 4.1 and saved in the <ORACLE_HOME>\discvr4 directory will not be deleted.

3. (optional) To retain workbooks from the <ORACLE_HOME>\discvr4 directory for future use, follow these steps:

   a. Move any Discoverer Release 4.1 workbooks from the <ORACLE_HOME>\discvr4 directory to a new directory for use with Discoverer Version 10.1.2.

   b. Delete the \discvr4 directory.

Upgrading from Discoverer Version 9.0.x to Discoverer Version 10.1.2

This section explains how to upgrade from Discoverer Version 9.0.2 or Discoverer Version 9.0.4 (collectively referred to as Discoverer Version 9.0.x) to Discoverer Version 10.1.2 and contains the following topics:

"About upgrading from Discoverer Version 9.0.x to Discoverer Version 10.1.2"

"Upgrade step 1: Back up the Version 5.0 EUL"

"Upgrade step 2: Upgrade the Version 5.0 EUL"

"Upgrade step 3: Refresh summary folders"

"Upgrade step 4: Migrate users to Discoverer Version 10.1.2"

"Upgrade step 5: Remove Discoverer Version 9.0.x products from client machines"

About upgrading from Discoverer Version 9.0.x to Discoverer Version 10.1.2

To use Discoverer Version 10.1.2, Discoverer users must have access to a Discoverer Version 5.1 End User Layer (EUL).

For each EUL that needs upgrading, follow the upgrade steps below:

- "Upgrade step 1: Back up the Version 5.0 EUL"
- "Upgrade step 2: Upgrade the Version 5.0 EUL"
- "Upgrade step 3: Refresh summary folders"

Warning: The EUL upgrade process modifies the existing Version 5.0 EUL tables. Existing users cannot use Discoverer Version 9.0.x to access the EUL either during the upgrade process or after the upgrade process is completed.

When you are satisfied that any Version 5.0 EULs that need upgrading have been upgraded, follow the upgrade step below:

- "Upgrade step 4: Migrate users to Discoverer Version 10.1.2"

When you have upgraded all users, follow the upgrade step below:

- "Upgrade step 5: Remove Discoverer Version 9.0.x products from client machines"

Upgrade step 1: Back up the Version 5.0 EUL

Before you upgrade the EUL, you must first back up the EUL tables by exporting the EUL owner using the standard database export utility.

How to export the EUL owner will depend on:

- the version of the Oracle client software that is installed on the machine
- the version of the Oracle database on which the EUL resides

The version of the Oracle database and the version of the Oracle database client software that are installed on the machine should be the same. If the versions are not the same (for example, if the EUL is on an Oracle9*i* database and the Oracle 10g client software is installed on your machine), then you might not be able to follow the instructions in this section. If you are unable to export the EUL, then contact the database administrator who can export the EUL for you.

To back up a Version 5.0 EUL (assuming the EUL resides on an Oracle9*i* database and you are using a machine on which you have installed Oracle Developer Suite), follow the steps described in "How to export an EUL using the standard database export utility".

Upgrade step 2: Upgrade the Version 5.0 EUL

After backing up the EUL, you can upgrade it. To upgrade an EUL, you simply open the EUL in the latest version of Discoverer Administrator by following the instructions in this section.

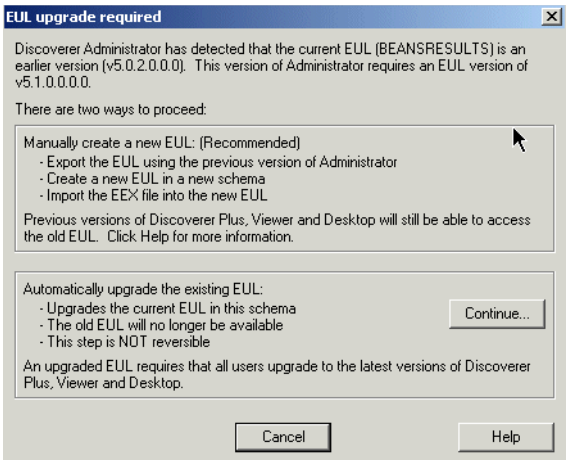
Note that after you have upgraded the EUL, users of Discoverer Version 9.0.x will not be able to use the upgraded EUL.

To upgrade a Version 5.0 EUL to Version 5.1:

1. From the Windows Start menu, choose Programs | Oracle Business Intelligence Tools - <BI TOOLS HOME NAME> | Discoverer Administrator to display the Connect to Oracle Business Intelligence Discoverer Administrator dialog.
2. Enter the database user name and password of the owner of the EUL that you want to upgrade.
3. Click OK.

   The EUL upgrade required dialog is displayed.

Figure 24–8 Discoverer Administrator upgrade dialog

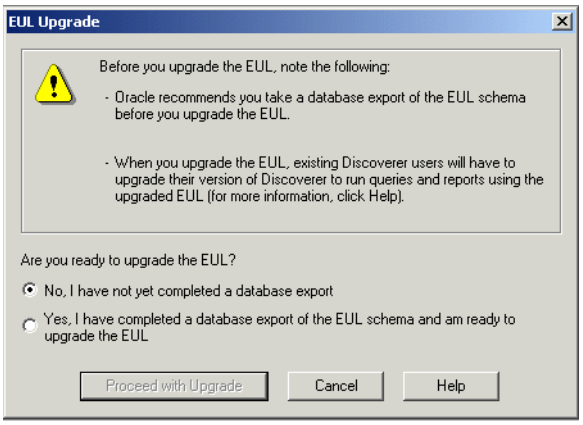


Notes:

- If you have not already exported the EUL, then click Cancel and export the EUL (for more information, see "Upgrade step 1: Back up the Version 5.0 EUL").
- If the EUL upgrade required dialog is not displayed, then the Version 5.0 EUL has already been upgraded. You do not need to upgrade the EUL again, so go straight to "Upgrade step 4: Migrate users to Discoverer Version 10.1.2".

4. Click Continue to display the EUL Upgrade dialog.

Figure 24–9 EUL Upgrade dialog



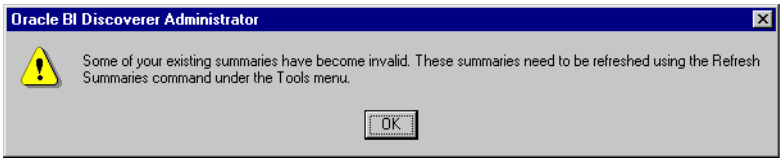
5. Select the **Yes, I have completed a database export and am ready to upgrade the EUL** option to confirm that you have exported the Discoverer Release 5.0 EUL.
6. Click Proceed with Upgrade to upgrade the Version 5.0 EUL.

   The EUL Upgrade progress window displays the status of the upgrade.

   Any messages that are output during the upgrade process are shown in the End User Layer Upgrade Log dialog, which is displayed at the end of the process. For more information about messages that refer to invalid characters in identifiers, see "Notes about upgrading identifiers that contain invalid characters for Discoverer Version 10.1.2".

   If there are summary folders in the upgraded EUL, then the following message dialog is displayed, indicating that the summary folders are invalid and must be refreshed.

Figure 24–10 Invalid summaries warning message dialog



7. If the message dialog in Figure 24–10 is displayed, then click OK.

   The Load Wizard is displayed.
8. Click Cancel to close the Load Wizard.

   The EUL upgrade is complete. You can use this EUL to connect to the database using Discoverer Administrator Version 10.1.2.

Upgrade step 3: Refresh summary folders

If there are summary folders in the EUL that you have upgraded, then you must refresh the summary folders.

The definitions of any Release 9.0.x summary folders are copied into the new Version 5.1 EUL and the status of any upgraded summary folders is changed to “Refresh Required”. The database tables or materialized views on which the upgraded

summary folders are based are not actually created until the summary folders are refreshed.

When you refresh upgraded summary folders:

- on Oracle Standard Edition databases, Discoverer creates summary tables
- on Oracle Enterprise Edition databases, Discoverer creates materialized views

When the summary tables or materialized views have been created, Discoverer can use the summary folders to optimize queries.

For more information about summary folders, summary tables, and materialized views, see Chapter 14, "Managing Summary Folders".

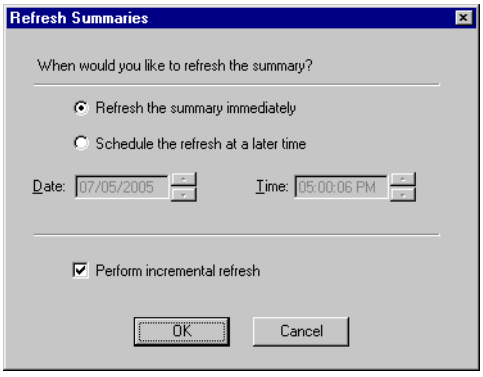
To refresh upgraded summary folders:

1. Connect to Discoverer Administrator as the owner of the upgraded EUL.
2. Open the business area that contains the summary folders that you want to refresh.
3. Display the Summaries tab of the Workarea.
4. Select the summary folders that you want to refresh.

   You must refresh all of the summary folders before Discoverer can use them. However, depending on the amount of data, you might not want to refresh all the summary folders at the same time.
5. Select Tools | Refresh Summaries.

   For any summary folders that are not based on external summary tables, the Refresh Summaries dialog is displayed.

Figure 24–11 Refresh Summaries dialog



6. Specify refresh options as required.

   You can refresh summary folders immediately or specify a time for the refresh. Depending on the amount of data, you might want to schedule the refresh for an off-peak time.
7. Click OK to refresh the summary folders.

Notes

- If an upgraded EUL contains summary folders that are based on external summary tables, then you must also refresh those summary folders. During the refresh, Discoverer updates EUL metadata for summary folders based on external summary tables. If you are using an Oracle9*i* (or later) Enterprise Edition database,

then Discoverer creates a materialized view that references the external summary table.

Upgrade step 4: Migrate users to Discoverer Version 10.1.2

When you have upgraded all Version 5.0 EULs and you are satisfied that the upgraded EULs are ready to use, migrate Discoverer users to Discoverer Version 10.1.2.

Until you have migrated users to Discoverer Version 10.1.2, they will not be able to access upgraded EULs.

How to migrate Discoverer users to Discoverer Version 10.1.2 will depend on the Discoverer tools that they use.

To migrate Discoverer Plus and Discoverer Viewer users:

1. Install Oracle Business Intelligence Discoverer.
2. Follow the instructions in *Oracle Application Server 10g Upgrading to 10g (10.1.2)* to upgrade the Discoverer components on the middle tier.

To migrate Discoverer Desktop users:

1. Install Discoverer Desktop on client machines using the CD that is supplied with Oracle Business Intelligence Tools.

   The Oracle Installer installs Discoverer Desktop Version 10.1.2 in a separate directory from Discoverer Release 9.0.x.

Notes

When a user logs into Discoverer Version 10.1.2 for the first time (by using Discoverer Plus, Discoverer Desktop, or Discoverer Viewer), Discoverer searches for any Version 5.1 EULs that the user has access to, as follows:

- If a valid EUL is found, then the user can connect and can start work in Discoverer Version 10.1.2.
- If no valid EUL is found, then Discoverer alerts the user that they cannot connect to the database. At this point, the user must contact the Discoverer manager because it is likely that an EUL has not yet been upgraded. Note that the user can still use Discoverer Version 9.0.x against a non-upgraded EUL.

After Discoverer Version 10.1.2 is installed and a connection to the database has been established successfully through a Version 5.1 EUL, you can remove Discoverer Version 9.0.x products (that is, Discoverer Desktop and Discoverer Administrator) from client machines.

Upgrade step 5: Remove Discoverer Version 9.0.x products from client machines

When you and your users have connected successfully to Version 5.1 EULs using Discoverer Version 10.1.2, you can remove Discoverer Version 9.0.x products (that is, Discoverer Administrator, Discoverer Desktop) from client machines.

To remove Discoverer Version 9.0.x products from client machines:

1. Insert the CD from which you installed Discoverer Version 9.0.x products into your computer.

   The Oracle Installer starts automatically. If the Installer does not start automatically, then access the CD-ROM with Windows Explorer and run setup.exe from the CD root directory.

2. Use the Oracle Installer dialogs to remove Discoverer Version 9.0.x products.

   Note that any workbooks that were created in Discoverer Version 9.0.x and saved in the <ORACLE_HOME>\discoverer902 directory (Version 9.0.2) or the <ORACLE_HOME>\discoverer directory (Version 9.0.4) will not be deleted.

3. (optional) To retain Discoverer Version 9.0.x workbooks for future use with Discoverer Version 10.1.2:

   a. Move the Discoverer Version 9.0.x workbooks to a new directory.

   b. Delete the original directory.

Notes about upgrading to Discoverer Version 10.1.2

This section contains the following notes about upgrading to Discoverer Version 10.1.2:

- "Notes about upgrading Oracle Applications EULs for Discoverer Version 10.1.2"
- "Notes about upgrading EULs that contain analytic functions for Discoverer Version 10.1.2"
- "Notes about upgrading the Video Stores tutorial for Discoverer Version 10.1.2"
- "Notes about upgrading scheduled workbooks for Discoverer Version 10.1.2"
- "Notes about upgrading workbooks saved in .dis files for Discoverer Version 10.1.2"
- "Notes about upgrading Discoverer systems that use the EUL Gateway for Discoverer Version 10.1.2"
- "Notes about upgrading summary folders that contain SET operators for Discoverer Version 10.1.2"
- "Notes about upgrading identifiers that contain invalid characters for Discoverer Version 10.1.2"

Notes about upgrading Oracle Applications EULs for Discoverer Version 10.1.2

When upgrading an Oracle Applications EUL, be aware that the MAXEXTENTS storage property of the EUL tables might have been increased to a value greater than the MAXEXTENTS storage property of the tablespace in which the EUL was created. If this situation exists, then any attempt to upgrade the EUL will fail (for example, with an ORA01631 error) because:

- the upgrade process uses the original EUL tablespace's MAXEXTENTS value when creating the new EUL tables
- the new EUL tables will therefore not be large enough to contain the data from the original EUL tables

If the MAXEXTENTS value of the EUL tables is greater than the MAXEXTENTS value of the EUL's tablespace, then ask the database administrator to increase the MAXEXTENTS value of the original EUL's tablespace before attempting to upgrade the EUL. The new EUL tablespace and the new EUL tables will be created with the larger MAXEXTENTS value.

Notes about upgrading EULs that contain analytic functions for Discoverer Version 10.1.2

When you upgrade a Discoverer Release 4.1 EUL to a Discoverer Version 5.1 EUL, new Oracle9*i* analytic functions are added to EUL tables.

Where existing user-defined functions have the same name (or the same unique identifier) as the new functions, Discoverer does the following:

- renames the existing user-defined function
- displays a log message at the end of the upgrade process
- gives you the option to save the messages to a log file

Note: Discoverer's internal reference system ensures that Discoverer end users can still open workbooks that contain renamed user-defined functions.

Notes about upgrading the Video Stores tutorial for Discoverer Version 10.1.2

The Video Stores tutorials are specific to particular Discoverer releases.

When you upgrade to a new version of Discoverer, install the Video Stores sample data using the appropriate version of Discoverer Administrator instead of upgrading the tutorial.

Notes about upgrading scheduled workbooks for Discoverer Version 10.1.2

When you upgrade a Release 3.1 EUL to a Release 4.1 EUL, you must run a separate executable (called dis4sch.exe) to upgrade scheduled workbooks (for more information, see the Discoverer 4.1 Release Notes).

When you upgrade a Release 4.1 EUL to a Version 5.1 EUL, scheduled workbooks are automatically upgraded. However, scheduled workbook results are not copied to the Version 5.1 EUL. The results for an upgraded scheduled workbook will be available only after the scheduled workbook has next run.

Notes about upgrading workbooks saved in .dis files for Discoverer Version 10.1.2

If Discoverer Desktop users save workbooks to the file system in `.dis` files, then the `.dis` files must be upgraded before they can be used with the latest version of Discoverer.

To upgrade the `.dis` files, users simply open the `.dis` files in the latest version of Discoverer and save the files back to the file system, or to the database (to open them in Discoverer Plus and Discoverer Viewer). Note that when a `.dis` file has been upgraded, users of earlier versions of Discoverer Desktop will not be able to open the file.

Notes about upgrading Discoverer systems that use the EUL Gateway for Discoverer Version 10.1.2

A Discoverer system might use the EUL Gateway to populate EULs with metadata from a source other than the database's on-line dictionary (for example, from Oracle Designer).

If you upgrade such a system, then you must re-install and reconfigure the EUL Gateway after the upgrade process is complete. For more information about installing and configuring the EUL Gateway, see the `eulgatew.doc` document located in the `<ORACLE_HOME>\discoverer\kits` directory.

Notes about upgrading summary folders that contain SET operators for Discoverer Version 10.1.2

When you upgrade a Release 3.1 EUL to a Release 4.1 EUL on an Oracle9*i* (or later) Enterprise Edition database, be aware that summary folders based on SET operators (for example, UNION, UNION ALL, MINUS, INTERSECT) might be invalidated.

During the upgrade process, summary folders are converted to materialized views. However, the Oracle9*i* (or later) Enterprise Edition database imposes restrictions on the use of SET operators (for example, UNION, UNION ALL, MINUS, INTERSECT) in materialized views.

Note that the restrictions on the use of SET operators in materialized views have been removed in Oracle databases (9.2(or later).

Notes about upgrading identifiers that contain invalid characters for Discoverer Version 10.1.2

In a future release of Discoverer, there may be a change to the valid characters that can be used in identifiers and some characters may be de-supported (for more information, see "What are identifiers?"). If any characters become de-supported, then Discoverer will automatically modify the invalid characters in the release where such modification is required.

Note: During a 9.0.2 to 9.0.4 upgrade, Discoverer detects invalid characters in identifiers and warns that you will have to modify the characters in a future release. In fact, Discoverer will modify the invalid characters automatically in the release where such modification becomes required.

About scheduled workbooks and compatibility between Discoverer 10.1.2 and pre-Oracle9*i* database releases

New version of the batch PL/SQL package is installed into the user's schema

When you upgrade an EUL on a pre-Oracle9*i* database to Discoverer 10.1.2, a new version of the batch PL/SQL package is installed into the user's schema alongside the existing package. Preserving the existing PL/SQL package prevents any existing scheduled workbook batch jobs from being destroyed. Function names in the new batch PL/SQL package however, remain the same as the existing batch PL/SQL package.

Run a script to specify that a scheduled workbook results schema is to own the results tables

When you upgrade the EUL to Discoverer 10.1.2 from a pre-Oracle9*i* database release, check whether the following conditions are true:

- the database user that schedules a workbook does not own the database tables that contain the workbook results
- you want a different database user (a scheduled workbook results schema) to own the database tables that contain the workbook results

In this case, you must install the new version of the batch PL/SQL package (EUL5_BATCH_REPOSITORY) using the SQL script batchusr.sql. The script is located in the <ORACLE_HOME>\discoverer\util directory. The new version of the batch PL/SQL package can be installed into the scheduled workbook results schema (that is, the user's schema that owns the tables containing the workbook results). For more information, see "Use a script to specify a scheduled workbook results schema to own the scheduled workbook results tables (not the database user scheduling the workbook)".

Note: When upgrading an EUL from a pre-Oracle9*i* database to Discoverer 10.1.2, the batch PL/SQL package is the same and does not need to be upgraded.

For more information about scheduling workbooks, see Chapter 8, "Scheduling Workbooks".

Part IV

Reference Information

This section contains general reference information including descriptions of all Oracle Business Intelligence Discoverer Administrator dialogs.

25

Dialog Reference

This chapter contains comprehensive reference information for each dialog in Discoverer Administrator.

List of reference dialogs

This section contains an alphabetical list of links to the reference dialogs used in Discoverer Administrator.

"Alphabetical Sort dialog"

"Business Area Properties dialog"

"Changing Identifier Warning dialog"

"Choose Folder dialog (for an item, condition or join)"

"Choose user or table/view dialog"

"Condition Properties dialog"

"Conditions dialog"

"Confirm Business Area Delete dialog"

"Confirm Delete dialog"

"Confirm Folder Delete dialog"

"Connect dialog"

"Create EUL Wizard dialog"

"Create EUL Wizard: Step 2 dialog"

"Create EUL Wizard: Step 2 dialog (Oracle Applications EUL)"

"Custom Folder dialog"

"Custom Folder Properties dialog"

"Database Information dialog"

"Database Storage Properties dialog: List of tabs"

"Database Storage Properties dialog: Materialized Views tab"

"Database Storage Properties dialog: Mappings tab"

"Database Storage Properties dialog: Properties tab"

"Database Storage Properties dialog: Tablespaces tab"

"Edit Hierarchy dialog: Items tab"

"Delete EUL dialog"

"Edit Calculation dialog"

"Edit Hierarchy dialog: Items tab (select date items that will use this date hierarchy)"

"Edit Hierarchy dialog: Items tab (select items to include in this hierarchy)"

"Edit Hierarchy dialog: Name tab"

"Edit Item Class dialog: Alternative Sort tab"

"Edit Item Class dialog: General tab"

"Edit Item Class dialog: List of values tab"

"Edit Item Class dialog: Options tab"

"Edit Item Class dialog: Select Items tab"

"Edit Join dialog: Items tab"
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"Edit Summary dialog: Choose Items tab"
"Edit Summary dialog: Combinations tab"
"Edit Summary dialog: General tab"
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"EUL Manager dialog"
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"Folder Properties dialog"
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"Import PL/SQL Functions dialog"
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"Item Class Properties dialog: General tab"
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"Item Properties dialog"
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"Load Wizard: Step 1 dialog"
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"Load Wizard: Step 3 dialog"
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"Manage Folders dialog: By Folder tab"

"Manage Folders dialog: Orphaned Folders tab"
"Manage Scheduled Workbooks dialog"
"Matching Values dialog"
"New Condition dialog (Advanced)"
"New Condition dialog (select an item or folder for)"
"New/Edit Condition dialog"
"New Date Format dialog"
"New Item dialog"
"New Item dialog (select a folder for)"
"New Join dialog (select a folder for)"
"Online Dictionary Options dialog"
"Open Business Area dialog"
"Options dialog: Connection tab"
"Options dialog: Default EUL tab"
"Options dialog: Query Governor tab"
"PL/SQL Functions dialog: Arguments tab"
"PL/SQL Functions dialog: Functions tab"
"Privileges dialog: Privileges tab"
"Privileges dialog: Query Governor tab"
"Privileges dialog: Scheduled Workbooks tab"
"Privileges dialog: User/Role tab"
"Properties dialogs"
"Refresh Business Area dialog"
"Refresh Summaries dialog"
"Refresh Wizard dialog"
"Repository Users dialog"
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"Schedule Workbook dialog: General tab"
"Scheduled Workbook dialog: Parameter values"
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"Summary Wizard (ASM): Change default settings dialog: Folders tab"

"Summary Wizard (ASM): Change default settings dialog: Analyze tab"
"Summary Wizard (ASM): Change default settings dialog: Deletion tab"
"Summary Wizard (ASM): Change default settings dialog: Query Usage tab"
"Summary Wizard (ASM): Change default settings dialog: Query User tab"
"Summary Wizard (ASM): Not Analyzed dialog"
"Summary Wizard (ASM): Recommended Summaries dialog"
"Summary Wizard (ASM): Step 2 Analyze Folders dialog"
"Summary Wizard (ASM): Step 3 Allocate Space dialog"
"Summary Wizard: Step 1 dialog"
"Summary Wizard: Step 2 dialog"
"Summary Wizard: Step 3 dialog (using query statistics)"
"Summary Wizard: Step 3 dialog (using external tables)"
"Summary Wizard: Step 3 dialog (using query statistics)"
"Using Help"
"Values dialog"
"Workarea: Data tab"
"Workarea: Hierarchies tab"
"Workarea: Item Classes tab"
"Workarea: Summaries tab"

Alphabetical Sort dialog

Discoverer displays this warning dialog when you attempt to sort:

- folders within a business area
- items within a folder.

For more information about folders and items, see:

"What are folders?"

"What are items?"

n Folders/Items will be alphabetically sorted. The existing order will be lost.

The above message displays the number of folders or items (n) that will be alphabetically sorted and also indicates that the existing display order will be lost if you click the Yes button.

Do you want to continue?

Don't show this dialog again

Select this check box to disable further display of this warning during the current session.

Yes

Use this button to proceed.

Discoverer will sort the folders/items.

No

Use this button to abandon the alphabetical sort.

Discoverer will display the Workarea.

Business Area Properties dialog

Use this dialog to view or change the properties of a business area. For example, to change a business area name, description, or identifier.

For more information, see:

"What are business areas?"

"How to edit business area properties"

This dialog has two tabs: General and Dependents. Click each tab to view or edit properties.

General tab

Name

This field displays the business area name.

Description

This field displays a text description of the business area.

The contents of this field are displayed in the description line of the Discoverer Plus Query Wizard (for more information, see the *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Plus*.

Identifier

A unique name that Discoverer uses to identify EUL and workbook objects. When matching objects common to different EULs, Discoverer uses identifiers to locate objects in different EULs that refer to the same business object. For more information, see "What are identifiers?".

Warning: It is not advisable to change an identifier as it can affect the relationships between EUL objects.

Dependents tab

Note that dependents do not apply at the business area level.

Automatically save changes after each edit

Use this check box to save changes each time a field in this dialog is updated.

Changing Identifier Warning dialog

This dialog is displayed when you attempt to save changes to an item's identifier, to warn you of the implications of changing an identifier.

Identifiers are unique names that Discoverer uses to identify EUL and workbook objects (for example, business areas, folders, items, worksheets, parameters, joins, conditions, calculations). For example a folder named Sales in EUL 'A' might refer to the same business object to which the folder Sales Figures in EUL 'B' refers. Both folders have the same identifier and can therefore be recognized as being the same object.

Warning: It is not advisable to change an identifier as it can affect the relationships between EUL objects.

Some examples of why you might want to change an identifier are as follows:

- to comply with strict naming conventions
- where an object has been deleted and must be re-created with the same identifier

If you do change an identifier, then matching identifiers in other EULs should also be updated to reflect the change.

Are you sure you want to proceed?

Yes

Use this button to proceed.

No

Use this button to abandon the change.

Discoverer displays the Properties dialog.

Don't show this warning again during this session

Select this check box to disable display of this warning during a session.

Choose Folder dialog (for an item, condition or join)

Use this dialog to select a folder in which to store new items, conditions, or joins. Discoverer might display the Choose Folder dialog in any of the following cases:

- the currently selected folder does not use the condition you are about to create
- a folder is not selected on the Join Manager dialog and you click Change folder in the drop down list

This dialog is also displayed as:

New Join dialog
New Item dialog
New Condition dialog

For more information, see:

"What are folders?"

"What are items?"

"What are joins?"

"What are conditions?"

Business area

Use this drop down list to select a business area.

Choose a folder from the expandable list below.

Choose Join dialog

Use this dialog to select one or more joins, after you add items to a complex folder.

Discoverer displays the Choose Join dialog when you select items from two folders that are joined using more than one join.

For more information, see:

"About joining two folders using more than one join"

"How to create complex folders"

Choose Join

Use this field to select one or more joins.

Choose user or table/view dialog

Use this dialog to:

- choose database and user

  For example, when choosing a database user as the Owner of a folder (for further information, see "Folder Properties dialog").

- choose table or view

  For example, choosing a table or view when creating an external summary folder (for further information, see "How to create summary folders based on external summary tables").

This dialog is also displayed as:

Choose user dialog

For more information, see:

"What are folders?"

"What is manual summary folder creation?"

Database

Use the drop down list to select the database that contains the required user or table/view.

Use the list to select the user or table or view that you want.

Condition Properties dialog

Use this dialog to view or change the properties of a condition.

Note: Where more than one condition is selected, if you choose the Properties option then any changes made to a property will affect all the selected conditions.

For more information, see:

"What are conditions?"

Name

Use this field to enter a descriptive condition name. This name appears in condition lists, and on Discoverer worksheets.

Description

Use this field to enter a brief description for the condition. This description is displayed in condition lists to help Discoverer users choose which condition they want to use.

Type

Use this drop down list to specify the condition as Mandatory and Optional as follows:

- Mandatory conditions always apply to a folder. The Discoverer end user does not see the condition in Discoverer Plus and cannot turn it off.
- Optional conditions can be applied or not applied. This offers Discoverer end users the choice to turn the condition on or off in Discoverer Plus.

Sequence

This field displays the order in which this item appears in the Discoverer Plus Object Selection Wizard. For example, you might want to display all conditions before items.

Formula

This field displays the formula that defines the condition.

Click this field to display the "Edit Condition dialog".

For more information about valid server syntax, see the *Oracle Server SQL Language Reference Manual*.

Identifier

A unique name that Discoverer uses to identify EUL and workbook objects. When matching objects common to different EULs, Discoverer uses identifiers to locate objects in different EULs that refer to the same business object. For more information, see "What are identifiers?".

Warning: It is not advisable to change an identifier as it can affect the relationships between EUL objects.

The Dependents tab displays two columns:

Type

Displays one or more object types (for example, folders, items) that have a dependency on the selected condition.

Name

Displays the name of each object listed in the Type column.

Automatically save changes after each edit

Use this check box to save changes each time a field in this dialog is updated.

Conditions dialog

Use this dialog to select an existing condition to use when you create or edit a condition.

For more information, see:

"What are conditions?"

Discoverer displays this dialog when you choose the **Select Condition...** option from the drop down list in the **Item** field of the New/Edit Condition dialog.

Select a condition:

Choose a condition to display in the **Item** field of the New/Edit Condition dialog.

Use the OK button to display the selected condition in the **Item** field.

The condition that you select here is used in the current condition statement of this condition.

Confirm Business Area Delete dialog

Use this dialog to manage how you delete a business area. For example, to check the impact of removing a business area before doing so.

Note: Folders that have no business area become orphaned folders. These folders still exist in the EUL, but are no longer visible in the Workarea. You can view and delete orphaned folders by using the Tools | Manage Folders option from the Discoverer main menu.

For more information, see:

"What are business areas?"

"How to delete a business area"

Are you sure you want to delete this business area?

- **Delete this Business Area**

  Use this option to remove only the business area, but not the contents of the business area.

- **Delete this Business Area and its Folders**

  Use this option to remove the business area and all of the folders. This option does not remove folders from any other business area.

Yes

Use this button to remove the selected business area.

No

Use this button to cancel the action, and close this dialog with no change to the business area or EUL.

Impact

Use this button display the "Impact dialog". The Impact dialog displays a list of all objects that will be affected or removed if you remove the selected business area.

Confirm Delete dialog

Use this dialog to manage how you remove an item. For example, to check the impact of removing an item before doing so.

Yes

Use this button to removes the selected item from the business area.

No

Use this button to cancel the action and close the dialog without changing the business area.

Impact

Use this button to display the "Impact dialog". The Impact dialog displays a list of all objects that will be affected or removed if you remove the selected item.

Confirm Folder Delete dialog

Use this dialog to manage how you delete a folder. For example, to check the impact of removing a folder before doing so.

Note: A folder removed from the business area but not the EUL, and which is not referenced in any other business area is known as an orphan folder.

For more information, see:

"What are folders?"

"How to delete folders from a business area"

Are you sure you want to delete this folder?

- **Delete from this Business Area**

  Use this option to remove the selected folder from the current business area, but not delete the folder from the EUL. So you can still use this folder in other business areas.

- **Delete from the End User Layer**

  Use this option to remove the selected folder from the business area and from the EUL. You will no longer be able to use this folder in this or any other business area in the EUL.

Impact

Use this button display the "Impact dialog". The Impact dialog displays a list of all objects that will be affected or removed if you delete the selected folder.

Connect dialog

Use the Connect dialog to connect to a different End User Layer. This dialog also appears when you first run Discoverer Administrator. You cannot work in Discoverer Administrator unless you are connected to an EUL.

Notes

- When you connect to Oracle Applications EULs, the Connect dialog prompts you to enter your Oracle Applications connect details, (see the Status area in the Connect dialog). If Discoverer is not configured to use Oracle Applications EULs, you must reconfigure your Connect dialog. Choose Tools ¦ Options to configure Discoverer to connect to Oracle Applications EULs.

For more information, see:

"Differences with the Discoverer Connect dialog in Oracle Applications mode"

Username

Use this field to enter your authorized database user name.

Password

Use this field to enter authorized database password to match the user name.

Passwords are case-sensitive in Oracle databases (Enterprise Edition release 11.1 or later).

Connect

Use this field to enter the name of the database that you are connecting to.

Oracle Applications User

This optional check box is displayed when Discoverer is configured to use both standard Discoverer EULs and Oracle Applications EULs.

If you DO NOT want to connect to an Oracle Applications EUL, make sure that this option is NOT selected.

If you DO want to connect to an Oracle Applications EUL, make sure that this option is selected.

Connect button

Use this button to connect to the database using the connection details entered.

Note: You cannot be connected to more than one End User Layer at a time. When you establish a new connection, all open business areas close and the connection to the current database terminates. You are prompted to save any changes before the new connection is established. If the new connection fails, you remain connected as the original user id.

Create EUL Wizard dialog

Use the Create EUL Wizard to help you create a new End User Layer (EUL). In this dialog you define the owner of the new EUL.

For more information, see:

"What is an End User Layer?"

Who will own the EUL?

- **Select an existing user**

  Use this option to create an EUL for an existing database user in the current database. Select the database user from the User drop down list.

  Note: If the database user already owns an EUL, the new EUL will replace the existing EUL.

- **Create a new user**

  Use this option to create a new database user and an EUL for that database user. You must have sufficient database privileges to create a new user (for more information, see "What privileges do you require to create an End User Layer in an Oracle database?").

Grant EUL access to PUBLIC

Select this check box to specify that the new EUL is accessible to all users in the current database.

Clear this check box to specify that the EUL owner is the only database user that is able to access data through this EUL.

Note: It is recommended that you clear the **Grant EUL access PUBLIC** check box, where security is an issue. The EUL owner can subsequently define business area access and privileges for users and roles or responsibilities as required (for more information, see "Controlling Access to Information").

New EUL is for use by Oracle Applications users ONLY

Select this check box to restrict EUL access to Oracle Applications users. Clear this check box to create a standard EUL.

Note: The choice that you make here is final. You cannot change a standard EUL into an Oracle Applications EUL (and vice versa).

Enter the EUL user's password

User

If you want a new database user to own the new EUL, use this field to enter a username for the new database user. A new database user will be created.

Select

If you want an existing database user to own the new EUL, use this button to display the "Select User dialog" where you can search for and select the database user that will own the new EUL.

Password

If you want a new database user to own the new EUL, use this field to enter a password for the new database user.

If you want an existing database user to own the new EUL, use this field to enter the password for that user.

Passwords are case-sensitive in Oracle databases (Enterprise Edition release 11.1 or later).

This field is grayed out if you have specified that the current user (that is, the username you used to start Discoverer Administration) will own the EUL.

Confirm password

If you want a new database user to own the new EUL, use this field to reenter the password for the new user.

This field is grayed out if you have specified that an existing user will own the new EUL.

Create EUL Wizard: Step 2 dialog

Use this dialog when you want a new database user to own a new EUL. Use this dialog to select the default and temporary tablespace for the new user.

Note: These settings are database settings.

This dialog is also displayed as:

Create EUL Wizard: Step 3 dialog

For more information, see:

"What is an End User Layer?"

Default Tablespace

Use this field to select the database tablespace in which to store the Discoverer EUL tables, metadata, workbooks and worksheets for this user.

For more information about EUL space requirements and storage parameters, see "What are the space requirements and storage parameters for a typical EUL?".

For a default configuration, you typically choose the USR tablespace here.

- Tablespace

  Lists the available tablespaces in the database.

- MB free

  Displays the amount of space available in the tablespace.

- Auto Ext.

  Indicates whether the Auto Extend feature is On or Off for the tablespace in the database. When the Auto Extend feature is On, the tablespace will automatically increase in size when necessary.

Temporary Tablespace

Use this field to select the database tablespace where temporary data is stored for this user. For a default configuration, you typically choose TEMP here.

