Platform

DEMAND PLANNER USER'S GUIDE

Version 7.0.2

CREATE DEMAND. MANAGE DEMAND. FULFILL DEMAND.

Demand Planner User's Guide
Version 7.0.2
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Demand Planner User's Guide

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Preface

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About This Manual

This manual, the *Demand Planner User's Guide*, describes how to use the desktop demand-planning product, Demand Planner. It includes the following information:

- Basic introduction
- How-to information on using worksheets to examine your data, including the forecast
- An extensive glossary

Other User Manuals

Demantra Spectrum provides the following additional manuals for end users:

- *Promotions Effectiveness User's Guide*
- *Demand Planner Web User's Guide*
- *Demantra Settlement Management User's Guide*
- *Collaborator Workbench User's Guide*
- *TPMO User's Guide*
- *Demand Replenisher User's Guide*

For the System Administrator

Manual	Contents
Demantra Spectrum Administrator's Guide	• Overview of administrative tasks • Creating users and groups of users; maintaining security of menu items • Managing workflow instances • Managing the worksheets • Maintaining the database and using the Scheduler to schedule database procedures; wrapping database procedures • Using the desktop BLE user interface and defining safety stock levels • Configuring the menus and links in Collaborator Workbench • Upgrading the Demantra Spectrum license • Troubleshooting appendix

Other Documentation

The Demantra Spectrum documentation includes other manuals, mainly for use by people implementing a Demantra Spectrum solution:

Manual	Contents
Demantra Spectrum Release Notes	• New and changed features • Defects fixed in this release • Known defects in this release • Late-breaking information, as needed
Demantra Spectrum Installation Guide	• Hardware and software prerequisites • Running the Demantra Spectrum installer • Upgrading from a previous release • Starting the server and logging on • Initiating the Citrix Metaframe Server, if you use this product • Uninstalling Demantra Spectrum • Tips on configuration settings and on Tomcat (used for demos)
Demantra Spectrum Concepts	• Detailed discussion of basic Demantra Spectrum concepts • Separate chapters with further conceptual details on configuring series, levels, worksheets, and so on • Overview of the implementation tools and process • Tips on information needed to hand off the solution to users and administrators
TPMO Demo Script	Standalone document to get readers acquainted with the TPMO application.
Demantra Spectrum Consultant's Guide	Information on configuring everything apart from the Analytical Engine.
Analytical Engine Guide for Demand Planning	Information on configuring the Analytical Engine, for use with Demand Planner Web, Demand Planner, and Demand Replenisher.

Manual	Contents
Analytical Engine Guide for Promotions Effectiveness	Applies to Promotions Effectiveness. Same general contents as *Analytical Engine Guide for Demand Planning.*
Demantra Spectrum Reference Guide	Provides reference material on the following: • Demantra Spectrum URLs • Parameters • Database procedures • Base data fields • Functions and operators used in server and client expressions • Theoretical forecast models • Workflow step types • Glossary

Location of HTML and PDF Manuals

All Demantra Spectrum manuals are available in PDF format, within the directory *Demantra_root***Documents**. To read a PDF file, use Adobe Acrobat version 4.0 or higher. These files are formatted for double-sided printing and contain color graphics (which can be printed in color or in black and white).

Most of the manuals are also available in HTML format, as follows:

Help Title	Contents
User Help	HTML versions of the following: • *Demand Planner Web User's Guide* • *Promotions Effectiveness User's Guide* • *Demantra Settlement Management User's Guide* • *Collaborator Workbench User's Guide* • Member Management and Chaining Management chapters from *Demand Planner User's Guide* • *Demantra Spectrum Administrator's Guide* • Combined glossary and index
Offline Help	Condensed version of the preceding, covering only the topics that apply to working offline.
Consultant Help	HTML versions of the following: • *Demantra Spectrum Concepts* • *Demantra Spectrum Installation Guide* • *Demantra Spectrum Consultant's Guide* • *Analytical Engine Guide for Demand Planning* • *Analytical Engine Guide for Promotions Effectiveness* • *Demantra Spectrum Administrator's Guide* • *Demantra Spectrum Reference Guide* • Combined glossary and index
Demand Planner Help	HTML version of the *Demand Planner User's Guide*.
Demand Replenisher Help	HTML version of the *Demand Replenisher User's Guide*.

Each help file is contained in a subdirectory of *Demantra_root***Documents**. Each of these directories contains the file **helpset.htm**. To open the help, open that file from an internet browser.

In this release, there is no HTML version of the TPMO documentation.

For Customer Support

For customer support, call 1-866-Demantra (x501) or send email to **support@demantra.com**.

1 Getting Started with Demand Planner

This chapter provides a quick introduction to Demand Planner. It includes the following sections:

About Demand Planning 1
Getting Started with Demand Planner 1
Typical Use of Demand Planner.....2
Saving and Viewing Changes 3
Quitting Demand Planner 4

About Demand Planning

The process of demand planning generally consists of studying historical sales data and trying to predict future demand as closely as possible. The goal is to achieve an appropriate balance between meeting customer demands as quickly as possible and making or buying only as much of each product as required. Demand Planner Web and Demand Planner give you insight into both sides of this trade-off.

A demand plan is based on a forecast, which in turn is a prediction of tendencies in the supply chain over a period of time, influenced by seasonal and other predictable factors. The result of a forecast is a projected curve that has been smoothed to show tendencies and de-emphasize the exceptional variations.

In general, the demand plan and forecast are used in downstream operations such as production planning. Depending on how your system has been configured, it either exports such data automatically or contains reports that you use for that purpose.

Getting Started with Demand Planner

To start Demand Planner and open a worksheet

1. On the **Start** menu, click **Programs**.
2. Click **Demantra > Demantra Spectrum** *release* **> Demand Planner**.

   A login window appears, with the main Demand Planner window behind it.

   Note If you receive a database error, the Demantra Spectrum database is not running. Contact your system administrator.

3. In the **User** box, type your user name.

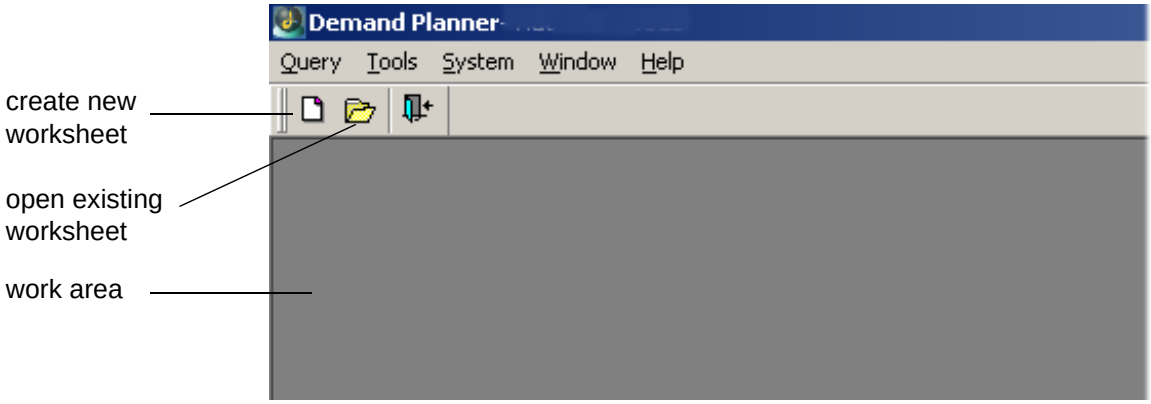
4. In the **Password** box, enter your password.

   If you do not know your user ID or password, consult your system administrator.

5. Click **OK**.

Note Not all users can access all functions.

Demand Planner comes up in a new browser window. The page contains a menu bar, a toolbar, and a workspace that is initially empty.



The window title will be different, depending on which data you have access to.

6. Click **File > Open**.

7. Click a worksheet in the list and then click **Open**.

Now the work area displays a worksheet, and the menu bar and toolbar have many more options.

See also

"Core Concepts" on page 5
"Introduction to Worksheets" on page 14

Typical Use of Demand Planner

At a very high level, you might work with Demand Planner as follows:

1. Log onto Demand Planner.
2. Open a worksheet.
3. View the forecast series and other data and work with it in any of the following ways, as needed:
   - Edit data manually
   - Adjust the forecast itself
   - Perform a simulation

- Perform data approval
- Export data for downstream use

4. Log off.

Saving and Viewing Changes

The changes you make are not saved automatically. Also, in the case of changes to data, the changes are not necessarily visible immediately.

Saving Changes

You save changes differently depending on whether you have changed data or the worksheet definition:

- To save changes that you have made to the data in the worksheet, including changes to notes, click **Data > Update**.
- To save changes that you have made to the worksheet definition, click **File > Save**.

  For information on changing the worksheet definition, see Chapter 4, “Creating and Redefining Worksheets” on page 29.

A Note About Series Definitions

When you edit series data in a worksheet, you might not immediately see changes to that series and the series that are related to it.

- Some kinds of series are redisplayed instantly to show any changes, if the Recalc option is switched on. (These series use a Demantra client expression, which acts as a local spreadsheet expression.)
- For other series, Demantra Spectrum must compute how to store the data in the database and how to display it at the worksheet level. (These series use a Demantra server expression.) These series are not redisplayed instantly with changes. Instead, you must wait briefly and then rerun the worksheet.

Note For these series to be calculated, a database procedure must run in the background. By default, the required procedure runs several times a minute. For details, see the *Demantra Spectrum Administrator’s Guide*.

Controlling the Recalc Option

By default, Demand Planner recalculates all client expressions automatically. In some cases, such as the following, you may want to switch off this automatic recalculation:

- While running a worksheet at a level that is different from the replenishment planning level.

  The replenishment planning level is the level at which safety stock is calculated and is defined in the Business Logic Engine.
- In resolving the exceptions before accepting the Supply Constraint.

To switch the Recalc option off

- Click **Data > Set Data Recalc Off.**

To force calculation while Recalc is off

- Click **Data > Calculate.**

To switch the Recalc option on

- Click **Data > Set Data Recalc On.**

Viewing Changes to Data

To make sure that you are seeing all changes, do the following:

To see all changes

1. Click **Data > Update** to save your data changes.
2. Display the Scheduler window and wait until the **MANUALS_INS** procedure has run again.

   If you are working at a relatively high level, the **MANUALS_INS** procedure takes longer to run.
3. Return to the worksheet and click **Data > Rerun**.

Quitting Demand Planner

To quit Demand Planner

- Click **Query** > **Exit**. Or click the **Exit** button.

2 Core Concepts

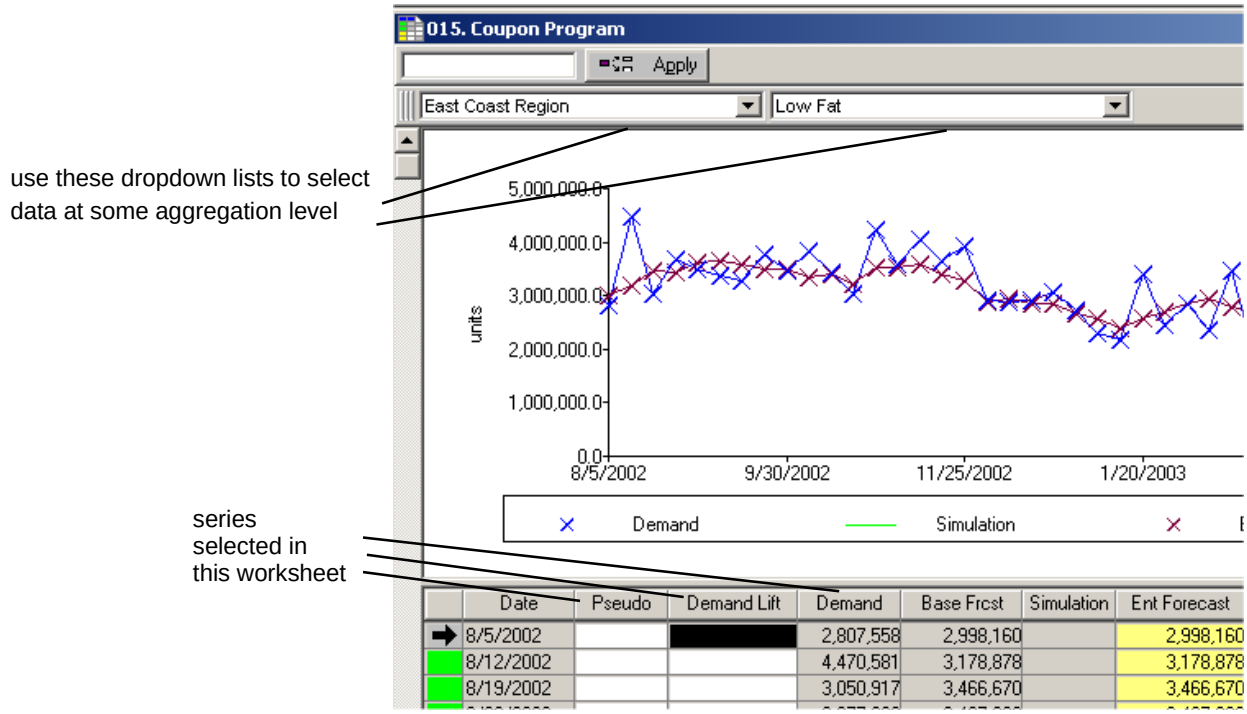
This chapter explains the background concepts and terminology. It includes the following sections:

Worksheets *5*
The Basic Input Data *6*
Levels *6*
Combinations *8*
Filtering *9*
Series *10*
User Access *11*

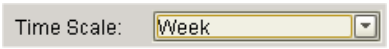
Worksheets

A *worksheet* (sometimes called as a *query*) is the primary user interface to Demantra Spectrum data. Within a worksheet, you can examine and edit data as needed, view and adjust the forecast, and run simulations. When you save changes back to the database, they become available to other users and to downstream operations.

A typical worksheet looks like the following:



In a worksheet, you generally select an item (or aggregation of items) and a location (or aggregation of locations). Then the worksheet displays a set of data aggregated at that level. You also specify the time resolution to use, and the data is aggregated in time, as well.



At any given time, a worksheet uses a single unit of measure to express most quantities, which you can switch. When you do so change, the displayed values are changed accordingly. Note that not all quantities use a unit of measure; a percentage value, for example, does not use units. The units in your system depend upon your implementation but probably include unit count and dollars. For monetary units, you can switch to a different index (such as the Consumer Price Index or CPI) or exchange rate, and the worksheet automatically multiplies all values accordingly.

The Basic Input Data

When fully configured, Demantra Spectrum automatically imports the following data, at a minimum, from your enterprise systems:

- Item data, which describes each product that you sell.
- Location data, which describes each location to which you sell or ship your products.
- Sales history, which describes each sale made at each location. Specifically this includes the items sold and the quantity of those items, in each sale.

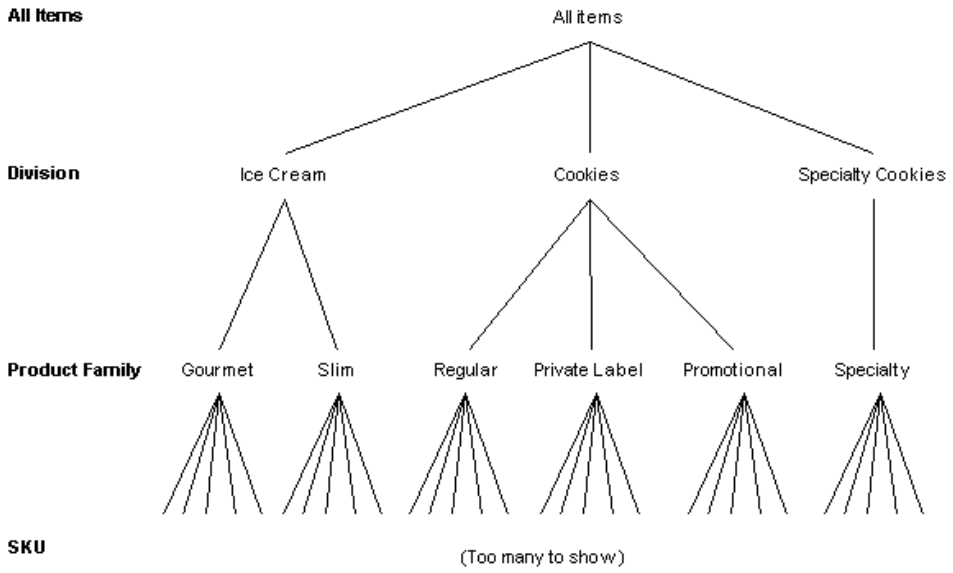
Demantra Spectrum can import and use other data such as returned amounts, inventory data, and orders.

Levels

Levels organize and aggregate the input data so that you can study it to identify patterns. The levels are completely configurable and are easily extended. Your Demantra Spectrum implementors defined levels as required for your organization, and an authorized user can add more. Levels are used in worksheets, in import and export, and in forecasting.

Level Terminology

The easiest way to understand the terminology is to consider an example. The following figure shows an example (from the demo) of item-type levels, which organize and aggregate sales data by various properties of the items being sold:



In this example, **SKU, Product Family**, and **Division** are levels, and you can view data aggregated and grouped at any of these levels. (You can also view data aggregated for all items.) Here the *root level* is **SKU**. (This is the lowest item level in most Demantra Spectrum implementations.) The **Product Family** level is the *parent* of the **SKU** level, and conversely, **SKU** is the *child* of **Product Family**.

Members

Each level includes a set of *members*, each with different characteristics. For example, the SKU level includes a set of *members*, each corresponding to a different value of SKU. In this example, these members include the following (among many others):

- Private Label LF Chocolate
- Private Label LF Chocolate Chip
- Private Label LF Chocolate Wafer
- Private Label LF Cinnamon
- Private Label LF Oatmeal Raisin
- Private Label LF Shortbread

Within a worksheet, you can view aggregate sales data corresponding to each member. (You might not see all the members in a given worksheet, because of your security access and because of any additional filtering in the worksheet itself.)

The Product Family and Division levels have fewer members, which are shown in the figure.

Kinds of Levels

Demantra Spectrum supports the following kinds of levels, each of which is indicated with a different icon:

- *Item levels*, which group and aggregate data according to characteristics of the items you sell.
- *Location levels*, which group and aggregate data according to characteristics of the locations where you sell. For example, location levels could describe a hierarchy of geographical places. Another location hierarchy could organize the locations in some other manner, such as by type of store.
- *Combination levels*, which group and aggregate data according to characteristics of the item-location combinations. Combination levels are also known as matrix levels.
- *Time levels*, which group and aggregate data by sales date.
- *Promotion levels*, which group and aggregate data by sales promotions. Depending on how your system is implemented, you may have a hierarchy of promotional levels (to organize the promotions), and the higher levels might use different icons.

Combinations

As you explore your data, you are generally most interested in sales for some item at some location, as a function of time. Each possible pairing of item and location is known as a *combination*.

Note In theory, some implementations may have more than two chief dimensions. For example, you might track sales for items, locations, and demand types. In this case, a combination is an item, a location, *and* a demand type.

Combinations are central to Demantra Spectrum. Within a worksheet, you display data for a combination at any aggregation level. For example, you could display data for any of the following:

- Low fat items in Northeast stores
- SKU PLLF202FCPB at CVS 0051
- Private Label Brand cookies at the account Retailer D
- Ice cream, aggregated at all locations

Selecting Combinations

Apart from completely aggregated worksheets, each worksheet gives you a way to select the combination to view, as in the following example.

Here the selected combination is “Low fat products at the BJ account.”

In some cases, you view data that is aggregated across one dimension, as in the following example:

Here the selected combination is “Low fat products at all locations.”

Combination Status

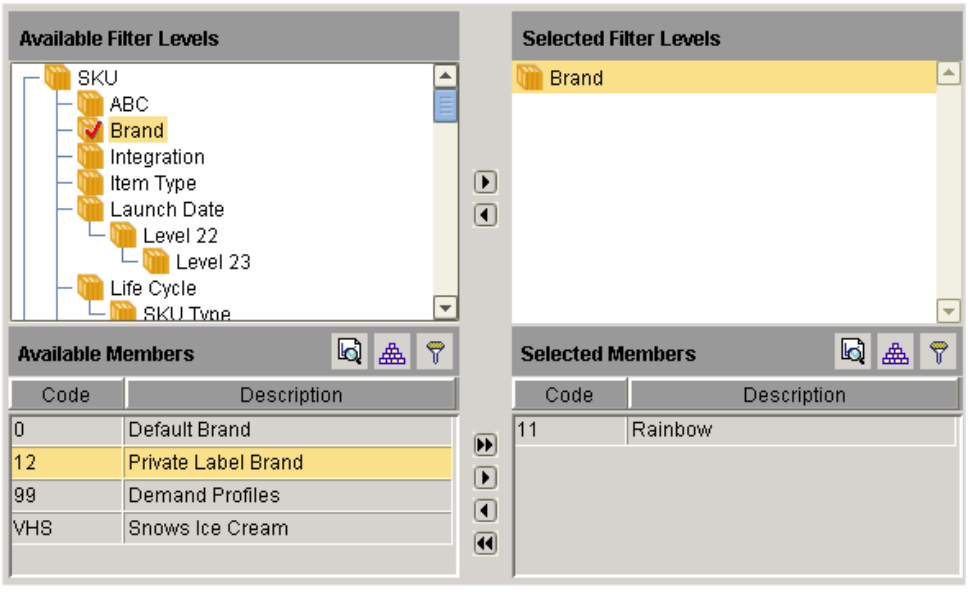
Not all items are sold at all locations. By default, Demantra Spectrum stores only those combinations that have actual sales, and the Analytical Engine considers only those combinations. Depending on your implementation and your user access, you might be able to create new combinations, for simulation purposes.

Filtering

Filters control the data that you are able to see. The available data may already be filtered, and you can apply additional filters to your worksheets as needed. When you apply a filter, you specify the following:

- An aggregation level. You can filter data at any level in any dimension.
- Specific members of that aggregation level that are allowed through the filter; other members are not included.

The net result is that a filter allows Demantra Spectrum to display only certain item-location combinations. In the following example, the filter blocks data for all brands except for the Rainbow brand.



As a result, the worksheet will display only those item-location combinations that are associated with the Rainbow brand. You can filter data at any level, whether or not it is chosen as an aggregation level of the worksheet.

Note The **Selected Members** list cannot include more than 200 members.

Series

Each worksheet shows series data associated with the combination that you have currently selected in the worksheet. A worksheet displays the series data in a table, or in a graph, or both. The following shows an example of a worksheet table:

Private Label LF Butter - BJ Store # 0006							
Time	Demand	Final Plan	Pseudo	Simulation	Sales Forecast	Sales Fcst Bias	Stat Frcst (Y/N)
04/08/2002	1,258,700				1,240,202	-18,498	Do Forecast
07/08/2002	1,232,800				1,161,719	-71,081	Do Forecast
10/07/2002	1,326,200				1,057,580	-268,620	Do Forecast
01/06/2003	488,500				903,675	415,175	Do Forecast
04/07/2003		1,193,227			1,193,227		Do Forecast
07/07/2003		1,123,295			1,123,295		Do Forecast
10/06/2003		1,040,942			1,040,942		Do Forecast
01/05/2004		820,737			820,737		Do Forecast
04/05/2004		280,121			280,121		Do Forecast
Summary	4,306,200	4,458,322			8,821,497	14,244	

The example here shows series at the lowest level, but you can view data for any given series at any aggregation level. The definition of the series controls how the data is aggregated. Data can be aggregated in various ways, for example by totalling it, or by taking the maximum or the minimum value.

As you can see from this example, there are many possible variations of series:

- Some series are editable (see **Stat Frcst**), some are editable only for specific dates (see **Pseudo**), and some are not editable at all. Generally, editable series are used as input to other series.
- Some series are shown in different colors, depending on the data values. For example, **Sales Fcst Bias** is displayed in red for any values less than zero.
- Some series are calculated from other series.
- Some are populated directly by the Analytical Engine. These series include information about the forecast and related information such as markers that indicate regime changes, outliers, and so on.
- Most series have time-varying values for each combination, but there are other kinds of series as well (discussed below). For example, the series **Stat Frcst** specifies whether a combination should be used in forecasting or not. As you can see, this series has the same value for all time buckets for a given combination.

Your implementors created series for your organization's needs. For an introduction to the most important series, see Chapter 6, "Forecasting and Simulations" on page 45.

Kinds of Series

Demantra Spectrum supports the following kinds of series:

- *Sales series* contain time-dependent set of data for item-location combinations. That is, each data point in the series corresponds to a given item-location

combination at a given point in time. This type of series is the most common type by far.

- *Combination series* (also called matrix series) store time-independent data for each item-location combination. That is, each data point in the series corresponds to a given item-location combination. You use combination series to store and maintain information about item-location combinations, such as flags for the Analytical Engine to use.
- *Level series* store data associated with a specific level. Each data point in the series corresponds to a given member of that level.

User Access

Depending on the implementation and on your access, you might not see the same data as other users of the system. Your access can be different from that of another user in many ways:

- The data you see might be filtered. For example, if you are an account manager, you might not be able to see accounts that are not yours.
- You might not see the same aggregation levels. And you should be able to see only those units of measure that make sense for the levels you see.
- You might not see the same series.
- You might not have access to all menus listed in the documentation.
- You can use only worksheets that are public or that you defined. Only the owner of a worksheet can edit it.

You should also be aware that an individual worksheet might have additional filters applied to it.

3 Using Worksheets

This chapter provides an overview of worksheets and explains how to use them. It includes the following sections:

Opening and Running a Worksheet *13*
Introduction to Worksheets *14*
Closing a Worksheet *17*
Editing Data in a Worksheet *17*
Working with the Graph *18*
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Changing the Layout of the Summary Report *26*

Opening and Running a Worksheet

To open a worksheet

1. Click **Query** > **Open**. Or click the **Open** button.

   A **Select Query** dialog box appears.

2. Click a worksheet name and then click **OK**. Or double-click a worksheet name.

To run a worksheet

Depending on how Demantra Spectrum was configured, it may or may not run a worksheet automatically when you open it.

- Within the worksheet, click **Data** > **Run Query**. Or click the **Run Query** button.

To stop a worksheet from running

- Click **Cancel**.

> **Note** This button may not be available in your implementation, due to difficulties in the supporting software.

Introduction to Worksheets

A worksheet displays data for specific item-location combinations. This data consists of all the series that are included in the worksheet, most or all of which vary with time. You can display a worksheet in either of the following formats:

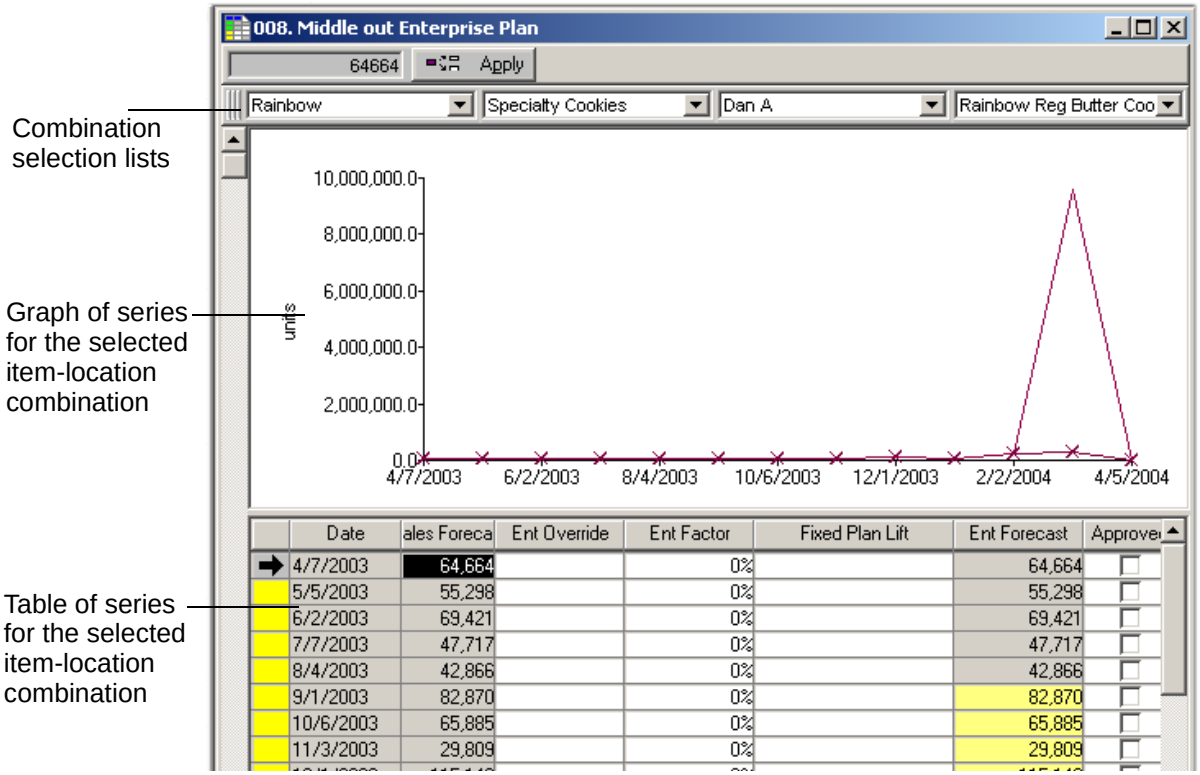
- Regular format, which includes dropdown lists you use to select the combination to view, and a table and graph, which display the series in the worksheet.

  When you use the dropdown lists to select a combination, the table and graph are updated automatically to display information for that combination.

- Summary format, which consists of a table that displays the series for all combinations in the worksheet. This table has one row for each combination.

The Regular Worksheet Format

When you display a worksheet in regular format, it looks like this:



Combination-Selection Lists

The upper section of the worksheet contains a dropdown list for each level that is included in the worksheet. These dropdown lists might not contain all the items or locations, because the worksheet may be filtered to exclude some.

For example, if the worksheet includes the City level, then a list of city names appears in the dropdown list. The list of city names depends on how the worksheet is filtered. If the worksheet is not filtered, all available city names will appear.

To relocate the dropdown lists

1. Click the striped area at the far left of the dropdown lists.

   The dropdown lists appear contained in a box.

2. Drag the box to a new location, and then release the mouse button.

   To restore the original display, click the X button inside the box with the dropdown lists.

Worksheet Table

A typical worksheet table looks like this:

	Date	Sales	Demand	Simulation	Sales Forecast	Ent Override	Ent Factor	Ent Forecast
	12/20/1999	100,058	100,058		60,909		0%	60,909
	12/27/1999	22,512	22,512		58,263		0%	58,263
	1/3/2000	43,091	43,091		51,577		0%	51,577
	1/10/2000	62,112	62,112		63,880		0%	63,880
	1/17/2000	36,402	36,402		46,323		0%	46,323
	1/24/2000				54,776		0%	54,776
	1/31/2000				74,548		0%	74,548
	2/7/2000				61,878		0%	61,878
	2/14/2000				71,816		0%	71,816
	2/21/2000				62,776		0%	62,776
	2/28/2000				66,873		0%	66,873

The color of cells in the leftmost column indicates the type of data displayed in the corresponding rows:

Green	Historic data
Yellow	Forecast data
Orange	Data that can be either history or forecast. If this worksheet aggregates data in time, it is possible for a single table row to aggregate both historical and forecast data. Forecast functions are not available for this row.