Create EUL Wizard: Step 2 dialog (Oracle Applications EUL)

Use this dialog when you are creating a new Oracle Applications EUL. Use this dialog to select the schema (containing the Oracle Applications FND (Foundation) tables) and enter a password for the schema. The FND tables contain the metadata for the Oracle Applications.

For more information, see:

"What is an End User Layer?"

"What are Oracle Applications?"

Select the schema containing the Oracle Applications FND tables

Schema

Use this drop down list to select the schema that contains the FND tables.

Password

Use this field to enter the password for the schema.

Passwords are case-sensitive in Oracle databases (Enterprise Edition release 11.1 or later).

Custom Folder dialog

Use this dialog to create and edit custom folders. You do this by entering a SQL select statement. Like other folders, custom folders require joins in order for their data to relate to other data in the business area.

For more information, see:

"What are custom folders?"

"How to create custom folders"

Enter the SQL to define the custom folder

Use this field to enter the SQL statement that will define the folder. For example:

```
SELECT ENAME, JOB, SAL FROM EMP@ORCL
```

The Discoverer Administrator then creates items for each of the select list items. In Discoverer Plus, end users can use custom folders to build queries in the same way as for other folders.

You can enter up to 2,000,000,000 characters in this field.

Name

Use this field to enter a name for the folder.

Validate SQL

Use this button to validate the SQL statement at any time before saving it. An invalid SQL statement prompts an error message.

OK

Use this button to validate the SQL statement and save the custom folder.

Notes

- Discoverer allows you to save the custom folder even if the SQL is invalid. This allows for situations where the SQL must be inserted into the EUL before the actual database objects are created or made available. However, users will not be able to query it until the SQL is corrected.
- If the SQL is invalid and you want to correct it, select the custom folder in the Data tab and right-click to access its Properties dialog. Double-click the Custom SQL field to display the Custom Folder dialog.
- This dialog becomes read-only if the current user does not have the Create/Edit Business Area privilege (for more information, see "Privileges dialog: Privileges tab"). When this dialog is read-only you can still copy and paste the SQL statement to another document.
- When a custom folder is based upon a view and you update the view (for example, by adding a new column), the update will only become available in Discoverer if you refresh the business area. For more information, see "How to synchronize a business area with the database".
- Discoverer does not allow you to use the WITH clause in the custom folder SQL.

Custom Folder Properties dialog

Use this dialog to look at or change the properties of the currently selected custom folder.

For more information, see:

"What are custom folders?"

Name

Use this field to enter a name for the folder.

Description

Use this field to enter a brief description for the folder.

Visible to user

Use this field to choose whether you want Discoverer end users to be able to see this folder in Discoverer Plus.

Valid

This read-only field displays Yes when the SQL statement used to create the custom folder is valid.

Custom SQL

Use this field to display the "Custom Folder dialog", where you can change the SQL statement used to create the custom folder.

Identifier

A unique name that Discoverer uses to identify EUL and workbook objects. When matching objects common to different EULs, Discoverer uses identifiers to locate objects in different EULs that refer to the same business object. For more information, see "What are identifiers?".

Warning: It is not advisable to change an identifier as it can affect the relationships between EUL objects.

Automatically save changes after each edit

Use this check box to save changes each time a field in this dialog is updated.

Notes

- The Custom SQL field contains the SQL statement that defined the folder. If the SQL statement is incorrect, the custom folder will not be functional in Discoverer Plus.
- To view the entire statement resize the Properties window.

Database Information dialog

Use this dialog to view the name of the database to which you are currently connected and the functions available. For example, to check that you have configured the database correctly.

For more information, see:

"What are the prerequisites for using Discoverer Administrator?"

Connected to:

Use this field to find out the name of the database to which you are connected. This field is a concatenation of your user name, the @ symbol and the database name.

The list box displays database configuration information and any functionality not available to this database user and why the functionality it is not available.

Notes

If summary management is displayed as not available:

- Summary management will not be available to a newly created EUL owner.

  The following privileges must be granted to enable summary management:

  - analyze any
  - create any materialized view
  - drop any materialized view
  - alter any materialized view
  - global query rewrite

  The above privileges can also be set up from the script eulasm.sql (located in the <ORACLE_HOME>\discoverer\util directory).

Database Storage Properties dialog: List of tabs

Use these tabs to edit the database storage properties for summary folders. For example, to change the tablespace allocation, cache setting or refresh type.

This dialog is also displayed as:

Database Storage Properties dialog

Note: Database storage properties do not apply to summary folders based on external summary tables.

For more information about summary folders, see:

"Managing Summary Folders"

"Creating Summary Folders Manually"

"How to edit database storage properties of summary combinations for a summary folder"

The Database Storage Properties dialog consists of four tabs:

Properties

Use the "Database Storage Properties dialog: Properties tab" to view and set database storage properties.

Mappings

Use the "Database Storage Properties dialog: Mappings tab" to view the mappings between the items in the summary combination and database columns.

Tablespaces

Use the "Database Storage Properties dialog: Tablespaces tab" to view storage attributes for available tablespaces, including the available space in each tablespace. This information can help you to select a tablespace on the Properties tab.

Materialized Views (Oracle9*i* (or later) Enterprise Edition databases)

Use the "Database Storage Properties dialog: Materialized Views tab" to view and set database storage properties that are specific to Oracle9*i* (or later) Enterprise Edition databases.

Database Storage Properties dialog: Materialized Views tab

Use this tab to view and set database storage properties that are specific to Oracle9*i* (or later) Enterprise Edition databases.

Note: Database storage properties do not apply to summary folders based on external summary tables.

For more information, see:

"Managing Summary Folders"

"What are materialized views?"

"Creating Summary Folders Manually"

"How to edit database storage properties of summary combinations for a summary folder"

The following table lists the properties and their default values, where appropriate. When you select a property, the panel at the bottom of the dialog displays a description of the purpose of the property.

Property	Default Value	Range	Create/Edit
Parallel Inserts	No	Yes/No/Default	yes
No. of Processes	1		yes, if Parallel Inserts set to yes
Logging	Same as user's tablespace	Yes/No	yes
Cache	No	Yes/No	yes, if Logging set to yes
Refresh Type	Full	Full/Incremental	yes
Refresh	On demand	On demand/On commit	yes
Last Refresh			no
Incremental Load			no
Stale			no

Parallel Inserts

Use this property to choose whether to use parallel inserts when refreshing summary folders.

No. of processes

Use this property (if Parallel Inserts is set to Yes) to set the number of parallel processes used when refreshing summary folders.

Logging

Use this property to enable or disable database logging.

Cache

Use this property to enable or disable database caching.

Refresh Type

Use this property to specify whether the summary folder Refresh Type is Incremental or Full.

- Incremental

  Only rows that have changed in the detail tables will be applied to the summary folder.

  For more information on the conditions required for incremental refresh, see the *Oracle Database Data Warehousing Guide*.

- Full

  The summary folder is entirely rebuilt from the detail tables.

Refresh Mode

Use this property to specify whether the summary folder Refresh Mode is On demand or On commit.

- On demand

  Select this option to refresh manually or through scheduled refreshes.

- On commit

  Select this option to refresh every time the detail tables are updated. There is no need to schedule refreshes, and the scheduling option of the Summary Wizard is not enabled.

  Restrictions apply for when you can perform a refresh On commit. For more information, see the *Oracle Database Data Warehousing Guide*.

Last Refresh

This read-only property indicates the date when the last summary folder was refreshed.

Incremental Load

This read-only property indicates the types of inserts to the detail/fact table that can be incrementally refreshed.

- None

  The materialized view cannot be incrementally refreshed.

- Direct Load

  Only direct loads can be handled.

- DML

  Only DML (data manipulation language) statements can be handled.

- Direct Load and DML

  Both direct loads and DML can be handled.

- Direct Load and limited DML

  Direct loads and a subset of DML will be handled (for more information, see the Oracle Database documentation)

Stale

This read-only property indicates whether the detail tables have changed since the last summary folder refresh.

Database Storage Properties dialog: Mappings tab

Use this read-only tab to find out how summary combinations are stored in the database. You can see how combination items map to columns in this materialized view.

Note: Database storage properties do not apply to summary folders based on external summary tables.

For more information, see:

"What are summary combinations?"

"About folders and summary folders in Discoverer"

"What to consider when defining summary combinations?"

"Guidelines for setting up summary combinations"

"How to edit database storage properties of summary combinations for a summary folder"

Item

This column displays the name of the item in the business area.

Database column

This column displays the column to which the item is mapped.

Datatype

This column displays the data type of the item.

Notes

- The information on this tab is read-only.
- The Mappings tab does not apply where summary folders are based on external summary tables.

Database Storage Properties dialog: Properties tab

Use this dialog to view and set database storage properties and the materialized view name (or summary table name in Oracle Standard Edition databases).

Note: Database storage properties do not apply to summary folders based on external summary tables.

For more information, see:

"Managing Summary Folders"

"Creating Summary Folders Manually"

"How to edit database storage properties of summary combinations for a summary folder"

The following table lists the properties and their default values. When you select a property, the panel at the bottom of the dialog displays a description the purpose of the property and the datatype it will accept.

Property	Datatype	Default Value*	Range	Create/Edit
Table Owner**	alphanumeric	current user		yes
Table Name	alpha	EUL generated		yes
Tablespace**	alphanumeric	SYSTEM		yes
Initial Extent**	numeric	10K		yes
Next Extent	numeric	10K	minimum data block	yes
% Increase	numeric	50%	>=0%	yes
Min. Extent**	numeric	1	1-Maximum Extent	yes
Max. Extent	numeric	121	> Minimum Extent	yes
% Free	numeric	10%	0-100%	yes
% Used	numeric	40%	0-99%	yes
Status	alpha			no
# Rows	numeric			no
Error	alpha			no
Last Refreshed				no

Note: In the above table, if you change a **non-dynamic storage property that affects existing summary data, Discoverer recreates the summary folder, this might take some time.

Values for the attributes Status, # Rows, Error and Last Refreshed are only available for summary folders that have been built. Therefore, when you use the Summary Wizard, these fields are grayed out, but when you edit the summary folder, these fields display appropriate values.

Database Storage Properties dialog: Tablespaces tab

Use this read-only tab to view database storage attributes for available tablespaces, including the available space in each tablespace.

Note: Database storage properties do not apply to summary folders based on external summary tables.

For more information, see:

"Managing Summary Folders"

"Creating Summary Folders Manually"

"How to edit database storage properties of summary combinations for a summary folder"

Tablespace

This column displays the name of the tablespace.

Free Space

This column displays the amount of free space remaining in the tablespace.

Used Space

This column displays the amount of space currently used.

Extend

This column indicates whether the tablespace automatically extends when more space is required.

Delete EUL dialog

Use this dialog to verify the name of the EUL that you want to delete. Discoverer Administrator only enables you to delete the EUL to which you are currently connected.

For more information, see:

"What is an End User Layer?"

"How to delete an End User Layer"

EUL

This field displays the name of the EUL that you want to delete. Because you can only delete the current EUL, the name you see in this field is the name of the EUL to which you are currently connected.

OK

Use this button to delete the current EUL.

Cancel

Use this button if the name displayed in the EUL text box is not the EUL you want to delete.

To delete a different EUL, close the EUL Manager dialog and reconnect to the EUL you want to delete.

Edit Calculation dialog

Use this dialog to edit items and calculated items.

For more information, see:

"What are items?"

"What are calculated items?"

"How to edit calculated items"

For example:

- to change the name or description of an item
- to change the name of a calculated item
- to amend the formula in a calculated item

Show

Use these options to display calculations, functions, and item that you can use to build a calculation. To include items in the calculation, paste them into the **Calculation** field.

- **Items**

  Use this option to display the EUL items available.

- **Functions**

  Use this option display the functions available.

Paste

Use this button to the add the item currently selected in the **Show** list to the Calculation. The item is copied into the **Calculation** field at the position of the cursor.

Name

Use this field to edit the name of the item or calculated item.

Calculation

Use this field to enter the calculation details (for calculation examples, see *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Plus*).

To create a calculation, you one or more of the following methods:

- Type the formula directly into the **Calculation** field.

  Note: If you type an expression in the **Calculation** field, you must prefix the expression with an equals sign (=). For example, '=Sales SUM-Costs SUM'.

- Paste items and functions from the **Show** field on the left into the calculation.
- Click the operator buttons underneath the **Calculation** field to use them in the calculation.

Operator buttons + - x / % ( )

Use these buttons to add operators to the calculation. Operators are copied into the **Calculation** field.

Note: When you use arithmetic expressions in a calculation, the multiply and divide operators are executed first, regardless of their position in the calculation. If you have more than one operator of the same precedence, they are evaluated from left to right.

For example, the calculation Price – Discount * Quantity is evaluated as Discount*Quantity subtracted from Price. If you use parentheses around the subtraction expression (Price – Discount), the subtraction is executed before the multiplication.

OK

Use this button to validate and save the calculation, as follows:

- If the calculation has valid syntax, the calculation is saved and displayed in the Calculations dialog.
- If the calculation has invalid syntax, an error message is displayed. You must correct any syntax errors before you can save the calculation.

Notes

- The table below shows the functions available in the field beneath the **Show** field:

Category	Description
All Functions	An alphabetical list of all functions.
Analytic	Advanced statistical analysis, such as RANK, NTILE, CORR.
Conversion	Converting from one data type to another, such as: RAWTOHEX, TO_CHAR, TO_DATE.
Database	Optional category that is displayed when user defined functions are available (created using the Register PL/SQL Functions facility on the Tools menu).
Date	Manipulating date items such as ADD_MONTHS, NEW_TIME, SYSDATE and NEXTDATE.
Group	Aggregate and statistical functions including SUM, COUNT, MAX, MIN, VARIANCE.
Numeric	Numeric items, transcendentals and floating point such as COS, LOG, MOD, POWER.
Others	Miscellaneous functions such as LEAST, USER, DECODE, ROWNUM.
String	Character items, text operations such as INITCAP, LPAD, NLS_UPPER.

- For detailed information about all functions available in Discoverer, see the *Oracle Database SQL Reference Guide* and *Oracle Database Data Warehousing Guide.*
- For examples of the most commonly used functions, see *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Plus*.

Edit Hierarchy dialog: Items tab

Use this dialog to manage date hierarchies for use in Discoverer workbooks.

This dialog is also displayed as:

Hierarchy Wizard: Step 2 dialog

You can create a date hierarchy in one of two ways:

- Create a custom format mask of your own (for more information, see the New Format button below).
- Choosing from a set of predefined date format masks

For more information, see:

"What are hierarchies?"

"What are date items?"

"What are date format masks?"

Select date formats for the hierarchy

New Format

Use this button to display the "New Date Format dialog", where you can define a customized date format mask.

Note: This button is only displayed when you are creating a date hierarchy using the Hierarchy Wizard.

Description

This editable field displays a brief description of the data format currently selected in the right hand pane.

(Format pane)

To use a predefined format, select from the items listed in the left hand pane and move them to the right hand pane.

You can select more than one item by pressing the Ctrl key and clicking another item.

Promote

Use this button to move the selected item up one level in the hierarchy.

Demote

Use this button to move the selected item down one level in the hierarchy.

Group

Use this button to group the selected items at the same level in the hierarchy.

Ungroup

Use this button to ungroup previously grouped items to their previous levels in the hierarchy.

Edit Hierarchy dialog: Items tab (select date items that will use this date hierarchy)

Use this dialog to specify which items in the business area use a defined hierarchy. For example, if you create a hierarchy: Year - Month - Week - Day, you might want to specify year, month, week, and day items here. When Discoverer users drill on these items, they can use this hierarchy in the drill path.

This dialog is also displayed as:

Hierarchy Wizard: Step 3 dialog

For more information, see:

"What are hierarchies?"

"How to create date hierarchies and templates"

Available Items

Use this drop down list to select a business area.

Select the items to use this hierarchy from the expandable list below.

To select items, move them from the **Available Items** list to the **Selected Items** list.

You can select more than one item by pressing the Ctrl key and clicking another item.

Selected items

This field displays the selected items that will use this hierarchy.

To select items, move them from the **Available** field to the **Selected** field.

Edit Hierarchy dialog: Items tab (select items to include in this hierarchy)

Use this dialog to create or edit items to include in hierarchies for use in Discoverer workbooks.

This dialog is also displayed as:

Hierarchy Wizard: Step 2 dialog

For more information, see:

"What are hierarchies?"

"What are item hierarchies?"

Select items to include in this hierarchy.

Use this drop down list to select a business area that contains the items that you want to use in the hierarchy.

Use the expandable list below to select one or more items. To add items to the hierarchy, move items from the left-hand list to the right-hand list.

Description

This field displays a brief description of the item format currently selected in the right hand list.

Promote

Use this button to move the selected item up one level in the hierarchy.

Demote

Use this button to move the selected item down one level in the hierarchy.

Group

Use this button to position selected items on the same level of the hierarchy. Use grouped items so the Discoverer end user can drill from one item to display two levels of detail (for example, the user could drill from Product to description and full description).

Ungroup

Use this button to ungroup the selected items, which means that they are no longer on the same level of the hierarchy.

Notes

- You can select more than one item by pressing the Ctrl key and clicking another item.

Edit Hierarchy dialog: Name tab

Use this dialog to enter a name and description for a hierarchy.

This dialog is also displayed as:

Hierarchy Wizard: Step 3 dialog (name hierarchy)
Hierarchy Wizard: Step 4 dialog (name hierarchy)

For more information, see:

"What are hierarchies?"

Hierarchy Name

Use this field to enter a name for the hierarchy.

Hierarchy Description

Use this field to enter additional information about the hierarchy.

Set as default date hierarchy

(Displays when you create a date hierarchy)

Select this check box for Discoverer to use this date hierarchy as the default date hierarchy.

Edit Item Class dialog: Alternative Sort tab

Use this dialog to select the item on which to base the alternative sort.

This dialog is also displayed as:

Item Class Wizard: Step 2 dialog (select the item containing the alternative sort sequence)
Item Class Wizard: Step 3 dialog (select the item containing the alternative sort sequence)
Item Class Wizard: Step 4 dialog (select the item containing the alternative sort sequence)

For more information, see:

"Maintaining Items and Item Classes"

Select the item containing the alternative sort sequence:

Folder

Use this field to select an item on which to base the alternative sort.

Note: The alternative sort item must be in the same folder as the list of values.

Edit Item Class dialog: General tab

Use this dialog to enter a name and description for a new item class.

This dialog is also displayed as:

Item Class Wizard: Step 3 dialog (enter name and description)
Item Class Wizard: Step 5 dialog (enter name and description)
Item Class Wizard: Step 6 dialog (enter name and description)

For more information, see:

"Maintaining Items and Item Classes"

Item class name

Use this field to enter a name for the new item class. Discoverer Administrator enters a default name for you that you can use. This name is used to identify the item class in other dialogs.

Item class description

(optional) Use this field to enter a brief description for the new item class.

Edit Item Class dialog: List of values tab

Use this dialog to select the item on which to base the list of values.

For more information, see:

"Maintaining Items and Item Classes"

This dialog is also displayed as:

Item Class Wizard: Step 2 dialog (select the item that generates the LOV)

Select the item that generates list of values:

Business area:

Use this field to select an item on which to base the list of values. You can choose from any business area in the EUL.

Notes

- Selecting a business area displays its folders.
- Click the plus (+) symbol to expand folders and display the items contained in them.

Edit Item Class dialog: Options tab

Use this dialog to change advanced list of value (LOV) options for an item class. The settings made here affect how Discoverer Plus users select and display LOV options.

This dialog is also displayed as:

Item Class Wizard: Step 4 dialog (advanced options for list of values)
Item Class Wizard: Step 5 dialog (advanced options for list of values)

For more information, see:

"Maintaining Items and Item Classes"

Retrieve values in groups of

Use this spin box to specify the maximum number of rows to display to an end user (for each array fetch of data from the database), when a list of values is expanded in Discoverer Plus.

Discoverer end users see the results of each database array fetch as a block of data that they can scroll up and down. End users can also easily display the next block of data (for more information, see the *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Plus*).

This setting is useful in Discoverer where a LOV might contain many rows, as it removes the risk of having to wait to retrieve all the values from the database at once. Discoverer displays the LOV values in blocks of a specific number of rows.

Note: The value set here is used as a default when the **Require user to always search for values** check box is cleared (for more information, see the "Require user to always search for values" item below).

Note: In Discoverer Plus, the server always fetches from the database, the number of rows specified in the **Retrieve values in groups of** field, no matter how large that number is. However, the maximum number of values that can be fetched by the client from the server is 100. So if the Discoverer manager sets the fetch size to be 1000 (more than the 100 maximum above), in Discoverer Plus the rows are always fetched by the client in groups of 100. If the Discoverer manager sets the fetch size to be 50 (less than the 100 max), in Discoverer Plus the rows are always fetched in groups of 50.

Sort the values and remove duplicates

Select this check box to hide duplicate values and alphabetically sort the display order of the list of values (for an item class) in Discoverer.

Clear this check box to display duplicate values and display rows in the same order as the values stored in the database.

This option enables you to decide whether LOV statements should automatically add the DISTINCT and ORDER BY clauses. If you know that your data is already distinct and ordered (or if it doesn't matter if your data is returned this way) then you can choose to turn this setting off.

Note: The time taken to display large lists of values depends upon how long it takes to complete a search of the database tables. Clearing this check box can improve the time taken to display large lists of values.

Show values in "Select Items" page of Worksheet Wizard

Select this check box to display LOV items in the Select Items dialog of the Worksheet Wizard (the item navigator) in Discoverer Plus.

Clear this check box not to display LOV items in the Select Items dialog of the Worksheet Wizard (the item navigator) in Discoverer Plus.

Note: In the Item Navigator, the LOV does not use the array fetch size (as specified in the "Retrieve values in groups of" spin box). In this specific instance only, Discoverer will fetch all the values first before they are displayed. If you have millions of rows, this could potentially take a long time and you would want to have this option selected.

Require user to always search for values

Sometimes, for performance reasons you might want to force end users to query a subset of the LOV. To do this you use this check box.

Select this check box when you want Discoverer to display a **Search Criteria** field that forces end users to enter search criteria to reduce the list of values to a subset of the whole list.

Clear this check box when you want Discoverer to display the number of rows specified in the **Retrieve values in groups of** spin box (for more information, see "Retrieve values in groups of").

Cache list of values during each connection

Select this check box to cache the LOV (during the current session) after it has been displayed for the first time. Use a cache when your data is static during your session. This is the recommended setting.

Clear this check box to fetch LOVs from the database each time. This option is most useful when the data is extremely dynamic and you want end users to always see the very latest (up-to-the-second) list of values.

Edit Item Class dialog: Select Items tab

Use this dialog to specify which items in the business area will use the new item class. For example, if you create a list of values on Month (January, February, March, and so on.), you might want to specify all month items here. When Discoverer end users query on month, they can choose from January, February, March, and so on

This dialog is also displayed as:

Item Class Wizard: Step 2 dialog (select items that use this item class)
Item Class Wizard: Step 3 dialog (select items that use this item class)
Item Class Wizard: Step 4 dialog (select items that use this item class)

For more information, see:

"Maintaining Items and Item Classes"

Select the items that use this item class.

Available items:

Use this drop down list to select a business area.

Use the field to select the items to use this item class from the expandable list below.

To select items, move them from the **Available items** list to the **Selected items** list.

You can select more than one item by pressing the Ctrl key and clicking another item.

Selected items

This field displays the items that will use the item class.

To select items, move them from the **Available items** list to the **Selected items** list.

Notes

- If you do not select the items using the item class, you will need to apply the item class to specific items later.

Edit Join dialog: Items tab

Use this dialog to create a new join, or to edit an existing join.

This dialog is also displayed as:

Join Wizard: Step 1 dialog

For more information, see:

"What are joins?"

"What are single item joins?"

"How to create joins"

Name

Use this field to enter the name of the join. This name is displayed in the Discoverer Administrator Workarea. Discoverer end users only see this name when two or more joins exist between two folders, and the end user has to choose between them.

Description

Use this field to enter additional information about the join. This description is displayed in the Discoverer Administrator Workarea. Discoverer end users only see this description when two or more joins exist between two folders, and the end user has to choose between them.

Master Items

Use this field to select the item in the master folder that you want to join. Fields are prefixed with the folder name, for example Products.Product Key.

Choose More items to display the "New Join dialog", where you can select a folder or item from anywhere in the EUL.

Operator

Use this drop down list to select how you want to match the items in the master folder and the detail folder. For example, choose the equals (=) operator to find an exact match between the two items.

List of join operators:

Operator	Equi or Non-equi Join?	Description
=	equi	relates rows that have equivalent values for specified items
< >	non-equi	not equal
<	non-equi	less than
<=	non-equi	less than or equal
>=	non-equi	greater than or equal
>	non-equi	greater than

Note: For more information about non-equi joins, see "What are non-equi-joins?".

Detail Items

Use this drop down list to select the item in the detail folder that matches the item in the master folder. The detail item folder can be in the same business area as the master folder, or in a different business area.

Choose More items to display the "New Join dialog", where you can select a folder or item from anywhere in the EUL.

Add

Use this button to add a join item to the join. Here, you can create multi-item joins by selecting another master folder, operator, and detail folder.

Delete

Use this button to remove the currently selected join item from the join.

Edit Join dialog: Options tab

Use this dialog to specify whether detail items exist in the master folder and optionally specify an outer join and the join relationship (also known as the cardinality of the join).

This dialog is also displayed as:

Join Wizard: Step 2 dialog

For more information, see:

"What are joins?"

"What are single item joins?"

"What effect do joins have on query results and query performance?"

"How to create joins"

Choose the join details

Use this option to specify whether Discoverer can assume that detail item values exist in the master folder for this join. For more information about which option to select, see "Examples of how joins can affect query results from complex folders".

- **Detail item values always exist in the master folder (Typical)**

  Use this option to display rows for detail items assuming that values in the detail folder always have corresponding values in the master folder (for more information, see "What effect do joins have on query results and query performance?")

- **Detail item values might not exist in the master folder**

  Use this option to not display rows for detail items assuming that values in the detail folder do not always have corresponding values in the master folder (for more information, see "What effect do joins have on query results and query performance?").

For more information about when to use these settings, see "Examples of how joins can affect query results from complex folders".

No outer joins

Use this option to not create any outer joins, and return all matching master and detail rows.

Outer join on detail

Use this option to create an outer join on the detail table. This returns all master rows that have no corresponding detail items, and all matching master and detail rows. For more information, see "What are outer joins?".

Outer join on master

Use this option to create an outer join on the master table. This returns all detail rows that have no corresponding master items, and all matching detail and master rows. This construct is rare in real business scenarios. To use this construct you must select the **Detail item values might not exist in the master folder** option. For more information, see "What are outer joins?".

One to one join relationship between master and detail

Select this check box to create a one-to-one relationship instead of a one-to-many relationship between the master and detail tables. There is no real master and detail in this case, because each row in the master table can correspond to no more than one row in the detail table.

This setting has no effect on the SQL that Discoverer generates, because SQL does not know about the cardinality of joins. It only affects the fan trap detection (for more information, see "What are fan traps, and how does Discoverer handle them?").

For more information about join relationships, see "What are one-to-many joins, one-to-one joins, and many-to-many joins?".

Edit Summary dialog: Choose Items tab

Use this dialog to select which items to add to a summary folder.

Note: You can select any axis items and math functions, but if the items are from different tables, a join must exist between the tables.

This dialog is also displayed as:

Summary Wizard: Step 3 dialog (add items to summary folder)
Summary Wizard: Step 4 dialog (add items to summary folder)

For more information, see:

"What are summary folders?"

"What is manual summary folder creation?"

Available items

Use this field to select items to add to the summary folder.

To select an item to add to the summary folder, move it from the **Available items** field to the **Selected items** field.

You can select more than one item by pressing the Ctrl key and clicking another item.

Selected items

This field contains items selected for the summary folder.

Edit Summary dialog: Combinations tab

Use this dialog to specify when you want Discoverer to use summary folders.

This dialog is also displayed as:

Summary Wizard: Step 4 dialog (add combinations of items)
Summary Wizard: Step 5 dialog (add combinations of items)

For more information, see:

"What is manual summary folder creation?"

"What are summary combinations?"

"What to consider when defining summary combinations?"

"Guidelines for setting up summary combinations"

"How to create summary folders based on items in the EUL"

Add combinations of items to this summary folder by clicking "Add Combination" and checking desired items

You must choose the summary combinations that are to be pre-built and managed by the End User Layer. Each summary combination should reflect the type of analysis the user will want. The Summary Wizard displays one column for each possible summary combination of axis items and summary folders.

Items

This column displays the axis items selected for this summary folder.

Combinations

In each column, select the check box for each axis item in a summary combination to create a summary folder that reflects your requirements. Discoverer will build the results data for the summary folder when you finish using the wizard. The results data is available when a Discoverer end user runs a worksheet where the query matches a summary combination from this summary folder.

Add Combination

Use this button to add a new summary combination column.

Remove Combination

Use this button to delete the selected summary combination column.

Estimate Space

Use this button to display an estimate of the database space required to store the summary combinations you have created.

Properties

Use this button to view and edit database storage properties for the selected summary combination. For more information, see "Database Storage Properties dialog".

Status

This field displays the status and any database error message for a selected summary combination. If the summary folder for this combination was not built, Discoverer displays the server error message here. For more information about Status field values, see the "Summary Properties dialog" Notes section.

Edit Summary dialog: General tab

Use this dialog to enter a name and description for a summary folder. For summary folders based on materialized views or summary tables, you can also configure when to build the summary folder. For example, you might want to build a summary folder immediately.

This dialog is also displayed as:

Summary Wizard: Step 5 dialog (name summary folder)
Summary Wizard: Step 6 dialog (name summary folder)
Summary Wizard: Step 7 dialog (name summary folder)

For more information, see:

"About folders and summary folders in Discoverer"

"What is manual summary folder creation?"

For summary folders based on summary tables or materialized views

Here you can name a summary folder and schedule its build times.

Provide a name and description for this summary folder

Name

Use this field to enter a name for the summary folder. Discoverer Administrator creates a default name for you that you can use.

Description

(optional) Use this field to enter additional information about the summary folder.

When would you like to build this summary folder?

- **Build immediately**

  Use this option if you have smaller summary folders, or if you want to build the summary folder immediately.

- **Build at (Date, Time)**

  Use this option if you have larger summary folders that are best built at off-peak hours. Enter the time and date you want to build the summary folder.

For summary folders based on external summary tables

Here you can name the summary folder and provide a description.

Provide a name and description for this summary folder

Name

Use this field to enter a name for the summary folder. Discoverer Administrator creates a default name for you that you can use.

Description

(optional) Use this field to enter additional information about the summary folder.

Edit Summary dialog: Refresh tab

Use this dialog to set the refresh date and time for a summary folder.

This dialog is also displayed as:

Summary Wizard: Step 4 dialog (refresh summary folder)
Summary Wizard: Step 5 dialog (refresh summary folder)
Summary Wizard: Step 6 dialog (refresh summary folder)

For more information about refreshing summary folders see:

"How does ASM work?"

"Why must you refresh summary data?"

"What happens when a summary folder is refreshed?"

For summary folders (based on Discoverer summary tables or materialized views) refreshed by Discoverer

For summary folders refreshed by Discoverer, you can decide whether to refresh the summary automatically. If so, you can specify the date and time and the interval that you want to repeat the refresh.

When was this summary folder last refreshed by Discoverer?

These read-only fields display the date and time of the last refresh.

Automatically refresh this summary folder, starting on:

Use this check box to specify the date, time and repeat period that you want to apply to the refresh of this summary folder.

For summary folders (based on external summary tables) refreshed by another application

For summary folders refreshed by another application (by using external summary tables), you can decide whether you want Discoverer to refresh the summary folder automatically, and if so you specify a date and time and the interval that you want to repeat the refresh.

Manage the refresh of this summary

Use this check box if you want Discoverer to manage the refresh of this summary folder.

Note: Be aware that if you use this option, you give Discoverer full control over the external summary table. For example, if you delete the summary folder that is based on a managed external summary, you also delete the external summary folder.

When was this summary last refreshed?

Date/Time

Use this field to enter the date and time that the summary data was last refreshed. Discoverer uses this information to determine when summary folder data must be used.

Automatically refresh this summary folder, starting on:

Use this check box to specify the date, time and repeat period that you want to apply to the refresh of this summary folder.

EUL Manager dialog

Use this dialog to create and maintain End User Layers (EULs). This dialog also enables you to install the Discoverer sample data in the current EUL. The Discoverer sample data is an example business area that you can make available to Discoverer end users, enabling them to create and view workbooks and worksheets.

For more information, see:

"What is an End User Layer?"

"How to create an End User Layer for an existing database user"

"How to delete an End User Layer"

Connected to EUL: <EULName>

This field displays the name of the EUL to which you are currently connected.

Create an EUL

Use this button to display the "Create EUL Wizard dialog", where you can:

- create a new EUL for the current user or another user in the database.
- create a new user and an EUL for that user at the same time, providing you have sufficient database privileges (for more information, see "What privileges do you require to create an End User Layer in an Oracle database?").

Delete an EUL

Use this button to display the "Delete EUL dialog", where you delete the current EUL. Note that you can only delete the current EUL.

Install the sample data

Use this button to display the "Install/Uninstall Sample Data Wizard: Step 1 dialog", where you install the sample data into the current EUL. If the sample data has not been installed before, you must have sufficient database privileges to create the sample data user (for more information, see "What privileges do you require to create an End User Layer in an Oracle database?").

Uninstall the sample data

Use this button to display the "Install/Uninstall Sample Data Wizard: Step 1 dialog", where you delete the sample data business area and optionally remove the sample data, database tables and data from the current EUL. Note that the sample data database user is not deleted.

EUL Upgrade dialog

This dialog informs you that you must upgrade the EUL tables before you can use the current version of Discoverer Administrator.

To continue running queries and reports after upgrading the EUL tables, existing users must install the equivalent version of Discoverer Plus, Discoverer Desktop or Discoverer Viewer.

We recommend that you export the EUL tables before starting the upgrade process.

Discoverer suggests two ways to proceed:

- Manually create a new EUL

  When you upgrade from a version 9.0.2, 9.0.4, or 9.0.4.1 EUL this option is recommended. Previous versions of Discoverer Plus, Discoverer Viewer and Discoverer Desktop will still be able to access the old EUL.

  When you upgrade from a version 4.1 EUL this option is not essential because previous versions of Discoverer Plus, Discoverer Viewer and Discoverer Desktop will still be able to access the old EUL.

- Automatically upgrade the existing EUL

  When you upgrade from a version 4.1 EUL this option is recommended because previous versions of Discoverer Plus, Discoverer Viewer and Discoverer Desktop will still be able to access the old EUL.

  Warning: Do not use this option when you upgrade from a version 9.0.2, 9.0.4 or 9.0.4.1 EUL until you have carried out an export of the EUL tables. If you don't export the 9.0.2, 9.0.4 or 9.0.4.1 EUL tables before carrying out the upgrade process, you might lose your version 9.0.2, 9.0.4 or 9.0.4.1 EUL. If you upgrade the from a version 9.0.2, 9.0.4 or 9.0.4.1 EUL, all users must upgrade to the latest versions of Discoverer Plus, Viewer and Desktop.

For more information, see:

"Upgrading the EUL from Earlier Versions of Discoverer"

"What is an End User Layer?"

"How to export an EUL using the standard database export utility")

Yes, I have completed a database export

Select this option to confirm that you have backed up the EUL by performing a database export. When you have selected this option, the Upgrade button is enabled.

Continue

Use this button to begin the EUL upgrade.

EUL Upgrade Error dialog

Use this dialog to find out about errors that have occurred during the EUL Upgrade process. This dialog appears automatically during the upgrade process if an error has occurred. The error messages displayed in this dialog enable you to diagnose and correct upgrade issues.

Notes

- Make sure that you make a note of the error message before closing the dialog.
- When you have resolved the error, reconnect to the EUL and the upgrade will resume automatically.

The error message typically includes an Oracle Database Error number. For example, the error number ORA-02298 is displayed when a table has orphaned child records. For more information about Oracle database error messages, see *Oracle9i Database Error Messages* in the Oracle documentation library.