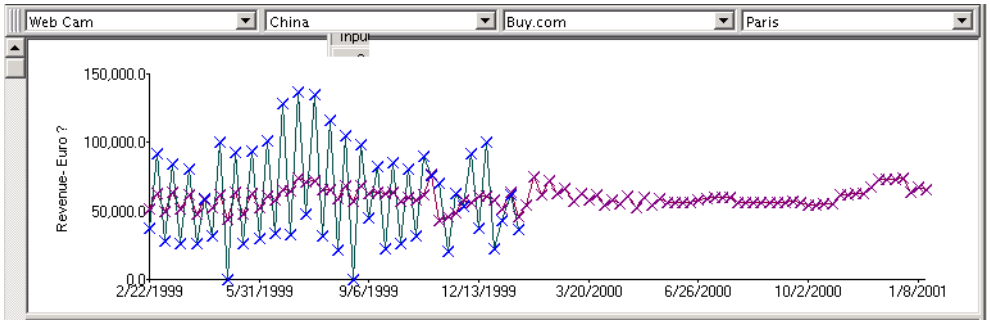
Non-editable data cells appear in light gray, while editable cells (only those that can actually be edited) appear white. Rows containing Summary Information (at the bottom of the screen) appear dark gray.

To resize a data column

- Drag the divider between two columns horizontally to the required position.

Worksheet Graph

The graph displays the series in the worksheet. You can specify the graph format.



To view the graph in other formats

Do one of the following:

- On the **Data** menu, click the option corresponding to the type of graph, for example **Bar Graph** or **Pie Chart**.
- On the toolbar, click the button corresponding to the type of graph.

To resize the graph

- Drag the divider between the table and graph to the required position.

Summary Format

When you display a worksheet in summary format, it displays data for all the lowest-level combinations in the worksheet. The result looks like this:

2302

	Date	01/08/2001						
	dc	Final Forecast	Error Standard	Repl Cycle	Service Level	Safety Stock	Safety Override	Final Safety Stock
Internet Phone	Boston	2,302	.14	14	95.%	768		768
Internet Phone		2,302	.14	14	95.%	768		768
	Grand Total	2,302	.14	14	95.%	768		768

To Change the Worksheet Format

To change the format of the worksheet

1. Open a worksheet.
2. 
   Click **Data > Options**. Or click the Options button.

   The **Options** dialog box appears.
3. Click **Worksheet** (for the regular format) or **Summary Report**.
4. Click **OK**.
5. 
   Click **Data > Run Query**. Or click the **Run Query** button.

See also

"Changing the Layout of the Summary Report" on page 26

Closing a Worksheet

To close an a worksheet

- 
  Click **Query** > **Close**. Or click the **Close** button.

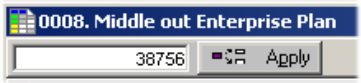
Editing Data in a Worksheet

Depending on the configuration of the worksheet, you can usually edit some of the data in it.

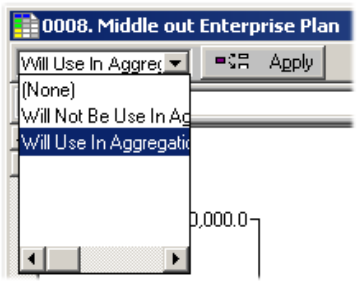
To edit data within the worksheet table

Any table cell shown in white is editable. You can edit data in the following ways:

- Type directly into the cell and then press **Enter** or move to another cell. Note that this technique does not work in cells that have a dropdown list of choices.
- Click the cell, type into the editable field in the upper left of the worksheet, and click **Apply**.



For a cell that has a dropdown list, the list of choices appears in this area:



Make a selection from the list and then click **Apply**.

- Select multiple editable cells within a single column. Either drag the cursor over the cells to be selected or click the column title (series) to select the whole column. Then type into the editable field in the upper left of the worksheet and click **Apply**.

Note If you have previously checked F. Approve and/or Approve in the **Series** dialog box, an **Enter Value for Approve** dialog box appears. Click **Checked** or **Not Checked**, and then click **OK**.

To cancel your entries, click **Edit** > **Reset Manual Changes**. Or click the **Reset Manual Changes** button.

- Copy and paste data within the worksheet table. To copy a data value, select a white data cell, and then click **Edit** > **Copy** or press **Ctrl+c**. To paste the value, place the cursor in a white data cell, and then click **Edit** > **Paste** or press **Ctrl+v**.

To edit data in the graph

1. In the graph, click a point in the graph and drag the line to a new position.

   As you drag the line, a box appears showing data corresponding to the current position.

2. When the required value appears in the box, release the mouse button.

Working with the Graph

To see the table row that corresponds to a graph point

- Click the required point in the graph.

  The table scrolls to the correct row, which appears selected.

Note The series to which you point must be defined with a symbol in the Business Modeler (Graph tab).

To position the graph data legend

1. Click **Data** > **Legend**.
2. Click the preferred legend position: left, right, top, bottom, or none.

Scrolling

To scroll between views

1. In the vertical scroll bar along the left side of the worksheet table, click the box and drag it to the required view.
2. When you have reached the required view, release the mouse button.

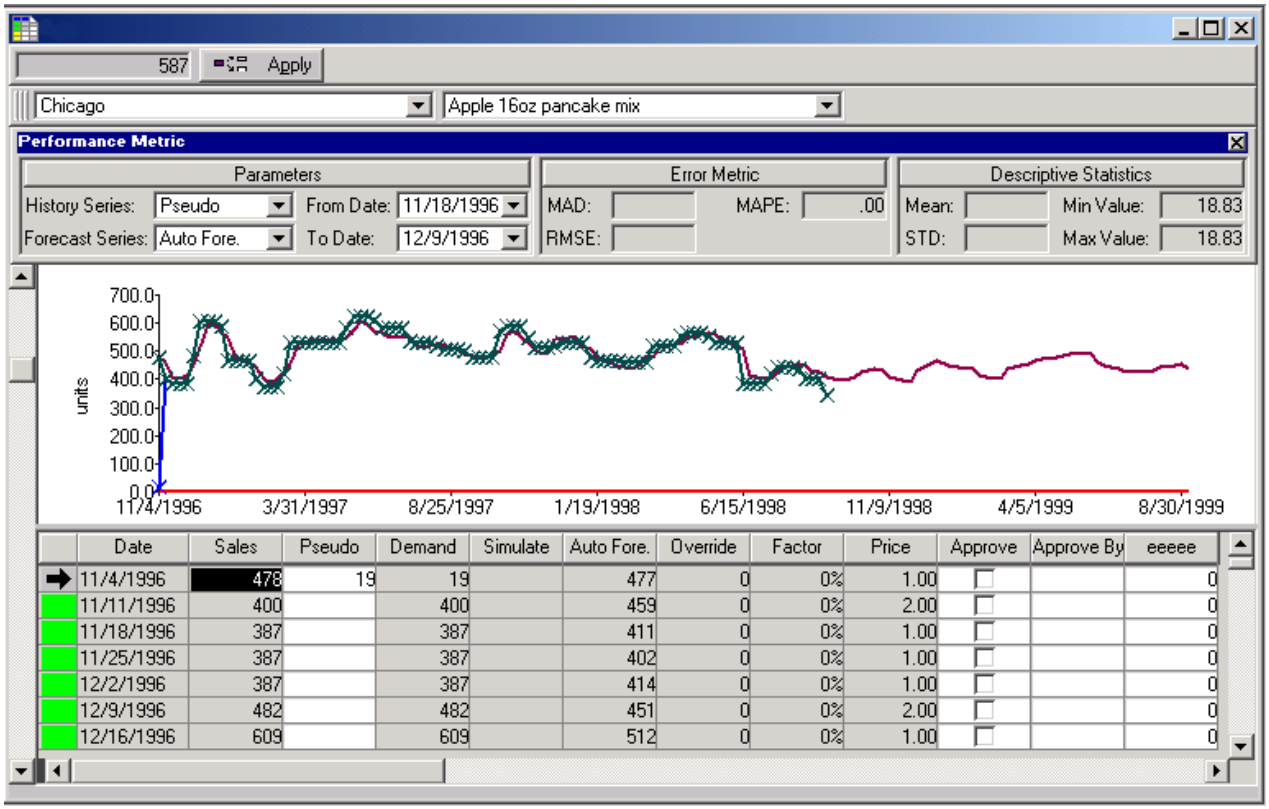
Viewing Performance Metrics

The Performance Metrics window displays quantitative measures for each item-location combination in the worksheet. It does this by comparing the model fit to the historical data. This gives you an impression of how well a certain forecast did in a given time period.

To view performance metrics

- Click **Analysis > Performance Metrics**.

  The **Performance Metrics** window appears.



In this window, you can view the following data:

Parameters (Input)

These parameters are used in calculating the Performance Metrics (=Error Metrics and Descriptive Statistics)

History Series	The history series for which you want to compute performance metrics.
Forecast Series	The forecast series for which you want to compute performance metrics.
From Date/To Date	The historic time period used in comparing the forecast to the base.

Error Metrics (Output)

MAD Mean Absolute Deviation (MAD), the average absolute error over several periods. This measure indicates the magnitude of the error, regardless of its direction.

RMSE Root Mean Squared Error (RMSE), root of the average squared error over several periods. This measure penalizes a forecast much more for extreme deviations than it does for small ones.

MAPE Mean Absolute Percentage Error (MAPE), a relative measure to the average absolute percentage error over several periods. The measure is an index to the actual series, and is useful in comparing forecast accuracy among time buckets.

Descriptive Statistics of History Series (Output)

Mean Mean value of the actual series. This measure indicates the mean level of the applicable series.

STD (Standard Deviation) Standard deviation of actual series. A measure of variation of the actual series around the mean value.

Min Value Minimum value of the actual series. A descriptive measure to the minimum of the series.

Max Value Maximum value of the actual series. A descriptive measure to the maximum of the series.

Performance Metrics: Editing the Parameters

For the system to be able to compute performance metrics, you must specify the following parameters. The default values of these parameters are taken from the worksheet definition, but they may be changed manually.

Parameter (Input)	Description	Default from worksheet definition
History Series	The history series for which you want to compute performance metrics.	Sales series
Forecast Series	The forecast series for which you want to compute performance metrics.	Batch Forecast version 0
From Date/To Date	The historic time period used in comparing the forecast to the base.	History periods chosen in the worksheet definition

To edit the parameters

- In the **Performance Metrics** window, in the **Parameters** area, change one or more of the default values that were used in calculating Error Metrics and Descriptive Statistics.

Note To be able to edit parameters, the available series must be part of the worksheet definition and the time period should be among the number of periods in history in the worksheet definition.

Locking Data

You can lock your worksheet data and make it read-only to other users.

To lock data

- Click **Data** > **Protect Data**. Or click the **Lock** button.

  The button appears red.

To release the lock

1. Make sure the worksheet you want to unlock is open.
2. Click **Data** > **Release Protected Data**. Or click the **Lock** button again.

   The button reverts to its original appearance.

Printing a Worksheet

To preview the printed worksheet

1. Click **Query** > **Print Preview**.

   The active worksheet appears in the default table format.

2. Click the appropriate **Print Preview** toolbar buttons to achieve the following:

 Display the worksheet in graph format

 Display the worksheet as a summary report

 Print the worksheet

 Zoom in

 Scroll to the first page

 Scroll to the previous page

 Scroll to the next page


Scroll to the final page


Close the Print Preview window

To print a worksheet

- Click **Query** > **Print**. Or click the **Print** button.

Exporting Data

You can export worksheet data to different applications.

To export worksheet data

1. Click **Query** > **Export**. Or click the **Export** button.

   A **Save As** dialog box appears.
2. Enter a name for the file and specify the type of file you are saving.
3. Click **Save**.

Viewing the Lowest Combination Count

The Lowest Combination Count indicates the number of combinations that exist at the lowest level in the data window.

To view the lowest combination count

- Click **Analysis > Lowest Combination Count**.

  The number of lowest level combinations is displayed.

Opening a Note List

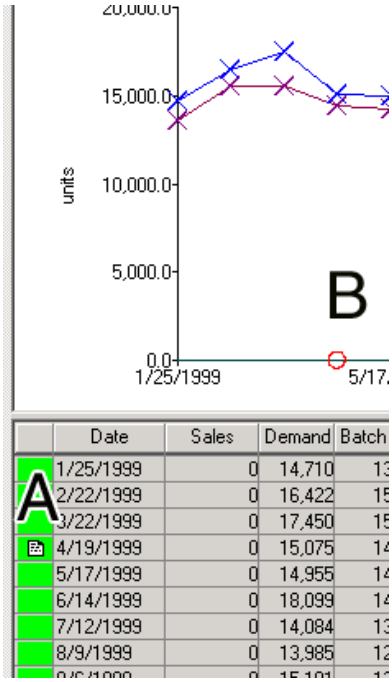
You can add notes to a worksheet to record comments and reminders.

To open a note list

Do one of the following:

- Hold the mouse button over a point in the chart, right-click and then select **Note List**. An existing note list is indicated by a red circle at the base of the chart.
- Select one or more table rows, right-click and then select **Note List**. If you select more than one row, the note will be associated with each of the selected rows.

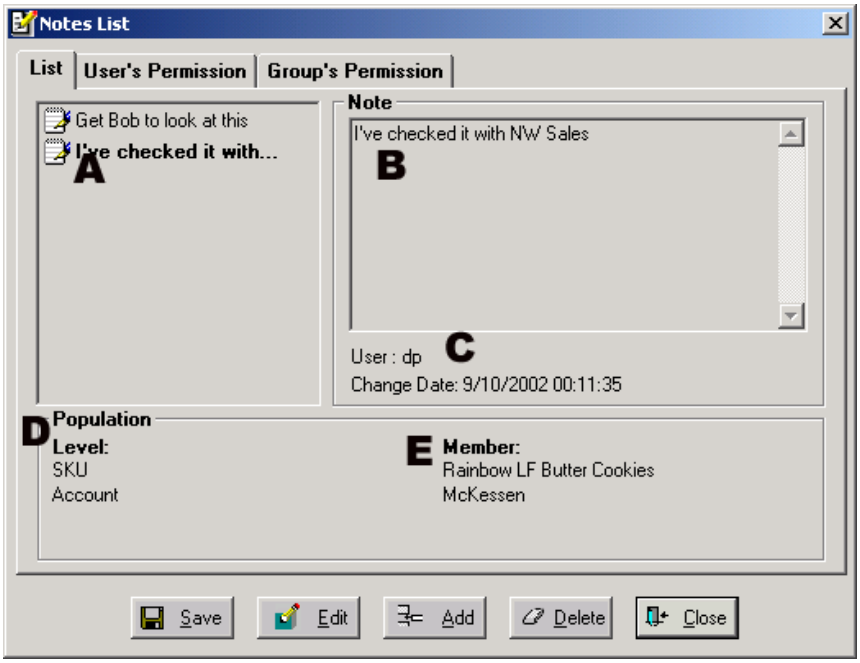
- Double-click the left column. If a note list is already associated with the row, a symbol is displayed in the first column.



A Note symbol in worksheet table

B Note symbol in graph

The Notes List screen appears.