For more information, see:

"Upgrading the EUL from Earlier Versions of Discoverer"

"What is an End User Layer?"

Export Wizard Step 1 dialog

Use this dialog to choose the Discoverer objects that you want to export to a file. You can export the entire EUL, one or more business areas, one or more EUL objects (for example, folders, item classes, workbooks, the automated summary management (ASM) policy).

For more information, see:

"About copying EULs and EUL objects by exporting and importing"

"Creating and Maintaining Business Areas"

What do you want to export?

- **The entire End User Layer**

  Use this option if you want to export the entire EUL to a file (that is, all business area definitions, folders, item classes, item hierarchies, date hierarchies, PL/SQL function registration information, summary folders, workbooks and the automated summary management (ASM) policy).

- **Selected Business Areas**

  Use this option if you want to export one or more business areas to a file (that is, selected business area definitions and their folders, item classes, item hierarchies, date hierarchies, PL/SQL function registration information, summary folders, workbooks and the automated summary management (ASM) policy).

- **Selected objects in the End User Layer**

  Use this option if you want to export one or more EUL objects to a file (that is, selected business area definitions, folders, item classes, item hierarchies, date hierarchies, PL/SQL function registration information, summary folders, workbooks and the automated summary management (ASM) policy).

Notes

- Note that you are only exporting the definition of the EUL, the business area, or the object being exported. You are not exporting the database containing the EUL tables, or the EUL tables themselves. Nor are you exporting the database objects referenced by the EUL objects. If you import a business area or object into a database, the following conditions must apply before Discoverer end users can view the data referenced by the imported business area or object:
  - the database tables referenced by the imported business area or object must exist in the database
  - database users must have sufficient privileges to access the database, the EUL tables, and the database objects, that the imported business area or object reference (for more information, see "Controlling Access to Information" and "What are the data access prerequisites?")

Export Wizard: Step 2 dialog (to export selected business areas)

Use this dialog to select the business areas to export.

This dialog is also displayed as:

Export Wizard: Step 2 dialog

For more information, see:

"What is an End User Layer?"

"About copying EULs and EUL objects by exporting and importing"

Which business areas do you want to export?

Available

This field displays all accessible business areas in the EUL.

To export a business area, move it from the **Available** field to the **Selected** field.

Selected

This field displays the business areas that will be exported.

To select a business area, move it from the **Available** field to the **Selected** field.

Export Wizard: Step 2 dialog (to export selected objects)

Use this dialog to select EUL objects to export (for example, business area definitions, folders, workbooks).

This dialog is also displayed as:

Export Wizard: Step 2 dialog

For more information, see:

"What is an End User Layer?"

"About copying EULs and EUL objects by exporting and importing"

Which objects do you want to export?

Use this drop down list to select the type of object to display in the **Available** field (for example, business area definitions, folders, item classes, item hierarchies, date hierarchies).

Available

This field displays all available objects in the EUL for the currently selected object type (for example, if you chose item classes from the **Which objects do you want to export** drop down list, all item classes in the EUL are listed in this field).

To export an EUL object, move it from the **Available** field to the **Selected** field.

Selected

This field displays the EUL objects that you want to export.

Relationships between business areas and folders are displayed in the **Selected** field.

To select an EUL object, move it from the **Available** field to the **Selected** field.

Export Wizard: Step 2/3 dialog

Use this dialog to specify where you want to save the export file.

You can also:

- save workbooks in XML
- save export commands as a text file (*.txt)

This dialog is also displayed as:

Export Wizard: Step 2 dialog
Export Wizard: Step 3 dialog

For more information, see:

"What is an End User Layer?"

"About copying EULs and EUL objects by exporting and importing"

Where do you want to save the file?

Use this field to specify the name and location of the export file in which to save the exported objects. The export file will have `.eex` as the suffix.

Use the Browse button to specify the export file name and location using the Save As dialog.

Tip: It is a good idea to give the export file a name that suggests the kind of EUL objects the file contains. A descriptive name makes it easier to locate the file when you want to import it into another EUL later.

The following objects will be exported:

This field displays all of the objects that will be exported to the export file.

Generate additional XML for exported workbooks

Select this check box to save workbooks in XML format within the `.eex` file.

Clear this check box to only save workbooks in binary format within the `.eex` file.

Discoverer Administrator saves exported EUL objects (except workbooks) in XML format in the export file. By default, workbooks are saved in binary format. By saving workbooks additionally in XML format you can view workbook definitions in an XML browser.

Save export commands as text file (*.txt)

Select this check box to create an additional text file containing the commands that were used to create this export. You might save export commands as a text file, to reuse them in the Discoverer command-line interface (for more information, see "About using the Discoverer command-line interface").

Notes

- Note that you only export the definition of the EUL, the business area, or the object being exported. You are not exporting the database containing the EUL tables, or the EUL tables themselves. Nor are you exporting the database objects referenced by the EUL objects. If you import a business area or object into a

database, the following conditions must apply before Discoverer end users can view the data referenced by the imported business area or object:

- the database tables referenced by the imported business area or object must exist in the database
- database users must have sufficient privileges to access the database, the EUL tables, and the database objects, that the imported business area or object reference (for more information, see "Controlling Access to Information" and "What are the data access prerequisites?")

Folder Properties dialog

Use this dialog to set properties for the currently selected folder. For example, to change the name of a folder, or to specify whether the folder is visible to end users.

For more information, see:

"What are folders?"

"How to edit folder properties"

"What is complex folder reach through?"

The Folder Properties dialog displays the following tabs for a simple folder, for more information, see:

- "Folder Properties dialog: General tab"
- "Folder Properties dialog: Dependents tab"

The Folder Properties dialog displays additional tabs for a complex folder, for more information, see:

- "Folder Properties dialog: Components tab"
- "Folder Properties dialog: Reach-Through tab"

Folder Properties dialog: General tab

Use this tab to configure the properties of the current folder.

For more information, see "What are folders?".

Name

Use this field to enter a unique name for the folder. The contents of this field are displayed in the Discoverer Plus folder selection dialog. The name of the folder must be unique in the End User Layer. You cannot have two folders with the same name, even in different business areas.

Note: If you change the name of an item, this might affect the names of secondary elements (for example, joins, hierarchies, hierarchy nodes, item classes) that have the Auto generate name property set to Yes (for more information, see "About generating and updating EUL item names automatically").

Description

Use this field to enter a brief description of the folder. The contents of this field are displayed on the description line of the Query Wizard.

Visible to user

Use this field to specify whether the folder is displayed to the end user in the Discoverer Plus Query Wizard. Choose Yes to display this folder. You can use this property to hide items that are not directly of value to the end user, but need to be included in the business area because of joins or calculations. Folders not visible to the end user will be displayed in Discoverer Administrator in gray to indicate their hidden status.

Database

This field specifies the location of the source database which stores the table corresponding to the folder. To change the database, click this field to display the Choose Database dialog and select from the drop down list.

Note: This field is read-only for complex folders.

Owner

This field specifies the database user ID or owner of the table or view corresponding to the folder.

Note: This field is read-only for complex folders.

To change the owner, either type in the owner directly or click the field and then click the button to display the Choose user dialog where you can select from the list.

The Owner field can be left blank. In this case the owner property is not specified in subsequent SQL references (through Discoverer Plus) to that folder. For example, a SQL select statement could now read as follows:

```
select <column> from <table>
```

rather than:

```
select <column> from <owner>.<table>
```

This is useful as it enables you to create/maintain an EUL for which the tables or table owners are not yet available, or to which the EUL administrator does not have access.

It also enables multiple users (such as Oracle Applications users) each with their own schema in an EUL, to access their schema tables when making queries in Discoverer Plus.

Object

This field displays the name of the database object that corresponds to this folder. If a new table or view name has been chosen, it will appear here. To change the object, click this field to display the "Choose user or table/view dialog" and select from the list. You can choose an object from a different owner or a different business area.

If you select an Object name, the Database and Owner fields will also be re-populated with the database and owner values of the selected Object (irrespective of whether the Owner field was blank or not).

Note: This field is read-only for complex folders.

Optimizer hints

Use this field to place a specific optimizer hint against the folder. The hint is not visible in Discoverer Plus. For more information about how to use optimizer hints, see an appropriate release of the Oracle designing and tuning for performance documentation.

Identifier

A unique name that Discoverer uses to identify EUL and workbook objects. When matching objects common to different EULs, Discoverer uses identifiers to locate objects in different EULs that refer to the same business object. For more information, see "What are identifiers?".

Warning: It is not advisable to change an identifier as it can affect the relationships between EUL objects.

Automatically save changes after each edit

Use this check box to save changes each time a field in this dialog is updated.

Notes

- If the Owner field is left blank, summary tables (in Oracle Standard Edition databases) based on this folder are not allowed. If a summary folder already exists a warning message is displayed.
- If the Owner field is changed, summary tables (in Oracle Standard Edition databases) based on this folder need to be refreshed. If a summary folder already exists a message is displayed advising you to refresh the summary folders based on this folder.

Folder Properties dialog: Dependents tab

The Dependents tab displays two columns (Type and Name) that clarify the extent to which other objects (for example, folders, joins, items, item classes, summaries, conditions, calculations, workbooks, scheduled workbooks) are dependent on the selected folder.

For more information, see "What are folders?".

Type

This field displays the type of item that has a dependency on the current folder. For example, folders, conditions, summaries, workbooks, scheduled workbooks.

Name

This field displays the name of each item that has a dependency on the current folder.

Folder Properties dialog: Components tab

This tab displays all component folders (and their items and joins) that are used by this complex folder.

For more information, see "What are complex folders?".

Use the + and - icons to expand and collapse the tree.

Note: This tab is only displayed for complex folders.

Folder Properties dialog: Reach-Through tab

This tab displays the base folders that you can define as reach through enabled for the currently selected complex folder. If a worksheet contains items from the complex folder, Discoverer end users can add additional items from reach through enabled base folders.

For more information, see "What is complex folder reach through?".

<folder name>

Use the check box to enable reach through for this base folder.

Note: This tab is only displayed for complex folders.

Hierarchy Properties dialog

Use this dialog to set hierarchy properties. For example, to change the name or description of a hierarchy.

For more information, see:

"What are hierarchies?"

Name

Use this field to change the name of the hierarchy. By default, the name is derived from the item on which the hierarchy is based.

Note: This field becomes read-only if the Auto generate name property is set to Yes.

Auto generate name

Use this field to change the value of the Auto generate property to Yes or No. When the Auto generate name property is set to Yes, Discoverer enables the names of some types of End User Layer (EUL) items to be dynamically generated, whenever a folder or item name (used in this type of hierarchy) is changed.

This field becomes read-only when the Auto generate name property is not applicable to this item class.

For more information about this property, see "About generating and updating EUL item names automatically".

Description

Use this field to change the description of the hierarchy. The contents of this field are displayed on the description line of Discoverer Plus's Query Wizard.

Identifier

Use this field to change the unique name that Discoverer uses to identify EUL and workbook objects. When matching objects common to different EULs, Discoverer uses identifiers to locate objects in different EULs that refer to the same business objects.

Warning: It is not advisable to change an identifier as it can affect the relationships between EUL objects.

Automatically save changes after each edit

Use this check box to save changes each time a field in this dialog is updated.

Hierarchy Wizard: Step 1 dialog

Use this dialog to select the type of hierarchy that you want to create. For example, to select a date hierarchy when you want Discoverer end users to be able to drill into time-based data.

For more information, see:

"What are hierarchies?"

"What are item hierarchies?"

"How to create item hierarchies"

"How to create date hierarchies and templates"

Which type of hierarchy do you want to create?

- **Item hierarchy**

  Use this option to select the item hierarchy type.

- **Date hierarchy**

  Use this option to select the date hierarchy type.

Notes

- The hierarchical relationships that you create are not defined in the database, but in the business area.
- Item hierarchies are used to connect multiple items in a specified order, allowing your user to drill up and down to different levels of detailed information. For example, you can connect the columns country, region, district, and retail store to create a location-based sales hierarchy. Each higher item (country is higher than region, for example) being a super-set of the items below it. When you create this sales hierarchy, users can create a worksheet that displays sales by country, then drill down to get regional details for each country, and so on down to the retail store level.
- A date hierarchy lets your users drill up or down into date items from virtually any time-based perspective. For example, users can see sales data based on year, then drill down to quarter, and even further to month. Date hierarchies, unlike Item hierarchies, possess an inherent structure based on year, quarter, month, week, day, hour, minute, and second. Therefore, Discoverer Administrator uses pre-existing Date Templates to define many common formats for date hierarchies. In addition, you can create customized date hierarchies.

Impact dialog

Use this dialog to assess the impact of refreshing or deleting an object (for example, business area, folder, item, item class, join, condition, hierarchy).

Based on the information displayed, you can determine if it is safe to perform the current action against the object.

For more information, see:

"Confirm Business Area Delete dialog"

"Confirm Delete dialog"

"Confirm Folder Delete dialog"

Type

Use this column to view any dependent EUL objects that might be affected by the current action you are taking. The EUL objects listed here can include workbooks, scheduled workbooks, summary folders, business areas, folders, items, joins, conditions and item classes.

If you select a row, Discoverer displays text that indicates the effect the current action will have on the EUL object.

The following table lists the messages that Discoverer can display when workbooks, summary folders or other EUL objects are affected by the current action:

Scenario	Message Discoverer displays in Impact dialog
Workbook definitely affected	The object you are deleting is referenced by this workbook
Workbook might be affected	A probable impact to this workbook has been detected. Please open and close the workbook to re synchronize it with the current EUL.
Summary	You will need to remove the object from the summary before being able to delete it.
Item Class	This object will be updated.
All other EUL objects	This will be deleted.

Name

Use this column to view the name of the EUL objects that might be affected by the current action you are taking.

Notes

- Discoverer Administrator does not refresh or delete dependent workbooks when you refresh or delete an EUL object. Subsequent use of a workbook however, will be affected when you delete an EUL object that has dependent workbooks.
- The Impact dialog displays dependent workbooks that are saved to the database. Dependencies might also exist in workbooks that are saved locally, such workbooks are not displayed in the Impact dialog.
- Discoverer does not delete an EUL object that has dependent summary folders. You must manually remove such summary folders first. You delete summary

folders at the Summaries tab in the Workarea (for more information, see "How to delete summary folders").

Import PL/SQL Functions dialog

Use this dialog to select the PL/SQL function that you want to import into the End User Layer.

For more information, see:

"Why do you need PL/SQL functions?"

"How to register custom PL/SQL functions automatically"

"How to register custom PL/SQL functions manually"

The functions listed in this dialog have been defined in the database using SQL commands. For more information about defining PL/SQL functions in the database, see the *PL/SQL User's Guide and Reference.*

Note: To register a PL/SQL function you must have EXECUTE privilege on the function.

Show PL/SQL functions where Owner matches

Use this field to enter search criteria to filter the PL/SQL functions that you want to display in the **Select functions to import** field.

Note: This field might improve performance when there are very large numbers of PL/SQL functions to display.

Go

Use this button to search for functions that match the search criteria that you entered in the **Show PL/SQL functions where Owner matches** field, and list the results in the **Select functions to import** field.

Select functions to import

Use this list to select one or more functions that you want to import from the database.

You can select more than one function by pressing the Ctrl key and clicking another function.

OK

Use this button to import the functions selected and display to the "PL/SQL Functions dialog: Functions tab".

Import Wizard: Step 1 dialog

Use this dialog to choose which EUL export files to import. For example, you might want to import a business area definition stored in a file called sales.eex.

For more information, see:

"About copying EULs and EUL objects by exporting and importing"

"How to import EUL objects from a file using the Import Wizard"

Add the files you would like to import

This field displays the list of files that you have selected for import.

Add

Use this button to display the Open File dialog, where you select the export file (.EEX) that you want to import.

When you have selected one or more files to import, the files appear in the **Add the files you would like to import** field.

Delete

Use this button to remove a highlighted export file from the list of files that you want to import.

Import Wizard: Step 2 dialog

Use this dialog to choose how to treat objects that have the same name or identifier, common to the EUL that you exported the objects from and the EUL that you are importing the objects into.

For more information, see:

"About copying EULs and EUL objects by exporting and importing"

"How to import EUL objects from a file using the Import Wizard"

If two objects match then what action should occur?

- **Rename the imported object**

  Use this option to rename imported objects to differentiate them from existing objects in the current EUL.

  For example, you might want to import a folder named Sales into the current EUL, even though the current EUL already contains a folder named Sales. Selecting this option will change the name of the imported folder to Sales1. The EUL will contain a folder called Sales, and a folder called Sales1.

- **Rename the existing object**

  Use this option to rename existing objects in the current EUL to differentiate them from imported objects.

  For example, you might want to import a folder named Sales into the current EUL, even though the current EUL already contains a folder named Sales. Selecting this option will change the name of the existing folder to Sales1. The EUL will contain the existing folder renamed to Sales1, and the imported folder named Sales.

- **Do not import the matching object**

  Use this option to not import objects that match existing objects in the current EUL.

  For example, you might want to import a folder named Sales into the current EUL, even though the current EUL already contains a folder named Sales. Selecting this option will not import the folder Sales. The EUL will contain only the existing folder called Sales.

- **Refresh the object**

  Use this option to refresh any objects that match existing objects in the current EUL.

  For example, you might want to import a folder named Sales into the current EUL, even though the current EUL already contains a folder named Sales. Selecting this option will update the existing folder Sales. The EUL will contain an updated folder named Sales.

  When existing items are different from imported matching items, the imported items will replace the existing items. New items that are imported will be added. Existing items that do not match any imported items will not be altered.

  When you use the **Refresh the object** option, it also activates the **Preserve display related properties** check box.

Preserve display related properties

This check box is activated when you select the **Refresh the object** option.

Select this check box to preserve the following workbook display properties:

- heading
- format mask
- alignment
- word wrap
- display case
- replace NULL with
- default position

How you would like objects to be matched up?

Discoverer can use one of the following methods for determining, during an import, whether an object from one EUL is the same as an object in another EUL.

- **By Identifier**

  Use this option to match the same objects from different EULs by using identifiers. When an object from one EUL is the same as an object from another EUL, both objects share the same identifier.

  Note: It is recommended that you use the **By Identifier** option to make sure that Discoverer correctly matches the same objects from different EULs, and not use the **By Display Name** option.

- **By Display Name**

  Use this option to match the same objects from different EULs by using object display names.

  Note: It is recommended that you do not use the **By Display Name** option, but use the **By Identifier** option instead. This option is included here only for compatibility with previous versions of Discoverer.

Should the current user take ownership of imported workbooks?

- **Always take ownership of imported workbooks**

  Use this option if you want the current user to own any imported workbooks.

- **Only take ownership if original owner cannot be found**

  Use this option if you want the owner of an imported workbook to be the same database user as the original owner of that workbook. If the database does not contain a user with the same name as the original owner of a particular workbook, the current user will be the owner of that imported workbook.

Import Wizard: Step 3 dialog,

Use this dialog to start the import process and monitor its status as Discoverer processes each EUL object.

When you click the Start button, the status bar at the top of the page shows the percentage of the import that has completed.

For more information, see:

"About copying EULs and EUL objects by exporting and importing"

"How to import EUL objects from a file using the Import Wizard"

Start

Use this button to start the import process.

Log

Use this window to monitor messages as they are displayed. Two types of message are displayed:

- information messages providing information about imported objects
- warning messages, providing warnings about potential problems

Save log...

Use this button to specify the import log file name and location using the Save As dialog. The log file will have `.txt` as the suffix.

Tip: It is a good idea to give the log file a similar name to that of the export file that you are importing. A descriptive name makes it easier to locate the file later on.

Clear Log

Use this button to clear the messages from the **Log** field.

Cancel

Use this button to stop the import. You might want to stop the import if there are warning messages in the **Log** field.

When you stop an import, everything that has already been imported is rolled back.

Finish

Use this button after a successful import to commit the import transactions to the database.

Notes

- Note that you only import the definition of the EUL, the business area, or the object being imported. You are not importing the database containing the EUL tables, or the EUL tables themselves. Nor are you importing the database objects referenced by the EUL objects. When you import a business area or object into a database, the following conditions must apply before Discoverer end users can view the data referenced by the imported business area or object:
  - the database tables referenced by the imported business area or object must exist in the database

- database users must have sufficient privileges to access the database, the EUL tables, and the database objects, that the imported business area or object reference (for more information, see "Controlling Access to Information" and "What are the data access prerequisites?")

Install/Uninstall Sample Data Wizard: Step 1 dialog

Use this dialog to confirm the name of the EUL when you are installing or removing the sample data business area, data and tables.

If the EUL shown in this dialog is not the current EUL, click Cancel, close the EUL Manager dialog, and reconnect to the correct EUL.

For more information, see:

- "Install Sample Data Wizard: Step 1 dialog"
- "Uninstall Sample Data Wizard: Step 1 dialog"
- "EUL Manager dialog"

Install Sample Data Wizard: Step 1 dialog

Use the Install Sample Data Wizard to help you install the sample data tables, data, and other necessary files.

You can only install the sample data in the current EUL.

EUL

This field displays the name of the EUL where the sample data information will be installed.

Uninstall Sample Data Wizard: Step 1 dialog

Use the Uninstall Sample Data Wizard to uninstall the sample data and tables from the current EUL.

Note: When you uninstall the sample data:

- the sample data business area is removed from the current EUL
- the VIDEO5 database user is not removed from the database.

EUL

This field displays the name of the EUL from where the sample data information will be uninstalled.

Remove the sample data tables

Use this check box to decide whether to remove the sample data and tables from the current EUL as follows:

- Select this check box to remove the sample data and tables.

  If you select this check box, other sample data installations will no longer be able to access the sample data.

- Clear this check to remove the business area only.

Install/Uninstall Sample Data Wizard: Step 2 dialog

Use this dialog to confirm the sample data user's password when you are installing or removing the sample data business area, data and tables.

For more information, see:

- "Install Sample Data Wizard: Step 2 dialog"
- "Uninstall Sample Data Wizard: Step 2 dialog"
- "EUL Manager dialog"

Install Sample Data Wizard: Step 2 dialog

Use this dialog to specify a password for the new VIDEO5 database user that is required to install the sample data.

User

This field displays the name of the sample data database user (VIDEO5) and is read-only.

Password

Use this field to enter the password for the VIDEO5 database user. If this is the first time the sample data has been installed in the current database, you create the password by entering it in this field.

Passwords are case-sensitive in Oracle databases (Enterprise Edition release 11.1 or later).

Confirm password

Use this field to reenter the password you entered in the **Password** field to confirm the VIDEO5 database user password. If the sample data was previously installed in any EUL in the current database, you will not need to confirm this password.

Finish

Use this button to install the sample data in the current EUL.

Uninstall Sample Data Wizard: Step 2 dialog

You must know the VIDEO5 database user password to uninstall the sample data.

Note: When you uninstall the sample data:

- if you selected the **Remove the sample data tables** check box in the "Uninstall Sample Data Wizard: Step 1 dialog", the sample data and tables are removed from the database
- the sample data business area is removed from the current EUL
- if you selected the **Remove the sample data tables** check box in the "Uninstall Sample Data Wizard: Step 1 dialog", other sample data installations will no longer be able to access the sample data
- the VIDEO5 database user is not removed from the database.

User

This read-only field displays the name of the sample data database user (VIDEO5).

Password

Use this field to enter the password for the VIDEO5 database user.

Passwords are case-sensitive in Oracle databases (Enterprise Edition release 11.1 or later).

Finish

Use this button to uninstall the sample data from the current EUL.

Notes

- If you do not know the VIDEO5 database user password, ask the DBA.

Install Sample Data Wizard: Step 3 dialog

Use this dialog to select the default and temporary tablespace for the VIDEO5 database user.

For more information, see:

"EUL Manager dialog"

Default Tablespace

Use this field to select the database tablespace in which to store the VIDEO5 data. The tablespace you select must have at least 10 MB free.

For more information about EUL space requirements and storage parameters, see "What are the space requirements and storage parameters for a typical EUL?".

For a default configuration, you typically choose the USR tablespace here.

- Tablespace

  Lists the available tablespaces in the database.

- MB free

  Displays the amount of space available in the tablespace.

- Auto Ext.

  Indicates whether the Auto Extend database feature is On or Off for the tablespace in the database. When the Auto Extend feature is On, the tablespace will automatically increase in size when necessary.

Temporary Tablespace

Use this field to select the database tablespace where temporary data is stored for the VIDEO5 database user. For a default configuration, you typically choose TEMP here.

Item Class Properties dialog: General tab

Use this dialog to set item class properties. For example, to change the name or description of an item class.

For more information, see:

"Maintaining Items and Item Classes"

"How to edit item properties"

Name

Use this field to change the name of the item class. By default, the name is derived from the item on which the item class is based.

Note: This field becomes read-only if the Auto generate name property is set to Yes.

Note: If you change the name of an item class, this might affect the names of secondary elements (for example, joins and items in complex folders) that have the Auto generate name property set to Yes (for more information, see "About generating and updating EUL item names automatically").

Auto generate name

Use this field to change the value of the Auto generate property to Yes or No. When the Auto generate name property is set to Yes, Discoverer enables the names of some types of End User Layer (EUL) items to be dynamically generated, whenever a folder or item name (used in this type of item class) is changed.

This field becomes read-only when the Auto generate name property is not applicable to this item class.

For more information about this property, see "About generating and updating EUL item names automatically".

Description

Use this field to change the description of the item class. The contents of this field are displayed on the description line of Discoverer Plus's Query Wizard.

Fetch in groups of

Use this field to change the maximum number of values that are returned with each fetch from the database.

Sort Values

Use the drop down list to sort the item class values or display them in the order that they are stored in the database.

Show in Wizard

Select Yes from this drop down list to show item class values in the Select Items page of the worksheet Wizard; users can expand the LOV when selecting items to include in a worksheet.

Select No from this drop down list not to show item class values in the Select Items page of the worksheet Wizard. Users are not able to expand the LOV when selecting items to include in a worksheet.

Display Search Dialog

Select Yes from this drop down list to require users to always search for values whenever the LOV is expanded.

Cache LOV

Select Yes from this drop down list to store each LOV value in memory when the LOV is expanded for the first time.

Select No from this drop down list to retrieve values from the database each time the LOV is expanded.

Identifier

Use this field to change the unique name that Discoverer uses to identify EUL and workbook objects. When matching objects common to different EULs, Discoverer uses identifiers to locate objects in different EULs that refer to the same business objects.

Warning: It is not advisable to change an identifier as it can affect the relationships between EUL objects.

Automatically save changes after each edit

Use this check box to save changes each time a field in this dialog is updated.

Item Class Wizard: Step 1 dialog

Use this dialog to choose the type of item class that you want to create. For example, to choose to create a list of values (LOV) that Discoverer end users can use when choosing parameter values to restrict workbooks.

For more information, see:

"Maintaining Items and Item Classes"

Select item class attributes:

List of values

Use this check box to create a set of the unique values that exist for an item. The values correspond to those found in a database column.

Alternative sort

Use this check box to sort items by criteria you define. Items are normally sorted in ascending or descending order according to ASCII sort values. Sometimes, however, you might want to sort data objects in an alternative order. For example, you might want to sort sales regions North, South, East, and West in that order, so the alternate sort order would be North=1, South=2, East=3 and West=4.

Drill to detail

Use this check box to allow users to drill from summary information into more specific information. These items do not need to be in the same folder.

Notes

- To create an alternative sort order, you must first add a column to the database table containing the column to be sorted.
- The item to be sorted with an alternate sequence must be contained within the same folder as the item providing the list of values for the item class. An item class containing an alternate sort sequence must also contain a list of values.
- A one to one relationship must exist between the item used for the list of values and the item used for the sort order.

Item Hierarchy Node Properties dialog

Use this dialog to set item or date hierarchy node properties. For example, to change the name or description of an item or date hierarchy node.

For more information, see:

"What are hierarchies?"

Name

Use this field to change the name of the item or date hierarchy node. By default, the name is derived from the item on which the hierarchy is based.

Note: This field becomes read-only if the Auto generate name property is set to Yes.

Auto generate name

Use this field to change the value of the Auto generate property to Yes or No. When the Auto generate name property is set to Yes, Discoverer enables the names of some types of End User Layer (EUL) items to be dynamically generated, whenever a folder or item name (used in this type of hierarchy) is changed.

This field becomes read-only when the Auto generate name property is not applicable to this item class.

For more information about this property, see "About generating and updating EUL item names automatically".

Description

Use this field to change the description of the item or date hierarchy node. The contents of this field are displayed on the description line of Discoverer Plus's Query Wizard.

Identifier

Use this field to change the unique name that Discoverer uses to identify EUL and workbook objects. When matching objects common to different EULs, Discoverer uses identifiers to locate objects in different EULs that refer to the same business objects.

Warning: It is not advisable to change an identifier as it can affect the relationships between EUL objects.

Automatically save changes after each edit

Use this check box to save changes each time a field in this dialog is updated.

Item Properties dialog

Use this dialog to set item properties. For example, to change the name or formula of an item.

For more information, see:

"Maintaining Items and Item Classes"

"How to edit item properties"

The Item Properties dialog contains two tabs:

- "Item Properties dialog: General tab" - use this tab to configure the item. For example, to change the item name.
- "Item Properties dialog: Dependents tab" - use this tab to look at other items dependent on this item. For example, summaries that use the item.

Item Properties dialog: General tab

Use this tab to configure the item.

Name

Use this field to change the name of the item. By default, the name is derived from the database column on which the item is based.

Note: This field becomes read-only if the Auto generate name property is set to Yes.

Note: If you change the name of an item, this might affect the names of secondary elements (for example, joins and items in complex folders) that have the Auto generate name property set to Yes (for more information, see "About generating and updating EUL item names automatically").

Auto generate name

Use this field to change the value of the Auto generate property to Yes or No. When the Auto generate name property is set to Yes, Discoverer enables the names of some types of End User Layer (EUL) items to be dynamically generated, whenever a folder or item name (used in this type of item) is changed.

This field becomes read-only when the Auto generate name property is not applicable to this type of item.

For more information about this property, see "About generating and updating EUL item names automatically".

Description

Use this field to change the description of the item. The contents of this field are displayed on the description line of Discoverer Plus's Query Wizard.

Data type

This read-only field displays the data type of the item, supplied by the column definition in the data dictionary. This field is not editable because it identifies the data type directly from the dictionary.

Formula

Use this field to display the "Edit Calculation dialog" where you change the item's formula. A formula displayed in this field means the item is a derived item. A derived item is created, by applying a calculation to an existing item. For example, a derived item can be the calculation for percentage profit. Deriving items in the business area means users do not have to know complex formulas themselves to calculate analysis results. A field containing a column name indicates that it is not a derived item and that its data comes directly from the database column (in this case, the field is read-only).

Database column

This field displays the derivation of the item. It consists of the owner's user name, the table name and column name. If this field is blank, the column has been created from a formula.

Visible to User

Use this field to specify whether the item is visible to Discoverer end users:

- choose Yes to display the item in Discoverer Plus.
- choose No to hide the item in Discoverer Plus

Note: You typically use the No option to hide items that must be present in the folder to be used in calculations, but are of no value or are inappropriate to display to the end user. Other hidden items might contain data such as primary and foreign keys or sensitive data such as salary information.

Item Class

Use this field to change the item class to which the item belongs. Use the list to select an alternative item class. This field is active only when the item is an axis item.

Date Hierarchy

Use this field to change the date hierarchy that is applied to the item. A list is available of valid date hierarchies that can be applied to the item. The field is inactive when the item is not a date item.

Default position

Use this field to change where the item is positioned by default on worksheets (for example, Side, Page, Top, Datapoint)

Default aggregate

Use this field to change the aggregate type for the item (if numeric).

Heading

Use this field to change the heading. Discoverer displays the Heading property of each item used in a worksheet. By default, the heading is the item's Name property, which is derived from the database column on which the item is based.

Format mask

Use this field to change the default format mask used to display the item in Discoverer end user workbooks. The syntax uses standard Oracle formats found in the *Server SQL Language Reference Manual*, which is supplied with your Oracle database. By default, a listing shows sample format masks appropriate for the item's data type. You can enter your own format mask if the samples do not list the one you want.

Note: Discoverer Administrator does not currently enable you to use the Euro currency symbol in the format mask. However, you can specify the Euro currency symbol in the format mask using Discoverer Plus. For more information, see the *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Plus*.

Alignment

Use this field to change the alignment of data displayed in Discoverer Plus. Select an alignment from the drop down menu. The default selection, General, right aligns numeric data, and left aligns date and text data.

Word Wrap

Use this field to specify whether text data wraps in Discoverer Plus.

Note: Setting this to Yes can impact on performance in Discoverer Plus when accessing large amounts of text data.

Case Storage

Use this field to specify how text items are stored in the database, independent of how they are displayed. The Discoverer end user does not see this information. It enables you to optimize the use or display of this information in end-user workbooks. For example, if the data is already being stored correctly, you do not need to modify the text using the Display case option. Setting this value can improve the user's performance when running queries with conditions. If the data is always stored in uppercase in the database, set the value to uppercase. If the data is stored in lowercase, set the value to lowercase.

Display case

Use this field to change how items are displayed in workbooks.

Default width

Use this field to change the item's default width (in characters) when displayed in end user reports. This value is only used if Use Default Width is set in Discoverer Plus (under Tools | Options | Table).

Replace NULL with

Use this field to change how Discoverer displays null characters. For example, null = We're out... order now!, null = 0, null = nothing visible, or space.

Content type

Use this field to specify that the item contents are to be used to launch an external application. Choose FILE if the data item contents require another application to run, such as Microsoft Excel or an Internet browser. Choose <NONE> if the data type does not require another application.

Note: Setting this field to FILE only enables the item contents to display the data by launching an external application, when you are using Discoverer Desktop.

If the item contains a binary large object (BLOB), the file extension determines the application (that is, which `.exe` file) to use to view the item. For example, .DOC uses MS Word, .WAV plays a sound through the currently registered sound player for WAV files. These associations are set up in your computer's operating system.

Note: If the content is an image that is stored in the database, choose NONE (for more information, see "About drilling out to other applications").

Max char fetched

Use this field to view (or specify, for LONG data types) the maximum amount of characters retrieved in a SQL call to the database. This option is particularly useful for specifying the number of characters retrieved for LONG data types. The purpose of restricting the total number of characters is that sometimes there are hundreds or thousands of characters in a data element and it would be inefficient or unnecessary to retrieve the entire data element.

Note: This field only displays values for LONG, LONG RAW and BLOB datatypes.

Alternative display value

Use this field to specify a descriptive label for items that have the Content Type set to <FILE>. This label is displayed in Discoverer Plus, Discoverer Viewer, and Discoverer Desktop. The label you specify here is used in the text for the drill link in Discoverer

Desktop. For example, you might enter 'Click here to display the report in Wordpad' to replace the default field value \files\Report.doc.

Note: Setting the **Content type** field to FILE only enables you to drill on the item to display the data by launching an external application, when you are using Discoverer Desktop.

When a Discoverer Desktop end user clicks on a drill link, the file is opened in the application associated with the file type. For example, if you select a link for a *.DOC file, Discoverer Desktop might invoke Microsoft Word to display the file.

Indexed item

Use this field to select an indexed item to associate with the current item. Discoverer uses the indexed item to improve query performance when a parameter is based upon this item. The value of the indexed item you select here can be displayed in lists of values in Discoverer Plus and Discoverer Desktop when users create, edit and select parameter values.

When you select an item from the drop down list, make sure that the item has a database index icon beside it (the icon indicates that the item represents an indexed column in the database). Selecting an item that is not indexed might not improve query performance.

You can specify an indexed item for any EUL item, subject to the following conditions:

- The item and its indexed item must be in the same EUL folder.
- There must be a one-to-one mapping between the current item and its associated indexed item (that is, for each item value there must be one (and only one) corresponding indexed item value). This condition is set by the database.
- The indexed item cannot be of data type LONG or LONG RAW.
- An EUL item can have only one indexed item associated with it. However, many EUL items can use the same item as their indexed item.
- An item cannot simultaneously be associated with an indexed item and also be the indexed item of another EUL item.
- Items that are hidden from end users can be selected as the indexed item.

Identifier

Use this field to change the unique name that Discoverer uses to identify EUL and workbook objects. When matching objects common to different EULs, Discoverer uses identifiers to locate objects in different EULs that refer to the same business objects.

Warning: It is not advisable to change an identifier as it can affect the relationships between EUL objects.

Note: The primary use for the formula and database columns is for tracking the source of the item's data. For example, if something has changed in the underlying database or data dictionary, this field provides an audit trail identifying the data's original source. It provides information to the Discoverer manager about exactly where the data came from.

Automatically save changes after each edit

Use this check box to save changes each time a field in this dialog is updated.

Item Properties dialog: Dependents tab

This read-only tab displays two columns (Type and Name) that clarify the extent to which other objects (for example, folders, joins, items, item classes, summary folders, conditions, calculated items) are dependent on the selected item.

Type

This field displays one or more object types (for example, folders, items) that have a dependency on the selected item.

Name

This field displays the name of each object listed in the Type column.

Items dialog

Use this dialog to select an item to use when you create or edit a condition.

For more information, see:

"What are conditions?"

Discoverer displays this dialog when you choose the **Select Item...** option from the drop down list in the **Value(s)** field of the New/Edit Condition dialog.

Select an item:

Choose an item to display in the **Value(s)** field of the New/Edit Condition dialog.

Use the OK button to display the selected item in the **Value(s)** field.

The item that you select here is used in the current condition statement of this condition.

Join Properties dialog

Use this dialog to configure join properties. For example, to change the name of a join or change its cardinality (Join relationship property).

The Join Properties dialog contains two tabs:

- "Join Properties dialog: General tab" - use this tab to configure the join. For example, to change the join name.
- "Join Properties dialog: Dependents tab" - use this tab to look at other items dependent on this join. For example, to look at summary folders that use the join.

Note: You can use the Join Properties dialog to inspect and edit more than one join item at a time. Select a join to view its properties. If you select more than one join and make a change to a property that is common to the selected joins, the changes apply to all selected joins.

Note: Discoverer can improve query performance for end users by removing unwanted joins (also known as join trimming). For more information, see "What effect do joins have on query results and query performance?".

For more information, see:

"What are joins?"

"How to view or edit joins"

Join Properties dialog: General tab

Use this tab to configure the join.

Name

Use this field to change the name of the join. By default, Discoverer Administrator will name the join item by combining the master and detail folder names in the form: Master Folder - > Detail Folder.

Note: This field becomes read-only if the Auto generate name property is set to Yes.

Auto generate name

Use this field to change the value of the Auto generate name property to Yes or No. When the Auto generate name property is set to Yes, Discoverer enables the names of some types of Joins to be automatically updated whenever a folder or item name (used in this join) is changed.

For more information about this property, see "About generating and updating EUL item names automatically".

Description

Use this field to change the description of the join. By default, Discoverer Administrator will describe the join item by combining the master and detail folder names in the form: Master Folder - > Detail Folder.

Master

Use this read-only field to view the folder name at the master end of the join relationship.

Detail

Use this read-only field to view the folder name at the detail end the join relationship.

Formula

Use this field to display the "Edit Join dialog: Items tab", where you specify how the items are joined.

Outer join on

Use this field to specify an outer join on the detail or master folder. This field can display the values None, Master folder or Detail folder.

Use an outer join on the detail folder when you want to return:

- Master rows that have no corresponding detail items, and all matching master and detail rows.

Use an outer join on the master folder when you want to return:

- Detail rows that have no corresponding master items, and all matching detail and master rows. This construct is rare in real business scenarios. To use this construct, select the Detail item values might not exist in the master folder value in the **Join details** field. For more information, see "Edit Join dialog: Options tab".

Join details

Use this field to specify that detail items always exist in the master folder, or whether detail items might not exist in the master folder.

This field can display the following values:

- Detail item values always exists in master folder

  For more information, see the **Detail item values always exist in the master folder (Typical)** option in the "Edit Join dialog: Options tab".

- Detail item values might not exist in master folder

  For more information, see the **Detail item values might not exist in the master folder** option in the "Edit Join dialog: Options tab".

Join relationship

Use this field to specify the type of join relationship (cardinality of the join) as follows:

- Use the **One to one (1:1)** join to join two tables that have a one to one relationship. For example, if every department has one (and only one) manager, and every manager can manage one (and only one) department, then you would use a 1:1 join relationship.
- Use the **One to many (1:n)** join to join two tables that have a one to many relationship. For example, if every employee can be in one (and only one) department, and a department can have one, many, or no employees, then you would use a 1:n relationship.

Identifier

This field displays a unique name that Discoverer uses to identify EUL and workbook objects. When matching objects common to different EULs, Discoverer uses identifiers to locate objects in different EULs that refer to the same business object.

Warning: It is not advisable to change an identifier as it can affect the relationships between EUL objects.

Automatically save changes after each edit

Use this check box to save changes each time a field in this dialog is updated.

Join Properties dialog: Dependents tab

The Dependents tab displays two columns (Type and Name) that clarify the extent to which other objects (for example, folders, joins) are dependent on the selected join.

Type

This column displays one or more object types (for example, folders, items) that have a dependency on the selected join.

Name

This column displays the name of each object listed in the Type column.

Load Wizard: Step 1 dialog

Use the Load Wizard to choose how you want to open a business area. For example, you might want to:

- create a new business area
- open an existing business area

For more information, see:

"What is the Load Wizard?"

"How to create a business area using the Load Wizard"

What do you want to do?

Create a new business area

Use this button to create a new business area. Discoverer displays the field "Where do you want to load the metadata from?".

Open an existing business area

Use this button to open an existing business area. Discoverer displays the field "Select one or more business areas to open".

If you choose **Create a new business area**, Discoverer displays the following options:

Where do you want to load the metadata from?

- **On-line dictionary**

  Use this option to load tables and views from the Oracle dictionary.

- **Gateway**

  Use this option to load tables and views from the data source you specify in this text box. Use the drop down list to select from available data sources.

  For more information about loading a business area from the gateway, see "How to create a business area using the Load Wizard".

If you choose **Open an existing business area**, Discoverer displays the following options:

Select one or more business areas to open

Use this field to choose one or more business areas to open. Click the appropriate check boxes or use the Select All and Clear All buttons to help you select the business areas.

Notes

- Discoverer displays the Load Wizard automatically when you connect to an EUL. To display the Load Wizard when you are already connected to an EUL, choose File ¦ New.
- The Gateway option is only available when you have a registered EUL Gateway and all its tables are visible (for more information about setting up an EUL Gateway, see "What is the EUL Gateway?").

Load Wizard: Step 2 dialog

Use this dialog to define which objects you want to load into the new business area. Your choices depend on where you choose to get your metadata.

For more information, see:

"What is the Load Wizard?"

"How to create a business area using the Load Wizard"

Select a database link

Use this drop down list to specify which database to use as the data source.

Note: A database link sets up a connection from one database to another, and is created in the database. You can set up multiple database links in a database. If you are unsure, ask your Database Administrator for more information.

Select the users whose tables you want to load [for loading metadata from an online dictionary]

Use this field to choose one or more users whose tables can be loaded from the data source named in the **Select a Database Link** field. Click the appropriate check boxes or use the Select All and Clear All buttons to help you select the users.

Select the schemas you want to load [for loading metadata from a gateway]

Use this field to choose one or more schemas (object owners) whose objects can be loaded from the database link named in the **Select a Database Link** field. Click the appropriate check boxes or use the Select All and Clear All buttons to help you select the schemas.

Load user objects that match

Use this field to enter Oracle wildcard characters to find objects to load. This is helpful if you do not remember the names of the tables you want to load. By default (that is, when the percent (%) symbol is displayed in this field), all objects owned by the userid you selected will be loaded .

For further information about wildcards see "Loading from the online dictionary"

Load Wizard: Step 3 dialog

Use this dialog to select the schema objects that you want to load into the new business area.

For more information, see:

"What is the Load Wizard?"

"How to create a business area using the Load Wizard"

Available

This field displays all schema objects (tables and views) available for inclusion in the new business area. Select one or more schema objects from the **Available** field and move them to the **Selected** field.

Selected

This field displays all tables and views that you have selected to be included in the new business area. Each table and view that you select will be a folder in the new business area.

Notes

- You can select more than one schema object by pressing the Ctrl key and clicking another schema object.
- The selections made in the Load Wizard: Step 2 dialog determined the objects that are now displayed in the **Available** field in the Load Wizard: Step 3 dialog. If you want to change any of those selections (that is, the database link, user IDs, or tables you specified, if you used the online dictionary options), click Back to return to the Load Wizard: Step 2 dialog.

Load Wizard: Step 4 dialog

Use this dialog to configure the joins and additional objects that Discoverer generates when data is loaded into the new business area.

For more information, see:

"What is the Load Wizard?"

"How to create a business area using the Load Wizard"

Do you want to create joins?

Yes, create joins from:

Use this check box to create joins on items in the business area.

- **Primary/foreign key constraints**

  Use this option to create joins on primary and foreign keys. For example, if Regions contain many Stores, the primary key Region.Region Name might be joined to the foreign key Stores.Region Name.

  It is recommended that you use this option:

  - when primary and foreign key constraints are defined in the database

  You use this option because:

  - it saves you having to create the joins manually
  - Discoverer always creates joins that are correct (that is, the master and detail relationship is specified the right way round)

- **Matching column names**

  Use this option to create joins on matching column names in the database tables. You use this option when no primary and foreign key constraints are defined, for example, if you are using a non-Oracle data source.

  If you choose this option, Discoverer checks every column name of every object being loaded against every other column name. As the number of columns that are loaded increases, the amount of processing required also increases. A side effect of doing this is that the joins created must be checked after the load to make sure they are valid. The master-detail folder relationship must be verified as being the correct way round, and the join condition must be verified as being valid (that is, not created accidentally by two different columns using the same name.)

What additional objects do you want to generate?

Summaries based on folders that are created

Use this check box to use automated summary management (ASM) to create summary folders after the load process, based on folders that Discoverer creates.

ASM attempts to create a set of suitable summary folders after analyzing the table structure. Selecting this option might slightly increase duration of the business area load, but should give end users improved query performance.

Note: Do not choose this option if you are going to run ASM, or if your database space is low.

Date hierarchies:

Use this check box to automatically create date hierarchies for date items.

Choose a hierarchy from the drop down list of default date hierarchy formats. The date hierarchy is applied to all date columns in the business area. Creating a date hierarchy enables end users to drill up/down through date items. For example, from years to quarters or from months to days.

Automatically generating date hierarchies inserts additional (calculated) items into the folder. An extra item is created for every date item in each node in the date hierarchy. For example a date hierarchy containing year | quarter | month | day applied to a table with three date columns, generates an additional 12 items in the folder. For more information, see "Creating and Maintaining Hierarchies".

Default aggregate on data points

Use this check box to specify a default aggregate for numeric items.

Choose an aggregate from the drop down list. The default aggregate is SUM.

List of values for items of type:

Use this check box to generate lists of values based on the types you select. This option automatically creates lists of values for each axis item of each type specified, except character items longer than 40 characters. The values are derived from the values in the database column.

Notes

- Items are loaded as data points if they are DECIMALS (that is, a NUMBER data type) and have a nonzero scale. Integer numbers, all keys, and all other data types are loaded as axis items, with a default position of Top.
- Axis items are usually displayed on one of the axes of a worksheet. For example, the term Monthly Profit might be an axis item in a worksheet.

  The alternative term for an axis item is a dimension.
- Data points are usually displayed in the body of a worksheet. For example, an amount in dollars (for example, $2,000) might be a data point item representing Monthly Profit in a worksheet.

  The alternative term for a data point is a measure.
- In Discoverer Plus, whether an item is an axis item or data point determines the items' default placement on cross tab worksheets, as follows:
  - Because data points usually include the numbers that users want to analyze, they are displayed by default with aggregate functions in the center of cross tabular reports.
  - Axis items can have lists of values but data points cannot. Axis items appear on the page, top, or side of cross tabular worksheets by default.
  - The default position of an axis item or data point item in a worksheet is determined by the Discoverer manager. However, Discoverer Plus users can alter the position of axis items and datapoint items in a worksheet.
- Lists of values are derived by querying the database when Discoverer users click the plus (+) symbol next to the item. Lists are dynamic and change if the values in the database change. When the plus (+) symbol is clicked, Discoverer caches the values on the client machine for performance reasons, unless the **Cache list of**

values during each connection check box is cleared, when creating or editing an item class in the following dialogs:

- Item Class Wizard: Step 4/5 dialog
- Edit Item Class dialog: Options tab

If you select the **Cache list of values during each connection** check box and you want to display new values in a list, you must reconnect (for more information about this setting, see "Edit Item Class dialog: Options tab").

- Avoid creating lists of values on items that will contain many values (for example, decimals).

Load Wizard: Step 5 dialog

Use this dialog to enter a name and description for the business area and to configure how data is loaded into the business area.

For more information, see:

"What is the Load Wizard?"

"How to create a business area using the Load Wizard"

What do you want to name this business area?

Use this field to enter a name for your new business area. Use a short name that reflects the business function of the business area. For example, Web Usage Analysis.

What Description do you want for this business area?

Use this field to enter a description for your new business area. Use this field to provide additional information about the business area, such as who created it, the intended audience, or more specific details about its scope.

How do you want to generate object names?

Replace all underscores with spaces

Use this check box to replaces underscores with spaces. For example, Region_Name is converted to Region Name.

Remove all column prefixes

Use this check box to removes prefix characters that are common to all columns. For example, if a table name is EMP and its column names are EMP_Number, EMP_Name, and EMP_Address, the corresponding names in the business area become Number, Name, and Address.

Capitalize:

Use this check box to capitalize (then choose an option from the drop down list) as follows:

- The first letter of every word

  Choose this option to capitalize the first letter of folder and item names. For example, REGION_NAME is converted to Region_Name. This is useful because table names are usually in uppercase text in the database.

- The initial letter

  Choose this option to capitalize the first letter of the first word of folder and item names. For example, REGION_NAME is converted to Region_name.

Which objects do you want to sort?

Sort Folders

Use this check box to sort folders alphabetically within a business area.

Sort Items

Use this check box to sort items alphabetically within a folder.

For information about using the command-line interface to sort folders and items during a business area load, see "/load".

For information about sorting folders and items in a business area, see:

- "How to sort folders in a business area"
- "How to sort items in a folder"

Manage Folders dialog: By Business Area tab

Use this tab to assign multiple folders to a single business area. For example, to add multiple folders to a new business area.

For more information, see:

"What are folders?"

Business area

Use this drop down list to select a business area to which you want to assign one or more folders.

Available folders

This list displays available folders not currently assigned to the business area selected. Orphaned folders are also shown in the list.

To assign folders to the current business area, move the folders from the **Available folders** list to the **Current folders** list.

Current folders

This list displays folders currently assigned to the business area.

To remove a folder from the current business area, move the folder from the **Current folders** list to the **Available folders** list.

Notes

- You can select more than one folder at a time by holding down the Ctrl key and clicking another folder.

Manage Folders dialog: By Folder tab

Use this tab to assign single folders to multiple business areas. For example, to assign a new folder to multiple business areas.

For more information, see:

"What are folders?"

Folder

Use this drop down list to select the folder that you want to assign.

If you select a folder that is not assigned to any business area, the folder is an orphaned folder.

Available business areas

This list displays all available business areas to which you can assign the current folder.

To assign the current folder to a business area, move the business area from the **Available business areas** list to the **Current business areas** list.

Current business areas

This list displays business areas to which the current folder is assigned.

To remove a business area from the current folder, move the business area from the **Current business areas** list to the **Available business areas** list.

Notes

- You can select more than one business area at a time by holding down the Ctrl key and clicking another business area.

Manage Folders dialog: Orphaned Folders tab

Use this tab to view or delete orphaned folders from the current EUL. Orphaned folders are folders that are not owned by any business areas.

For more information, see:

"What are folders?"

"How to remove an orphaned folder from the EUL"

Orphaned Folders

This list displays all orphaned folders in the current EUL.

Delete

Use this button to delete a highlighted orphaned folder from the current EUL.

Notes

- You can select more than one orphaned folder at a time by holding down the Ctrl key and clicking another orphaned folder.

Manage Scheduled Workbooks dialog

Use this dialog to monitor and maintain workbooks that Discoverer end users have scheduled. For example, you might want to check on the progress of a workbook being processed, or to remove a scheduled workbook that was created by a Discoverer end user but is no longer required.

For more information, see:

"What are workbooks and scheduled workbooks?"

Show workbooks for

Use the Select button next to this field to display the "Select User/Role dialog" where you can search for and select the user or role whose scheduled workbooks you want to view or edit. For example, choose jchan to display the scheduled workbooks for jchan.

Select all users

Use this check box to display scheduled workbooks for all users.

Scheduled workbooks

This field displays a list of the scheduled workbooks that are owned by the selected user or role. The workbooks listed are either scheduled to run or have already run and are ready to use. The list contains the following fields:

- User

  This column displays the name of the Discoverer user who scheduled the workbook.

- Name

  This column displays the name of the scheduled workbook.

- Status

  This column displays the status of the workbook. See the table below for information about the status of a workbook.

Status	Description:
Scheduled	This workbook has been scheduled and will run at the specified date and time.
Running Query	This workbook is currently running. No results are available.
Could not schedule	This workbook was not successfully submitted to the processing job queue. It is a good idea to let the Discoverer end user know so they can attempt to reschedule this workbook.
Error while running query	There was an error when this workbook was run. No results were returned from the database. This could be due to a problem in the PL/SQL generation or execution. An Oracle database error is generated here and can be accessed by the database administrator. If part of a scheduled workbook fails (that is, one sheet out of the workbook), the entire scheduled workbook run fails.
Report deleted by Administrator	The Discoverer manager has set the scheduled workbook for deletion. Report runs with this status are deleted when the user next disconnects from the EUL.

Status	Description:
EUL has changed, reschedule report	A change has occurred in the EUL which affects the scheduled workbook. For example, if a folder has been deleted. The user can resubmit the scheduled workbook.
Number of Rows Limit exceeded	The results of this scheduled workbook return more rows than this user is allowed to retrieve. The results have been deleted. Use the "Privileges dialog: Query Governor tab" to change this limit.
Report Expired	The expiration date has passed. This workbook is no longer available. Reports with this status are deleted when the user disconnects from the EUL.
Report Ready	This workbook successfully queried the database and users can view the results.

- Date

  This column displays the date on which the workbook is next scheduled to run (if the workbook's status is Scheduled) or when the workbook was last run (if the workbook's status is Report Ready).

- Time

  This column displays the time at which the workbook is next scheduled to run (if the status is Scheduled) or was last run (if the status is Report Ready).

- Run time

  This column displays the length of time this workbook took to run.

Description

This read-only field displays any additional information about the selected workbook.

Edit

Use this button to display the "Schedule Workbook dialog: General tab", where you change the settings for the selected workbook. This option is only available for workbooks that have not yet been processed.

View Error

Use this button to display a description of why a selected workbook could not be run successfully. This option is only available for workbooks that could not be scheduled due to an error.

Unschedule/Delete

Use this button to un-schedule the workbook and remove the workbook from the list in the **Scheduled workbooks** field. Any workbooks resulting from previous runs of this workbook are removed.

Refresh

Use this button to check the database for any changes to the schedule since you opened this dialog.

Notes

- You can re-sort the **Scheduled Workbooks** list by clicking the column you want to sort by. For example, if you want the list sorted by date, click the Date column header.

Matching Values dialog

Discoverer displays this dialog when you are defining an indexed item for an item in a folder, and Discoverer has determined that the list of values (LOV) associated with the indexed item in the current folder is created on another item (that is, either in the current folder, or in another folder).

Use this dialog to confirm that the list of values (LOV) associated with the indexed item in the current folder exactly matches another LOV in another folder.

For more information, see "How to assign an indexed item to an item".

OK

Use this button if you are sure that the values of the items referred to in this dialog, exactly match each other.

Note: If you use the OK button but the values of the items displayed in the Matching Values dialog do not exactly match each other, results returned when parameters are used in conditions might be incorrect.

Notes

- A LOV (item class) contains values that are generated from a single item but which can be applied to multiple items in multiple folders (for more information, see "What are item classes?"). When Discoverer determines that the LOV (item class) to be used by the indexed item can be based on another item, Discoverer asks you to confirm that the values in the item class exactly match the unique values in the indexed item.
- The items whose values you are matching must be of the same datatype. For example, you cannot match a date LOV (that is, a Date datatype) with a city name LOV (that is, a Varchar datatype), or a Days of the Week LOV (that is, a varchar datatype) with a date LOV (that is, a Date datatype).

New Condition dialog (Advanced)

Use this dialog to create a new condition for use in the business area.

For more information, see:

"What are conditions?"

"What are the different types of condition?"

"How to create simple conditions"

"How to create advanced conditions"

Advanced conditions contain multiple criteria. For example:

- to restrict Discoverer end users to data for the year 2001 in the first quarter, you might create a mandatory condition here: Year = 2001 AND Quarter = Q1. When they access workbooks, Discoverer end users will always see data for the year 2001 in the first quarter.
- to enable Discoverer end users to easily look at data for different quarters in the year 2001, you might create the optional conditions:
  - Year = 2001 AND Quarter = Q1
  - Year = 2001 AND Quarter = Q2
  - Year = 2001 AND Quarter = Q3
  - Year = 2001 AND Quarter = Q4

  When they access workbooks, Discoverer end users will be able to focus on data for particular quarters in the year 2001 by applying these conditions.

Name

Use this field to enter a name for the new condition.

Generate name automatically

Select this check box for Discoverer to create a name for you.

Clear this check box to enable the **Name** field and enter a condition name.

Description

Use this field to enter additional information about the condition. This description is displayed when you select this condition in the Workarea, and in Discoverer Plus. Make your description useful to both you and your users.

Location

This field displays the name of the folder that will store the condition. This is the location you selected when you chose Insert | Condition.

Type

Use this drop down list to choose the condition type:

- Mandatory

Mandatory conditions are always applied to a worksheet that contains one or more items from the folder that contains the condition. Discoverer Plus users are not notified of mandatory conditions and cannot turn them off.

- Optional

  Optional conditions can be turned on or off as required by Discoverer Plus users.

Formula

Use this field to specify the filter criterion that you want to use.

- Item

  Use this drop down list to choose what item you want to filter the data on. For example, choose Year here if you want to display data for a particular year.

- Condition

  Use this drop down list to choose how to match data against the item. For example, choose the '>' symbol (greater than) here to filter data where the item value is greater than a particular number.

- Value(s)

  Use this field to define what data you want to match against. For example, enter 2001 here to look only at data for the year 2001.

  If you created a list of values for the item, these items appear in the drop down list.

  You can also click the drop down list and match against the following:

  – Click **Select Multiple Values** to display the "Values dialog".

    You select one or more values to use in the condition.

  – Click **Create Calculation** to display the "New Item dialog".

    You create a calculated item to use in the condition.

  – Use the **Select Item** option to display the "Items dialog".

    You select an item to use in the condition.

  Note: You can enter up to 254 values in this field. If you want to enter more than 254 values in the condition, use the OR option to add a new condition statement line for the extra values.

Match case

Use this check box to match upper and lowercase text data exactly. When selected, the match value 'New York' would not return data for 'new york'.

Advanced

Use this button to add one or more new criteria lines to the condition. Use this button to display the Add, Delete, And, Or and Not buttons.

Add

Use this button to insert a new criterion line to the condition. By default, the new item is grouped with a logical AND, which means that data must match all criteria contained within the AND group.

Delete

Use this button to remove the currently selected filter criterion from the condition.

And

Use this button to insert a new criterion line to the condition. The new item is grouped with a logical AND, which means that data must match all criteria contained within the AND group.

Or

Use this button to insert a new criterion line to the condition. The new item is grouped with a logical OR, which means that data much match at least one of the criteria contained within the OR group.

Not

Use this button to invert the condition for the currently selected group. The item is grouped with a logical NOT AND or NOT OR, which means that data must *not* match the criteria contained with the NOT group.

Notes

- The buttons Delete, And, and Or are only available if you have selected a criteria in the Formula display.

New Condition dialog (select an item or folder for)

Use this dialog to choose where you want to store the new condition.

For more information, see:

"What are conditions?"

"What are the different types of condition?"

"How to create simple conditions"

"How to create advanced conditions"

For example, if you do not select a folder before choosing Insert ¦ Condition, you select a folder here.

This dialog is also displayed as:

New Condition dialog

Business Area

Use this drop down list to select a business area. Then, choose the folder in which to store the condition from the expandable item list below.

New/Edit Condition dialog

Use this dialog to create a new condition, or edit a condition in the business area.

This dialog is also displayed as:

New Condition dialog
Edit Condition dialog

For more information, see:

"What are conditions?"

"What are the different types of condition?"

"How to create simple conditions"

"How to create advanced conditions"

Simple conditions typically contain one filter criterion. For example:

- to restrict Discoverer end users to data for the year 2001, you might create a mandatory condition here: Year = 2001. When they access workbooks, Discoverer end users will always see data for the year 2001
- to enable Discoverer end users to easily look at data for different quarters, you might create the optional conditions:
  - Quarter = Q1
  - Quarter = Q2
  - Quarter = Q3
  - Quarter = Q4

  When they access workbooks, Discoverer end users will be able to focus on data for particular quarters by applying these conditions.

Name

Use this field to enter a name for the new condition.

Generate name automatically

Select this check box for Discoverer to create a name for you.

Clear this check box to enter a name for this condition.

Description

Use this field to enter additional information about the condition. This description is displayed when you select this condition in the Workarea, and in Discoverer Plus. Make your description useful to both you and your users.

Location

This field displays the name of the folder that will store the condition. This is the location you selected when you chose Insert | Condition.

Type

Use this drop down list to choose the condition type:

- Mandatory - mandatory conditions are always applied to a worksheet that contains one or more items from the folder that contains the condition. Discoverer Plus users are not notified of mandatory conditions and cannot turn them off.
- Optional - optional conditions can be turned on or off as required by Discoverer Plus users.

Formula

Use this field to specify the filter criterion that you want to use.

- Item

  Use this drop down list to choose what item you want to filter the data on. For example, choose Year here if you want to display data for a particular year.

- Condition

  Use this drop down list to choose how to match data against the item. For example, choose the greater than symbol (>) here to filter data where the item value is greater than a particular number.

- Value(s)

  Use this field to define what data you want to match against. For example, enter 2001 here to look only at data for the year 2001.

  If you created a list of values for the item, these items appear in the drop down list.

  You can also click the drop down list and match against the following:

  – Click **Select Multiple Values** to display the "Values dialog".

    You select one or more values to use in the condition.

  – Click **Create Calculation** to display the "New Item dialog".

    You create a calculated item to use in the condition.

  – Use the **Select Item** option to display the "Items dialog".

    You select an item to use in the condition.

  Note: You can enter up to 254 values in this field. If you want to enter more than 254 values in the condition, click Advanced and use the OR option to add a new condition statement line for the extra values.

Match case

Use this check box to match upper and lowercase text data exactly. When selected, the match value 'New York' would not return data for 'new york'.

Advanced

Use this button when you want to create more than one filter criterion. Here, you display additional fields and buttons used to create advanced conditions (see "New Condition dialog (Advanced)").

New Date Format dialog

Use this dialog to create a new date format. For example, you might want to create a new format for Year containing the last two digits only of a typical four digit year (for example, to display the digits 01 to represent 2001, 02 to represent 2002 and so on).

You can use the new format in date hierarchies.

For more information, see:

"What are date hierarchies?"

"What are date items?"

"What are date format masks?"

Date format group

Use this drop down list to choose the group in which you want the new date format to be included (for example, Year, Quarter, Month).

New Format

Use this field to enter the date format mask that you want to use. For example, use Mon-YYYY to display the month plus the four digits of the year.

Notes

- A new date format must confirm to the SQL Date Format Model, for example YYYY, YYY, YY, RR
- You can prefix a new Date Format with descriptive text by enclosing the descriptive text in quotes (for example, "Fiscal Year" YYYY).

New Item dialog

Use this dialog to create items based on EUL objects and functions. Items can be derived items, aggregate calculated items or aggregate derived items.

For more information, see:

"What are items?"

"What are calculated items?"

"How to create calculated items"

For example:

- to create an item named Year, based on the EUL item Calendar Year
- to create a calculated item named Sales Target, based on the formula Sales SUM * 1.25
- to create a calculated item named Profit, based on the formula Sales SUM - Cost SUM
- to create a calculated item named Rank Sales, based on the formula RANK () OVER (ORDER BY Sales SUM)

Show

Use these options to display calculations, functions, and item that you can use to build a calculation. To include items in the calculation, paste them into the **Calculation** field.

- **Items**

  Use this option to display the EUL items available.

- **Functions**

  Use this option display the functions available.

Paste

Use this button to the add the item currently selected in the **Show** list to the Calculation. The item is copied into the **Calculation** field.

Name

Use this field to enter a name for the item or calculated item. Discoverer Administrator creates a default name for you.

Calculation

Use this field to enter the calculation details (for calculation examples, see *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Plus*).

To create a calculation, you can use any or all of the following methods:

- Type the formula directly into the **Calculation** field.

  Note: If you type an expression in the **Calculation** field, you must prefix the expression with an equals sign (=). For example, '=Sales SUM-Costs SUM'.

- Paste items and functions from the **Show** field on the left into the calculation.
- Click the operator buttons underneath the **Calculation** field to use them in the calculation.

Operator buttons + - x / % ( )

Use these buttons to add operators to the calculation. Operators are copied into the **Calculation** field.

Note: When you use arithmetic expressions in a calculation, the multiply and divide operators are executed first, regardless of their position in the calculation. If you have more than one operator of the same precedence, they are evaluated from left to right.

For example, the calculation Price – Discount * Quantity is evaluated as Discount*Quantity subtracted from Price. If you use parentheses around the subtraction expression (Price – Discount), the subtraction is executed before the multiplication.

OK

Use this button to validate and save the calculation, as follows:

- If the calculation has valid syntax, the calculation is saved and displayed in the Calculations dialog.
- If the calculation has invalid syntax, an error message is displayed. You must correct any syntax errors before you can save the calculation.

Notes

- The table below shows the functions available in the field beneath the **Show** field:

Category	Description
All Functions	An alphabetical list of all functions.
Analytic	Advanced statistical analysis, such as RANK, NTILE, CORR.
Conversion	Converting from one data type to another, such as: RAWTOHEX, TO_CHAR, TO_DATE.
Database	Optional category that is displayed when user defined functions are available (created using the Register PL/SQL Functions facility on the Tools menu).
Date	Manipulating date items such as ADD_MONTHS, NEW_TIME, SYSDATE and NEXTDATE.
Group	Aggregate and statistical functions including SUM, COUNT, MAX, MIN, VARIANCE.
Numeric	Numeric items, transcendentals and floating point such as COS, LOG, MOD, POWER.
Others	Miscellaneous functions such as LEAST, USER, DECODE, ROWNUM.
String	Character items, text operations such as INITCAP, LPAD, NLS_UPPER.

- For detailed information about all functions available in Discoverer, see the *Oracle Database SQL Reference Guide* and *Oracle Database Data Warehousing Guide.*
- For examples of the most commonly used functions, see *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Plus*.

New Item dialog (select a folder for)

Use this dialog to choose where you want to store the new item. For example, if you do not select a folder before choosing Insert ¦ Item, you select a folder here.

Discoverer displays this dialog when the currently selected folder does not use the item that you are about to create.

This dialog is also displayed as:

New Item dialog

For more information, see:

"What are items?"

"What are folders?"

Business Area

Use this drop down list to select a business area, then choose the folder in which to store the item from the expandable item list below.

New Join dialog (select a folder for)

Use this dialog to choose where you want to store the new join. For example, if you do not select a folder before choosing Insert ¦ Join, you select a folder here.

The Choose Folder window might appear in any of the following cases:

- The currently selected folder does not use the join you are about to create.
- No folder is selected on the Workarea.

This dialog is also displayed as:

New Join dialog

For more information, see:

"What are joins?"

"What are business areas?"

"How to create joins"

Business Area

Use this drop down list to select a business area. Then, choose the folder in which to store the join from the expandable item list below.

Online Dictionary Options dialog

Use this dialog to specify what types of tables and views you want to see in the "Load Wizard: Step 2 dialog". For example, you can display all tables and views accessible to a user, not just those owned by a user.

For more information, see:

"What is the Load Wizard?"

Which tables (and views) do you want to see?

- **Tables owned by user**

  Use this option to make available tables and views that belong to the user IDs specified in "Load Wizard: Step 2 dialog".

  Choose this option:

  - When you have a schema, and you want to load tables or objects based on the schema permissions.
  - When you have a schema owner, and you want to load tables or objects based on the schema grants. For example, an owner such as FINAPPS, who owns all of the data tables used by the Financial Applications system and has granted access rights to other users to view those tables.

- **Tables accessible by user**

  Use this option to make available tables and views to which the user IDs have been granted SELECT access in the database.

What types of tables (and views) do you want to see?

- Public tables

  Select this check box to import tables and views in the selected user IDs' schema that have been granted public access. For example, JOE is seeing publicly accessible tables.

- Partially restricted tables

  Select this check box to import the tables and views in the selected user IDs' schema that have also been granted some access to another user ID. For example, user ID Bob could grant SELECT privileges on Table D in the database to user ID Betty. Table D would be designated as a partial access object. Use this option to display a list of partial access objects that are either owned by a user ID or objects to which the user ID has been given explicit SELECT access. For example, JOE has been granted specific access to these tables.

- Private tables

  Select this check box to import the tables and views in the selected user IDs' schema that are not accessible by any other user ID.

Notes

- A user ID can own tables and also grant access to other user IDs. For example, an application owner, such as FINAPPS, owns all of the data tables used by the Financial Applications system and has granted access rights to other users to view those tables.

Open Business Area dialog

Use this dialog to specify which business areas you want to open in the Discoverer Administrator Workarea. For example, you might want to work with your own business area and the Video Stores Tutorial business area.

For more information, see:

"What are business areas?"

"Loading from the online dictionary"

"Loading from a Gateway"

Available

This list displays business areas that are available. To open business areas, move the business areas from the **Available** list to the **Selected** list.

Selected

This list contains the business areas that will open in the Workarea. If you do not want to open business areas in this list, move these business areas from the **Selected** list to the **Available** list.

Notes

- You can select more than one business area by pressing the Ctrl key and clicking another business area.
- You cannot open the same business area twice. If you select a business area that is already open in the Workarea, the Open command will have no effect. To see another view of the same business area, choose New Window from the Window menu to display another Workarea window.

Options dialog: Connection tab

Use this dialog to specify the connection details to display in the "Connect dialog". For example, if you always connect to Oracle Applications EULs, you might configure the Connect dialog to prompt you to enter Oracle Applications connection details.

For more information, see:

"How to start Discoverer Administrator"

"Options dialog: Default EUL tab"

What type of EULs would you like to connect to?

- **Connect to standard EULs**

  Use this option when you only want to connect to standard EULs using Discoverer Administrator.

  If you select this option, the Oracle Applications User check box is not displayed in the Connect dialog.

- **Connect to applications EULs**

  Use this option if you only want to connect to Oracle Applications EULs using Discoverer Administrator.

  If you select this option, the Oracle Applications User check box is not displayed in the Connect dialog, but you must login using your Oracle Applications user ID and Responsibility.

  Note that if you select this check box, you can only log in to Oracle Applications EULs.

- **Connect to both standard and applications EULs**

  Use this option when you want to be able to connect to both standard and Oracle Applications EULs using Discoverer Administrator.

  If you select this option, the Oracle Applications User check box is displayed in the Connect dialog.

  - You can connect to Oracle Applications EULs by selecting the check box and specifying Oracle Applications connection details.
  - You can connect to standard EULs by clearing the check box and specifying standard database user details.

Applications EUL Settings

Use these fields with an Oracle Applications EUL. Discoverer Administrator uses default values for both these fields if you do not enter any values.