A Beginning of text of the note

B Complete contents of the note

C Last edit - user and date

D Level with which note is associated

E Member with which note is associated

Adding a Note to a Note List

To add a note

1. In the **Notes List** screen, click **Add**.
2. Type a note in the note box, and then click **Save**.

Editing a Note

To edit a note

1. From the **Notes List** screen, select a note in the **List** pane and click **Edit**.
2. Edit text in the **Note** box, and then click **Save**.

Deleting a Note

To delete a note

1. From the **Notes List** screen, select a note in the **List** pane.
2. Click **Delete**.
3. Click one of the following:
   - **Partial Deletion** - deletes the note only from the current member/date.
   - **Total Deletion** - deletes the note from all member/dates with which it is associated.
4. Click **OK**.

Specifying Note Permissions

The notes can be viewed by other users. Security permissions can be specified for the notes, to determine who can read the note and what type of access they are permitted.

To specify note permissions for individual users

1. In the **Notes List** dialog box, select the **User's Permission** tab.
2. Double-click a user in the **Available Users** column.

   Repeat for each user to whom you wish to grant access permissions.
3. Click a user in the **Selected Users** column.
4. Click a setting from the **Permission** dropdown list.

   The following options are available:
   - **Full Control** - read, write, add, delete.

- **Read and Write** - read, write, add.
- **Invisible** - the note list is not visible.
- **Read Only** - read.

To specify note permissions for groups of users

1. In the **Notes List** dialog box, select the **Group's Permission** tab.
2. Double-click a group in the **Available Groups** column.

   Repeat for each group to which you wish to grant access permissions.
3. Click a group in the **Selected Groups** column.
4. Click a setting from the **Permission** dropdown list.

Group and User Permission Priorities

A user can be granted permissions that are different from the permissions granted to the groups to which that user belongs. The following rules apply:

- Read-only is the default setting for non-selected users.
- When permissions are specify for a particular user, this takes precedence over the group permissions.
- If the user has only default settings, the group permissions will take precedence.
- If a user belongs to more than one group, the highest level of permissions from the associated groups will be granted.

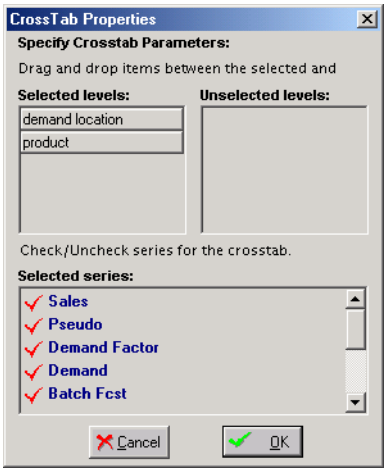
Changing the Layout of the Summary Report

You can change the layout used by a worksheet when it is displayed in the summary format. Your changes are not saved permanently, however.

To change the layout of the summary report

1. Open a worksheet and switch to the summary format. See "To Change the Worksheet Format" on page 17.
2. Click **Data** > **Design Report**.

The following dialog box appears.



3. To select a level, drag it from the **Unselected Levels** list to the **Selected Levels** list.

Note The order in which the levels are listed controls the layout of the worksheet.

4. To unselect a level, drag it from the **Selected Levels** list to the **Unselected Levels** list.
5. To select or unselect a series, click the series in the **Selected Series** list.

   The selected series are marked with a check symbol.
6. Click **OK**.

4 Creating and Redefining Worksheets

This chapter explains how to create and redefine worksheets. It includes the following sections:

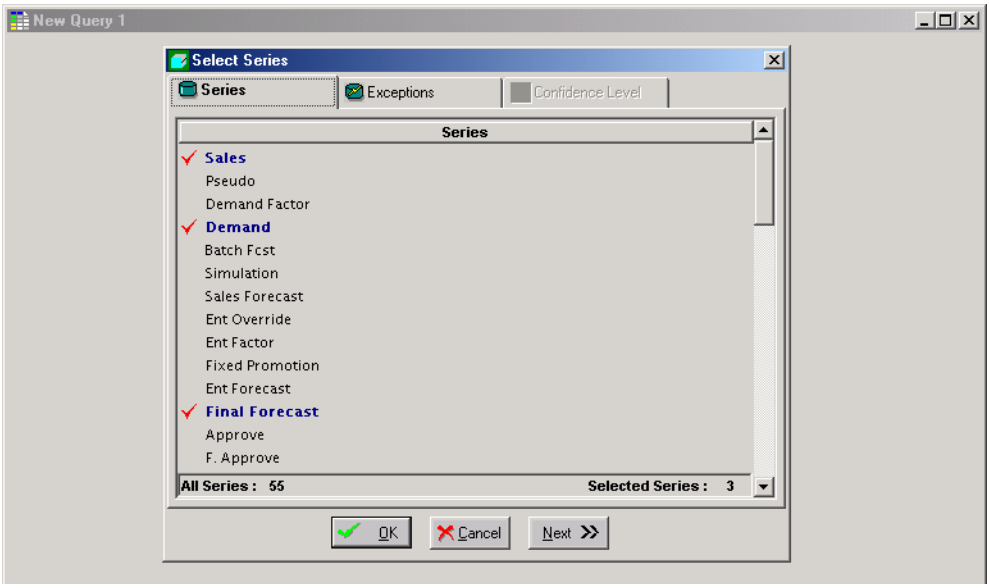
Starting to Create a New Worksheet *30*
Selecting Series *30*
Applying Exception Filters *32*
Specifying the Confidence Level *34*
Specifying the Time Criteria *34*
Specifying Aggregation Levels *36*
Changing the Overall Scale or Unit of Measure *37*
Filtering the Data in the Worksheet *38*
Switching the Filter Mode *39*
Adding a Description to a Worksheet *39*
Viewing a Worksheet Definition *40*
Saving a Worksheet Definition *40*
Saving a Worksheet with a Different Name *40*
Renaming a Worksheet *41*
Redefining a Worksheet *41*
Deleting a Worksheet *42*

Starting to Create a New Worksheet

To start a new worksheet

- Click **Query** > **New**. Or click the **New** button.

  A toolbar appears on the left side of the screen, and a **New Query** window appears with the **Select Series** dialog box displayed on top.



In general, you follow a sequence of steps. On each screen, save your work and continue to the next step by clicking **Next** on the dialog box. Or, to save the criteria and return to the previous step, click **Back**.

To save the criteria and quit the wizard at any time, click **OK**.

Selecting Series

A worksheet can select up to 40 series.

The Demantra Spectrum database contains different types of information, such as budget data, sales data, and forecasts. In the **Select Series** dialog box you can select the types of data you want to retrieve, from a list that was configured for you.

Choosing categories of information involves three operations:

1. Selecting the *series* such as budget data, sales data, and forecasts that you want to retrieve from the database. Options include default error series, which enable you to view error graphs and identify regions of better or worse fit, as well as confidence interval series. You may also select outlier series (data points that do not seem to follow the characteristic distribution of the rest of the data) and regime change marker series (data points in which a change in the demand pattern

occurs). These points will then be visible in the graph of the worksheet combination.

Caution You can select no more than 40 series per worksheet.

2. Defining *exceptions*. If you attach an exception to a worksheet, Demantra Spectrum checks the values of the worksheet data and displays only the combinations that meet the exception criteria.
3. Specifying the *confidence level*. The confidence interval for a forecast line gives you a range of values around the forecast line where the 'true' demand can be expected to be found (with a given level of certainty, that is, the confidence level). You can change the confidence level to 90% or 99% or use the default of 95%.

To select a series

- In the **Select Series** dialog box, click the required series. (Repeat as needed.)

Note You can select all series (or the first 40 series listed). To do so, right-click and then select **Check All**. Or cancel the selection of all series by choosing **Uncheck All**.

To cancel a selection

- In the **Select Series** dialog box, click a selected series.

Allowed Types of Series

The desktop product supports only numeric sales or combination series. That is, if a worksheet includes any of the following types of series, Demantra Spectrum cannot run the worksheet:

- Date series
- String series (other that dropdown series, which are stored with numeric value)
- Series that are related to promotions

Sorting and Finding Series in the Select Series Dialog Box

To sort the list

1. In the **Select Series** dialog box, right-click and then select **Sort**.

   A **Sort** dialog box appears.
2. To determine how the series will be sorted, do one of the following:

- Click one or more required boxes in **Columns Available for Sorting**, and drag them to **Sort Columns**.
- Double-click the required boxes in **Columns Available for Sorting**.

Note This process can be reversed by dragging a box in the opposite direction, or by double-clicking a box in **Sort Columns**.

3. To specify an ascending sorting order, make sure **Ascending** is checked. For a descending order, clear the box.
4. Click **OK**.

To find a series in the list

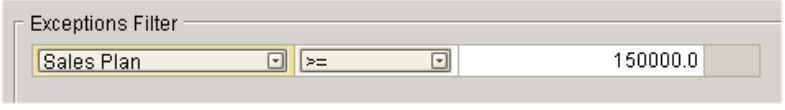
1. In the **Find** dialog box, right-click and then select **Find**.

   A **Find** dialog box appears.
2. In the **Find where** box, select **Code** or **Description** to find the series by its code or by its description.
3. In the **Find what** box, type the code or the description of the required series, depending on your choice in the **Find where** box.
4. In the **Search** box, select **Up** or **Down** to specify the direction of the search.
5. (Optional) Click one or more of the following check boxes:
   - **Whole Word:** Search for the exact match of a word.
   - **Match Case:** Search for the exact match of a word (case sensitive).
   - **On Line Search:** For immediate search results (even if only part of a word has been entered in the **Find what** box).
6. Click **Find Next** to begin (or continue) searching.

Applying Exception Filters

If you attach an exception to a worksheet, Demantra Spectrum checks the values of the worksheet data and displays only the combinations that meet the exception criteria.

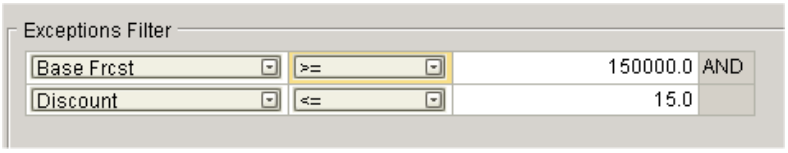
Specifically, you define an exception condition that consists of a series, a comparison operator, and a value, for example:



When you open the worksheet, Demantra Spectrum checks each combination in the worksheet. For each combination, if the condition is met for *any* time in the worksheet date range, Demantra Spectrum displays that combination. For example, the worksheet shows combinations that have Sales Plan values greater than or equal to 150000, within the time range included in the worksheet.

If the condition is not met at any time for any of the worksheet combinations, Demantra Spectrum shows the worksheet as empty. That is, if all values in the Sales series are less than 15000 for all combinations, the worksheet comes up empty.

You can apply multiple exceptions to a worksheet. When you apply multiple exceptions, you can relate them to each other via logical AND or logical OR relationships. For example:



To apply an exception filter

1. In the **Select Series** dialog box, click the **Exceptions** tab.
2. Click **Add**.
3. In the new row, click the arrow to the right of the **series** box and select a series from the dropdown list.
4. Click the arrow to the right of the **operator** box and select an operator from the dropdown list.
5. (Optional) In the **number** box, change the default to the required number.

   Note Not all series are necessarily available for exceptions, depending upon the implementation. Contact your implementors.

6. Click **Verify** to ensure that the new exception is valid.
7. (Optional) You can apply additional exceptions. Click the **AND** or the **OR** check box to specify that the exceptions will have an AND or an OR relationship.

To delete an exception

- Click the exception and then click **Delete**.

To save the criteria and quit the Select Series dialog box

Do one of the following:

- Click **Next** to proceed to the **Time** dialog box
- Click **OK** to close the **Select Series** dialog box and quit the worksheet criteria entry path.

Specifying the Confidence Level

You can specify a confidence level for your series. The confidence interval for a forecast line gives you a range of values around the forecast line where the 'true' demand can be expected to be found (with a given level of certainty, that is, the confidence level). You can change the confidence level to 90% or 99% or use the default of 95%.

Note The confidence level series applies only to future periods.

To specify a confidence level

1. In the **Select Series** dialog box, click the **Confidence Level** tab.
2. In the **Confidence Level** dropdown, select the required percentage.

Specifying the Time Criteria

You use the Time dialog box to specify the time resolution of the worksheet and to specify the range of dates to which the worksheet applies.

To specify time criteria

1. In the **Time Scale** box, specify the time resolution of the worksheet results.
2. In the **Time Filter** box, specify the time period to which the worksheet applies:
   - **Relative** if you always want the worksheet to show a time range relative to today (for example, if you want to see two years of history and a one-year forecast each time you open the worksheet).
   - **Fixed** if you always want the worksheet to show a specific time range.
3. In the **From Date** and **To Date** boxes, enter values depending on the time filter you have chosen, as follows:

Time Filter	Box	Action
Relative	**From Date/ To Date**	Specify periods in both **From** and **To** with the current (computer) date as the reference point. For example: If the Time Scale is *Month*, and you want to see results starting from six months before today until six months after, enter -6 (negative) in **From Date**, and 6 in **To** Date.

Time Filter	Box	Action
Fixed	**From Date**	Enter a specific date as a starting point of the worksheet results. This is enabled only from the calendar (see “To insert a date from the calendar” on page 35).
	To Date	Specify the number of periods you want to include, starting from the From date. The unit period is what you selected in **Time Scale**. For example: If the Time Scale is *Year*, **From Date** is 01/01/96, and you want to see results until 12/31/98, enter 3 in **To Date**.

You can also enter the date from the calendar window.

To insert a date from the calendar

1. In the **From Date** or **To Date** boxes, click the **Calendar** button.

   A **Calendar** window appears.

2. Select the required month and year from the relevant dropdown lists.
3. Click the date, and then click **OK**.

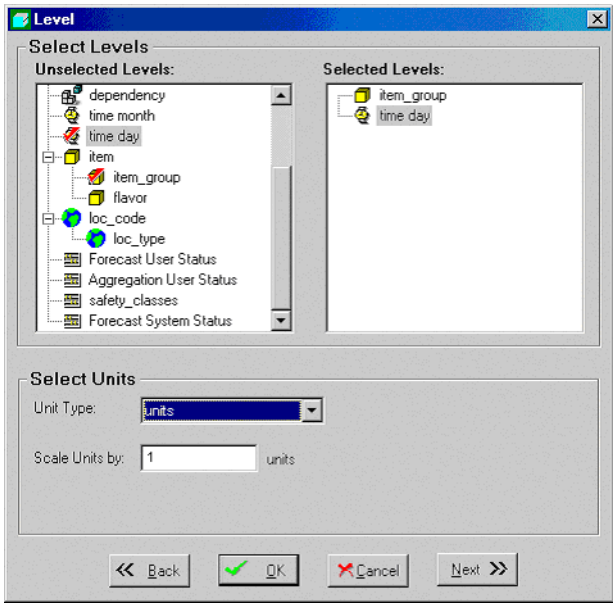
To save the criteria

Do one of the following:

- Click **Next** to move to the **Level** dialog box.
- Click **Back** to return to the **Select Series** dialog box.
- Click **OK** to close the dialog box and quit the criteria entry path.

Specifying Aggregation Levels

A worksheet can optionally contain aggregation levels; when you use the worksheet, you can examine data associated for any members of those levels. If you do not specify any aggregation levels, the data is completely aggregated (but is still time-dependent).



To specify the aggregation levels in a worksheet

1. Click one or more required levels in **Unselected Levels**, and drag them to **Selected Levels**. Or double-click a level in **Unselected Levels**.

   The selected levels appear checked in **Unselected Levels**, and are displayed in **Selected Levels**.

   Note You can select a maximum of four levels per worksheet.