Gateway User ID (GWYUID) / password

Use this field to specify the user name and password of the public Gateway (identified by the Gateway User ID/password) that Discoverer Administrator is to use when logging in to an Oracle Applications EUL. Use the slash (/) character to separate the user name and password.

You enter a Gateway User ID to override the default values (APPLSYSPUB/PUB) that Discoverer uses.

If you do not specify a Gateway User ID and password, Discoverer Administrator will use the default values specified above.

Foundation Name (FNDNAM)

Use this field to specify the FND schema that owns the core Oracle Applications tables and views.

Enter a Foundation Name to override the default value (APPS) that Discoverer uses.

If you do not specify a Foundation Name, Discoverer Administrator will use the default value specified above.

Notes

- The default values for the Gateway User ID/password and Foundation Name for Discoverer Administrator, are defined in the Windows Registry. For more information, see "About Discoverer Administrator and Discoverer Desktop registry settings".

Options dialog: Default EUL tab

Use this dialog to specify the default EUL to connect to when you start Discoverer Administrator.

For more information, see:

"What is an End User Layer?"

"How to start Discoverer Administrator"

"Options dialog: Connection tab"

Which EUL would you like as your default?

Select a default EUL:

Use this field to choose which EUL you want to connect to by default when you start Discoverer Administrator. When you next connect to Discoverer Administrator, the Load Wizard will display business areas from the EUL that you chose here.

Notes

- If you want to create new EULs, you must have write access to the default EUL that you specify here. If you do not have write access to the default EUL, the Create business area option will not be available in the Load Wizard. For more information, see "What are the data access prerequisites?" and "About Discoverer access permissions".

Options dialog: Query Governor tab

Use this dialog to specify the time that Discoverer Administrator or Discoverer Desktop waits for a query to return its data before displaying an error message. This setting might be useful for example, when you try to expand a long list of values (LOV) and Discoverer displays an error message before the LOV can be displayed. If you increase the value of this setting, Discoverer has more time to display the list of values before displaying the error message.

For more information, see:

"What are lists of values?"

"How to view the list of values for an item"

"Options dialog: Connection tab"

"Options dialog: Default EUL tab"

Cancel value retrieved after:

Use this field to define the maximum time (in seconds) you want to wait while Discoverer retrieves list of values items.

Note: This tab is displayed only if the user is connected to a database

PL/SQL Functions dialog: Arguments tab

Use this dialog to define arguments for PL/SQL functions that are registered.

You can register PL/SQL functions that have been defined in the database, using SQL commands.

For more information, see:

"Why do you need PL/SQL functions?"

Functions

This field displays Oracle-supplied PL/SQL functions and user-defined PL/SQL functions that have already been registered for use with Discoverer Administrator.

Arguments

This field displays a list of arguments defined for the function currently selected in the **Functions** field.

New

Use this button to create a new argument. Discoverer generates a default argument name and fields are initialized with default values. You can then edit the default values to configure the new argument as required.

Delete

Use this button to delete the currently selected argument. The argument is removed from the **Arguments** field.

Move Up/Move Down

Use these buttons to rearrange the list of arguments in the **Arguments** field. This is useful if an argument is out of place ordinally, or if the function itself has been modified and you need to update the function definition.

Attributes for <argument selected in Arguments field>

This area displays information about the selected PL/SQL function.

Name

Use this field to enter the argument name. When you add an argument, a default name is created by Discoverer Administrator.

Description

Use this field to enter additional information about the argument. When you add an argument, a default description is created by Discoverer Administrator.

Data Type

Use the drop down list to specify the argument data type for this field (the default is Number).

Identifier

Use this field to change the unique name that Discoverer uses to identify EUL and workbook objects.

Usage

- **Optional**

  Use this option when the argument is an optional argument to the function.

- **Required**

  Use this option when the argument is a mandatory argument to the function.

Notes

- This dialog becomes read-only if the current user does not have the Create/Edit Business Area privilege (for more information, see "Privileges dialog: Privileges tab").
- When a PL/SQL function contains an argument with a boolean data type, you can manually input the PL/SQL function only if the following conditions are met:
  - the boolean argument has a default value defined for it (for example, Arg1 on boolean:=TRUE)
  - you select the **Optional** option

PL/SQL Functions dialog: Functions tab

Use this dialog to manage PL/SQL functions available to Discoverer Administrator. To register functions, you can:

- import PL/SQL functions defined in the database (use the Import button)

  This method is recommended because the function details are entered automatically after you select a function to import.

- enter PL/SQL function details manually (use the New button)

  You might use this option if the list of functions in the database is very long, you want to reduce the search time by entering the function details yourself.

For more information, see:

"Why do you need PL/SQL functions?"

"How to register custom PL/SQL functions automatically"

"How to register custom PL/SQL functions manually"

Functions

This field displays a list of Oracle-supplied PL/SQL functions and user-defined PL/SQL functions that have already been registered for use with Discoverer Administrator. When the **Available in Discoverer Plus** check box is selected, these registered functions are also available to Discoverer end users to use in calculations.

Attributes for <function selected in Functions field>

This area displays information about the selected PL/SQL function.

Function Name

Use this field to enter a name for the function. The Function Name can be different from the Display Name.

Display Name

Use this field to enter a name for the function. This name will be visible in the Discoverer Administrator in the Edit Calculation window, and in Discoverer Plus if the Available in Discoverer Plus check box has been selected.

Owner

Use this field to enter the user ID of the owner of the function. Changing this value enables you to move the reference from a development environment to a production environment.

Package

Use this field to enter the package that contains this function. A package is used in the Oracle database to group many functions together by category for easier management.

Database Link

Use this drop down list to select the database that stores the function. This is a particularly useful feature if you are using distributed databases.

Return Type

Use this drop down list to enter the data type of the data returned by the function. For example, a function might return a character string (char) or a number.

Description

Use this field to enter additional information about the function.

Identifier

Use this field to change the unique name that Discoverer uses to identify EUL and workbook objects. When matching objects common to different EULs, Discoverer uses identifiers to locate objects in different EULs that refer to the same business object.

Available in Discoverer Plus

Use this check box to enable Discoverer end users to use this function in calculations.

Validate

Use this button to test the validity and accuracy of the information you have entered. The Discoverer Administrator generates a test SQL statement that includes the PL/SQL function and tests the query. This test validates the existence of the function (by properly naming and locating it), its owner, and tests the data return type.

New

Use this button to register a new PL/SQL function. A default function name is generated and fields are initialized with default values. You can then edit the default values to configure the new function as required.

Delete

Use this button to remove the PL/SQL function currently selected in the **Functions** field.

Import

Use this button to display the "Import PL/SQL Functions dialog", where you search for and select the PL/SQL functions (defined in the database) that you want to import. After you import PL/SQL functions, you register them so that Discoverer Administrator can use them. For more information, see "How to register custom PL/SQL functions automatically".

Notes

- This dialog becomes read-only if the current user does not have the Create/Edit Business Area privilege (for more information, see "Privileges dialog: Privileges tab").

Privileges dialog: Privileges tab

Use this tab to grant privileges to users or roles (role is replaced with responsibility for Oracle Applications users). For example, you can enable Discoverer Plus and Discoverer Desktop end users to create and edit queries, drill down, and drill out, but prevent them from saving workbooks to the database.

For more information, see:

"About Discoverer and security"

Show privileges for

Use the Select button next to this field to display the "Select User/Role dialog" where you can search for and select the user or role whose privileges you want to change. For example, choose jchan to display the privileges for jchan in the **Administration Privilege** and **Desktop and Plus Privilege** fields.

Administration Privilege

Use this check box to grant or revoke the ability of the currently selected user or role to use Discoverer Administrator.

Desktop and Plus Privilege

Use this check box to grant or revoke the ability of the currently selected user or role to use Discoverer Desktop, Discoverer Plus, and Discoverer Viewer.

Use the check boxes in the fields under the **Administration Privilege** and **Desktop and Plus Privilege** check boxes, to grant or revoke privileges to the currently selected user or role as follows:

- To grant Discoverer Administrator privileges, select individual privileges in the group under the **Administration Privilege** check box. These privileges apply to Discoverer Administrator.
- To grant Discoverer Desktop and Discoverer Plus privileges, select individual privileges in the group under the **Desktop and Plus Privilege** check box. These privileges apply to Discoverer Desktop, Discoverer Plus, and Discoverer Viewer.

<description field>

This field displays a brief description about the currently selected privilege.

Select an Oracle system profile

Use this list to specify an Oracle system profile to apply to the user. This enables you to apply predefined sets of privileges to users and roles.

- system profiles are Oracle-specific
- if you selected a database role or an Oracle Applications responsibility in the **Show privileges for** field, this field is grayed out

Notes

- If your current user ID does not have access to the table DBA_ROLES, only a subset of roles and responsibilities might be visible in the "Select User/Role dialog".
- Administration privilege types available:

Privilege Name	Description
Administration Privilege	Granting this privilege allows the user or role to log in to Discoverer Administrator. Note that to allow the user to access the features in Discoverer Administrator, you must select individual Administration features (privileges) listed below this privilege. This check box must be selected to grant any of the privileges listed below.
Format Business Area	Granting this privilege allows the user or role to edit formatting information in an existing business area to which they have access. Such formatting information includes folders, summary folders, joins, and items. Granting this privilege allows the user or role to specify names, descriptions, default format masks and placement.
Create/Edit Business Areas	Granting this privilege allows the user or role to create and modify business areas, folders, summary folders, joins, calculations, conditions, hierarchies and item classes.
Create/Edit Summaries	Granting this privilege allows the user or role to create summary folders through Discoverer Administrator. Also requires database resource privileges.
Set Privilege	Granting this privilege allows the user to maintain and modify user privileges using this dialog box. **Note:** You cannot grant this privilege to a role.
Manage Scheduled Workbooks	Granting this privilege allows the user or role to monitor and maintain the schedule for scheduled workbooks.

- Desktop and Plus privilege types available:

Privilege Name	Description
Desktop and Plus Privilege	Granting this privilege allows the user or role to log in to Discoverer Desktop, Discoverer Plus and Discoverer Viewer. Note that to allow the user to access the features in Discoverer Desktop, Discoverer Plus, and Discoverer Viewer you must select individual features (privileges) listed below this privilege. This check box must be selected to grant any of the privileges listed below.
Create/Edit Query	Granting this privilege allows the user or role to create new worksheets (queries) and modify existing ones. Without this privilege, the user can only open and run existing (predefined) workbooks and worksheets.
Collect Query Statistics	Granting this privilege saves performance statistics when this user runs worksheets/workbooks (queries).If you clear this check box query prediction estimates might be less accurate. For more information, see "Predicting Query Performance".
Item Drill	Granting this privilege allows the user or role to drill to detail and related information in the worksheet. In addition to granting this privilege, you must create the drill using the Item Class wizard before the user will be able to use this function.
Drill Out	Granting this privilege allows the user or role to launch another application to see related information by drilling on an item in the worksheet. In addition to granting this privilege, you must create the drill using the Item Class wizard before the user will be able to use this function, or have items with the Content Type set to <FILE>.
Grant Workbook	Granting this privilege allows the user or role to grant access to their workbooks so other users can run and view them.
Schedule Workbooks	Granting this privilege, allows the user to schedule a workbook to run at a later time and at regular intervals (daily, weekly, monthly). **Note:** You cannot grant this privilege to a role.

Privilege Name	Description
Save Workbooks to Database	Granting this privilege allows the user or role to save the workbooks they create in the database. By default, Discoverer Desktop workbooks are saved on the user's hard drive. **Note**: You cannot save Discoverer Plus workbooks to a file system. You can save them only to the database.
Change Password	**Note:** This privilege is not used in this release.
Create Link	Granting this privilege enables Discoverer end user to create their own drill links. A drill link is a way to access another worksheet or URL from a particular worksheet cell value.

Privileges dialog: Query Governor tab

Use this tab to view and edit the query configuration for a specified user or role (role is replaced by responsibility for Oracle Applications users). For example, to limit the number of rows that can be retrieved for the user jchan.

For more information, see:

"Controlling Access to Information"

Show query limits for

Use the Select button next to this field to display the "Select User/Role dialog" where you can search for and select the user or role whose query limits you want to change. For example, choose jchan to display the query limit settings for jchan in the Query Governor area.

Query Governor

Warn user if predicted time exceeds... Seconds:

Select this check box to display a warning to the Discoverer end user if a query takes longer than the amount of time specified.

This privilege is only available when using an Oracle database.

Prevent queries from running longer than... Minutes:

Select this check box to limit the query time for the selected user.

Limit retrieved data to... Rows:

Select this check box to limit the number of rows a users query can return. The limit you set here is a maximum. The end user can set a limit that is lower. When a query has reached the maximum number of records set by you or the end user, the query stops and the data retrieved so far is returned to the end user. For example, if the check box is selected and the value 1000 is entered, only the first 1000 rows of a query are displayed on a Discoverer end user worksheet.

Clear this check box for Discoverer to attempt to retrieve all rows in a query. Note that for performance reasons, it is not recommended that you clear this check box when queries might return hundreds of thousands of rows or more.

Privileges dialog: Scheduled Workbooks tab

Use this tab to specify scheduled workbook settings for a specified user or role (role is replaced by responsibility for Oracle Applications users). For example, to limit the number of workbooks that a user can schedule, or to define the expiry date of scheduled workbooks.

For more information, see:

"Scheduling Workbooks"

"About Discoverer and security"

"How to set scheduled workbook limits"

Show scheduling limits for

Use the Select button next to this field to display the "Select User/Role dialog" where you can search for and select the user or role whose scheduling limits you want to change. For example, choose jchan to display the scheduled workbook settings for jchan.

Note: If you select a user or role that does not have schedule workbook privileges, the configuration details are disabled. If you want the user or role to have this privilege, see "How to specify a user or role (responsibility) to perform a specific task":

Select the user to own the tables which store any workbook results

Use this drop down list to select the user name of the database user that will own the scheduled workbooks tables.

<Is user required to schedule workbooks?>

Use these options to specify if or when a user is required to schedule workbooks.

- **User must always schedule workbooks**

  Use this option for a Discoverer end user only to run queries using the scheduled workbooks facility.

- **User is never required to schedule workbooks**

  Use this option to enable users to choose whether they want to run queries using the scheduled workbooks facility.

- **Schedule only if predicted time exceeds (HH:MM:SS)**

  Use this option for users to schedule workbooks if the predicted time to run the query exceeds the value specified in the **Time** field. The maximum value that you can enter here is 23:59:59.

Limit number of scheduled workbooks

Use this check box to specify the maximum number of workbooks that a user can schedule.

Note: This option enables you to prevent users from submitting so many scheduled workbooks that no other jobs on the DBMS_JOB queue can run

Expire results

Use this check box to limit the lifetime of scheduled workbook results (days). Results due for deletion are deleted when the user disconnects from the EUL.

Commit size

Use this check box to specify the number of rows that are committed to the result table at a time, when Discoverer processes the scheduled workbook. For example, if 1000 rows need to be written and the Commit size is 100, 10 writes are performed. On large result sets, server performance is improved by setting the commit size higher than the default (although little gain will be achieved by setting the Commit size higher than 1000).

Restrict the hours during which a workbook may be scheduled

Use this check box to specify when a user can schedule workbooks. This could be exploited to prevent users from scheduling workbooks at peak times.

Privileges dialog: User/Role tab

Use this tab to configure specific privileges for users and roles. For example:

- to look at which users and roles have Administration privileges
- to check that a group of roles have the Save Workbooks to Database privilege
- to revoke drill out privileges for specified users

Note that Oracle Applications users have responsibilities instead of roles.

For more information, see:

"About Discoverer and security"

"How to specify a user or role (responsibility) to perform a specific task"

Show users/roles with privilege

User this drop down list to choose a privilege that you want to look at. For example, choose Save Workbooks to Database to display the users and roles that have this privilege in the **Show** field.

Users

Use this check box to look at user privileges.

Roles

Use this check box to look at role privileges. This option is only available when you are using an Oracle database.

Show: *(Users/Roles list)*

This field displays all users and roles and whether they have the currently selected privilege. A privilege is applied to a user or role when the check box next to the user or role is selected. The list is updated when you select a new privilege in the **Show users/roles with privilege** field.

- To grant a privilege, select the check box next to the user or role that requires the currently selected privilege.
- To revoke a privilege, clear the check box next to the user or role that does not require the currently selected privilege.

Privilege Description

This field displays additional information about the currently selected privilege.

Properties dialogs

Choose one of the following help topics:

- "Business Area Properties dialog"
- "Condition Properties dialog"
- "Folder Properties dialog"
- "Item Properties dialog"
- "Join Properties dialog"
- "Summary Properties dialog"

Refresh Business Area dialog

Use this dialog to look at differences that have been found between the folders and items in the current business area and source tables in the database to which they link. For example, if a new primary key has been detected in the source database, you can use this dialog to correct this in the business area and continue the refresh. You can also assess the impact that changes will have on other objects in the business area.

For more information, see:

"Creating and Maintaining Business Areas"

"How to synchronize a business area with the database"

Name

This field displays the name of the item that is different.

Type

This field displays the type of change that has occurred. For example, the source table has a new foreign key.

Actions

This field displays the effect that completing the refresh will have on the object and the check box enables you to switch the action on or off.

OK

Use this button to start the refresh using the options selected.

Impact

Use this button to display the "Impact dialog". The Impact dialog displays a list of objects that will be affected or removed if you refresh this business area.

Refresh Summaries dialog

Use this dialog to refresh the currently selected summary folder. For Oracle Enterprise Edition databases you can also specify an incremental refresh if available (for more information, see the *Oracle Database Data Warehousing Guide* for conditions).

For more information about refreshing summary folders, see:

"How does ASM work?"

"Why must you refresh summary data?"

"What happens when a summary folder is refreshed?"

When would you like to refresh this summary?

- **Refresh the summary immediately**

  Use this option to refresh the selected summary folder immediately. Refresh will begin after clicking OK.

  This option is useful when you have smaller materialized views or summary tables, or when you need to refresh the summary folder right away, without relying on the scheduling capabilities of the database server. Discoverer Administrator displays a progress bar enabling you to monitor the refresh.

- **Schedule the refresh at a later time**

  Use this option to enable the **Date** and **Time** fields where you can use the arrow buttons or type into the fields to select a later date and time when you want the refresh to occur.

  This option submits a job to the queue using DBMS_JOB and immediately returns you to Discoverer Administrator (rather than waiting for the refresh to be complete) enabling you to continue working. This option is useful when you have larger materialized views or summary tables, which are best built during off-peak hours.

Perform Incremental refresh

Select this check box to perform an incremental refresh, available against Oracle Enterprise Edition databases only.

An incremental refresh is faster than a full refresh as it incrementally adds the new data that has been inserted into the tables.

During a summary folder refresh with Oracle Standard Edition databases a full table scan is carried out.

Clear this check box to refresh the summary using a full table scan.

Notes

- The length of time taken for the refresh to complete depends on the data volume and the current database engine load.
- For further information on the conditions required for incremental refresh, please see *Oracle Database Data Warehousing Guide*.

Refresh Wizard dialog

Use the Refresh Wizard to refresh business areas in the current End User Layer. For example, when you make modifications to the database, the refresh facility synchronizes the business area with the data dictionary, incorporating database modifications into the business area.

Refresh Wizard Step 1

Use this dialog to specify how you want a business area to be refreshed.

Refresh business areas from:

- **On line dictionary**

  Use this option to refresh the business area from the Oracle database tables on which the business area is based.

- **Gateway**

  Use this option to refresh the business area from the source that you select from the drop down list.

Finish

Use this button to start the refresh process from the online dictionary.

Notes

- If you choose the Gateway check box, click Next to display the Refresh Wizard Step 2.

Refresh Wizard Step 2

Use this dialog to select the gateway application that you want to refresh from.

Select the application you want to refresh from

Use this drop down list to select the gateway application that you are using as the source for the current EUL.

Finish

Use this button to start the refresh process from the selected gateway application.

Repository Users dialog

There might be a single database user that all Discoverer end users can exploit, or different ones created for each database user. The advantage of having a single database user is that individual end users do not need additional privileges to process scheduled workbooks, but the disadvantage is that space quota is shared, and so could be exhausted by a single user. Having multiple repository users provides a greater degree of control.

Responsibilities dialog

Use this dialog to select an Oracle Applications responsibility with which to connect to an Oracle Applications EUL.

For more information, see:

"Using Discoverer with Oracle Applications"

Responsibility list

Use this drop down list to select the responsibility that you want to connect to the database with.

OK

Use this button to connect to the database as the selected responsibility.

Schedule Workbook dialog: General tab

Use this dialog to:

- edit the description of a scheduled workbook
- specify the interval between when Discoverer processes the scheduled workbook and when you want Discoverer to delete results automatically

For more information, see:

"Scheduling Workbooks"

Name this scheduled workbook:

This read-only field displays the name of the scheduled workbook.

Description:

Use this field to enter additional information about the scheduled workbook. Discoverer end users will see this information when deciding which workbook to open.

Scheduled workbooks save results each time they run. Do you want to keep all versions of results?

- **Yes, keep all results**

  Use this option when you do not want to delete results sets when new results sets are created. For example, for a monthly report, do not delete the January and February results set when the March results set is created.

- **No, just keep the latest set of results**

  Use this option when you do want to delete old results sets when new results sets are created. For example, for a monthly report, delete the January results set when the February results set is created.

How long do you want to keep the results?

Delete results automatically after: _ days

Use this spin box to specify the interval in days between running this workbook and automatically deleting the workbook results. For example, you might want to delete the results set of a weekly report every seven days.

Parameters...

Use this button to display any parameters used in this scheduled workbook.

Scheduled Workbook dialog: Parameter values

Use this dialog to view parameter values required by worksheets. For example, a workbook might use the parameter '2001' when it is required to display data for the year 2001.

For more information, see the *Oracle Fusion Middleware User's Guide for Oracle Business Intelligence Discoverer Plus*.

Parameter list

This area contains one or more fields in which you view the parameter values for the scheduled worksheet. Each field can also display a name.

Schedule Workbook dialog: Schedule tab

Use this dialog to specify when you want Discoverer to process the scheduled workbook. For example, you might want Discoverer to process a workbook at 1:00 a.m. every Sunday morning.

For more information, see:

"Scheduling Workbooks"

Sheets included in the scheduled workbook:

Lists all the sheets included in the currently selected scheduled workbook.

Schedule this workbook on:

Use these fields to specify when you want Discoverer to process the scheduled workbook.

Time:

Use this spin box to specify the time at which you want Discoverer to process the scheduled workbook. The current time is displayed by default.

Date:

Use this spin box to specify the date on which you want Discoverer to process the scheduled workbook. The current date is displayed by default.

How often do you want to repeat this schedule?

Use these fields to specify how often you want Discoverer to process this scheduled workbook.

- **Never**

  Use this option when you want Discoverer to process a scheduled workbook only once. For example, for an occasional report requested by your manager.

- **Repeat every:**

  Use this option when you want Discoverer to process a scheduled workbook at regular intervals. For example, once per day or once per month.

Security dialog: Business Area - > User tab

Use this tab to grant or revoke multiple user access to a single business area. For example, to give a group of Discoverer end users access to the Video Store Tutorial business area so that users can use the sample data to learn about Discoverer Plus.

To grant a single user access to multiple business areas at once, use the "Security dialog: Users - > Business Area tab".

For more information, see:

"Controlling Access to Information"

Business area

Use this drop down list to select the business area to which you want to grant access. The drop down list displays business areas that you currently have open. If you cannot see the business area to which you want to grant access, reconnect to Discoverer and open that business area.

Available users/roles

Use this field to choose which users and roles you want to grant access to the selected business area. To grant access, move user names and roles from the **Available users/roles** field to the **Selected users/roles** field.

Selected users/roles

Use this field to see which users have access to the selected business area. To revoke access, move user names and roles from the **Selected users/roles** field to the **Available users/roles** field.

Show

Users

Use this check box to display Discoverer users in the **Available users/roles** field.

Roles

Use this check box to display Discoverer roles in the **Available users/roles** field.

Allow Administration

Use this check box to grant both access and administration rights to the users selected in the **Selected users/roles** field. The operations the user can perform on the granted business area depend on the user's Administration privileges.

Notes

- Before displaying the folders in a business area, Discoverer checks if the user has database access to the tables referenced in the folders. If they don't have the necessary permission, Discoverer does not display the folders. You can override this check by changing the value of the ObjectsAlwaysAccessible registry setting (for more information, see ObjectsAlwaysAccessible in "Discoverer Registry Settings").
- When logged in as an Oracle Applications user, the term Role is replaced with Responsibility.

- You can select more than one user or role by pressing the Ctrl key and clicking another user or role.

Security dialog: Users - > Business Area tab

Use this tab to grant or revoke user access to multiple business areas. For example, to grant a new Discoverer end user access to several business areas in the End User Layer.

To grant multiple users access to a single business area, use the "Security dialog: Business Area - > User tab".

For more information, see:

"Controlling Access to Information"

User/Role

Use the Select button next to this field to display the "Select User/Role dialog" where you can search for and select the user or role that requires access.

Available business areas

Use this field to choose which business areas you want to grant access to the selected user or role. To grant access, move business areas from the **Available business areas** field to the **Selected business areas** field.

Selected business areas

Use this field to see which business areas the selected user or role has. To revoke access, move business areas from the **Selected business areas** field back to the **Available business areas** field.

Allow Administration

Use this check box to grant both access and administration rights on the selected business areas to the user selected.

Notes

- Before displaying the folders in a business area, Discoverer checks if the user has database access to the tables referenced in the folders. If they don't have the necessary permission, Discoverer does not display the folders. You can override this check by changing the value of the ObjectsAlwaysAccessible registry setting (for more information, see ObjectsAlwaysAccessible in "Discoverer Registry Settings").
- When connected to Discoverer as an Oracle Applications user, the term Role is replaced with the term Responsibility.
- You can select more than one business area by pressing the Ctrl key and clicking another business area.

Select User/Role dialog

Use this dialog to search for and select the database user or role (or Oracle Applications responsibility) which you want to display privileges, query limits and scheduling limits. For example, to narrow your search you might want to list only database usernames that begin with the letter C.

This dialog is also displayed as:

Select User dialog

For more information, see:

"About Discoverer task privileges"

"Privileges dialog: Privileges tab"

"Privileges dialog: Query Governor tab"

"Privileges dialog: Scheduled Workbooks tab"

Search in

Use this drop down list to specify whether to search for users or roles (or Oracle Applications responsibilities).

Search by

Use this drop down list to specify how you want to match against the value that you type in the **Search for** field. For example, to find all database usernames starting with the letter T, choose Starts With and type T in the **Search for** field.

Search for

Use this field to enter the text that you want to search for. For example, to find all database usernames starting with the letter T, type T and choose Starts With from the **Search by** drop down list. You can also use the wildcards % and _. For example, if you enter the text N%, Discoverer Administrator will search for all usernames that start with the letter N. However, if you enter N_T, Discoverer Administrator will search for usernames that start with N and where the third letter of the username is T.

Case Sensitive

Use this check box to specify whether you want to match upper and lowercase letters exactly when searching (for example, when selected, the search term 'New York' would find 'New York', but would not find 'NEW YORK', 'new york', or 'new York').

Go

Use this button to start the search according to the search criteria that you have specified and display matching values in the Results list below.

Use this button to start the search according to the search criteria that you have specified and display matching values in the **Results** list up to a maximum of 100,000 rows. The maximum number of rows displayed here is determined by the Registry setting MaxNumListRows (for more information, see "What are the Discoverer Administrator and Discoverer Desktop registry settings?").

If you click **Go** when the **Search for** field is empty, all users/roles specified by the **Search In** value are displayed.

Results

This list displays the results of the search. Use this list to select a database user (or role). Select a name in the list and click OK.

Notes

- Discoverer displays an error message if the number of rows returned from a search exceeds 10,000 (for more information about changing this limit, see "What are the Discoverer Administrator and Discoverer Desktop registry settings?").

Summary Properties dialog

Use this dialog to view and configure properties for this summary folder. For example, to look at the status, or change the next refresh date for a summary folder.

For more information, see:

"Managing Summary Folders"

"What are summary folders?"

"What are Discoverer summary tables?"

"What are materialized views?"

"Why must you refresh summary data?"

Name

Use this field to enter a name for the summary folder.

Description

Use this field to enter a description for the summary folder.

Type

This read-only field indicates whether a summary folder is managed or external.

- Managed summary folder

  Managed summary folders have their data refreshed at intervals you specify. Managed summary folders can contain many summary combinations. Discoverer can create the materialized views required, and enables you to specify summary folder name, summary item names, and storage properties for summary folders you create. Alternatively you can pre-create the summary tables, and simply tell Discoverer the table owner and name.

- External summary folder

  External summary folders contain tables created by an application external to Discoverer. The column and item names might differ from those in Discoverer. With this option, you register each external table and map its columns to items in the End User Layer. You can specify that Discoverer takes over management of the external summary folder, so that Discoverer can populate the materialized view and refresh the summary folder.

Available for queries

Use this field to specify whether this summary folder can be used for worksheets run in Discoverer Plus. For example, when a Discoverer end user opens a worksheet that displays items from this summary folder Discoverer Plus might use the summary folder to display the worksheet results.

Status

This read-only field displays the current point in the life cycle of this summary folder. Only summary folders that have the status Complete, are available for queries.

The following list explains the meaning of values displayed in the Status field:

- Pending

The summary refresh job is scheduled on DBMS_JOB queue, but has not yet started execution.

- Under construction

  The summary refresh job has started, and is inserting the rows into the materialized view.

- Unusable

  Discoverer has created a new summary a folder but has not yet refreshed it for the first time (Oracle Enterprise Edition databases).

- Stale

  The summary folder data is inconsistent with the detail data for a materialized view (Oracle Enterprise Edition databases).

- Complete

  The summary folder is complete and ready for use.

- Failed

  The summary refresh job fails and Oracle displays a database error.

- Refresh Required

  The end user must refresh the summary folder before it can be used. This normally happens only when the Discoverer manager has changed folder, item or join definitions in a way that requires the summary folder to be rebuilt. Discoverer displays the following reasons when refresh is required:

  - Incompatible with database version

    The EUL definition of the materialized view is incompatible with the version of the database. This can occur if a database export/import of the EUL has occurred across database versions. For example, from an Oracle Standard Edition database to an Oracle Enterprise Edition database.

  - EUL has changed

    Dependent EUL item has changed its definition. For example, the formula of an item used in the summary folder.

  - Server has changed

    The definition of the materialized view in the database is inconsistent with the definition in the EUL (Oracle Enterprise Edition databases).

- External

  This summary folder is external and uses summary tables created in an application external to Discoverer.

Last refreshed

This read-only field displays the date when this summary folder last received up-to-date data from the database. This is only available for managed summary folders.

Next Refresh

Use this field to change the date when this summary folder will next receive up-to-date data from the database. This is only available for managed summary folders.

Refresh Interval

Use this field to change how often this summary folder receives up-to-date data from the database. This is only available for managed summary folders.

Identifier

Use this field to change the unique identifier that Discoverer uses to identify EUL and workbook objects. Discoverer uses identifiers to locate objects in different EULs that refer to the same business object.

Automatically save changes after each edit

Use this check box to save changes each time a field in this dialog is updated.

Summary Wizard (ASM): List of dialogs

The Summary Wizard enables you to use the Automated Summary Management facility to create and maintain the best set of summary folders for your organization's needs with the minimum of manual intervention.

For more information about ASM Summary Wizard dialogs, see:

"Summary Wizard: Step 1 dialog"

"Summary Wizard (ASM): Step 2 Analyze Folders dialog"

"Summary Wizard (ASM): Change default settings: List of dialog tabs"

"Summary Wizard (ASM): Step 3 Allocate Space dialog"

"Summary Wizard (ASM): Not Analyzed dialog"

"Summary Wizard (ASM): Recommended Summaries dialog"

Summary Wizard (ASM): Change default settings: List of dialog tabs

The preset default values found within Advanced Settings enable ASM to create and maintain the best set of summaries for your needs. If you want you can further refine the default setting to alter how ASM creates and maintains your summaries.

The Advanced Settings define which objects in the database to consider for inclusion in the ASM process and influence what ASM produces.

The Advanced Settings (Change Default Settings dialog) displays the following tabs:

"Summary Wizard (ASM): Change default settings dialog: Analyze tab"

"Summary Wizard (ASM): Change default settings dialog: Folders tab"

"Summary Wizard (ASM): Change default settings dialog: Query User tab"

"Summary Wizard (ASM): Change default settings dialog: Query Usage tab"

"Summary Wizard (ASM): Change default settings dialog: Deletion tab"

Summary Wizard (ASM): Change default settings dialog: Folders tab

Use this tab to specify which folders are analyzed by ASM. By default all folders are included. For example, you might have a large data warehouse and want to only analyze the most important folders (for instance the fact tables) to reduce analysis time.

For more information, see:

"Managing Summary Folders"

Available

This list displays folders that are not included in the ASM analysis. Choose folders for analysis by moving folders from the **Available** list to the **Included** list.

Included

This list displays folders that are included in the ASM analysis. Remove folders from the ASM analysis by moving folders from the **Included** list to the **Available** list.

Notes

- You can select more than one folder by pressing the Ctrl key and clicking another folder.

Summary Wizard (ASM): Change default settings dialog: Analyze tab

Use this tab to specify which folders to analyze and specify an optimization level. For example, to perform a complete analysis on all folders, not just those that have not already been analyzed.

For more information, see:

"Managing Summary Folders"

How do you want to analyze the selected folders?

- **Only analyze folders that have not already been analyzed**

  Use this option when you have partly analyzed some folders previously, and want to analyze the rest. When summary data has been held for more than the period specified by the **After _ days** field, this data is also re-analyzed.

- **Analyze ALL folders regardless**

  Use this option when you want to analyze every folder in the EUL.

When would you like a folders analysis to expire?

After _ days

Use this field to specify how long to use analyzed summary data. After this period, folders will be re-analyzed when you run ASM. The default for this is 30 days.

How would you like the analysis to be optimized?

Use this slider bar to increase the speed of analysis or the range of folders analyzed.

Max Speed

At this level, around 10% of folders are analyzed. This level produces a basic set of summaries without taking too long. For example, if you have a large data warehouse and want to minimize analysis time.

Normal

At this level, you get an equal balance between speed and range.

Max Accuracy

At this level, 100% of folders are analyzed (default setting). This setting enables the widest range of summaries to be created by ASM. For example, if you have a relatively small data warehouse or where analysis time is not an issue.

Summary Wizard (ASM): Change default settings dialog: Deletion tab

Use this tab to configure how you purge (remove) summary folders that are out-of-date. For example, to make more space available in the database.

For more information, see:

"Managing Summary Folders"

Delete specific summary folders if

Last queried more than _ days ago

Use this field to delete summary folders if they were last used by Discoverer end users more than the number of specified days. For example, delete summary folders not used for seven days.

Created more than _ days ago

Use this field to delete summary folders if they were created before a specified time. For example, delete summary folders created more than two weeks ago.

Average usage less than _ times per _ over the last _ _

Use these fields when you want to finely control which summary folders are purged. For example, delete summary folders used less than ten times per week over the last two weeks.

Always retain the following summaries

Use this check box to exclude particular summary folders from the purge. For example, to maintain important summary folders that you always need to use.

Summaries to be retained

This field displays folders that are excluded from the purge. Include folders in the purge by moving folders from the **Summaries to be retained** field to the **Available summaries** field.

Available summaries

This field displays all folders that are included in the purge. Select folders to be excluded from the purge by moving folders from the **Available summaries** field to the **Summaries to be retained** field.

Notes

- You cannot move external summary folders from the **Summaries to be retained** field.
- If you try to move an external summary folder from the **Summaries to be retained** field to the **Available summaries** field a warning message appears and the summary folder remains in the **Summaries to be retained** field. Discoverer does not delete external summary data as it does not own it. Also deleting the metadata associated with external summary tables would not yield any great space gain which is why it is not done.