To cancel a level selection

- Drag the level in the opposite direction (that is, to the **Unselected Levels** list). Or, in the **Selected Levels** list, double-click a level.

To save the criteria and quit the Level dialog box

1. Do one of the following:
   - Click **Next** to move to the **Filters** dialog box.
   - Click **Back** to return to the **Time** dialog box.
2. Click **OK** to quit the criteria entry path.

See also

"Changing the Overall Scale or Unit of Measure" on page 37

Changing the Overall Scale or Unit of Measure

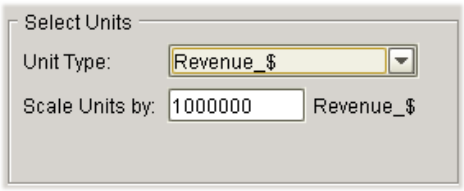
Any given worksheet uses a single overall scaling factor and a single unit of measure. You can change either or both of these. When you make this change, the displayed values for most or all of the series in the worksheet are changed.

Note This change affects only the series that are scaled. Not all series are scaled. For example, a series defined as a percentage is probably not scaled.

To change the overall scaling factor

1. Click **Worksheet > Aggregation Levels**. Or click the Levels button on the toolbar.

   The Levels page includes a section where you specify the overall scale of the worksheet, as well as its units of measure.



2. In the **Scale Units by** box, specify the factor by which all numbers in the worksheet are to be divided (for display purposes).

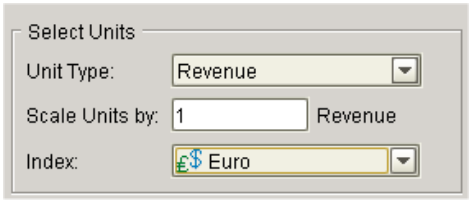
   For example, if you specify a factor of 1000, the displayed data will divided by 1000. So the number 96,000 will be displayed as 96. The vertical axis of the graph is updated to show the factor in parentheses. For example, if the vertical axis was formerly labeled "units", it will be updated to say "units (1000)" instead.

To change the unit of measure

1. Click **Worksheet > Aggregation Levels**. Or click the Levels button on the toolbar.
2. In the **Unit Type** box, select the unit of measure to display in the worksheet results.

   For example, our items are bottles, and suppose that a case that contains six bottles. If you display the worksheet with cases instead, the system will display the number of bottles divided by six.

3. If the **Index** box is displayed, choose an index from the dropdown list.



The **Index** menu lists all the time-dependent indexes and exchange rates that are associated with this unit. Each index or exchange rate is a time-varying factor that the worksheet can use. When you select an index, the worksheet will automatically multiply all monetary series by the factor for each date. For example, if you choose Consumer Price Index (CPI) as the index, the system will calculate all monetary quantities with relation to the CPI.

Note These indexes and exchange rates are generally imported from other systems. The set available to you depends upon your implementation.

See also

"Specifying Aggregation Levels" on page 36

Filtering the Data in the Worksheet

You specify the scope of the worksheet by filtering the data that it displays, so that it displays only selected members of specific aggregation levels. These aggregation levels do not have to be the same as the aggregation levels you display in the worksheet (in fact, they are usually different).

To filter the data used in the worksheet

1. Do one of the following:
   - In the **Filters** dialog box, click a level in **Select Filters From** (which lists the available levels) and drag it to **Selected Filters**.
   - Double-click a level in **Select Filters From.**
2. Under **Select Values to Filter**, the **Select Values From** box now displays members for the filter you selected. Do one of the following:
   - Double-click the member you want to filter out.
   - Click a member in the list, and then click the right arrow button.

   Note The **Selected Members** list cannot include more than 200 members.
3. Repeat for each filter you want to add.

To save the criteria and quit this dialog box

Do one of the following:

- Click **Back** to return to the **Level** dialog box.
- Click **OK** to close the dialog box.

To filtering, sorting, or find levels in this dialog box

You can filter, sort, and find the levels that are displayed in the Filter dialog box. To do so, use the same general technique described in “Sorting and Finding Series in the Select Series Dialog Box” on page 31.

Switching the Filter Mode

By default, the filters operate in cascade mode. In this mode, the filters enable you to filter only existing combinations or members for your worksheets. You will see only members that have combinations with the previously selected members. Members that do not have those combinations will not be available in the list.

Your system administrator may or may not have given you the ability to switch the filter mode to non-cascading. In non-cascade mode, you see all the members of the selected level regardless of the previously selected members from other levels.

To switch the filter mode

- In the **Select Values to Filter** pane, right-click and then select **Turn Cascade Filters Off** or **Turn Cascade Filters On**, as needed.

Adding a Description to a Worksheet

You can add a description to your worksheet, allowing you to explain its purpose and uses. A description serves only for documentation purposes and does not affect the worksheet itself. It is useful mainly in public worksheets as it clarifies the worksheet to other users of the system.

To add a description to a worksheet

1. Open a worksheet.
2. Click **Query** > **Description**.

   The **Query Description** dialog box appears.
3. Type the required text and then click **OK**.

Viewing a Worksheet Definition

To view all selected worksheet criteria

1. Click **Data** > **Properties**. Or click the **Info** button.

   A **Query Properties** window appears.

2. Click the required tab to view its details.

Note You cannot edit criteria in this window.

Saving a Worksheet Definition

The worksheet criteria you have entered have been stored temporarily, until you save the worksheet itself. After you save a worksheet, you can use it in the future as many times as you want. As new sales data is added to the database, you can select a saved worksheet and retrieve forecast data based on the criteria that make up the worksheet.

To save a worksheet definition

1. Click **Query** > **Save**. Or click **Save**.

   A **Query** dialog box appears.

2. In the **Query Name** box, type a name for the new worksheet.

   This name will appear in the **Title** box of the worksheet window.

3. From the **Access** dropdown list, select one of the following:

   Private For your own use only. Data is retrieved from the database, but the worksheet is visible only to its owner (the user who created it) and the administrator.

   Public Data is retrieved from the database and the worksheet is visible to all users; any user may change its definitions.

4. Click **OK**.

Note In contrast, the **Data > Update** option saves the data and notes in the worksheet, not the worksheet definition. See “Saving Changes” on page 3.

Saving a Worksheet with a Different Name

To save a worksheet with a different name

1. Open a worksheet.
2. Click **Query** > **Save As**.

   A **Query** dialog box appears.

3. In the **Query Name** box, type a different name for the current worksheet.
4. From the **Access** dropdown list, select required access type.
5. Click **OK**.

Note In contrast, the **Data > Update** option saves the data and notes in the worksheet, not the worksheet definition. See "Saving Changes" on page 3.

Renaming a Worksheet

You can rename a worksheet. Each worksheet must have a unique name.

To rename a worksheet

1. Open the worksheet that you want to rename.
2. Click **Query** > **Rename**.

   A **Query** dialog box appears.
3. In the **Query Name** box, replace the name of the worksheet with a new one and then click **OK**.

   The new name appears in the title bar of the worksheet window.

Redefining a Worksheet

You can change your worksheet criteria. This process may be preferable to creating a new worksheet.

To change worksheet criteria

1. On the **Data** menu, click **Series**, **Time**, **Levels** or **Filter**. Or click the **Series**, **Time**, **Levels** or **Filter** button.

    Series

    Time

    Levels

    Filter

   The appropriate dialog box appears.
2. Make the required changes, and then click **OK**.

Deleting a Worksheet

To delete a worksheet

1. Open the worksheet that you want to delete.
2. Click **Query** > **Delete**.

   A **Verify** message appears.
3. Click **OK**.

5 Viewing the Audit Trail

You can view the audit trail that Demantra Spectrum automatically creates when users make changes to data and so on. This chapter includes the following sections:

Overview *43*
Viewing the Audit Trail *43*

Overview

Demantra Spectrum automatically records changes in an audit trail. The audit trail includes changes due to user edits within worksheets, updates via the Business Logic Engine, and changes caused by import.

You access the audit trail from within an open worksheet. You can view the changes that have occurred to the item-location combination that is currently displayed in the worksheet.

Note You can see only changes that were made by you or other users who are in the same collaboration groups as you.

Viewing the Audit Trail

To view the audit trail

1. In a given worksheet, select a combination.
2. Click **Data** > **Audit Trail**.

   The **Audit Trail** screen appears, displaying a table with one row for each change recorded in the audit trail. The following information is displayed:

Audit Date	Date when change was made.
User Name	User who made the change
Update Mode	Indicates the type of change: Manual, BLE (Business Logic Engine) or Integration
Unit Name	Unit of measure that was used at the time of the change
Index Name	Index that was used at the time of the change
Series List	Series affected by the change

Status In Progress, Fail, or Success

The data displayed here is filtered by selected levels (population), the series selected in the worksheet (date range) and user security (only updates that were made by the user or others in the same collaboration group).

3. To see more details, click **Details**.

   A window is displayed, showing more detail.

4. To see information about changes to series, click the **Series Values** tab.

   This tab displays the following information:

Series Name	Name of the series that was changed.
Series Value	New value used in this series.
Original Value	Original value in this series.
From Date	First date in the series when the change occurs.
To Date	Last date in the series when the change occurs.

5. To see the specific aggregation levels to which this change applies, click the **Aggregate Level Population** tab. Note that the change could have occurred at a different aggregation level.

6. To see the filtering that was used at the time of this change, click the **Filtered Population** tab.

6 Forecasting and Simulations

This chapter includes the following sections:

Overview of Forecasting *45*
Fine-Tuning the Forecast *46*
Selecting Forecasting Models *48*
Viewing How Causal Factors Affect Models *49*
Viewing Forecast Tree Information *50*
Filtering and Sorting Forecast Nodes *51*
Performing a Simulation *52*
Performing Data Approval *53*

Overview of Forecasting

The process of forecasting depends on the following implementation-specific factors:

- How often the Analytical Engine has been set up to run and generate the forecast series
- Which series your organization uses
- Which users have access to those series

However, the general process is roughly as follows:

1. Periodically, after the engine has run, open worksheets that contain the forecast series and any related series.
2. View the forecast series and make adjustments as needed.

Note If you examine the forecast through the worksheets, you can view only the Final Plan, not each of the individual models involved in generating the composite forecast. If you examine the forecast through Microsoft Excel, you can view each model and its contribution to Final Plan.

Fine-Tuning the Forecast

You may want to fine-tune your Final Plan. For example, if you intend to launch a sales promotion that is expected to yield an increase that will be well above the Demantra Spectrum projection, you can add the expected increase manually. Or if you foresee a serious drop in sales (for example, because a production unit is out of order), you can enter your prediction manually. Such sharp fluctuations in sales cannot be anticipated by the Analytical Engine, which bases its projections on historical analysis of sales and other time-based factors that are stored in the database.

To change the Final Plan value manually, you can use the Factor value or the Override value. Factor and Override can interact with the Final Plan as follows:

- **Factor (%) value alone: Only a Factor value is entered to change a Final Plan value.** Entering a Factor (%) value will add or subtract a percentage of the Sales Forecast to the Final Plan.

  The program will calculate the Final Plan on the fly when the Override column is null (empty). It is not necessary to update and rerun the worksheet to see the Factor's effect on the Final Plan. This is because calculations are done locally in the worksheet, rather than on the server. However, if you want the results of the Factor on Final Plan to be written to the database, you must update the data.

  When a Factor value is entered, the Final Plan will be equal to the Sales Forecast plus the multiple of the Sales Forecast times the Factor value. In other words, when a Factor value is entered:

  Final Plan = Sales Forecast + (Factor * Sales Forecast)

  For example, if the Sales and Final Plan were 10,000, and a 10% factor was entered in the Factor column, then the Final Plan will be 11,000 and Sales Forecast will be 10,000: 10,000 + (10,000 * 10%) = 11,000

- **Override (absolute) value alone: Only an Override value is entered to change a Final Plan value.** When an Override value is entered, the Final Plan will be equal to Override value. In other words, when a Factor value is entered: Final Plan = Override.

  Override will calculate the Final Plan on the fly. However, if you want results of the Override on Final Plan to be written to the database, you must update the data. For example, if the Sales and Final Plan were 10,000 and 12,000 was entered in the Override column, then the Final Plan will be 12,000 and Sales Forecast will be 10,000:

  12,000 = 12,000

- **Using both Factor and Override values together:** Both Factor and Override values are used to change a Final Plan value. When both Factor and Override values are entered in a row to change a Final Plan, the data must be updated and will be recalculated in the spreadsheet. The Final Plan will be equal to the Override plus the multiple of the Factor times the Override value.

  The effects of the combination of Factor and Override values on the Final Plan can be seen immediately.

For example: If the Sales and Final Plan were 10,000, and a 10% Factor was entered along with a 12000 Override, then the Final Plan would be 13,200:

12,000 + (12,000 * 10%) = 13,200.

Note The data series were configured for you when Demantra Spectrum was implemented. The series described here are default ones.

Batch, Sales, and Final Forecasts

Sales Forecast and Final Plan values work together with manual changes made to data by entering values into the Factor and Override columns. It is important to understand how these four columns work together.

In normal operation, and by default, Sales Forecast values are equal to the Batch Forecast (specified in the worksheet time definition area as the Forecast Version) unless changes have been made by a simulation and the simulation has been accepted.

The Final Plan will also be equal to the Sales Forecast in these two situations, unless further manual changes are made to the Factor (%) or Override. For example, you may open and run a worksheet (Batch, Sales and Final Plan initially all being equal), and then run a simulation. At this point, both the Sales and Final Plan values are updated to equal the simulation values. Both Sales and Final now reflect any changes from Batch Forecast as a result. Finally, you may make manual changes to the Final Plan using Factor or Override, or both, and update the data. In this case, all three forecasts (Batch, Sales and Final) will have different values for some part of the forecast period. Batch will always have the result of the batch forecast used by the worksheet; Sales Forecast will be identical to Batch Forecast unless a simulation has changed its value; and Final Plan will be identical to Sales Forecast unless a manual change has been made to Factor or Override.

Note If you are viewing data at a high level of aggregation (for example, forecasts of all sales in a certain town) and manual overrides and factor changes were made at the store level, then the SUM of these lower (child) level values will appear at the parent level of Final Plan and Override. As for the Factor value at the town (parent) level, this value will reflect the proportional effect that each store historically contributed to the overall sales in the town.

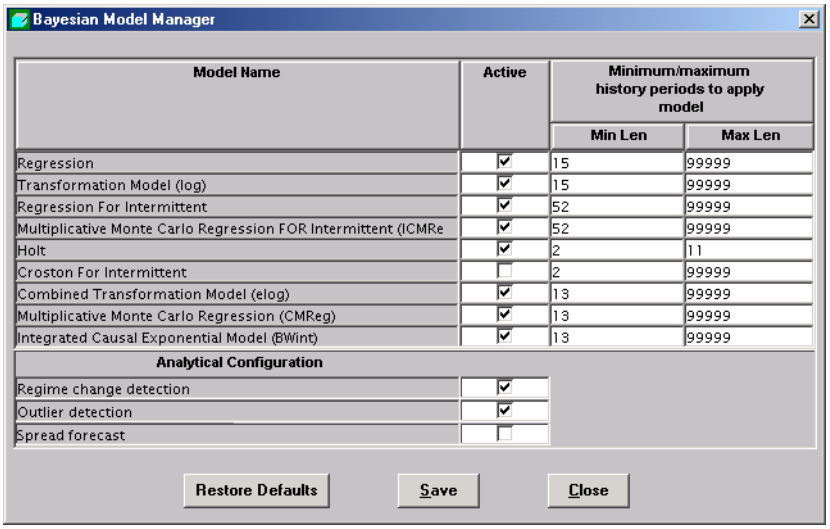
Selecting Forecasting Models

You can select and configure the forecasting models that will be included in the forecast.

To select the forecasting models to use

1. Click **Analysis** > **Model Library.**

   The **Bayesian Model Manager** screen appears.



2. Select the models to use as follows:

   - To include a model in the forecast, check the check box in the **Active** column.
   - To exclude a model from the forecast, clear the check box in the **Active** column.

Note The weight given to each forecasting model will be determined automatically by the Analytical Engine.

To determine historical time periods per series

1. Enter the minimum length in the **Min Len** column.
2. Enter the maximum length in the **Max Length** column.

Note The minimum and maximum historical time periods determine the time periods when the model will be used. The time period is the time unit configured in the system. The minimum number of time periods must be equal to, or greater than, the number of causal factors in the forecast, except in the **HOLT** and **FCROST** models. These models do not work with causal factors.

To specify the analytical configuration

- Click **Regime Change Detection** to make the forecast detect the existence of regime change points.
- Click **Outlier Detection** to detect and compensate for unusual points in the data that may distort the result of the forecasting process and lead to erroneous decisions.
- Click **Spread Forecast** to produce a smooth continuous demand pattern when forecasting intermittent demand. Unselect to allow peaking.

To return to default settings

- Click **Default.**

To save changes

- Click **Save**.

To close the window

- Click **Close**.

Viewing How Causal Factors Affect Models

To view a causal factor affects a model

- Click **Analysis** > **Forecast Tree Information**.

  The matrix in the Model Coefficients pane displays all causal factors and models loaded in the engine. For more information, see “Viewing Forecast Tree Information” on page 50. The matrix in the Model Coefficients pane displays all causal factors and models loaded in the engine.

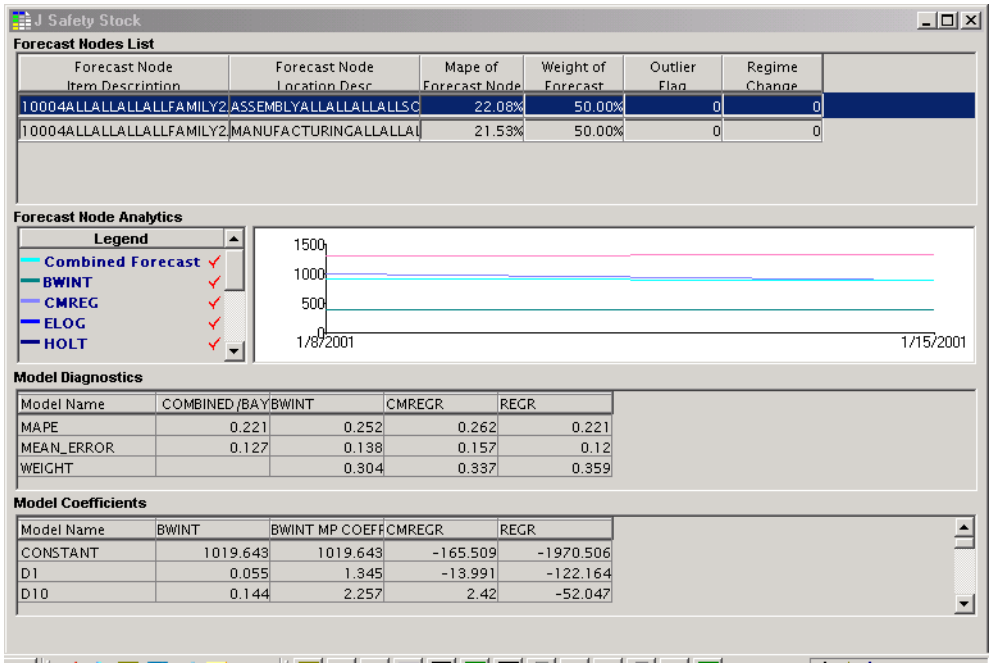
Viewing Forecast Tree Information

You can view analytics of each forecast node that was included in the aggregation for the worksheet combination forecast.

To view forecast tree information

- Click **Analysis** > **Forecast Tree Information**.

  The **Forecast Tree Information** window appears.



Note Only the models that performed a forecast on the selected forecast node appear in the Legend list. To view the corresponding graph, select the check box in the legend.

The following information can be viewed in the tables. First, the **Forecast Nodes** list contains all the nodes that were part of the forecast of the worksheet combination:

Item Description	Description of item forecast node.
Location Description	Description of location forecast node.
MAPE of Forecast Node	Mean Absolute Percentage Error. Will be computed during the simulation run.
Weight of Forecast Node	Shows the impact of the forecast node on this combination. It is computed during the simulation run. The formula uses global proportion parameters and computes the relationship between the forecast node and this combination.
Outlier Flag	If visible, indicates at least one outlier on the forecast node.

Regime-Change Flag	If visible, indicates at least one regime-change point on the forecast node.

Next, the **Model Diagnostics** table contains information about the selected node:

MAPE	Relative measure to the average absolute error over several periods.
Model Weight	Weight of each model.
Outlier Flag	Indicates at least one outlier in the model in one of the time buckets.
Regime Change Flag	Indicates at least one regime change point in the model in one of the time buckets.

Last, the **Model Coefficients** table contains the values of causal factors for each model. This table contains the entire model involved in the analysis, along with the weight of each causal factor and the final model.

Filtering and Sorting Forecast Nodes

You can filter and sort forecast nodes.

To filter forecast nodes

1. In the **Filter** dialog box, right-click in the **Forecast Nodes List** area in one of the following columns: MAPE of Forecast Node; Weight of Forecast Node; Outlier Flag or Regime Change Flag. A pop-up menu appears.
2. Click **Filter**.

   A **Filter** dialog box appears.
3. Select the expressions by which levels will be filtered in the respective lists. To add multiple expressions, click **Add** and then repeat the process (or delete one by clicking **Delete**).
4. Click **OK**.

To sort forecast nodes

1. Right-click in the **Forecast Nodes List** area in one of the following columns:
   - **MAPE of Forecast Node**
   - **Weight of Forecast Node**.

   A pop-up menu appears.
2. Click **Sort**.

   A **Sort** dialog box appears.

3. Click one or more required boxes in **Columns Available for Sorting**, and drag them to **Sort Columns**. Or double-click the required boxes in **Columns Available for Sorting**.

   Note To reverse this process, drag a box in the opposite direction or double-click a box in **Sort Columns**.

4. To specify an ascending sorting order, make sure **Ascending** is checked. For a descending order, clear the box.
5. Click **OK**.

Performing a Simulation

To perform a simulation

1. Make sure the engine process (in Simulation mode) is running on the server. Also note that an error will occur if the Analytical Engine has not been run previously.
2. Run a worksheet.

3. On the toolbar, click the **Simulate** button.

   A question box appears.

4. Do one of the following:
   - If you click **No**, Demantra Spectrum will perform a standard simulation.
   - If you click **Yes**, Demantra Spectrum will perform a simulation with forecast analytics. In the **Analysis** menu, the **Forecast Tree Information** command will be enabled and you can view forecast tree data, and you will be able to view details.
5. When the simulation is complete, a message appears.
6. Examine the results, which Demantra Spectrum writes into the **Simulation** series. Note that the **Simulation** series is displayed in bright green within the graph.
7. Optionally view details on how the simulation was created. To do so, click **Analysis > Forecast Tree Information**. See “Viewing Forecast Tree Information” on page 50.
8. Do one of the following:
   - To accept the results, click **Analysis** > **Accept Simulation**. Demantra Spectrum copies the data from the **Simulation** series into the **Sales Forecast** series, where they are visible to other users.
   - To reject the results, click **Analysis > Remove Simulation.** Demantra Spectrum clears the data from the **Simulation** series.

Performing Data Approval

Depending on your permission level, you may be able to approve or final approve data.

Note Depending on how your system was configured, when you approve data, the system may automatically apply your approval at a higher level as well.

To (final) approve data

- In the worksheet table, select the check box in the **Approved** and/or **F. Approve** columns:

  Approved Approve the forecast for this specific item-location combination and date.

  F. Approved Higher level of approval, only available to users with the **Supervisor** or **System Manager** permission levels. It also confirms the Approve check box if it has not been selected.

  Note If you do not have the required permission level, you will not be able to see these columns. See the *Demantra Spectrum Administrator's Guide*.

7 Member Management

Most members and combinations in Demantra Spectrum are imported, but you can create new ones for planning purposes. This chapter includes the following sections:

Introduction to Member Management *55*
Starting Member Management *56*
Introduction to the Member Management Tool *57*
Creating a Member *60*
Creating a Combination *61*
Creating Placeholder Data *63*
Filtering the Members *58*
Managing the Lowest-Level Combinations *63*
Moving a Member *66*
Copying a Member *66*
Renaming a Member *67*
Deleting a Member *68*

Introduction to Member Management

Most members and combinations in Demantra Spectrum are imported and have historical data. When you are planning new products or new sales locations, however, you do not have any imported data to work with. In this case, you can create members and combinations directly in Demantra Spectrum, and you can initialize the new combinations with data copied from combinations that you expect to be similar. Then the Analytical Engine can include the planned combinations in the forecast.

This overall process consists of the following steps:

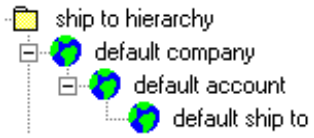
1. Create a new member at any aggregation level, if the member you need does not yet exist. For example, you can create a new SKU or a new distribution center.
2. Create new combinations that include the new member. For example, if you have created a new SKU, then create combinations of that SKU with various stores that will sell the SKU. Or if you are introducing an existing product to a store where it has not been sold, create a combination of that product and store.

3. Identify some combination that you believe will have a similar sales pattern to the new combinations. Copy data for specified series from those combinations to your new combinations, optionally multiplying by an overall factor.

Note This step is known as *chaining*, and is described in "Chaining Management" on page 69.

Default Members

Demantra Spectrum provides a default member within each level, as a placeholder, for example:



These placeholders may or may not be displayed in the worksheets, depending on how those worksheets are filtered.

Member Status

Member Management displays the status of each member, as follows:

	Real	Item member that was created by import and that has sales records.
	Real	Location member that was created by import and that has sales records.
	New	Item or location member that was created by import but that does not yet have sales records. When sales data is loaded for this member, it will become real.
	User-defined (also called fictive)	Item or location member that was created within through the Member Management or Chaining Management tools. When this member is loaded via import, it can become new or real, depending on whether it has sales data.

In a typical system, most members are real.

Starting Member Management

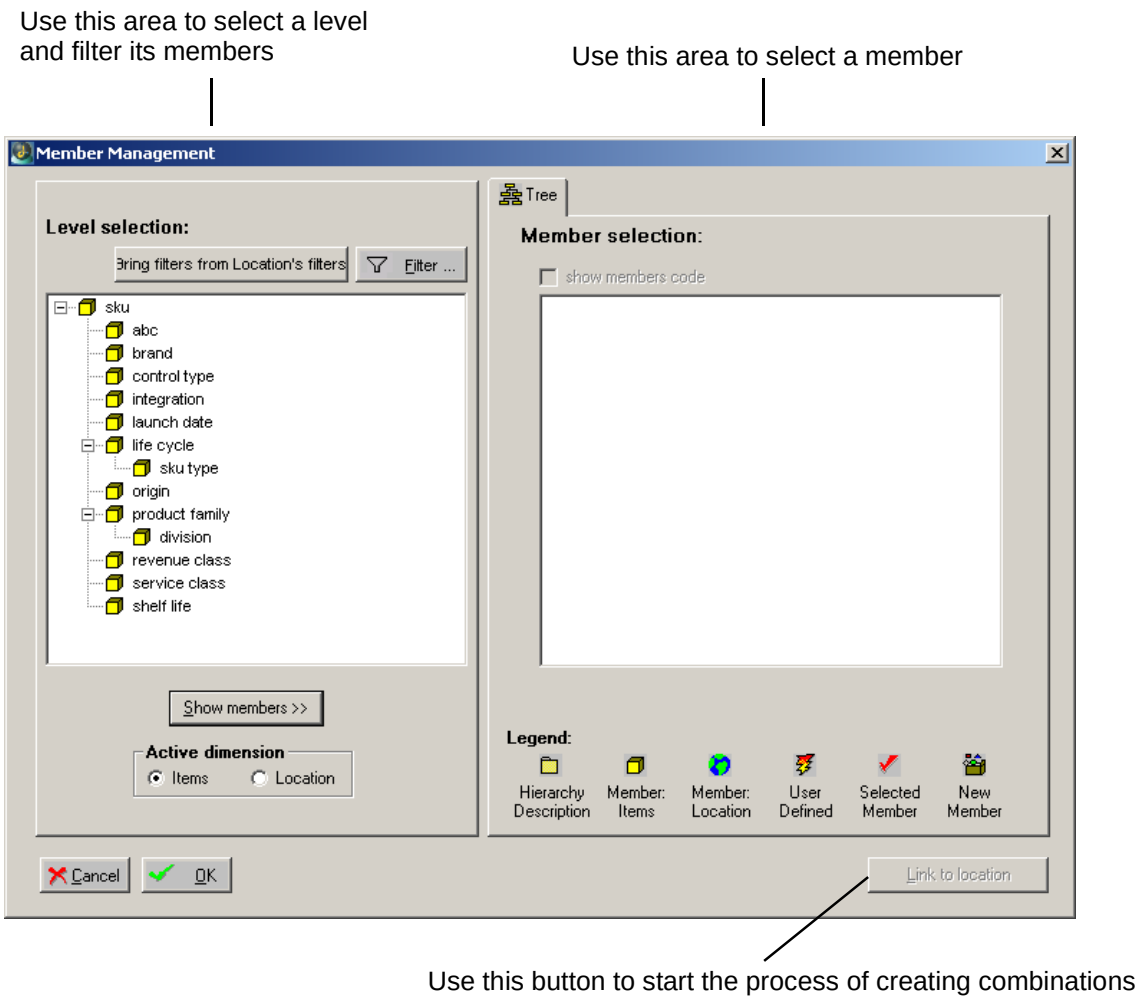
To start Member Management

Do one of the following:

- Within Demand Planner, click **Tools** > **Member Management**.
- Within Collaborator Workbench, click **Planning Applications > Member Management.**

Introduction to the Member Management Tool

Before you start to use Member Management, it is useful to become familiar with the user interface, which looks like this.



Displaying Level Members

To display the members of a level

1. In **Active Dimension**, click either **Items** or **Locations.**

   The left window of Member Management displays all the levels of that dimension.

2. In the left window, click the level.

3. Optionally filter the display for performance; see “Filtering the Members” on page 58.

4. Click **Show Members**.

5. The **Member Selection** pane displays the members of that level and all submembers.
6. In the **Member Selection** pane, expand the hierarchy as needed.

   For performance reasons, the maximum number of members displayed is preconfigured for your system. To display more members, click the **More Members** symbol.

   By default, Member Management displays the descriptions of the members. To see the codes instead, click the **Show Members Code** check box.

Note If you switch from the item dimension to the location dimension and then switch back (or vice versa), Member Management does not remember your selections. It does, however, remember any filters you applied in either window.

Filtering the Members

You can filter the members that Member Management displays, which can make the **Member Selection** pane display more quickly, and which can make it easier to find a particular member.

Notes

- If the list of members is currently filtered in any way, the **Filter** button is colored red as a reminder.
- If you switch from the item dimension to the location dimension and then switch back (or vice versa), Member Management remembers any filters you applied in either window.
- You can filter by members of any level of any dimension, no matter whether you are view item members or location members.