Summary Wizard (ASM): Change default settings dialog: Query Usage tab

Use this tab to select which queries are considered for summary recommendation. For example, to include only queries run at a specific time when Discoverer Plus users are working.

For more information, see:

"Managing Summary Folders"

Include

Use this drop down list to define which queries are considered for ASM.

All queries

Use this option to consider recommendations for summaries based upon all queries previously run.

Queries run since last execution

Use this option to consider recommendations for summaries based upon those queries run since the last execution of ASM.

Specific queries

Use this option to consider queries run at particular times, specified below.

- Which have been run in the last x days
- Which have been executed more than x times per minute/day/week/month/year
- Where elapsed time is greater than x seconds

Move the slider to the position which best reflects the nature of your users queries

Use this slider bar to determine whether during analysis the constructed summary data favors predetermined (performance) or ad hoc (coverage) queries.

Predetermined

Use this setting to optimize the summaries maintained by ASM to reflect historical queries. In other words, the summaries will give great performance improvements where queries stay much the same over time.

For example, ASM might recommend a list of five exact match summaries, corresponding one-to-one with previously run queries (where ASM determines there is a benefit).

Mixed

A balance between predetermined and ad hoc queries (the default).

Adhoc

Use this setting to increase the coverage of a summary giving a potential performance gain for queries that have never been run before, but are closely related to previous system usage. However, the cost of this is that the individual performance gain for the previously run queries might not be as high.

For example, ASM might combine the five exact-match summaries to form fewer but more general summaries. These would benefit not only the five previously run queries but also a greater number of other potential queries (that is, there would be a gain in overall coverage).

Summary Wizard (ASM): Change default settings dialog: Query User tab

Use this dialog to use Query Performance Statistics (QPP) from selected users in the ASM process. For example, to base ASM on a sub-set of users that require maximum performance when using Discoverer Plus.

For more information, see:

"Managing Summary Folders"

Available

This list displays users that are not included in the ASM process. Select users for analysis by moving users from the **Available** field to the **Included** field.

Included

This list displays users that are included in the ASM process. Remove users from the ASM process by moving users from the **Included** field to the **Available** field.

Notes

- You can select more than one user by pressing the Ctrl key and clicking another user.

Summary Wizard (ASM): Not Analyzed dialog

Use this dialog to specify how you deal with folders that cannot be analyzed. For example, when you do not have analyze privileges on a particular database.

This dialog is also displayed as:

Not Analyzed dialog

For more information, see:

"Managing Summary Folders"

_ out of _ folders could not be analyzed. Would you like those folders to be excluded from the automatic summary creation?

Yes

Use this button to exclude folders that could not be analyzed.

No

Use this button to include folders that could not be analyzed.

Help

Use this button to get more information about the folders that could not be analyzed.

Notes

Use these notes to understand, and help resolve the following issues:

- You do not have ANALYZE privileges for a given object/table

  To ANALYZE a table, you need one of the following:

  - to be the owner of that table
  - to have general ANALYZE privileges for the database (for example, through 'grant ANALYZE any to me')

  Where one of the underlying tables that make up a folder does not fit the above rules, that folder is not analyzed. In other words, if one or more tables within a folder cannot be analyzed then the whole folder is treated as if it cannot be analyzed.

- When a folder is Invalid

  How you fix this depends on why a folder is marked as invalid.

  To display the error message associated with an invalid folder go to View | Validate Folders.

- You are trying to ANALYZE over a DB-Link

  If a folder refers to a table that resides on a database accessed over a DB-Link then ANALYZE will fail. This operation is not supported in the Oracle Server.

- When Discoverer cannot determine or access the full list of tables that constitute a folder.

  A Discoverer folder can contain more than one underlying database table or view. Getting a full set of the underlying tables might be impossible. For example:

- Where a view is based upon another view and the ASM user has access to the top level view, but not to the referenced view underneath.

This makes it impossible for the ASM user to see which database tables are actually used to make that view.

- When folders do not fully resolve to tables

  This should only really apply to the server dynamic tables (for example, the V$ tables, and many DBA_tables). Not all these views and tables resolve to physical tables; some of them are stored in memory, thus they cannot be analyzed.

  For example:

  - V$_LOCKS

  Although you can run queries on this kind of table/view, in practice it makes sense not to have summaries built on them as the summarized data would soon be out of date.

Summary Wizard (ASM): Recommended Summaries dialog

Use this dialog to look at which summaries Discoverer intends to use and change the included list if required. Discoverer might mark existing summaries for deletion when they fall outside the current ASM policy.

This dialog is also displayed as:

Recommended Summaries dialog

For more information, see:

"Managing Summary Folders"

Include

Use this check box to include a recommended folder in the ASM summary creation/deletion process.

Action

This field displays the action that will be carried out as part of the ASM process if the **Include** check box is selected.

Name

This field displays the Discoverer folder name.

Existing space used

This field displays the amount of space currently being used for summary folders.

Total space required

This field displays the total amount of space that is needed for the recommended summary folders.

Notes

- When you first display the Recommended Summaries dialog, the summary folders that Discoverer recommends for the allocated space are selected. So if you click the **Finish** button in the main wizard, the summary folders that are selected are either created or deleted, depending on whether **Create** or **Delete** is displayed in the **Action** field. You can change which summary folders are created (or deleted) by selecting or deselecting check boxes from the list of recommended summaries.
- The right hand pane lists the currently selected summary folder components.
- The total space required for the selected summaries is displayed underneath.
- The method used to derive the figure for the **Total space required** from the list of recommended summaries is as follows:

  The amount of space required is totalled and displayed in the **Total space required** field. Where summary folders are to be deleted, the space that was used by the summary folders to be deleted is made available for use by one of the other summary folders listed. The effect is that the figure for the **Total space required** is reduced by the sum of the KB of any summary folders to be deleted.

- Discoverer will not generate summary folder recommendations based on items from base folders that are defined as reach though enabled (for more information, see "What is complex folder reach through?").

Summary Wizard (ASM): Step 2 Analyze Folders dialog

Use this dialog to automatically analyze your database structure and recommend which summaries you need.

This dialog is also displayed as:

Summary Wizard: Step 2 dialog

For more information, see:

"Managing Summary Folders"

(Progress indicator)

Use this bar to monitor the progress of the database analysis. When analysis is in progress, the cube above the bar revolves.

Start

Use this button to begin the folder analysis.

The first time this process is run, the analysis is based on default values. Any changes made to these values (through Advanced Settings) will be applied during subsequent folder analysis.

Continue

Use this button to resume folder analysis after you have stopped the process using the Stop button.

Stop

Use this button to pause the folder analysis.

- To resume the folder analysis, use the Continue button.
- To stop folder analysis, use the Cancel button.

Total folders in policy

This field displays the number of folders included in the ASM policy.

Folders analyzed

This field displays the number of folders in the ASM policy that have been analyzed.

Advanced Settings

Use this button to display the "Summary Wizard (ASM): Change default settings dialog: Analyze tab", where you can edit a range of default settings upon which folder analysis is based (known as the ASM Policy).

Notes

- If you pause folder analysis, then change the ASM Policy, when you resume the process the new ASM Policy is used.

Summary Wizard (ASM): Step 3 Allocate Space dialog

Use this dialog to specify the ASM performance required against the amount of tablespace available for ASM. For example, to maximize ASM performance using the minimum of tablespace. You can also analyze the performance gain achieved by increasing the amount of tablespace.

For more information, see:

"Managing Summary Folders"

Performance vs. Space (KB)

Use this graph to evaluate the performance gain achieved by using the specified amount of allocated tablespace. As you change the amount of tablespace, you can see the performance impact displayed as a factor value.

- The dotted line indicates the amount of tablespace available.
- The red line indicates the amount of tablespace selected.
- The plot line shows the performance gain achieved by selecting various amounts of tablespace.
- To change the selected space setting, either:
  - click the graph area and drag the red line to the left or right
  - drag the triangle above the Space (KB) axis to the left or right
  - click the graph area to the left of right of the red line
  - enter the amount of tablespace you want to use (in KB) in the Create summaries to fill field

Tablespace to use for summaries

Use this drop down list to specify which tablespace you want to use to store the summary tables.

Create summaries to fill

Use this field when you know how much tablespace is available and you want to evaluate the performance for the value.

Estimated performance gain

This figure is a factor value that represents the number of times faster that queries will run if ASM creates the recommended summaries.

Recommended Summaries

Use this button to display the "Summary Wizard (ASM): Recommended Summaries dialog", where you specify which summaries will be created/removed for optimum performance gain given the space currently allocated.

Advanced Settings

Use this button to display the "Summary Wizard (ASM): Change default settings: List of dialog tabs", where you define the ASM policy.

Notes

- When choosing a tablespace, it is recommended that you place summaries in a separate tablespace specifically intended for summary data. If such a tablespace does not exist, we strongly recommend you do not use the SYSTEM or TEMP tablespaces.

Summary Wizard: Step 1 dialog

Use this dialog to specify how you want to create Discoverer summary folders. For example, to have Discoverer automatically create summaries for you.

For more information, see:

"Managing Summary Folders"

"Creating Summary Folders Manually"

How do you want to create these summaries?

- **Have Discoverer recommend and create the best summaries for you**

  Use this option when you want Discoverer to automatically create summary folders for you. Here, you display the "Summary Wizard (ASM): Step 2 Analyze Folders dialog", which enables you to automatically analyze your tables and recommend which summary folders to create.

  Note: If this option is disabled, select Help | Database Information to display the "Database Information dialog" where Discoverer displays reasons why ASM might not be available. For more information about why this option might be disabled, see "What are the prerequisites for creating summary folders with ASM?".

- **I want to create the summaries myself**

  Use this option when you want to create summary folders manually. Here, you display the "Summary Wizard: Step 2 dialog".

Summary Wizard: Step 2 dialog

Use this dialog to choose how to create summary folders. For example, to use query statistics collected on Discoverer Plus users to determine which summaries to create.

For more information, see:

"Creating Summary Folders Manually"

"Managing Summary Folders"

How do you want to create this summary folder?

- **From items in the End User Layer**

  Use this option to create summary folders from an existing set of folders in the End User Layer (for more information, see "How to specify the tasks a user or role (responsibility) can perform").

  You might select this option if, for example:

  - you have switched off the Collect Query Statistics privilege (for more information, see "How to specify the tasks a user or role (responsibility) can perform")
  - you want to manually select the combinations of EUL items that make up a summary folder

- **Based on query performance statistics**

  Use this option to create summary folders based on Discoverer queries that were run previously. This powerful facility means that you do not have to choose the items yourself. After you create the summary folder based on previous queries, you can add items and combinations, tailoring it to your users' needs (for more information, see "How to create summary folders based on users' queries").

  Query performance statistics are automatically generated when queries are run in Discoverer Plus if the Collect Query Statistics privilege is switched on for users (for more information, see "How to specify the tasks a user or role (responsibility) can perform").

  You might select this option if you know that you want to create one or more summary folders based upon specific queries, but you do not necessarily want Discoverer to create any other summary folders.

- **Based on an external summary table**

  Use this option to use external summary folders containing tables created with an application external to Discoverer. The column and item names might differ from those in Discoverer. With this option, you will register each external table and map its columns to items in the End User Layer. You can specify that Discoverer take over management of the summary folder, so that it can populate the table and continue to refresh its data (for more information, see "How to create summary folders based on external summary tables").

Summary Wizard: Step 3 dialog (using query statistics)

Use this dialog to specify how you collect query statistics for estimating best summaries. For example, to use query statistics where queries exceed a specified amount of CPU time.

This dialog is also known as:

Summary Wizard: Step 3 dialog

For more information, see:

"Creating Summary Folders Manually"

"Managing Summary Folders"

Specify search criteria to obtain statistics on query performance, then click "Search"

Use these criteria to search for statistics to populate the **Select a query to be summarized** field.

Show query statistics from within the last _

Use this field to specify how recent the query statistic must be to qualify for the query list.

Average CPU Time exceeds _

Use this field to specify the minimum time required to execute the query on the database server.

Average elapsed time exceeds _

Use this field to specify the minimum time required to execute the query on the client workstation.

Number of queries exceeds _

Use this field to specify the minimum number of runs executed for the selected query. The runs might have been executed by different users at different times, but all used the same combination of folders and items.

Search

Use this button to search for query statistics matching the search criteria specified above and display them in the **Select a query to be summarized** list.

Select a query to be summarized

This list displays query statistics matching the search criteria specified.

Select a query from the list to display the query's folders, joins and items in the lower right panel of the dialog, and activate the Next button.

The #Hits column records the number of times a query has been run by end users.

Notes

- Summary folders built using Query statistics are refreshed by Discoverer.

- A check mark or cube icon indicates that the current query has found a matching summary folder from a previous query. The symbol indicates an exact match that includes all objects.

Summary Wizard: Step 3 dialog (using external tables)

Use this dialog to map an external database table to the End User Layer (EUL). Run the Summary Wizard once for each external table you want to register.

External summary folders reference tables created with an application external to Discoverer. The column and item names might differ from those generated by Discoverer.

This dialog is also displayed as:

Summary Wizard: Step 3 dialog

For more information, see "Creating Summary Folders Manually"

Select an external summary table

Use the Select button to display the "Choose user or table/view dialog", where you select a table within the current database.

Available Items

Use the drop down list to select the business area that you want to map to the external summary table.

Use the field to map EUL items (for the current business area) to corresponding database columns in the external summary table displayed in the **Mapped Items** field.

Map items in one of the following ways:

- Drag and drop

  Drag an item from the **Available items** field into the corresponding database column in the **Mapped items** field.

  Drag a folder from the **Available items** field into the **Mapped Items** field to map all the columns in the external summary table to End User Layer items in a single operation. Discoverer automatically matches the items of similarly named database columns in the external summary table. Repeat this procedure for multiple folders if the external summary table maps to items in more than one folder in the EUL.

- Include button

  Select a database column in the **Mapped Items** field and a corresponding item in the **Available items** field and click the include button (right arrow) and Discoverer matches both in the **Mapped Items** field.

- Double click

  Select an database column in the **Mapped Items** field and then double click the corresponding item in the **Available items** field.

Mapped Items:

The database columns in the external summary table mapped to corresponding items in the EUL

- Item

  The item in the EUL mapped to a corresponding database column in the external summary table.

- Database Column

  The database column in the external summary table mapped to a corresponding item in the EUL.

- Datatype

  Data type and size of the database column.

Using Help

Oracle Business Intelligence Discoverer Administrator provides comprehensive online context sensitive Help and reference information.

For more information, see "About Discoverer Administrator documentation and online help".

Values dialog

Use this dialog to select one or more values to use when you create or edit a condition.

For more information, see:

"What are conditions?"

Discoverer displays this dialog when you choose the Select Multiple Values option from the drop down list in the Values field of the New/Edit Condition dialog.

Select values:

Select one or more check boxes next to corresponding values to include the selected values in the Value(s) field in the Conditions dialog.

Use the Select All button to select all the values displayed in the **Select Values** field.

Use the Select None button to clear all the values displayed in the **Select Values** field

The value(s) you select here are used in the current condition statement of this condition.

Workarea: Data tab

Use the Data tab to view the business areas, folders and items in the EUL that Discoverer end users see in Discoverer Desktop, Discoverer Plus and Discoverer Viewer. Folder items include axis items, data point items, joins, conditions, and calculated items. Discoverer Administrator displays folders and items that might be hidden to end users.

For more information, see:

"What is the Workarea?"

"About the tabs in the Workarea window"

In the Data tab you can move items from one folder to another. You can also create, edit and delete folders, complex folders, items, conditions, joins and delete business areas.

Note: If you change the name of a primary element (folder or item) in this tab, it might affect the name of each secondary element whose Auto generate name property is set to Yes. If you change the name of a primary element when dependent secondary elements have their Auto generate property set to Yes, Discoverer will reset the Auto generate property for each dependent secondary elements to No. For more information, see "About generating and updating EUL item names automatically".

Use the Properties dialog to examine and modify many attribute values, and to view the types and names of dependents for business areas, folders and items.

Workarea: Hierarchies tab

Use the Hierarchies tab to view the hierarchies in the EUL grouped by business area. Discoverer end users can use hierarchies in worksheets to drill down through hierarchically organized items.

For more information, see:

"What are hierarchies?"

"About the tabs in the Workarea window"

Show

Use this drop down list to change which types of hierarchy are displayed. You can choose to view user or system defined hierarchies, and choose to display the different types of hierarchies (for example, item, date or all hierarchies).

Notes

- You can review the contents and the organization of each hierarchy and view the hierarchy templates provided by Discoverer Administrator.

Workarea: Item Classes tab

Use the Item, Classes tab to view item classes in the EUL grouped by business area.

For more information, see:

"Maintaining Items and Item Classes"

Show

Use this drop down list to change which types of item class are displayed. You can choose to view user or system defined classes, and choose to display the different types of class (for example, list of values or alternative sort).

Notes

- You can review the list of values assigned to an item class, in each item class folder. When you open a list of values folder Discoverer displays each unique occurrence of data values as a set. This display clearly shows which items use a particular item class.

Workarea: Summaries tab

Use the Summaries tab to manage summary folders in the EUL grouped by business area. From here you can:

- create new summary folders
- edit summary folders
- refresh summary folders
- delete summary folders
- examine summary folders properties
- validate summary folders

For more information, see:

"What is the Workarea?"

"About folders and summary folders in Discoverer"

Summaries tab

Use the list to select a summary folder.

To see a list of menu options available for a summary folder, right click the cube icon that represents the summary folder. Discoverer represents summary folders as follows:

Summary folder	How the summary folder is represented in Discoverer
valid summary folder.	a cube icon with a clock face
valid external summary folder	a cube icon
broken summary folder	a cube icon with a yellow warning triangle

Notes

- If Discoverer displays the message 'This user requires Create Any Materialized View privilege' when you try to refresh a summary folder, you do not have the necessary privileges to refresh summary folders. To grant the necessary privileges, follow these steps:
  - Log out of Discoverer Administrator.
  - Start Oracle SQL*Plus, and connect using the database administrator user name and password.
  - Run the following SQL script:

    <ORACLE HOME>\discoverer\util\eulasm.sql
  - Restart Discoverer Administrator
- A summary folder is considered broken when Discoverer cannot use the materialized view, summary table or detail tables. To find out more about why a summary folder is broken, use the View | Validate Summaries menu option. You might want to edit a broken summary folder to investigate its composition and remove any broken folders.

26

Using SQL Files and Trace Files

This chapter provides reference information about files that are used by Discoverer and includes the following topics:

- "List of SQL files supplied with Discoverer"
- "Working with Oracle Support to resolve Discoverer issues"
- "How to create trace files to diagnose Discoverer problems"
- "How to set the DCLOG_CONFIG_FILE Windows environment variable and create an EUL trace file"

List of SQL files supplied with Discoverer

Several SQL files are installed with Discoverer Administrator and enable you to perform specific database configuration tasks. The table below lists the SQL files and describes their functions.

The files are located in the `<ORACLE_HOME>\discoverer\util` directory, unless otherwise stated:

File name	Description
batchusr.sql	Sets up a scheduled workbook results schema (for more information, see "How to specify the owner of the tables containing scheduled workbooks results").
batchusr_app.sql	Sets up a scheduled workbook results schema for Oracle Applications users (for more information, see "How to specify the owner of the tables containing scheduled workbooks results").
dbmsjob.sql	The interface for the Oracle DBMS JOB queue (for more information, see "How to confirm that the DBMS_JOB package is installed"). The `dbmsjob.sql` file is not installed with the database in the `<ORACLE_HOME>\rdbms\admin` directory.
del_shd_wbk_rol_priv.sql	Removes the workbook scheduling privileges from the 4.1 EUL objects. In Discoverer 4i, workbook scheduling privileges could be granted to roles. In Discoverer 9.0.4 and 10.x, workbook scheduling privilges can be granted to users, but not to roles. When upgrading from Discoverer 4.1 to 10.x, the old workbook scheduling privileges would remain in the EUL. The del_shd_wbk_rol_priv.sql script is required to delete the workbook scheduling privileges manually.
eul4del.sql	Clears all 4.1 EUL objects (for more information, see "Upgrade step 5: Remove the Release 4.1 EULs").
eul5.sql	Creates the functions required by the eul5.eex business area and its workbooks (for more information, see "How to install the standard EUL status workbooks").

File name	Description
eul5_apps.sql	Creates the functions required by the eul5.eex business area and its workbooks when using an Oracle Applications EUL (for more information, see "How to install Oracle Applications EUL status workbooks"). **Note:** You use this script only with Oracle Applications EULs.
eul5_id.sql	Changes the reference number of an EUL. Use this script when you have used the database export and import utilities to copy an EUL and you want to: ▪ modify objects in both the original EUL and the new EUL ▪ having modified objects in both EULs, you then want to copy objects between the two EULs using the Discoverer Export Wizard and Import Wizard (or the Discoverer /export and /import commands) Run the eul5_id.sql script to give a new reference number to the new EUL and thereby prevent any uniqueness conflicts in the above scenario (for more information, see "How to import an EUL using the standard database import utility").
eulasm.sql	Grants the privileges required for summary folder management (and ASM) in Discoverer Administrator (for more information, see "How to use SQL*Plus to grant the privileges required to create summary folders").
eulgwreg.sql	Contains a template EUL gateway registration script that you use when setting up EUL gateway metadata. For more information, see `egwspec.doc` and `eulgatew.doc` located in the `<ORACLE_HOME>\discoverer\kits` directory.
eulgwtbl.sql	Contains the template CREATE TABLE SQL statements that you use when setting up EUL gateway metadata. For more information, see `egwspec.doc` and `eulgatew.doc` located in the `<ORACLE_HOME>\discoverer\kits` directory.
eulgwvue.sql	Contains the template CREATE VIEW SQL statements that you use when setting up EUL gateway metadata. **Note:** If you execute this script without modification, it will not create a valid gateway. To transfer information through the gateway, you must modify the SQL statement to correctly map the view columns to the metadata. For more information, see `egwspec.doc` and `eulgatew.doc` located in the `<ORACLE_HOME>\discoverer\kits` directory.
eulsown.sql	Modifies summary folder ownership information that you might need if you export the EUL using the database export utility and import it into a different database user (for more information, see "How to export an EUL using the standard database export utility"). This script prompts you for the owner name of the summary folders in the source EUL, and for the owner name of the new summary folder in the target EUL (for more information, see "How to import an EUL using the standard database import utility").
eulstdel.sql	Deletes query prediction statistics older than a specified age (for more information, see "How to delete old query prediction statistics").
eulsuqpp.sql	Grants the necessary database privileges to enable query performance prediction (QPP) (for more information, see "How to use query prediction with secure views").
gwdrop.sql	Enables you to delete an EUL gateway. For more information, see `egwspec.doc` and `eulgatew.doc` located in the `<ORACLE_HOME>\discoverer\kits` directory.
gwgrant.sql	Enables you to grant access to EUL gateways. For more information, see `egwspec.doc` and `eulgatew.doc` located in the `<ORACLE_HOME>\discoverer\kits` directory.
lineage.sql	You must run this script before using the lineage.eex business area and its workbook (for more information, see "Using Discoverer with Oracle Warehouse Builder").

Working with Oracle Support to resolve Discoverer issues

If you work with Oracle Support to resolve a Discoverer issue, you are typically asked for the following information:

- the version of Discoverer
- the Discoverer tool that was being used when the problem occurred (that is, Discoverer Administrator, Discoverer Plus, Discoverer Viewer, Discoverer Desktop)
- details of the actions the user performed in Discoverer when the problem occurred
- what the Discoverer user saw on the screen when the problem occurred

In addition, Oracle Support might ask you to provide a trace file (for more information, see "How to create trace files to diagnose Discoverer problems").

How to create trace files to diagnose Discoverer problems

Sometimes you might encounter a problem with Discoverer and be unable to identify the cause of the problem (for example, a generic error message might not provide sufficient information). To provide more information about Discoverer problems, you can generate two types of trace file:

- an EUL trace file, which records low-level interactions between Discoverer and the EUL
- a server trace file, which records the SQL statements sent to the database server

You can either use trace files yourself to diagnose the cause of the problem, or use trace files when working with Oracle Support.

To create an EUL trace file or a server trace file containing information relevant to the problem you are trying to resolve:

1. Start with Discoverer functioning as normal.
2. Specify the trace file you want to create, as follows:
   - to create an EUL trace file, you create a configuration file containing appropriate values, and set the DCLOG_CONFIG_FILE Windows environment variable to the name and path of the configuration file

     For more information about setting the DCLOG_CONFIG_FILE Windows environment variable, see "How to set the DCLOG_CONFIG_FILE Windows environment variable and create an EUL trace file".
   - to create a server trace file, set the SqlTrace Discoverer registry setting to 1

     For more information about Discoverer registry settings, see Chapter 21, "Discoverer Registry Settings".
3. Perform the actions in Discoverer that cause the problem.
4. Remove the DCLOG_CONFIG_FILE Windows environment variable or restore the SqlTrace Discoverer registry settings to their default values to prevent unnecessary information being written to the trace files.

How to set the DCLOG_CONFIG_FILE Windows environment variable and create an EUL trace file

You set the DCLOG_CONFIG_FILE Windows environment variable to gather EUL trace information in an EUL trace file. You can subsequently enable or disable the writing of information to the trace file.

To set the DCLOG_CONFIG_FILE Windows environment variable and create an EUL trace file:

1. From the Windows Start menu, select Control Panel | System Properties | Advanced tab | Environment Variables.
2. Create a new user variable:
   - Variable name=`DCLOG_CONFIG_FILE`
   - Variable value=`<path>/<file_name>`

     For example, `c:\dc_config/dc_config.txt`
3. Create a text file in the directory specified for the DCLOG_CONFIG_FILE Windows environment variable (for example, c:\dc_config\dc_config.txt).
4. Enter the configuration settings in the text file (for example, dc_config.txt) for Discoverer to use to create a trace file containing the required level of diagnostic information.

   For example, you could enter the following settings into dc_config.txt:

   DCLOG_ENABLED=1

   DCLOG_LEVEL=4

   DCLOG_LOGDIR=d:\oracle_home\bin

   DCLOG_ODLDEMO=1

   DCLOG_DCELEVEL='OL=6,DC=10,DCOV=10'

   You specify one or more values for the DCLOG_DCELEVEL setting, and give each value an integer (for example, OB=1). If you specify more than one value integer pair, separate each pair with a comma (for example, OB=1, OL=3). The values used for the DCLOG_DCELEVEL setting will create specific trace information at defined levels of granularity. The higher the integer used, the more detailed the information.

   The different types of trace information that can be written to the trace file using the DCLOG_DCELEVEL setting are as follows:

   - DC - General important events
     - DC=15 logs a range of Discoverer actions
   - DCBL - Bulk load details
   - DCIE - Import/export details
     - DCIE=2 logs actions and elements processed by an import/export operation
   - DCOV - Metadata validation
   - OB - Process of posting data to the database when a transaction is committed
   - OL - Database interactions (SQL statements, bind variables, and so on)
     - OL=0 logs all SQL statements which fail execution on the database

  - OL=2 logs all SQL statements executed, the numbers of rows fetched, and basic cursor lifecycle (in addition to the information logged by OL=0)
  - OL=3 logs all cursor bind variables (in addition to the information logged by OL=2)
- OM - Database connect/disconnect

5. Connect to Discoverer Administrator or Discoverer Desktop.

   Discoverer writes the trace information to an XML trace file (for example, log200501204153419588.xml), according to the configuration settings in the text file that is specified in the DCLOG_CONFIG_FILE Windows environment variable (for example, in dc_config.txt).

6. When you have gathered enough trace information, you can disable the writing of trace information to prevent unnecessary information being written to the trace file.

   To disable the writing of trace information, you edit the text file specified in the DCLOG_CONFIG_FILE Windows environment variable (for example, dc_config.txt), and change the value of the DCLOG_ENABLED setting from 1 to 0 (alternatively, you could remove the DCLOG_ENABLED setting).

   For more information, see "Working with Oracle Support to resolve Discoverer issues".

27

Installing the Discoverer Sample Data EUL, Data, and Workbook

This section explains how to install the Discoverer sample data EUL, data, and workbook so that you can use the sample data. This procedure also installs the Video Tutorial Workbook.

This section contains the following topics:

- "What must exist in the database before users can start using Discoverer Administrator using the sample data?"
- "What happens when you install the Discoverer sample data EUL, data, and workbook?"
- "What privileges do you require to install the sample data?"
- "What conditions apply when you connect to Discoverer Administrator for the first time?"
- "Why must you create an EUL?"
- "What steps do I follow to install the Discoverer sample data EUL, data, and workbook?"
- "How to create a private EUL for the sample data"
- "How to install the Discoverer sample data"
- "How to grant access privileges to the VIDEO5 database user for the sample data EUL"
- "How to install the tutorial business area in another End User Layer"
- "How to uninstall the tutorial business area, tables and data"
- "How to reinstall the sample data"

What must exist in the database before users can start using Discoverer Administrator using the sample data?

Before Discoverer Administrator users can start using Discoverer using the sample data, the following must exist in the database:

- an End User Layer (EUL)
- the VIDEO5 database user
- the VIDEO5 data

Note: When you use Discoverer Administrator for the first time, the VIDEO5 database user might not exist. If the VIDEO5 database user does not exist, you can create it when you install the sample data (for more information, see "How to install the Discoverer sample data").

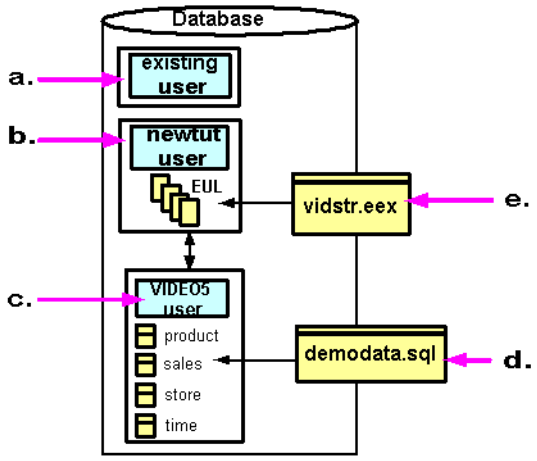
What happens when you install the Discoverer sample data EUL, data, and workbook?

When you install the Discoverer sample data EUL, data, and workbook Discoverer Administrator does the following:

- creates a new database user with a name that you specify (this user will own the EUL)
- creates a new EUL
- if the VIDEO5 database user does not already exist, Discoverer:
  - creates a new database user called VIDEO5
  - creates sample data tables in the VIDEO5 database user's tablespace
  - populates the sample data tables with sample data
- populates the new EUL with metadata about the VIDEO5 tables (that is, it imports the tutorial business area from the file vidstr.eex, located in the \demo directory)

  The following figure illustrates events that can occur when you install the sample data.

Figure 27–1 Events that can occur when you install the sample data



Key to the above figure:

a. Connect to Discoverer Administrator as an existing database user with sufficient privileges to install the sample data (for more information, see "What privileges do you require to install the sample data?").

b. Create an EUL for a new database user.

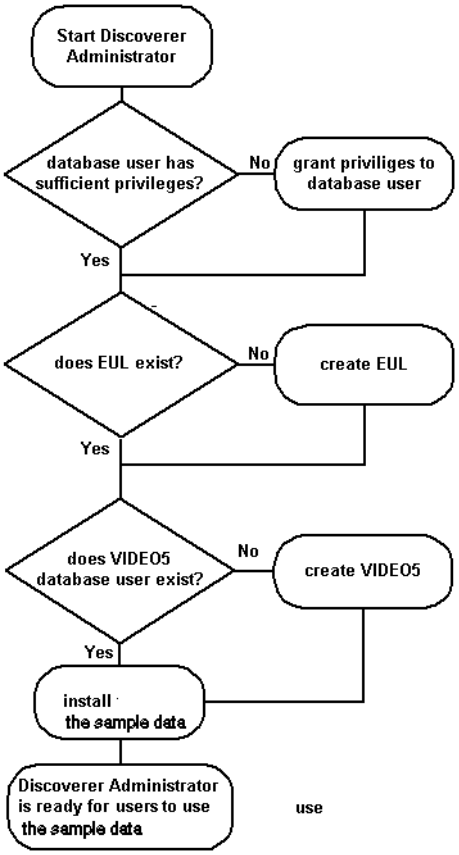
c. If you choose to install the sample data in the EUL, Discoverer Administrator creates the VIDEO5 user (if not already created).

d. Discoverer Administrator creates the VIDEO5 user tables (for example, Product, Sales Fact, Store, Time) and populates them with data from the file demodata.sql (located in the \demo directory).

e. Discoverer Administrator populates the EUL for the new database user with metadata about the video stores tutorial business area from the file vidstr.eex.

The choices you can make when you install the sample data are illustrated in the figure below:

Figure 27–2 Flow chart of the choices you can make when you install the Discoverer sample data



What privileges do you require to install the sample data?

To install the sample data in the current EUL, the database user that you use to connect to Discoverer Administrator must have the following database privileges:

- CREATE TABLE
- CREATE VIEW
- CREATE PROCEDURE

Tip: You can grant the above privileges to the database user by running the script <ORACLE_HOME>\discoverer\util\eulasm.sql.

- if the VIDEO5 user has not already been created, you must have the following additional database privileges:
  - CREATE USER

- GRANT ANY PRIVILEGE
- ALTER USER

- if you run against an Oracle Enterprise Edition database, you must also have the following additional database privileges to use the Discoverer summary management and ASM functionality:
  - CREATE ANY MATERIALIZED VIEW
  - DROP ANY MATERIALIZED VIEW
  - ALTER ANY MATERIALIZED VIEW
  - GLOBAL QUERY REWRITE
  - ANALYZE ANY

    Tip: You can grant the above privileges to the database user by running the script <ORACLE_HOME>\discoverer\util\eulasm.sql.
  - SELECT ON V_$PARAMETER

  For more information about how you grant the above database privileges, click Help.

What conditions apply when you connect to Discoverer Administrator for the first time?

When you connect to Discoverer Administrator for the first time the following conditions apply:

- you must connect as a database user having specific privileges (for example, a DBA user to install the sample data)

  For more information, see "What privileges do you require to install the sample data?".
- no EULs or EUL metadata will exist in the database
- the VIDEO5 database user and tables will not have been created

When the VIDEO5 database user does not exist, you must create it and populate the VIDEO5 tables with sample data before you can begin learning about Discoverer Administrator. For more information, see "What happens when you install the Discoverer sample data EUL, data, and workbook?".

Why must you create an EUL?

You must create an EUL (if an EUL does not already exist) to enable you to:

- install the Discoverer sample data
- create the VIDEO5 user and populate the VIDEO5 tables with data
- complete the Discoverer Administrator sample data

Installing the sample data into an EUL makes the sample data available to all users who have access privileges to that EUL.

What steps do I follow to install the Discoverer sample data EUL, data, and workbook?

To install the Discoverer sample data EUL, data and workbook, follow these steps:

1. Create a private EUL - see "How to create a private EUL for the sample data".
2. Install the Discoverer sample data into the private EUL that you have just created - see "How to install the Discoverer sample data".
3. Make sure that the VIDEO5 user has the necessary privileges to access the sample data EUL - see "How to grant access privileges to the VIDEO5 database user for the sample data EUL".

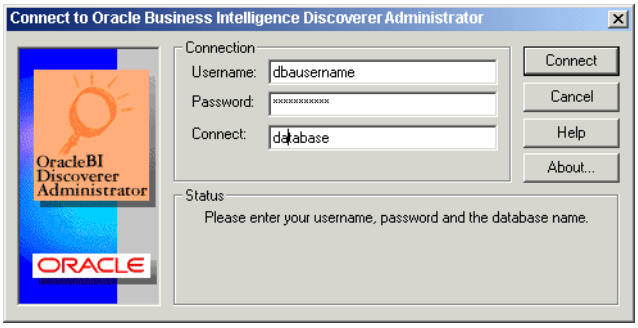
How to create a private EUL for the sample data

You must create an EUL if one does not already exist. To create the sample data EUL, you must connect to Discoverer as a database user with sufficient privileges (for more information, see "What privileges do you require to install the sample data?") and create an EUL for a new database user.