  For example, suppose you are displaying members of an item level. If your filter includes only the Rainbow brand, then at any item level, you will see only items that belong to the Rainbow brand. If your filter includes only the Northeast region, then you will see only items that are sold in that region.

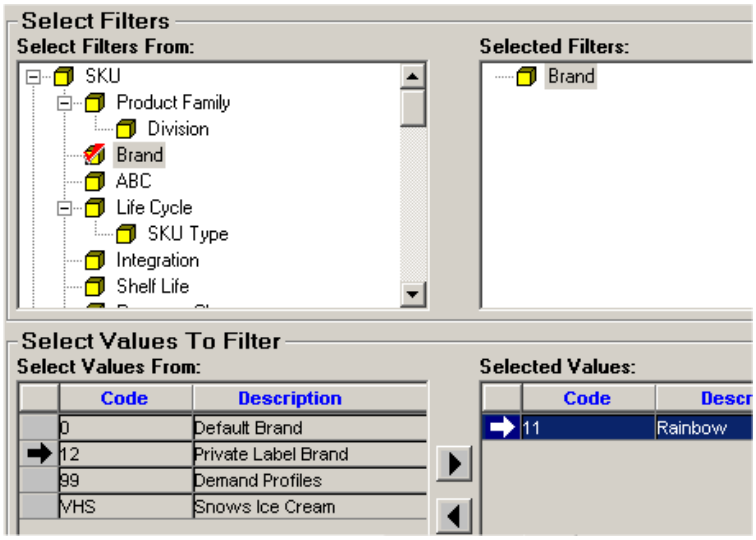
To filter the displayed members, method 1

1. Click **Filter**.

   The **Filter** dialog box appears.
2. In the **Select Filters From** pane, select a level to be filtered.

   The list of members for that level is displayed in the **Select Values From** pane.

3. Click the members to be included in the **Select Values From** pane and click the arrow to move them to the **Selected Values** pane, for example:



4. Click **OK** to return to Member Management.

5. Click **Show Members**.

To filter the displayed members, method 2

If you previously applied a filter to the other dimension (which is not currently displayed), you can copy that filter to this dimension. To do so:

1. Click **Bring filters from Location's filters** or **Bring filters from Item's filters**, whichever button is currently shown.

   When you do this, Member Management finds the information about the filter you had applied in the other window and copies it to this window. Then Member Management grays out the **Bring filters from Location's filters** or **Bring filters from Item's filters** button and displays the **Filter** button in red to remind you that a filter has been applied. You can click the **Filter** button and make changes as usual.

2. Click **Show Members**.

Creating a Member

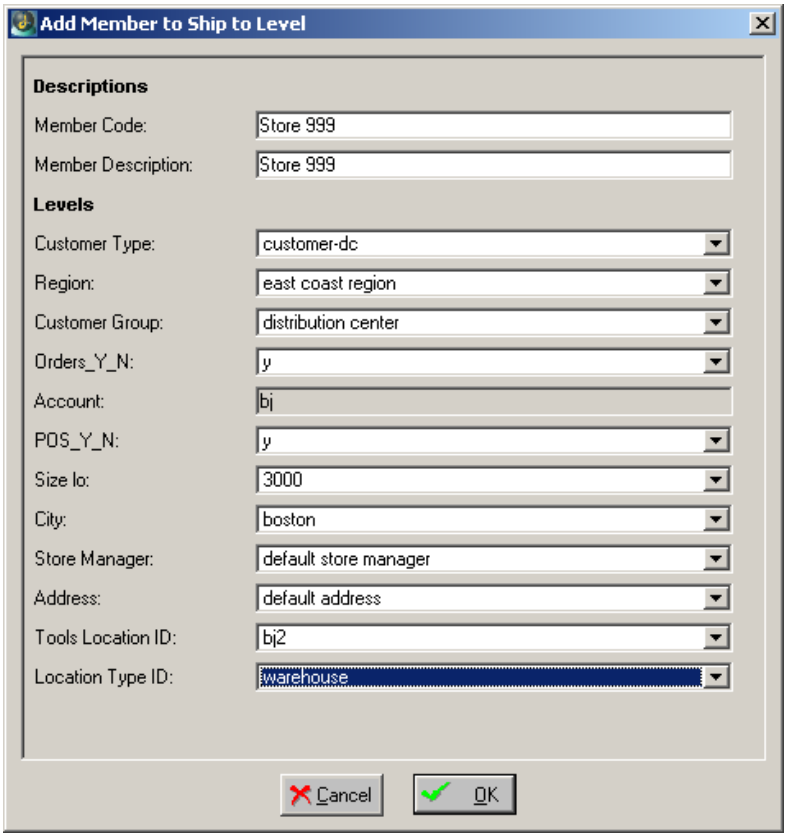
You can create a member at any level to which you have access.

Note At the lowest level, you can also create a member by copying an existing member; see “Copying a Member” on page 66.

To create a member

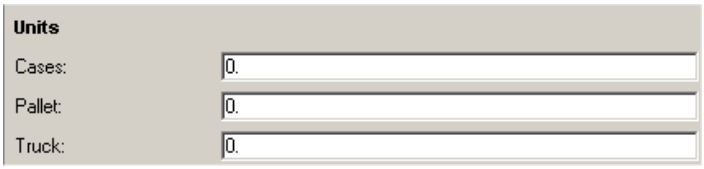
1. Start Member Management, as described in “Starting Member Management” on page 56.
2. Display members of any level that is directly above the level to which you want to add a member. See “Displaying Level Members” on page 57.
3. In the **Member Selection** pane, right-click a member to which you want to add a child member.
4. Click **Add Member**. This option is not available for members at the lowest level.

   The **Add Member** dialog box appears. This dialog box prompts you for information about all parent levels of the new member, as well as any attributes of the member. The following example does not include attributes.



The parent member that you chose is shown but is grayed out. Other parent members might also be pre-selected and grayed out, depending on the filters you applied to the display.

5. If you are creating a new SKU, this window also prompts you for unit data, as follows:



These numbers tell Demantra Spectrum how to scale worksheet data when you switch a worksheet to a different unit of measure. The units displayed depend upon your implementation. For each unit of measure, do the following

a. For this new SKU, consider the item count per unit of measure. For example, if a case contains eight items, the item count is eight. If a truck contains 2000 items, the item count is 2000.

b. Divide one by the item count: 1/8 or 1/2000, for example.

c. Enter that number: 0.125 or 0.0005.

Demantra Spectrum uses this information to scale worksheet values when you choose to display a worksheet in different units. For example, a worksheet displays numbers in terms of item count and you then switch to truckloads, the displayed numbers should be smaller.

Note If you are not sure what values to use, find a similar item, note the values it uses, and use the same values here.

6. Click **OK** to continue.

Note This change is immediate and cannot be canceled.

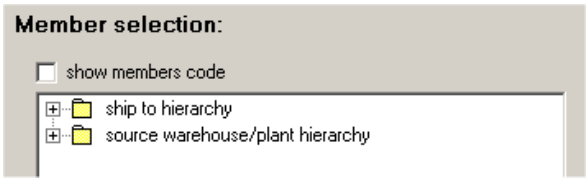
Creating a Combination

Before you create a combination, you should know which item member and which location member will be in the combination. These members can be at any aggregation level; higher levels generally correspond to a greater number of lowest-level combinations. You will have a chance to see the corresponding lowest-level combinations.

To create a combination

1. Start Member Management, as described in “Starting Member Management” on page 56.
2. Display members of the item or location level, as described in “Displaying Level Members” on page 57. You can start with either dimension. For example, display members of the Brand level.
3. Select the member that you are using as the starting point. For this example, click the Rainbow member to select it.

4. If there are other hierarchies within this dimension, select a member within each of them. For example, suppose that the **Member selection** list includes two hierarchies of locations, as follows (shown collapsed to save space).



   In this case, you need to select a member within the **ship to hierarchy** *and* a member within the **source warehouse/plant hierarchy**.

   You do this so that the new combination can be found within both these hierarchies.

5. Click the **Link to Location** or **Link to Item** button, whichever button is displayed. For this example, click **Link to Location**.

   Now Member Management displays the levels of the other dimension (in this case, the locations).

   Note To return to the previous screen, click **Back**.

6. Display members of the desired level. For example, display members of the Customer Type level.

7. Click the member that you want to combine with previously selected member. For example, click Customer-dc.

8. If there are other hierarchies within this dimension, select a member within each of them, as described in Step 4 on page 62.

9. Do either of the following:

   - Click **Create Combinations**. Demantra Spectrum prompts you to confirm the action. Click **Yes**.
   - Click **Insert Values**. Demantra Spectrum prompts you to confirm the action. Click **Yes**. In this case, Demantra Spectrum creates the combinations (if necessary) and inserts placeholder historical data (0 values) into the database. You will then be able to see this combination in worksheets.

   Notes
   - Neither option has any effect on existing combinations.
   - In either case, the change is immediate and cannot be canceled.

10. Continue as follows:

    - To view the lowest-level combinations, click **Combination List**. See “Managing the Lowest-Level Combinations” on page 63.
    - To go directly to Chaining Management, click **Chaining Management**. See “Chaining Management” on page 69.

Creating Placeholder Data

After you create a combination, you can create placeholder data for it so that the combination can be displayed in worksheets (with empty rows). Specifically, the demand and the forecast are set equal to zero for all dates.

This option has no effect if the combination already exists.

To create a placeholder (zero) data for a combination

1. Start Member Management, as described in “Starting Member Management” on page 56.
2. Select a combination in the same way that you create a combination; see “Creating a Combination” on page 61.
3. Click the **Insert Values** button at the bottom of the screen.

Note This change is immediate and cannot be canceled.

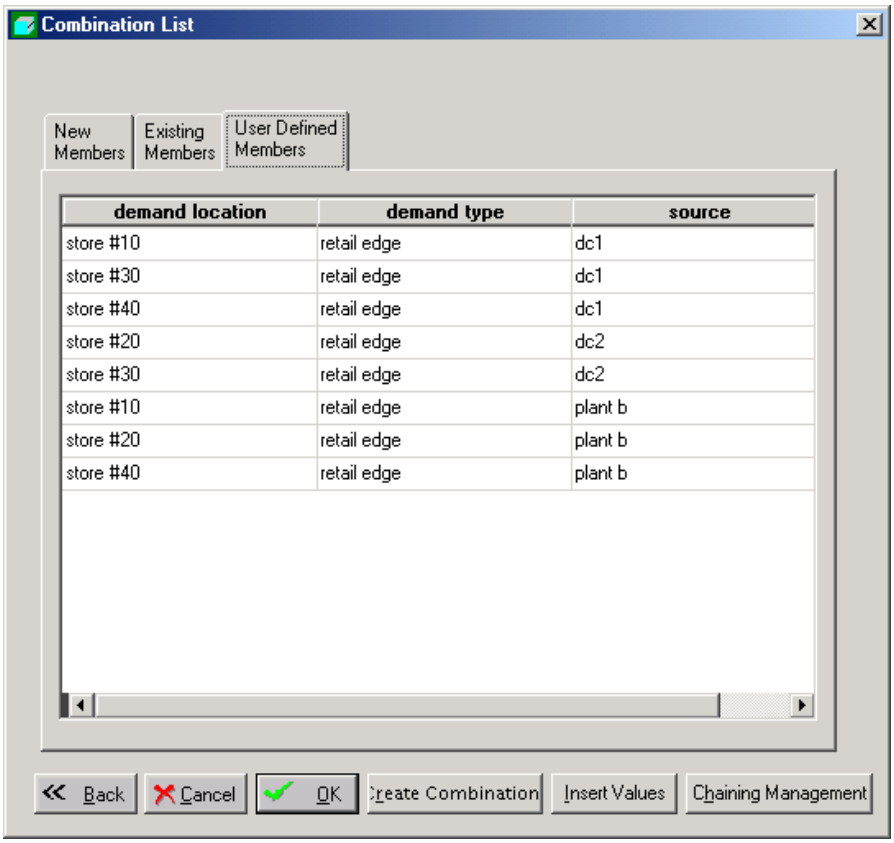
Managing the Lowest-Level Combinations

To manage the lowest-level combinations

1. Start Member Management, as described in “Starting Member Management” on page 56.
2. Click the **Combination List** button at the bottom of the screen.

   This button is activated only when both the item and location members to be linked have been selected.

3. In the **Combination List**, all possible hierarchy links are displayed in three tab windows: **New Members**; **Existing Members**, and **User Defined Members**.



4. Do one or more of the following:

   - To create combinations, select one or more combinations and click **Create Combinations**.
   - To add the combinations to the database and create zero histories for them, select one or more combinations and click **Insert Values**.

     Tip To select more than one member combination, press **Shift+Click** or **Ctrl+Click**.

   - To go directly to Chaining Management, click **Chaining Management**.
   - To save changes and close Member Management, click **OK**.
   - To close Member Management without saving changes, click **Cancel.**

To filter the displayed combinations

1. Right-click in the **Combination List** and then select **Filter**.

   A **Filter** dialog box appears.

2. From the respective dropdown lists, select the expressions by which members will be filtered. To add multiple expressions, click **Add** and then repeat the process.

3. Click **OK**.

To sort the displayed combinations

1. Right-click in the **Combination List** and then select **Sort**.

   The **Sort** dialog box appears.

2. Click the required boxes in **Columns Available for Sorting**, and drag them to **Sort Columns**. Or double-click the required box in **Columns Available for Sorting**.

   Note This process can be reversed by dragging the boxes in the opposite direction. Or double-click in the **Sort Columns** list.

   To sort in ascending order, make sure **Ascending** is checked. To sort in descending order, clear the box.

3. Click **OK**.

To delete a user-defined combination

You can delete a combination *only* if it is user-defined.

1. Click one or more user-defined combinations.

2. Right-click and then select Click **Delete**.

To search the combination list

1. Right-click in the **Combination List** and then select **Find**.

   The **Find** dialog box appears.

2. Click the dimension to search from the **Find Where** dropdown list.

3. Enter text to search in the **Find What** field.

4. Select up or down in the **Search** dropdown box.

5. Click one or more from the following, if required:

   - Whole Word
   - Match Case
   - On Line Search

6. Click **Find Next.**

Moving a Member

You can move a member within to a different parent member at the same level. Remember that the next time data is imported, however, the member may be moved back to its original parent. Generally you should move a member only if you anticipate a change in the enterprise systems with which Demantra Spectrum is integrated.

To move a member

1. Start Member Management, as described in "Starting Member Management" on page 56.
2. Display members of the level of interest. See "Displaying Level Members" on page 57.
3. Do either of the following:
   - In the **Member Selection** pane, drag the member to a new parent member.
   - In the **Member Selection** pane, right-click the member and select **Cut Member**. Then right-click the desired parent and select **Paste Member**.
4. Demantra Spectrum prompts you to confirm the change. Click **OK.**
5. Click **OK** to save the change and close Member Management. Or click **Cancel** to discard the change and exit Member Management.

See also

"Copying a Member" on page 66

Copying a Member

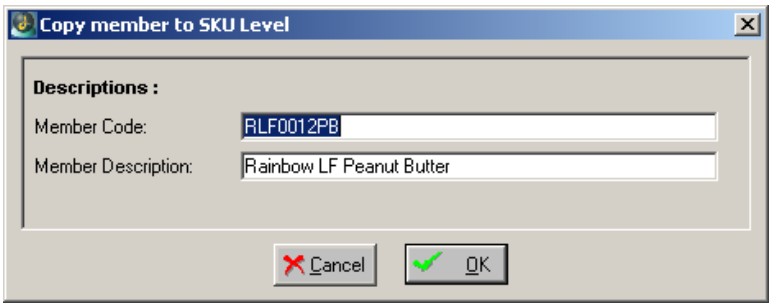
You can copy and paste a member at the lowest level. This creates a user-defined member.