To create the sample data EUL:

1. Choose Programs | Oracle Business Intelligence Tools - <HOME_NAME> | Discoverer Administrator from the Windows Start menu to display the Connect dialog.

Figure 27–3 Connect dialog



2. Enter a database username with sufficient privileges (for example, a DBA user).

   For more information, see "What privileges do you require to install the sample data?".

3. Enter the password.

   Passwords are case-sensitive in Oracle databases (Enterprise Edition release 11.1 or later).

4. In the **Connect** field:

   - If you are logging into your default database, leave this field blank.

     With Oracle Enterprise Edition databases, an entry is required in your tnsnames.ora file for this to work (for more information, see your Discoverer manager).

   - If you are logging into an Oracle database that is not your default database, specify the appropriate TNS alias (for more information, see your database administrator).

5. Click Connect.

   Discoverer Administrator behaves differently depending on whether an EUL has already been created for the database user you use to connect with.

   If no EUL exists, Discoverer Administrator displays a message asking **Do you want to create an EUL now?**

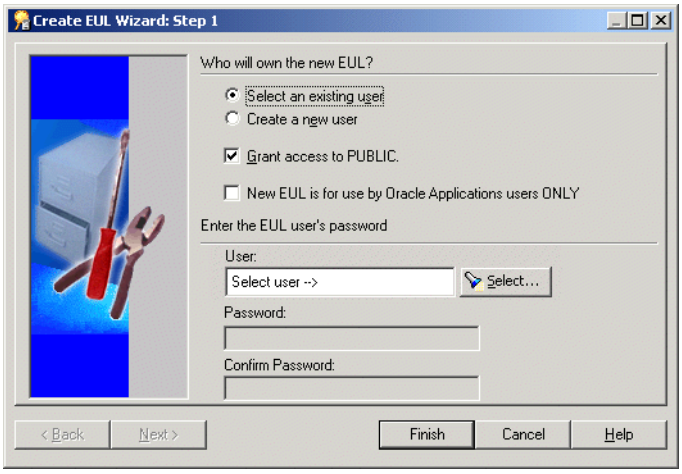
6. Click Yes to display the EUL Manager dialog.

   Tip: If one or more EULs already exist, Discoverer Administrator displays the Load Wizard. Click Cancel in the Load Wizard and choose Tools | EUL Manager to display the EUL Manager dialog.

Figure 27–4 EUL Manager dialog

7. Click Create an EUL to display the Create EUL Wizard dialog.

Figure 27–5 Create EUL Wizard dialog



   Use this wizard to create an EUL and a new database user. You must create the new EUL and database user before you can install the sample data into the VIDEO5 user.

8. Select the **Create a new user** option.

9. Clear the following check boxes:

   - **Grant EUL access to PUBLIC** check box

- **New EUL is for use by Oracle Applications users ONLY** check box

10. Enter a name for the new database user in the **User** field.

    You can use any name for the new database user. For example, you might enter 'TUTEUL' to identify a specific user.

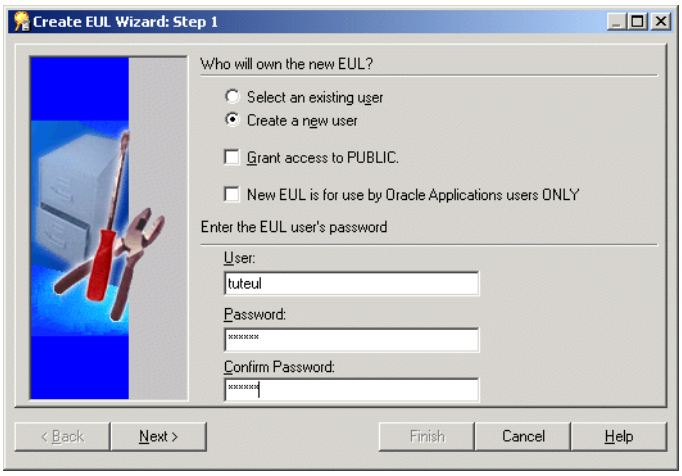
11. Enter a password into both the **Password** and **Confirm Password** fields.

    Tip: You could use same username that you entered in the previous step in both the **Password** and **Confirm Password** fields.

    Passwords are case-sensitive in Oracle databases (Enterprise Edition release 11.1 or later).

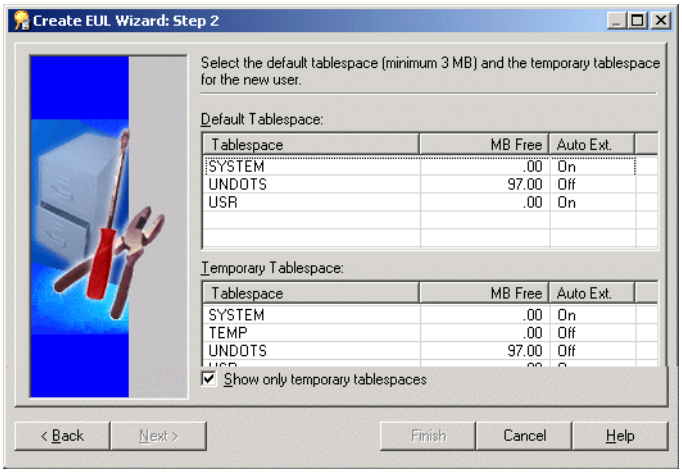
12. Make sure that the Create EUL Wizard displays the settings for options and check boxes as shown below.

Figure 27–6 Create EUL Wizard dialog



13. Click Next to display the Create EUL Wizard: Step 2 dialog.

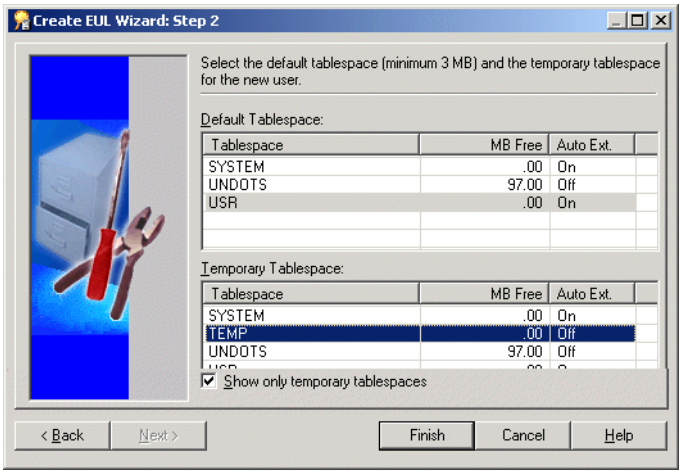
Figure 27–7 Create EUL Wizard: Step 2 dialog



14. Select the default and temporary tablespaces.

    For example, select USR as the default tablespace and TEMP as the temporary tablespace.

Figure 27–8 Create EUL Wizard: Step 2 dialog



15. Click Finish for Discoverer Administrator to build the EUL

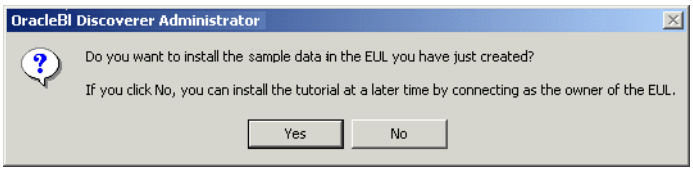
    Discoverer Administrator displays a progress bar.

    After Discoverer Administrator creates the new EUL, Discoverer Administrator displays a message that the EUL has been created successfully.

16. Click OK.

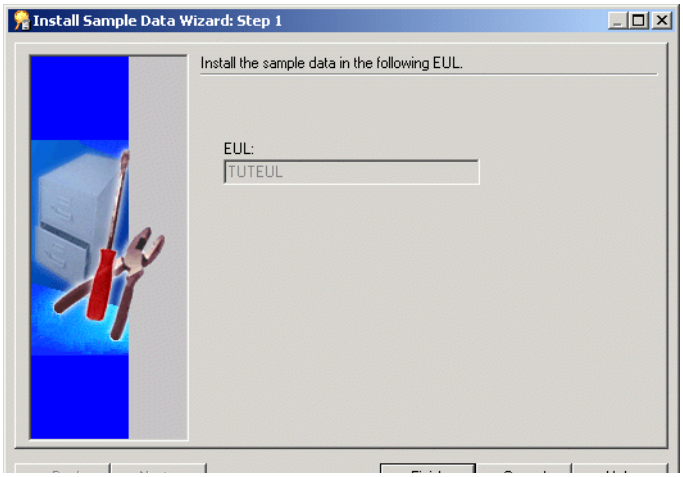
    You have just created the first EUL and you must now install the sample data.

Figure 27–9 Do you want to install the sample data? dialog



17. Click Yes to display the Install Sample Data dialog.

Figure 27–10 Install Sample Data dialog



18. Complete the steps in the following section "How to install the Discoverer sample data".

How to install the Discoverer sample data

Having created a private EUL for the sample data, you can install the Discoverer sample data into the private EUL (for more information, see "How to create a private EUL for the sample data").

How you install the Discoverer sample data depends on when you decide to install the sample data:

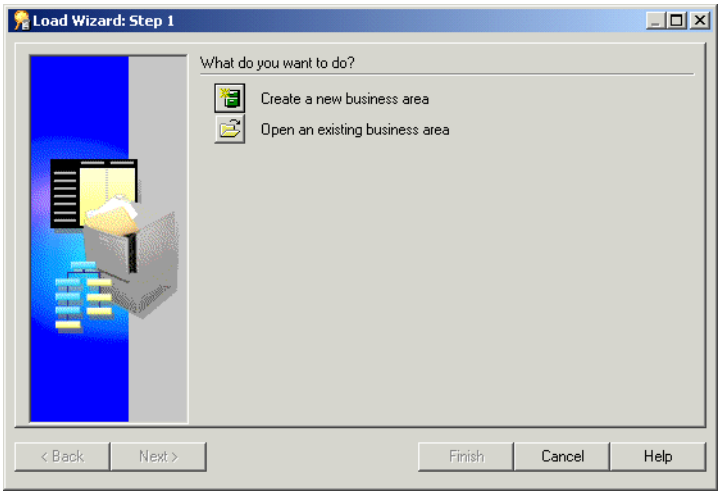
- to install the Discoverer sample data immediately after creating the sample data EUL, start at step 5 of the following procedure
- to install the Discoverer sample data into an existing EUL, start at step 1 of the following procedure

1. Connect to Discoverer Administrator as the owner of the EUL that you want to contain the tutorial business area (for more information, see "How to start Discoverer Administrator").

   Note: Make sure that the database user you connect with has sufficient privileges to install the sample data (for more information, see "What privileges do you require to install the sample data?")

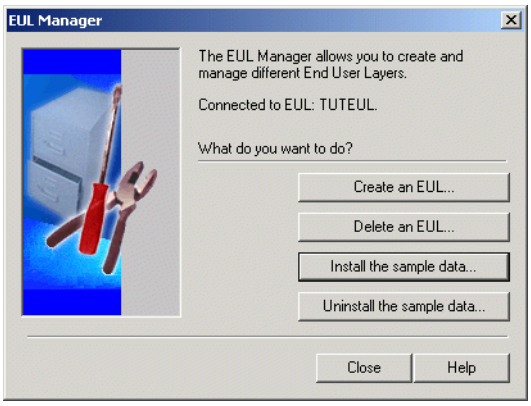
   Discoverer Administrator displays the Load Wizard.

Figure 27–11 Load Wizard dialog



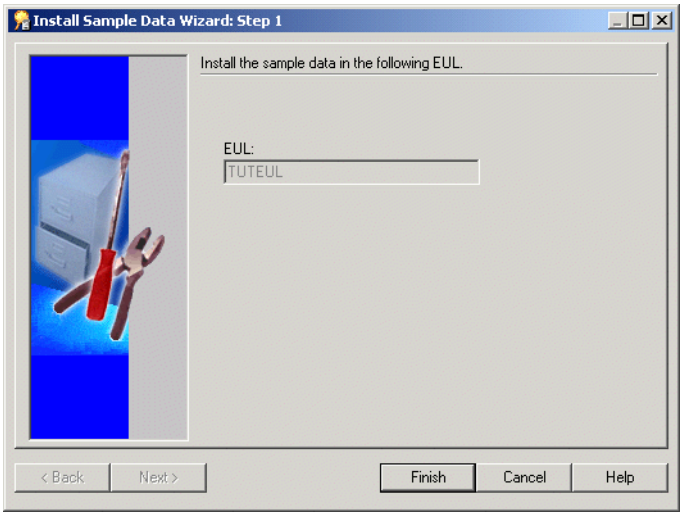
2. Click Cancel to close the Load Wizard.
3. Choose Tools | EUL Manager to display the EUL Manager dialog.

Figure 27–12 EUL Manager dialog



4. Click Install the Sample Data to display the Install Sample Data Wizard: Step 1 dialog.

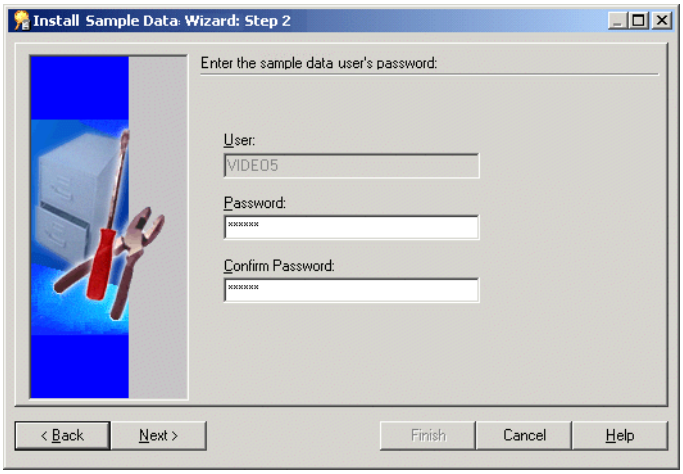
Figure 27–13 Install Sample Data Wizard: Step 1 dialog



Note that the EUL displayed in the **EUL** field is the EUL into which Discoverer Administrator imports the tutorial business area.

5. Click Next to display the Install Sample Data Wizard: Step 2 dialog.

Figure 27–14 Install Sample Data Wizard: Step 2 dialog



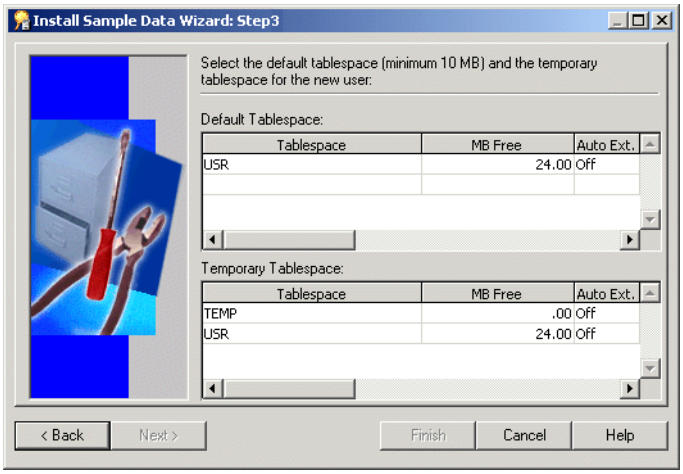
6. Type `VIDEO5` in both the **Password** and **Confirm Password** fields.

   Note: You will use the password `VIDEO5` if you uninstall or reinstall the sample data.

   Note: You may want to use a different password to the one given above.

7. Click Next to display the Install Sample Data Wizard: Step 3 dialog where you specify the default and temporary tablespaces for the VIDEO5 database user.

Figure 27–15 Install Sample Data Wizard: Step 3 dialog

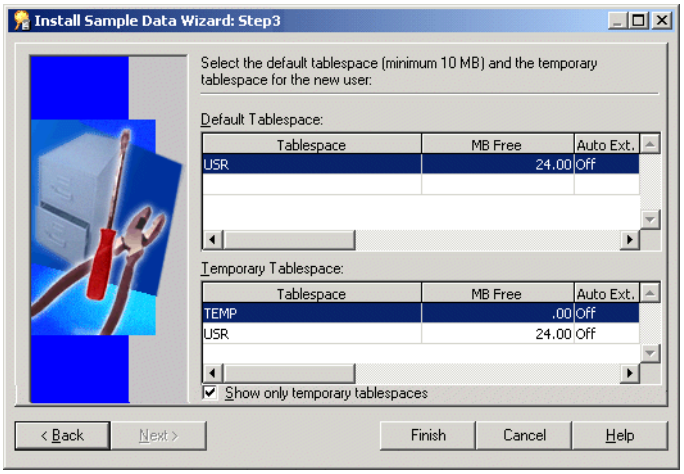


   Note: If you are not creating VIDEO5 as a new database user, Discoverer Administrator does not display the Install Sample Data Wizard: Step 3 dialog.

8. Choose a default and temporary tablespace.

   For example, select USR as the default tablespace and TMP as the temporary tablespace.

Figure 27–16 Install Sample Data Wizard: Step 3 dialog



9. Click Finish, Discoverer Administrator displays the Commit Status dialog.

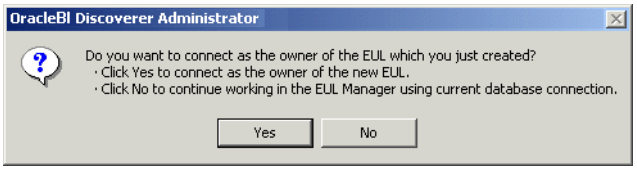
   Discoverer Administrator populates the VIDEO5 database user tables with default data using the file demodata.sql (located in the \demo directory) and imports the video stores tutorial business area into the new EUL using the file vidstr.eex (located in the \demo directory).

   When the process is complete, Discoverer Administrator displays a dialog indicating that the sample data has been successfully installed.

10. Click OK.

    Discoverer displays the following dialog.

Figure 27–17 Connect as the EUL owner?



11. Click No to display the EUL Manager dialog.

Figure 27–18 EUL Manager dialog

12. Click Close to close the EUL Manager dialog.

You have just completed the following tasks:

- created the VIDEO5 database user
- populated the VIDEO5 tables with data
- imported the tutorial business area into the new EUL

Discoverer Administrator is now correctly configured so that users can start to learn about using the sample data in Discoverer.

How to grant access privileges to the VIDEO5 database user for the sample data EUL

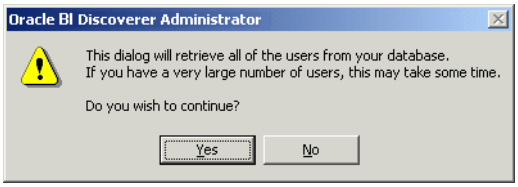
Now that you have created a private EUL and installed the Discoverer sample data, you must make sure that the VIDEO5 database user has access to the sample data EUL. Discoverer end users connecting to Discoverer as the VIDEO5 database user can then access the sample data, EUL, and workbook.

To make sure that the VIDEO5 database user has access to the sample data EUL:

1. Connect to Discoverer Administrator as the owner of the private sample data EUL that you created in "How to create a private EUL for the sample data" (TUTEUL).
2. Choose Tools | Security to display the Security dialog.

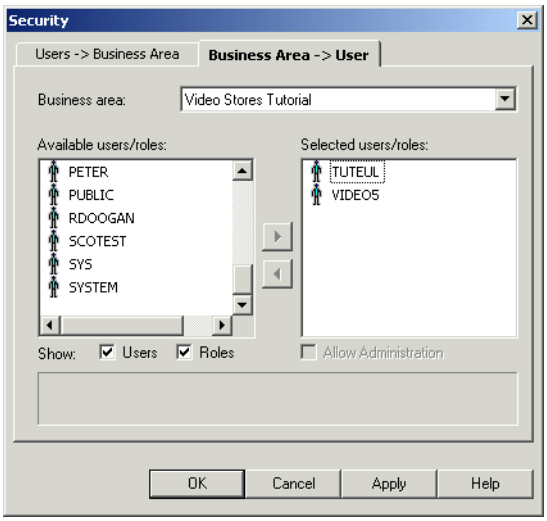
   Discoverer Administrator displays the following warning dialog.

Figure 27–19 Warning dialog



3. Click Yes to display the "Security dialog: Business Area - > User tab".

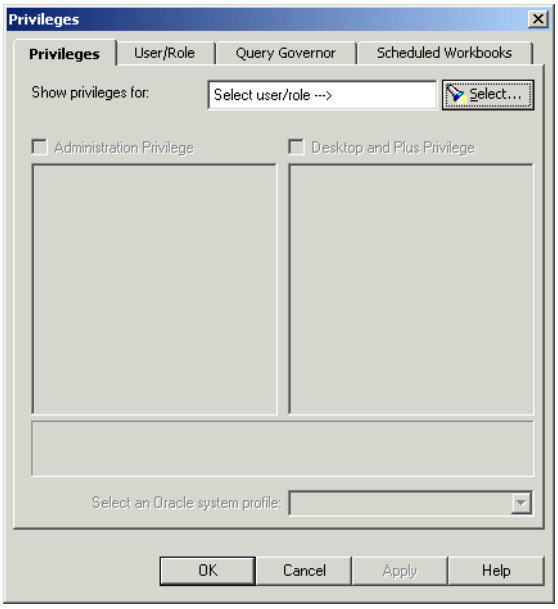
Figure 27–20 Security dialog: Business Area->User tab



You must make sure that the VIDEO5 database user is displayed in the **Selected users/roles** list.

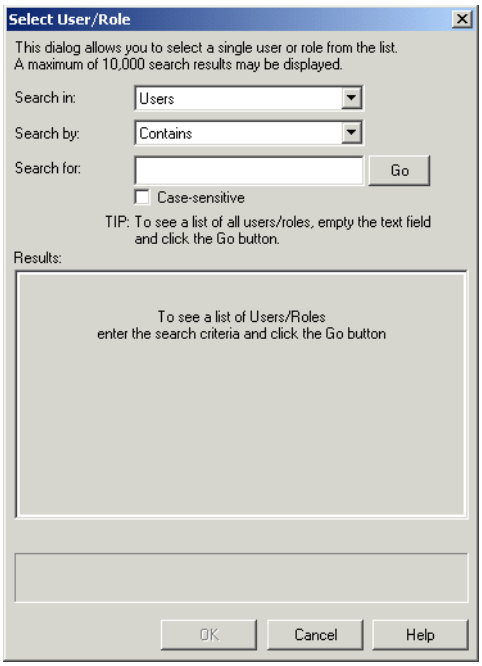
4. If the VIDEO5 database user is not displayed in the **Selected users/roles** list, move the VIDEO5 user from the **Available users/roles** list to the **Selected users/roles** list.
5. Click OK to save the details and close the Security dialog.
6. Choose Tools | Privileges and display the "Privileges dialog: Privileges tab".

Figure 27–21 Privileges dialog: Privileges tab



7. Click Select to display the "Select User/Role dialog" where you can search for and select the user or role whose task privileges you want to change.

Figure 27–22 Select User/Role dialog



8. Click Go.

   Discoverer Administrator displays the search results in the **Results** list.

9. Select the VIDEO5 user from the **Results** list.

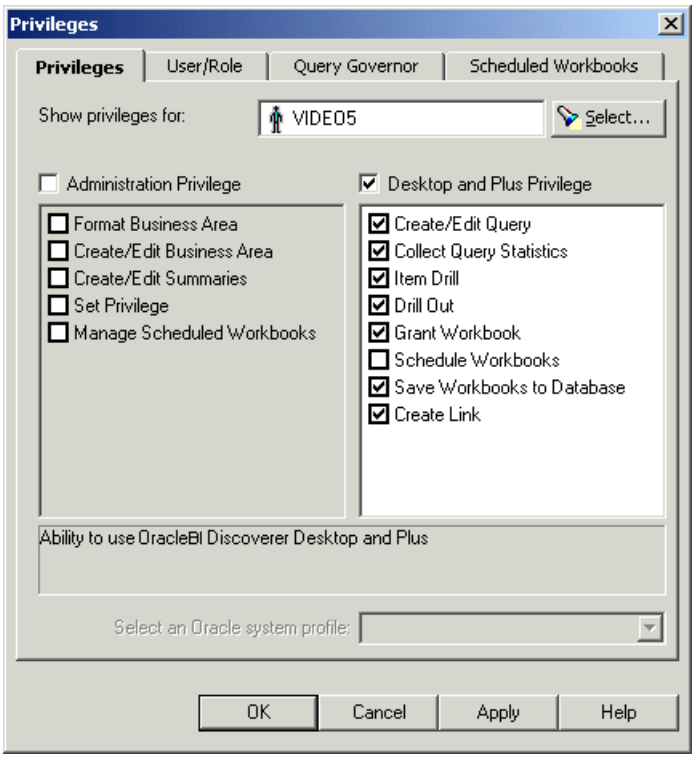
10. Click OK to display the "Privileges dialog: Privileges tab" for the VIDEO5 user.

    You must make sure that the VIDEO5 user has Desktop and Plus privileges, but not Administration privileges.

11. Clear the **Administration Privilege** check box, and select the **Desktop and Plus Privilege** check box.

12. Clear the **Schedule Workbooks** check box in the Desktop and Plus privileges list.

Figure 27–23 Privileges dialog: Privileges tab



13. Click OK to save the details and close the Privileges dialog.

    The VIDEO5 database user now has the required privileges for accessing the sample data EUL, data and workbook.

How to install the tutorial business area in another End User Layer

Having installed the tutorial business area into one EUL, you can install it in other EULs (for more information, see "How to install the Discoverer sample data").

If you want users to have access to the tutorial business area but not to the EUL in which you originally installed the sample data, you can install the sample data in one (or more) alternative EULs to enable each EUL owner to have their own tutorial business area. Each time you install the sample data in a different EUL, another tutorial business area is created in that EUL. Note that every tutorial business area accesses data from the same set of tables in the database. Only one version of each table is created in the database (that is, in the VIDEO5 database user's tablespace).

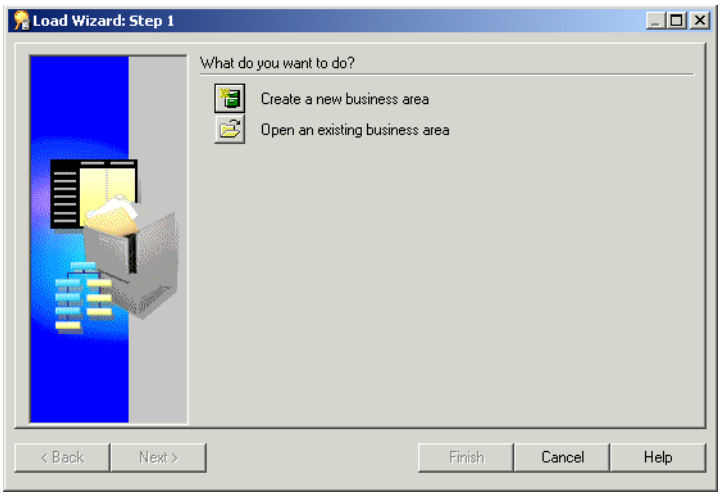
To install the tutorial business area in another EUL:

1. Connect to Discoverer Administrator as the database user that owns the EUL in which you want to install the sample data (for more information, see "How to start Discoverer Administrator").

   Note: Make sure that the database user you connect with has sufficient privileges to install the sample data (for more information, see "What privileges do you require to install the sample data?")

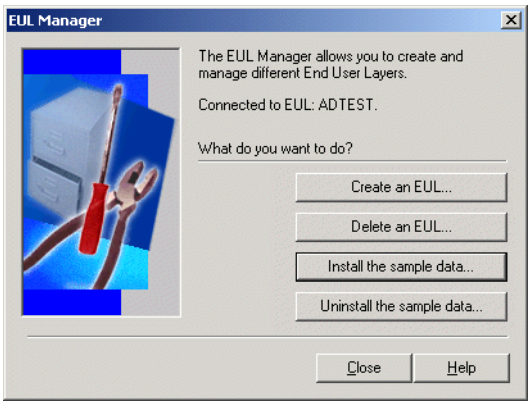
   Discoverer Administrator displays the Load Wizard.

Figure 27–24 Load Wizard dialog



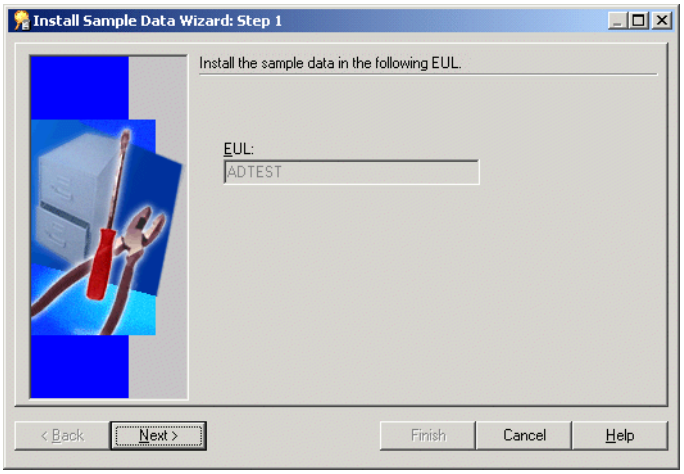
2. Click Cancel to close the Load Wizard.
3. Choose Tools | EUL Manager to display the EUL Manager dialog.

Figure 27–25 EUL Manager dialog



4. Click Install the Sample Data to display the Install Sample Data Wizard: Step 1 dialog.

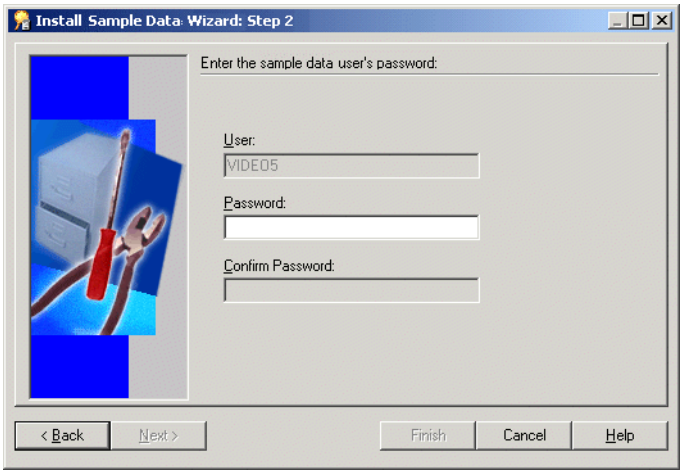
Figure 27–26 Install Sample Data Wizard: Step 1 dialog



Note that the EUL displayed in the **EUL** field is the EUL into which Discoverer Administrator imports the tutorial business area.

5. Click Next to display the Install Sample Data Wizard: Step 2 dialog.

Figure 27–27 Install Sample Data Wizard: Step 2 dialog



6. Type `VIDEO5` in the **Password** field.

   Note: The password can be whatever you have specified for the `VIDEO5` database user.

7. Click Finish.

   Discoverer Administrator displays the Commit Status dialog.

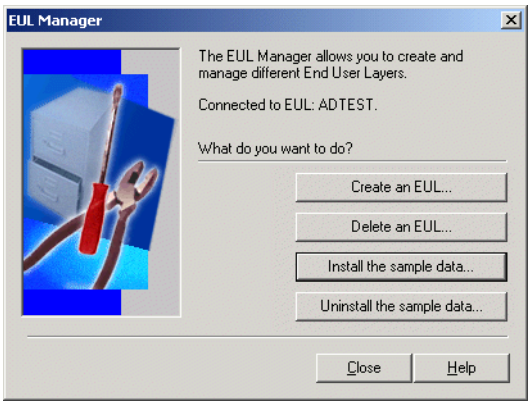
   Discoverer Administrator imports the video stores tutorial business area into the EUL using the file vidstr.eex (located in the \demo directory).

   When the process is complete Discoverer Administrator displays a dialog indicating that the sample data has been successfully installed.

8. Click OK.

   Discoverer displays the EUL Manager dialog.

Figure 27–28 EUL Manager dialog



9. Click Close to close the EUL Manager dialog.

Discoverer Administrator has created a copy of the tutorial business area in the current EUL. You can create multiple copies of the tutorial business area in an EUL by repeating the previous steps.

Note: All copies of the tutorial business area access data in the same set of tables in the database.

How to uninstall the tutorial business area, tables and data

When you uninstall the sample data, you remove:

- the tutorial business area from the current EUL
- (optional) the sample data tables from the database

Note the following:

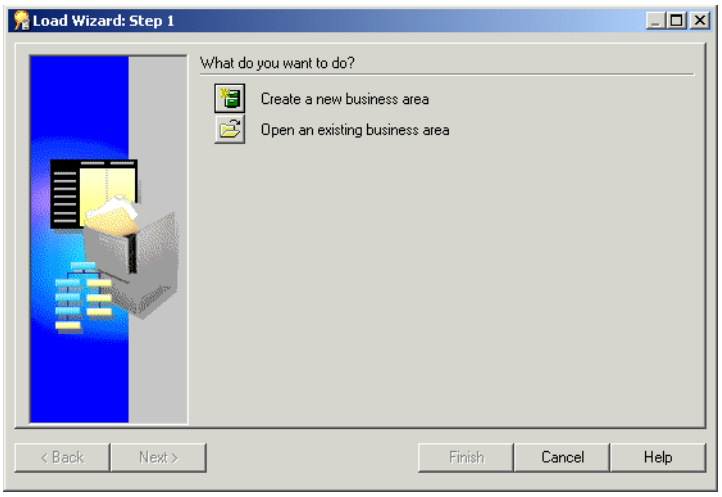
- the VIDEO5 user is not removed from the database
- if the sample data was installed in other EULs, the tutorial business areas are not removed from the other EULs (even though the tables that those business areas point to have been optionally dropped from the database)
- removing copies of the sample data from multiple EULs must be done one at a time

To uninstall the sample data:

1. Connect to Discoverer Administrator as the database user that owns the EUL from which you want to remove the tutorial business area.

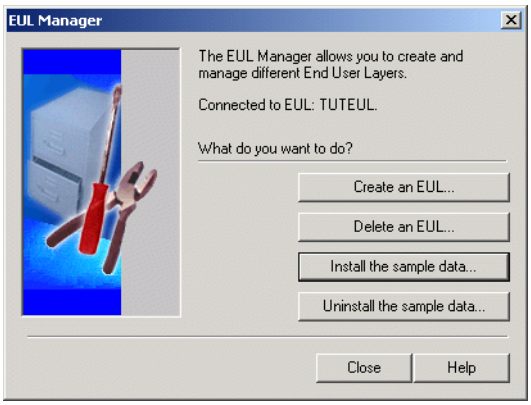
   Discoverer Administrator displays the Load Wizard.

Figure 27–29 Load Wizard dialog



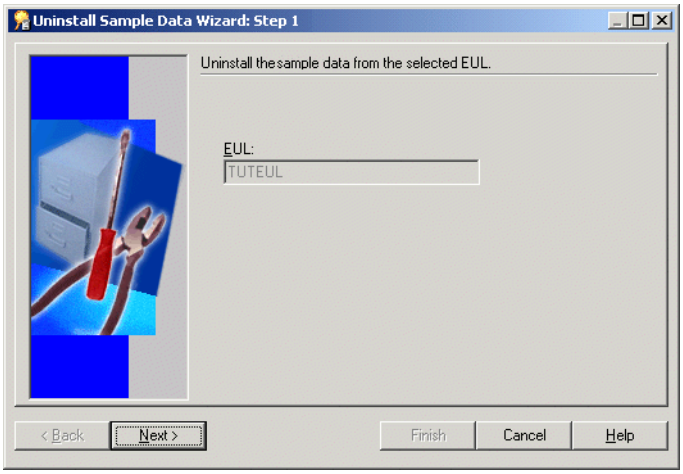
2. Click Cancel to close the Load Wizard.
3. Choose Tools | EUL Manager to display the EUL Manager dialog.

Figure 27–30 EUL Manager dialog



4. Click Uninstall the sample data to display the Uninstall Sample Data Wizard: Step 1 dialog.

Figure 27–31 Uninstall Sample Data Wizard: Step 1 dialog

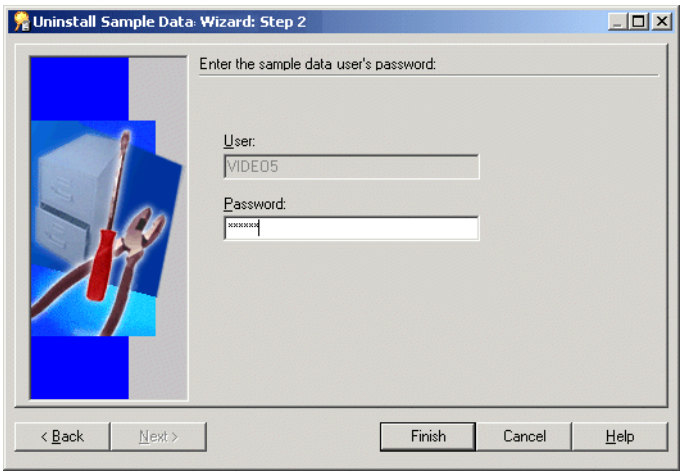


Make sure that the EUL named in the **EUL** field is the EUL from which you want to remove the tutorial business area.

If the EUL name is not correct, click Cancel and re-connect to Discoverer Administrator as the owner of the EUL from which you want to remove the tutorial business area.

5. Click Next to display the Uninstall Sample Data Wizard: Step 2.

Figure 27–32 Uninstall Sample Data Wizard: Step 2 dialog



6. Type `VIDEO5` in the **Password** field for the VIDEO5 database user.

   Or this can be whatever password you specified when you installed the sample data for the first time (that is, when you created the VIDEO5 database user).

7. Click Finish.

   Discoverer Administrator warns you that uninstalling the sample data removes the sample data and tables from the database, and the tutorial business area from the current EUL.

8. Click Yes to delete the tutorial business area and database tables.

How to reinstall the sample data

If you have previously uninstalled the sample data and you want to reinstall it, follow the steps in "How to install the tutorial business area in another End User Layer".

A

Discoverer Administrative Account Information

This section lists Oracle Business Intelligence Discoverer administrative account information, and contains the following topics:

- Database privileges granted by Oracle Business Intelligence Discoverer scripts to the PUBLIC user
- Database privileges granted by Oracle Business Intelligence Discoverer scripts to the Discoverer manager

Database privileges granted by Oracle Business Intelligence Discoverer scripts to the PUBLIC user

The table below shows the database privileges granted by Oracle Business Intelligence Discoverer scripts to the PUBLIC user.

Script name(s)	Script description	Privileges granted
batchusr.sql	Sets up the scheduling schema (granted with INVOKER rights)	EXECUTE on EUL5_BATCH_ REPOSITORY
demoddl.sql	Sets up the Video Stores Tutorial data	SELECT on all tables in VIDEO5 schema
eulsuqpp.sql	Run QPP statistics on secure views	SELECT on v_$session, v_$sesstat, v_ $parameter, v_$sql, v_$open_cursor

Script name(s)	Script description	Privileges granted
eulgfn.sql, lineage.sql, eul5.sql	Sets up PL/SQL packages	EXECUTE on EUL5_GET_COMPLEX_ FOLDER EXECUTE on EUL5_GET_SIMPLE_ FOLDER EXECUTE on EUL5_GET_OBJECT EXECUTE on EUL5_GET_ITEM EXECUTE on EUL5_GET_HIERORD EXECUTE on EUL5_GET_HIERLVL EXECUTE on EUL5_GET_ADATE EXECUTE on EUL5_GET_ANALYZED EXECUTE on EUL5_GET_OBJECT_ NAME EXECUTE on EUL5_GET_ITEM_NAME EXECUTE on EUL5_GET_APPS_ USERRESP EXECUTE on EUL5_GET_ISITAPPS_EUL EXECUTE on EUL5_GET_LINURL

Database privileges granted by Oracle Business Intelligence Discoverer scripts to the Discoverer manager

The table below shows the database privileges granted by Oracle Business Intelligence Discoverer scripts to the Discoverer manager.

Package name(s)	Package description	Privileges granted
EUL5_DROP_ BATCH_TABLE	Grant execute to Discoverer managers. Batch repository package for dropping tables as part of batch user management. (granted with GRANT rights)	With GRANT rights.

B

Discoverer EUL Trigger Information

This section provides information about Oracle Business Intelligence Discoverer EUL triggers, and contains the following topics:

- What are Oracle Business Intelligence Discoverer EUL triggers?
- List of Oracle Business Intelligence Discoverer EUL triggers
- How to register a PL/SQL function that can be executed by a Discoverer EUL trigger
- Example for using a PL/SQL trigger to extract SQL from a worksheet when it is saved

What are Oracle Business Intelligence Discoverer EUL triggers?

An Oracle Business Intelligence Discoverer EUL trigger is a database call that executes a specific PL/SQL function when specific actions occur in Discoverer (for example, when a user saves a workbook).

Notes:

- Discoverer enables EUL triggers to be executed by default unless the EnableTriggers registry setting is in the registry, and its value is set to 0. For more information about Discoverer registry settings, see Chapter 21, "Discoverer Registry Settings"
- An EUL trigger is only executed if a PL/SQL function is registered correctly in Discoverer Administrator with a specific display name (for example, eul_trigger$post_save_document). For more information, see "How to register a PL/SQL function that can be executed by a Discoverer EUL trigger".
- An EUL trigger is only executed if the PL/SQL function arguments are defined for each EUL trigger (for more information, see List of Oracle Business Intelligence Discoverer EUL triggers).

List of Oracle Business Intelligence Discoverer EUL triggers

The table below lists the EUL triggers you can use with Discoverer, when they fire, their arguments, whether they are required or optional and their suggested uses.

Trigger name	When it fires	Arguments (Datatype)	Arguments Required or Optional?	Suggested Uses
eul_trigger$post_login	After a successful login.	Function Return Datatype (Number) No Arguments. **Note:** The number returned from this function is not used.	N/A	Set up the user environment context. For example, to enforce row level security based on the database or SSO username.
eul_trigger$post_save_document	When a workbook is saved	Function Return Datatype (Number) WorkbookOwner (Varchar) WorkbookName (Varchar) WorksheetName (Varchar) Sequence (Varchar) SQLSegment (Varchar)	 Required Required Required Required Required	Automatically extract SQL from a Discoverer worksheet and save it into a pre-defined table in the database.
eul_trigger$pre_delete_document	Before a workbook is deleted from the database.	Function Return Datatype (Number) WorkbookOwner (Varchar) WorkbookName (Varchar)	 Required Required	Preserve the name and owner of the deleted workbook.
eul_trigger$refresh_new_column	When a refresh operation finds a new column.	Function Return Datatype (Varchar) DBLink (Varchar) Schema (Varchar) Table (Varchar) Column Name (Varchar) EUL Language (Varchar)	 Required Required Required Required Required	Return the proper display name of an Oracle Applications field.

Trigger name	When it fires	Arguments (Datatype)	Arguments Required or Optional?	Suggested Uses
eul_trigger$get_developer_key	When you load a business area from the Gateway or Online Dictionary, and before the object is created within the database	Function Return Datatype (Varchar) Default Developer Key (Varchar) Element Type (Varchar) DB Link (Varchar) Schema (Varchar) Table (Varchar) Constraint / Column (Varchar)	 Required Required Required Required Required Required Prepend the default Identifier with a product short name. For example, a folder based on the table EMPLOYEE (default Identifier: EMPLOYEE), maintained by HRI product, should have the Identifier: HRI_EMPLOYEE	Prepend the default Identifier with a product short name. For example, a folder based on the table EMPLOYEE (default Identifier: EMPLOYEE), maintained by HRI product, should have the Identifier: HRI_EMPLOYEE

How to register a PL/SQL function that can be executed by a Discoverer EUL trigger

You might want to register a PL/SQL function that carries out a particular function (for example, to extract SQL from a worksheet when it is saved). An Oracle Business Intelligence Discoverer EUL trigger can only execute a PL/SQL function if the PL/SQL function exists in the database, and is registered correctly in Discoverer Administrator.

Note: A PL/SQL function must be registered with the same name as the Discoverer EUL trigger. If it is not, the Discoverer EUL trigger will neither find the function nor execute it. Therefore, the name in the **Display Name** field of the PL/SQL function must be set to the PL/SQL function name (for example, eul_trigger$post_save_document).

To register a PL/SQL function that can be executed by an Oracle Business Intelligence Discoverer EUL trigger:

1. Create a PL/SQL function in the database and give it a function name.

   For more information, see "Example for using a PL/SQL trigger to extract SQL from a worksheet when it is saved"

2. Start Discoverer Administrator and select Tools | Register PL/SQL Functions to display the "PL/SQL Functions dialog: Functions tab".

   You use this dialog to import a PL/SQL function and register it with Discoverer.

   For more information, see "About registering custom PL/SQL functions".

Example for using a PL/SQL trigger to extract SQL from a worksheet when it is saved

To enable automatic extraction of SQL Discoverer has enabled a trigger that gets fired whenever a workbook is saved. This trigger looks for a PL/SQL function (eul_trigger$post_save_document). If the function is not found, then nothing happens. If the PL/SQL function is found then the SQL is saved according to the function. Below is an example function that can be used, but this functionality has been left open to enable customers to fit their own specific needs.

To use a PL/SQL trigger to extract SQL from a worksheet when it is saved:

1. Invoke SQL*Plus.
2. Enter the following SQL statement to create a table to store the SQL:

   Note: This creates a table my_sql that gets populated by the PL/SQL function.

```
SQL> create table my_sql (
            workbookowner              varchar2 (100),
            workbook                   varchar2 (100),
            worksheet                  varchar2 (100),
            seg_sequence               number (10),
            sql_segment                varchar2 (2000) );
```

3. Enter the following SQL statement to create a PL/SQL function called POST_SAVE_DOCUMENT:

```
SQL> create or replace function POST_SAVE_DOCUMENT
          (P_WORKBOOKOWNER in varchar,
           P_WORKBOOK        in  varchar,
           P_WORKSHEET       in  varchar,
           P_SEQUENCE      in number,
           P_SQL_SEGMENT   in varchar,
)
return number as
begin
delete from my_sql;
insert into my_sql
                       (       WORKBOOKOWNER,
                               WORKBOOK
                               WORKSHEET
                               SEG_SEQUENCE
                               SQL_SEGMENT

VALUES (          P_WORKBOOKOWNER,
                               P_WORKBOOK,
                               P_WORKSHEET,
                               P_SEQUENCE,
                               P_SQL_SEGMENT
                  );
return 1;
end;
```

4. Grant the following privileges to the PUBLIC user to allow access to the table my_sql and the PL/SQL function POST_SAVE_DOCUMENT, by entering the following SQL statements in SQL*Plus:

   ```
   SQL> grant execute on POST_SAVE_DOCUMENT to PUBLIC;
   ```

   This SQL statement enables the PUBLIC user to execute the PL/SQL function POST_SAVE_DOCUMENT.

   ```
   SQL> grant select, insert, update on my_sql to PUBLIC;
   ```

   This SQL statement enables the PUBLIC user to select, insert and update the database table my_sql.

5. Start Discoverer Administrator and select Tools | Register PL/SQL Functions to display the "PL/SQL Functions dialog: Functions tab".

   You use this dialog to register the new PL/SQL function with Discoverer.

   Note: You must make sure that the name in the **Display Name** field of the new PL/SQL function is set to `eul_trigger$post_save_document`.

6. Register the new PL/SQL function.

   For more information about how to import a PL/SQL function, see "How to register custom PL/SQL functions automatically".

Glossary

access rights and privileges

Specific functionality such as update and delete privileges which are granted to a specific user ID by a database administrator, or by the user ID which "owns" the tables for which the authority is being granted.

aggregate

Summarized data. For example, unit sales of a particular product could be aggregated by day, month, quarter and yearly sales.

alignment

The way in which data is positioned in a field. It can be positioned to the left, right, center, flush/left, flush/right, or flush/center of the defined width of a field.

analytic functions

Analytic functions compute an aggregate value based on a group of rows. The group of rows is called a window and is defined by the analytic clause. Analytic functions differ from aggregate functions in that they return one value for each row in the group. For example, if you create a ranking function, you create a rank value for each row in the group.

For more information about analytic functions, see the *Oracle Database SQL Reference Guide* or *Oracle Database Data Warehousing Guide.*

automated summary management (ASM)

A Discoverer feature to simplify the process of summary creation and maintenance. ASM enables you to set a range of input parameters known as a summary policy for Discoverer to operate within. Discoverer will automatically create and maintain the best set of summaries according to the summary policy.

axis

One of the three directions of a sheet. Items that you choose for a query appear in the axes. See: *top axis*, *side axis, page axis*, *axis item*.

axis item

An item appearing in either the top axis, side axis, or page axis of a sheet. In a table, items can appear only in the top axis or page axis; in a crosstab, items can appear in any axis. See: *axis, data item*.

business area

A conceptual grouping of tables or views (or both) that apply to user's specific data requirements. For example, an accounting department might have an accounting

Business Area that represents data about budgets and finance, while project leaders in an engineering department would have a business area specifically for projects requiring budget information.

Although some of the items might be the same, the exact combination of tables and views for each department might be different. A Business Area is represented as a file cabinet in Discoverer. This can be opened to display folders, and all the items in those folders.

cache (memory)

A temporary storage place for database data that is currently being accessed or changed by users, or for data that Oracle Server requires to support users. The terms are often used interchangeably.

calculation

A mathematical formula performed on one or more items. Oracle Business Intelligence Discoverer enables you to build complex calculations.

clipboard

A memory buffer. An object remains on the Clipboard until you cut or copy another object, or until you quit the application.

collapse

To remove all levels of related items from below a selected item. In effect, to undo a drill-down. See: *drill down*.

color palette

Contains all the colors available to the windowing system, the drawing surface, or a window and its views.

column

A vertical space in a database table that represents a particular domain of data. A column has a column name (for example, ENAME) and a specific data type (for example, CHAR). For example, in a table of employee information, all of the employees' names would constitute one column. A record group column represents a database column.

In Discoverer, the particular type of data is displayed vertically in your worksheet.

command line

An operating-system command line. Most Oracle products can be invoked from a command line by using several executable arguments.

complex folder

A folder created in Discoverer Administrator that contains items from more than one folder (or database table).

condition

A filter created on an item to restrict which values return. It contains a column and some qualifying data used to specify the volume of data. Conditions created in Discoverer Administrator can be optional or mandatory as business conditions dictate.

Conditions can also be created while defining a query in Discoverer Plus. For example, if you request all cities in the East Region you are using a condition (show East Region only) to limit the cities you get in your result set.

connect

To log on to a database. You must connect if you want to create or modify queries or access an application stored in a database.

connect string

The set of parameters, including a protocol, that SQL*Net uses to connect to a specific Oracle instance on the network.

copy

To store a replica of a selected object on the Clipboard, so that it might be pasted elsewhere in an editor if desired.

crosstab

A sheet layout that arranges items in a matrix of rows and columns. Items appear in both the top and side axes. Use a crosstab to display summary information and show how one item relates to another, such as sales by region by month. A crosstab is sometimes called a matrix. See: *table*.

cursor

A small icon representing the position of the mouse. The shape of the cursor varies, depending on the selected tool.

cut

To delete one or more objects and store them in the Clipboard, so that they can be pasted elsewhere in an editor, if desired.

data item

The item expressing the relationship between a top axis item and a side axis item. Only items which have a data item in common can appear opposite each other in the top and side axes. Applies only to crosstab-layout sheets. A data item is sometimes called a measure. See: *axis item*, *data point*.

data model

A relational model that defines what data should be fetched from the database, what values should be computed, and how data should be ordered in a report. Report Builder objects that define the data model are queries, groups, columns, parameters, and links.

data point

The value of a data item, as displayed in a cell of a sheet. A data point reflects the relationship between intersecting axis items in a crosstab. See: *data item*.

data type

A standard form of data. Some common Oracle data types are CHAR, VARCHAR2, DATE, NUMBER, LONG, RAW, and LONG RAW.

database

A set of dictionary tables and user tables that are treated as a unit.

DATE

An Oracle Server data type. A date column can contain a date and time between January 1, 4712 BC and December 31, 4712 AD.

date hierarchy

Date hierarchies possess an inherent structure based on year, quarter, month, week, day, hour, minute, and second. The Discoverer manager uses date hierarchy templates to define many common formats for date hierarchies. You can create customized date hierarchies or use the default date hierarchy.

date hierarchy template

A predefined hierarchy of date levels including display format. Date hierarchy templates are applied to a date item to create a date hierarchy specific for that date item.

For example, apply a generic date hierarchy temple of Year (YYYY), Month (Mon-YY), Day (DD-Mon_YY) to 'sales_date' to allow users to drill down from Year to month level and to Day level (from 1996 to June, 1996 to 2-June-96).

Use the date hierarchy template to define which time/date levels and which display format to use.

default

A value supplied by the system when a user does not specify a required command parameter or attribute.

detail to master join

A detail-to-master join icon represents a many-to-one relationship between two items in different folders. The foreign key is on the left (Detail), the primary key is on the right (Master). See: *master to detail join*, *join*.

dialog box

A partial screen or window that prompts you to enter information necessary to complete an operation.

disabled

An interface element state that means a menu item, button, and so on, cannot be used in the current context; that is,, it does not respond to keyboard or mouse input.

drag

Press and hold down a mouse button while you slide the mouse pointer to a particular location in a window.

drill

To expand an item to include items related to it. Oracle Business Intelligence Discoverer might re-query the database. See: *drill down*, *drill up*.

drill down

To expand an item to include related items lower than it in the hierarchy. Oracle Business Intelligence Discoverer may re-query the database. See: *drill*, *drill up*, *collapse*.

drill up

To expand an item to include the next related item above it in the hierarchy. Oracle Business Intelligence Discoverer may re-query the database. See: *drill*, *drill down*, *collapse*.

duplicate

An option that enables you to copy objects directly on the layout without affecting the contents of the Clipboard.

enabled

An interface element state that means that a menu item, button, and so on, can be used in the current context, that is, it responds to keyboard or cursor/mouse input.

End User Layer (EUL)

A set of database tables and views that reside (conceptually) between the database dictionary/table definitions and client applications, such as Discoverer Plus. The End User Layer is a metalayer that shields end users from the complexity of the database by providing meaningful, business-like terminology for database objects.

The EUL controls several elements such as hierarchy templates, formatting information, summary table management and aggregate information. The EUL also controls the SQL generated to extract the information from the database.

environment

The user's computer-based workplace, including the tools typically used and their configurations.

equijoin

A join of two columns with the equal operator, dictating that only those rows that have identical data in the defined columns on opposite sides of the operator will be joined.

exception

Data in your result set which falls outside of a set of criteria set by you.

execute

See *run*.

export

To store a copy of an object, module, selected text or image to a file or database. In Project Builder, the process of writing out a file containing project, type, action, or macro definitions in a portable format for distribution to others who may work on heterogeneous platforms. See also: *export file, import*.

export file

A sharable, portable file created by exporting EUL objects.

external query

An ANSI-standard SQL SELECT statement that can be referenced by other Oracle products.

field

An interface element in which you enter, edit, or delete data.

foreign key

Key that links a row or column of data in a table to a table in another business area. See: *primary key*.

focus

The state of an entity that is able to respond to input from the user or the client. If an entity has the keyboard focus, it can receive events when the user presses a key. If a drawn view has the drawing focus, it can respond to client routines that affect drawing.

folders

A representation of a database table in the EUL. Presenting tables as folders is another way to shield the end user from the complexities of the database.

grant

To give a user access to a module. Only a module's creator can grant its access to other users.

GUI

Acronym for graphical user interface. The use of pictures rather than just words to represent the input and output of a program. Programs with GUIs run under a windowing system (such as X Windows, Microsoft Windows, Apple Macintosh, and so on). GUI programs display icons, buttons, and so on, in windows on the screen; users control the GUI programs mainly by moving a pointer on the screen (typically controlled by a mouse). Also known as a bitmapped interface.

hierarchy

Natural relationships among items, defined in Discoverer Administrator and stored in the End User Layer. Hierarchies enable users to drill up and down through the data to see different levels of detail. There are two types of hierarchies: Item and Date. Use the hierarchy wizard to create new hierarchies, and to edit existing hierarchies.

hierarchy wizard

A predefined set of steps in Discoverer Administrator that ask the user for the information and choices needed to create a hierarchy for use in Discoverer Plus.

HTML

Acronym for Hypertext Markup Language. A tag-based ASCII language used to specify the content and hypertext links to other documents on WWW servers on the Internet. End users with Web browsers view HTML documents and follow links to display other documents.

HTTP

Acronym for Hypertext Transfer Protocol. The protocol used to carry WWW traffic between a WWW browser computer and the WWW server being accessed.

hyperdrill

A way of establishing a link across the system to allow users to drill to details in another worksheet. Requires an existing join between the items or categories in each worksheet.

hyperlink

A reference (link) from some point in one hypertext document to (some point in) another document or another place in the same document. A Web browser usually displays a hyperlink in some distinguishing way (in a different color, font or style). When users activate hyperlinks (by clicking on them with a mouse) the browser displays the target of the link.

hypertext

A collection of documents containing cross-references which, with the aid of a browser, (such as a Web browser or Acrobat Reader) allow readers to move easily from one document to another.

icon

A graphic representation of a window or tool.

identifier

Identifiers are unique names that Discoverer uses to identify workbooks. When matching objects common to different EULs, Discoverer uses identifiers to locate objects in different EULs that refer to the same business object.

For example, a folder named 'Sales' in EUL ‘A’ may refer to the same folder named 'Sales Figures' in EUL ‘B’. Both folders have the same identifier and can therefore be identified as referring to the same object.

image

A bitmapped object that can be stored and loaded into an application. The client cannot modify an imported image.

import

To read a module from the file system or database, and incorporate it into an application.

independent data

A piece of data that does not depend on other data for its value. For example, an employee's name may have the value *Jones*, which is independent of the values of other employee's names or associated data. Also called category data.

index

An optional structure associated with a table that is used by Oracle Server to locate rows of the table quickly, and (optionally) to guarantee that every row is unique.

internet

A worldwide TCP/IP-based network of computers.

IP (Internet Protocol) Address

A four-part number with no more than three digits in each part that uniquely identifies a computer on the Internet.

item classes

A grouping of items that database values. An item class is used to define a list of values that may be used by more than one item, an alternative sort order for these items, or to define a summary-to-detail capability between items. For example, an item called Product may contain a description of products, and may be part of the Product folder. The same item, Product, may also be required in the Sales Revenue folder. To have both items use the same list of values, you create one item class which defines the values, and apply it to both items. So you must define the list of values only once. If you did not create an item class, you would have to define a list of values for Product in the Product folder, and for Product in the Sales Revenue folder.

item class wizard

A predefined set of steps in Discoverer Administrator that ask the user for the information and choices needed to create an item class.

item hierarchy

Used to define the hierarchical relationship between items to allow end users to drill down to different levels of detail. For example form Country to Region to State.

items

A representation of database table's column in the EUL. Presenting columns as items allows the Discoverer manager to make formatting changes, name changes and other similar changes enabling the user to clearly read the data. Items are stored in folders and can be created, deleted, and moved among different folders.

join

A logical pairing of tables in a database, based on matching data in a specific column(s). Creating joins in Discoverer Administrator is critical for identifying the folders available to the user in Discoverer Plus. When the user selects an item or folder to create a worksheet, only those folders having joins with the selected folder are available. Thus, if a join does not exist between two folders, neither the unselected folder nor its items are available for the worksheet.

Joins are derived from matching columns or primary or foreign keys in the database.

justification

See *alignment*.

keyword

1. Part of a command-line syntax that must be supplied with a corresponding argument. 2. A required part of a PL/SQL construct.

label

Text identifying the values or meaning of an application's visual objects.

list of values

A set of the unique values that exist in an item. The values are from the items found in the database column.

For example, if a database contained 4 occurrences of widgets, 28 occurrences of bolts, 34 occurrences of fan belts, 90 occurrences of gaskets and 49 occurrences of brackets, list of values would produce the following list of five distinct values: [widget, bolt, fan belt, gasket, bracket]. Lists of values are used when creating and assigning conditions. The list of values is generated automatically at run time.

load wizard

A predefined set of steps in Discoverer Administrator that ask the user for the information and choices needed load tables into the End User Layer and create a new business area.

local database

1. The database on the computer running the application. 2. The database to which an application is connected. This database parses and executes all SQL statements generated by the application.

master folder

Used in a join, the master folder identifies the table which has a one-to-many relationship with the detail folder. For example, for each video title (identified by a row with a unique key) in a Video Product folder, there may be many entries (rows) in the Sales Details folder for each time a customer has rented the video.

master to detail join

A master-to-detail join icon represents a one-to-many relationship between two items in different folders. The primary key is on left (Master), the foreign key is on right (Detail).

Create joins while using the Load Wizard to create a business area or by choosing Join from the Insert menu. See: *detail to master join, join*.

materialized view

A materialized view is a summary mechanism used by Oracle Enterprise Edition databases. materialized views pre-compute and store aggregated data for use in SQL queries.

megabyte (Mb)

A unit of memory equal to 1,048,576 bytes (1024 x 1024). Often rounded to one million bytes.

message box

A modal window that notifies you of a condition that occurred because of your last action. You must respond to a message box.

metadata

Data about data. The data contained in the EUL is metadata because it is information describing the data in the actual database tables. Creating metadata allows the Discoverer manager to translate the database terminology into business terminology.

modal window

A window that elicits a response from the operator before the application can continue.

NOCACHE

A data type indicating that the data will be fetched when the page on which it appears is formatted (instead of fetched and cached until formatted).

non-caching column

A report column that references a database column of data type NOCACHE.

NULL value

The absence of a value.

object

An item that can be placed on the layout. The following are examples of objects: rectangle, line, ellipse, arc, polygon, polyline, rounded rectangle, freehand, chart, text, symbol, and text field.

ODBC

Acronym for Open Database Connectivity. A standard for accessing different database systems. An application can submit statements to ODBC using the ODBC flavor of

SQL. ODBC then translates these to whatever flavor the database understands. Using the Oracle Heterogeneous Data Services (HDS), Discoverer can access different database management systems in one consistent manner.

OLE

Object Linking and Embedding.

OLE container

An application that can store and display OLE objects.

OLE Server

An application that creates OLE objects.

one-to-many relationship

A relationship where there is one uniquely identified row in one table relating to one or more rows in another table. The relationship is based on the unique key found in the first table. For example, for each video title (identified by a row with a unique key) in a Video Product table, there may be many entries (rows) in the Sales Details table for each time a customer has rented the video.

one-to-one relationship

A relationship where there is one and only one match for a unique row in two tables.

For example, for each video title (identified by a row with a unique key) in a Video Product table, there is one and only one row in the Video Details table that contains the description. Since there is only one description for each product, it could be located directly in the Video Product table; however it could be placed in another table for other processing reasons. In the latter case, the two rows would be uniquely identified by a common key joining them together.

ORACLE_HOME

An environment variable that indicates the root directory of Oracle products.

Oracle Designer

An Oracle tool for system analysis and designing, generating, and maintaining applications.

Oracle Designer uses an enhanced Oracle dictionary for application system designs and model information.

orphan folder

A folder which does not exist in any business area. An orphan folder cannot be viewed in the work area because it is not located inside any business area; therefore it is unusable. A folder can only be created (and saved in the End User Layer) inside a business area and potentially used repetitively in several business areas. However, if it is subsequently removed from its last business area without being deleted from the End User Layer, it becomes an "orphan folder".

You can view orphaned folders by choosing Manage | Folders from the Tools menu.

own

A term defining proprietorship of a specific object in Discoverer. For example, a user owns an EUL if its tables reside in the user's database account. A user may have permission to access the tables in another user's account, but the permitted user does not own the EUL.

page axis

The axis that displays a page item. The page axis appears above the top axis.

page item

An item that enables you to view data from a particular perspective. Page items apply to a whole sheet. When you create a page item from an axis item or data item, one value appears at a time, such as 1997 for Year. You change the value of the page item—such as 1997, 1998, or 1999—by choosing from the list of available values in the Page item box. items can be dragged to the Page item box from either the top axis or the side axis.

parameter

A PL/SQL construct used to pass information to a subprogram. For example, in the subprogram call MYPROC (x),*x* is a parameter.

partially restricted tables

Tables you own and have granted access to for other user IDs. Or, tables you don't own but their owner has granted you access.

paste

To place the contents of the Clipboard (cut or copied objects) at the current cursor location.

pattern

A graphical property you can apply to the edge or fill of most objects.

PDF

Acronym for Portable Document Format. A file format (native for Adobe Acrobat) for representing documents in a manner that is independent of the original application software, hardware, and operating system used to create the documents. A PDF file can describe documents containing any combination of text, graphics, and images in a device-independent and resolution independent format.

physical page

The size of a page that is output by your printer.

pivot

To drag an item from one axis to the other (crosstabs only), or from an axis to the Page item box. A side axis item becomes a top axis item or a page item or vice versa. Pivoting enables you to display the data more compactly and show relationships between items more clearly.

PL/SQL

Oracle's proprietary extension to the SQL language. Adds procedural and other constructs to SQL that make it suitable for writing applications.

pop-up list

A list that pops up when the user performs a particular action.

port

A number that TCP uses to route transmitted data to and from a particular program.

preference

A setting that affects the behavior of the application's interface.

primary key

A column in a database table whose members consist of unique values that can be used to identify a row in a table.

private End User Layer

An End User layer only available to specific user IDs. Access is explicitly granted by the owner of the End User Layer.

A database can have one or more private End User Layers.

private tables

Tables in a database accessible only by those user IDs granted access by the user ID who "owns" the table. A user ID "owns" a table if that user ID has created the table.

properties

A characteristic of an object that determines the behavior or appearance of that object.

public tables

Tables in a database accessible by all user IDs.

query

1. A search that retrieves information from a database according to criteria you specify. The criteria include items, layout, formatting, conditions, and calculations. Results of a query are displayed in a sheet.

2. A SQL SELECT statement that specifies the data you want to retrieve from one or more tables or views of a database.

query prediction

An Oracle Business Intelligence Discoverer feature that gives an estimate of the time required to retrieve the information in a query. The Query Prediction appears before the query begins, so you can cancel the query.

quit

An option that terminates the current session and returns the user to the operating system. On some systems, Quit is Exit.

RDBMS

Acronym for Relational Database Management System. A database that allows the definition of data structures, storage and retrieval operations, and integrity constraints. In such a database, data and relations between them are organized in tables.

record

One row fetched by a SQL SELECT statement.

remote database

A database on a computer other than the local database. Usually a computer on the same network, but at a different node (that is,, a database that you use through a database link).

role

A set of privileges. A role is assigned to a user ID to grant all of the privileges defined in that role. A role is useful for a DBA assigning the same privileges to large numbers of people.

For example, the database administrator for a staff of airline reservation employees defines the role "reservationist" containing all of the necessary privileges for a reservationist. Then the DBA assigns every reservationist that role (reservationist), instead of having to define all of the privileges for each reservationist.

row

One set of field values in a table; for example, the fields representing one employee in the example table EMP.

run

To execute a run-time version of an application or program unit.

scheduled workbook

A workbook that has been programmed to run automatically at a scheduled date, time, and frequency. You can schedule a workbook by choosing File | Schedule.

schema

A collection of related database objects, usually grouped by database user ID. Schema objects includes tables, views, sequences, stored program units, synonyms, indexes, clusters, and database links.

SELECT statement

A SQL statement that specifies which rows and columns to fetch from one or more tables or views.

send

In Discoverer you can mail a workbook (or part of a workbook) in an e-mail. The data you send can be in the text of the mail message or an attachment. In Discoverer Plus, choose File | Send to send a workbook.

session

The period between invoking and quitting the executable.

sheet

A tab in the workbook window. A sheet displays the results of one or more queries.

side axis

The axis of a sheet that runs vertically along the left side of the sheet. Applies only to a crosstab. See: *axis, axis item*.

sort

To specify how data in an item should be ordered. For example, you can sort an item from low to high (A–Z) or from high to low (Z–A).

SQL

Acronym for Structured Query Language, the language used to define and manipulate data in a database. You can view the current SQL code for a particular sheet by choosing SQL Inspector from the View menu.

SQL script

A file containing SQL statements that you can run to perform database administration quickly and easily. Several SQL scripts are shipped with Oracle products.

SQL statement

A SQL instruction to Oracle. A SELECT statement is one type of SQL statement.

statement

A PL/SQL construct used for conditional, iterative, and sequential control, and for error handling. A semi-colon (;) must terminate every PL/SQL statement.

summary rewrite

The process that Discoverer Plus uses to rewrite the SQL for a query to use a summary table or materialized view rather than the detail data.

summary folder

The folder for storing information about summary tables, and the EUL items that can use them. Summary folders improve performance by directing queries to run against the summary tables' pre-aggregated and pre-joined data which, nevertheless, still satisfies the query requests. The process is automatic from the user's view-that is, to the user it is not apparent that the query is being handled by the summary folder, instead of the base data tables. The net result is quick response times for queries and accurate results.

summary table

Results from a query, listing information in table format.

summary wizard

A predefined set of steps in Discoverer Administrator that prompt the user for the information and choices needed to create a summary folder that will be used when end user queries are rewritten to use them.

syntax

The orderly system by which commands, qualifiers, and parameters are combined to form valid command strings.

table

1. A named collection of related information, stored in a relational database or server, in a two-dimensional grid that is made up of rows and columns.

2. A sheet layout that arranges items in columns. Items appear in the top axis. Use a table to list all information that fits the query criteria, such as sales transactions for the last month. See: *crosstab*.

tabular

A default layout displaying labels at the top of the page and rows of data underneath the labels.

task list

A window in Discoverer Administrator that lists each task for creating a comprehensive business area in logical order. It is helpful in keeping track of the tasks to complete. Click a task to invoke its respective wizard to help you complete the task.

TCP

Acronym for Transmission Control Protocol. The underlying communication protocol for exchanging HTTP requests between clients and Web servers.

tear-off menu

A submenu that the user can remove from its source using a mouse or other pointing device and drag to another part of the display screen.

text item

In Form Builder, an item that displays a character string value.

title bar

The horizontal area at the top of a window that displays the name of the application or interface element in that window.

toggle

To turn a setting alternately on or off. For example, you can hide or show the Toolbar.

tool

An iconic button used to create and manipulate objects in an application.

toolbar

Collection of iconic buttons that perform product commands. Usually aligned horizontally along the top, or vertically down the side of a window.

tool palette

A collection of tools

total

The result of a calculation that summarizes data in a sheet. Examples of totals are minimum, maximum, average, and sum.

trailer

A optional report region that can contain closing material for the report, including text, graphics, data, and computations. The report trailer appears last, following the header and body.

transaction

A sequence of SQL statements treated as a single unit.

trigger

A PL/SQL procedure that is executed, or "fired," upon a specific event.

user ID

a unique character string used to access a database. A user ID always has an associated password. When logging onto an Oracle database, a person must have an authorized user ID and password.

variable

A named object that can be assigned a value and whose assigned value may change over time.

wildcard

A character used to mean 'any one character' or 'a contiguous set of characters' within a word or phase.

window

A rectangular area of the desktop that contains an application. Each window has an area where you can interact with the application. Windows can be opened, resized, moved, reduced to an icon, or enlarged to fill the entire desktop.

workarea

A window in Discoverer Administrator which is the view into the End User Layer. Use the Workarea window to work with each business areas in the End User Layer. It is where you can create new business areas and folders, move items from one folder to another, and create and edit items. Essentially, everything you do that affects the End User Layer is done in the Workarea.

workbook

A collection of worksheets in Discoverer Desktop or Discoverer Plus. Workbooks are documents containing query definitions; they can be stored in database tables and shared with other users over a network. Discoverer Desktop workbooks can also be stored on a network file server and on your PC.

worksheet

The way Discoverer displays the results of your query. The Worksheet also contains the query to be executed against the End User Layer. Multiple worksheets are stored in a Workbook.

zoom

To expand an object to allow more room for editing the contents of the field.

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