To cut or copy and paste a member

1. Start Member Management, as described in "Starting Member Management" on page 56.
2. Display members of the level of interest. See "Displaying Level Members" on page 57.
3. In the **Member Selection** pane, right-click the member of interest and then select **Copy Member**.
4. Right-click the member that should be the parent of the copy and then select **Paste Member**.

   A confirmation message appears.
5. Click **Yes** to continue.

Demantra Spectrum prompts you for a unique code and description for the new member. If this level has attributes, you can specify values for those as well.



6. Complete the fields and click **OK**.

Note This change is immediate and cannot be canceled.

See also

"Moving a Member" on page 66

Renaming a Member

You can rename any member. Remember that the next time data is imported, however, the member name will be overwritten. Generally you should rename a member only if you anticipate a change in the enterprise systems with which Demantra Spectrum is integrated.

To rename a member

1. Start Member Management, as described in "Starting Member Management" on page 56.
2. Display members of the level of interest. See "Displaying Level Members" on page 57.
3. Do one of the following in the **Member Selection** pane:
   - Right-click the member and then select **Rename**. Then type a new name for the member and click **Enter**.

     Note This change is immediate and cannot be canceled.

   - Right-click the member and then select **Modify Member**. Demantra Spectrum displays the dialog box where you can change both the description (the name) and the code for this member. Make changes and then click **OK**.

     Then click **OK** to save the change and close Member Management. Or click **Cancel** to discard the change and exit Member Management.

See also

“Moving a Member” on page 66
“Copying a Member” on page 66

Deleting a Member

You can delete a member.

To delete a member

1. Start Member Management, as described in “Starting Member Management” on page 56.
2. Display members of the level of interest. See “Displaying Level Members” on page 57.
3. In the **Member Selection** pane, right-click the member of interest and then select **Delete**. This option is available only for user-defined members, which use this icon:

   A confirmation dialog box appears.
4. Click **Yes**.
5. Click **OK** to save the change and close Member Management. Or click **Cancel** to discard the change and exit Member Management.

See also

“Member Status” on page 56

8 Chaining Management

You use Chaining Management to copy series data, typically pasting it into new combinations that you created via Member Management. This chapter includes the following sections:

Introduction to Chaining 69
Opening Chaining Management 70
Introduction to the Chaining Management Tool 70
Overview of Chaining Options 74
Defining a New Chaining Operation 77
Performing a Chaining Operation 82
Scenario 1: Copying at Lowest Level (No Similarity) 84
Scenario 2: New Product (Location Similarity) 86
Scenario 3: Merging Two Locations 88
Scenario 4: Two New Products 89
Scenario 5: Multiple Sources 90

Note In order for chaining to occur, the Scheduler must be running and the **Chaining** procedure must be active.

Introduction to Chaining

Chaining is the process of copying series data from source combinations to target combinations. Typically, you do this after you have created a new member or new combinations, so that Demantra Spectrum has data to use when forecasting. While you set up a chaining operation, you specify each series data to copy, a range of dates to copy from, a date to start pasting to, and an optional multiplicative factor for that series. During the chaining operation, Demantra Spectrum aggregates the series data and then splits it across the target combinations, according to your choice of split mechanism.

Demantra Spectrum saves the details of the chaining operation, which means that you can run the same operation later if needed.

Opening Chaining Management

To open Chaining Management

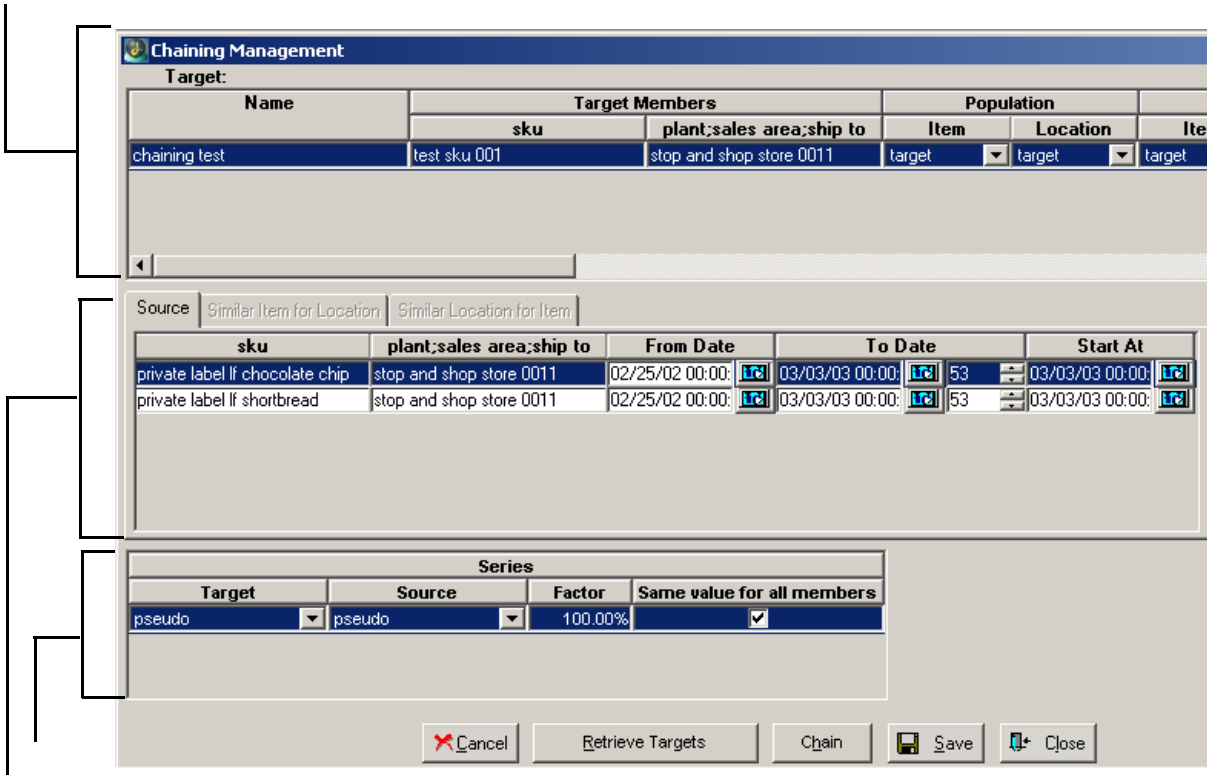
1. Do one of the following:
   - If Member Management is open, click **Chaining Management**.
   - Within Demand Planner, click **Tools** > **Chaining Management**.
   - Within Collaborator Workbench, click **Planning Applications > Member Management.**

   The Chaining Management window opens.
2. Click **Retrieve Targets**. Chaining Management is updated to display all saved chaining operations.

Introduction to the Chaining Management Tool

Before you start to use Chaining Management, it is useful to become familiar with the user interface. After you start it, click **Retrieve Targets**. The following window is displayed.

Each row of the **Target** area represents a saved chaining operation.



Each row of the **Series** area represents a series to copy during the selected chaining operation.

Each row of the **Source** area represents a source combination for the selected chaining operation.

In this window, you can do the following:

- Define chaining operations.
- View details of each saved chaining operation. When you click a row in the table at the top of the screen, the rest of the window is updated to show details for that operation.
- Edit a saved chaining operation.
- Send chaining operations to be processed in the background. You can rerun chaining operations that were processed earlier.
- View the status of past chaining operations.

Selecting Combinations

As you define chaining operations, you need to select combinations for the target and the source(s). To do so, you use a window that looks very much like the Member Management tool. The general technique is described here, for reference. In this example, we will select the combination Item A at Store 99.

To select a combination

1. Display members of the item or location level, as described in “Displaying Level Members” on page 57. You can start with either dimension. For example, display members of the SKU level.
2. Click the member that you are using as the starting point. For this example, click the Item A member.
3. Click the **Link to Location** or **Link to Item** button, whichever button is displayed. For this example, click **Link to Location**.

   Now Member Management displays the levels of the other dimension (in this case, the locations).

   Note To return to the previous screen and double-check your selection, click **Back**.

4. Display members of the desired level. For example, display members of the Ship To level.
5. Click the member that constitutes the “other part” of the combination. For example, click Store 99.
6. Optionally filter the combinations as described below. (In this example, filtering does not make sense, because we have selected a single lowest-level combination.)
7. Click **Chaining Management** to select this combination and return to the Chaining Management user interface.

Filtering the Selected Combinations

You can filter the lowest-level combinations that you select

Note If the list of members is currently filtered in any way, the **Filter** button is colored red as a reminder.

To filter the combinations

1. Click **Filter**.

   The **Filter** dialog box appears.

2. In the **Select Filters From** pane, select a level to be filtered.

   The list of members for that level is displayed in the **Select Values From** pane.

3. Click the members to be included in the **Select Values From** pane and click the arrow to move them to the **Selected Values** pane.

4. Click **OK**.

5. Click **Show Members**.

Note There is another way to filter the combinations. If you had previously applied a filter when viewing the other dimension, you can copy that filter to this dimension. To do so, click **Bring filters from Location's filters** or **Bring filters from Item's filters**, whichever button is currently shown.

Double-checking the Combinations

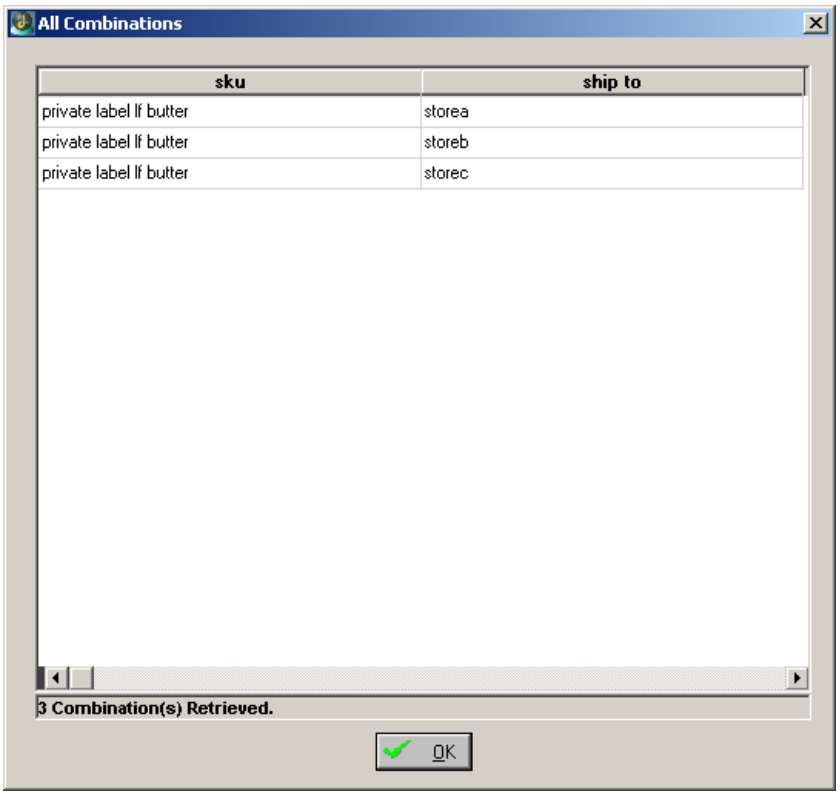
You can view the *existing* lowest-level source or target combinations for any chaining operation.

To view the existing lowest-level combinations

1. Right-click in the **Target** area or the **Source** area and then select **All Combinations**.

   Note If this option is not available, save your work, exit Chaining Management and then reopen it.

Chaining Management displays a window like the following:



This window lists all the lowest-level combinations that currently exist. It does not show you any combinations that the chaining operation itself would create.

2. To close the window, click **OK**.
3. If you need to make changes, do the following:
   a. Right-click in the **Target** area or the **Source** area and then select **Combination List-Item.**

      Demantra Spectrum displays a dialog box that lists all the items that you have selected. Specify the items to include and click **OK**.

   b. Right-click in the **Target** area or the **Source** area and then select **Combination List-Location.**

      Demantra Spectrum displays a dialog box that lists all the locations that you have selected. Specify the locations to include and click **OK**.

   c. Double-check the combinations as described in Step 1, if needed.

Overview of Chaining Options

This section provides an overview of the chaining options and explains how they are related to one another.

Target and Source

The **Target**, **Population**, and **Source** options are related to each other; when you set any of these options, you must consider how you have set the other ones. There are essentially three general configurations of these settings that are useful:

- One configuration is for *item similarity.* Here the source and target combinations both contain the same item member(s), at the lowest level. For example, store 99 sells 1500 items. You have created store 100, which will sell the same 1500 items. In this case, Demantra Spectrum automatically creates the implied combinations, if they do not yet exist; you do not need to create those combinations first in Member Management.
- Another configuration is for *location similarity.* Here the source and target combinations both contain the same location member(s), at the lowest level. For example, item A is sold in region 5, which has ten stores. You want to introduce item B into this region, where it has not been sold previously. In this case, Demantra Spectrum automatically creates the implied combinations, if they do not yet exist.
- Another configuration is for dissimilar sources and targets. Here the source and target combinations contain different item and location member(s). In these cases, Chaining Management does not create any combinations; the target combinations must already exist.

The following table summarizes the settings to use for each configuration.

	Settings to use					
	Target Members		**Population**		**Source****	
Case	**sku**	**ship to**	**Item**	**Location**	**sku**	**ship to**
Item similarity	all	a specific location*	source	target	all (in this context, this means all SKUs associated with the source location)	a specific location*, different from the target
Location similarity	a specific item*	all	target	source	a specific item* , different from the target	all (in this context, this means all ship-to's associated with the source item)
No similarity	a specific item*	a specific location*	target	target	a specific item*, different from the target	a specific location*, different from the target

*This member can be at any aggregation level and can be filtered.

**Chaining Management ignores any dead source combinations.

Aggregation and Splitting

For each series (and for each time period), Demantra Spectrum aggregates the data from all the source combinations and then splits the value across the target combinations.

Note For each series, you also have the option not to split the aggregated value at all. Instead, you can paste the aggregated value to each target combination.

Splitting Across Both Items and Locations

You specify how to split data across items *and* how to split data across locations. The resulting split proportions are multiplied for each combination. This is best shown by an example.

Suppose that you have four target combinations:

- Item 1 at Store A
- Item 2 at Store A
- Item 1 at Store Z
- Item 2 at Store Z

Now suppose you have specified the following split proportions for the items:

Item	Proportion
Item 1	0.6
Item 2	0.5

Also suppose that you have specified the following split proportions for the locations:

Item	Proportion
Store A	0.75
Store Z	0.25

As a result, the overall proportions for each combination would be as follows:

Combination	Proportion
Item 1 at Store A	0.6 * 0.75 = 0.45
Item 2 at Store A	0.4 * 0.75 = 0.3
Item 1 at Store Z	0.6 * 0.25 = 0.15
Item 2 at Store Z	0.4 * 0.25 = 0.1

Available Split Options

Within Chaining Management, you do not actually specify the proportions directly as percentages as in the preceding examples. Instead, you have the following options:

- **Target proportions:** Use the stored proportions of the existing targets. (This option applies only when all the specified target combinations already exist.)

  Note Stored proportions reflect the relative volume of sales of the different combinations. Demantra Spectrum calculates this information automatically.

- **Equal proportions:** Split the values equally between all lowest level targets. This option is suitable if you have no information about how to split across this dimension.
- **Source proportions:** Match each target combination to a source combination. Then for each target, use the proportions of the corresponding source.
- **Similar proportions:** Choose a third set of combinations to use as a reference, and match each target combination to a reference combination. Then for each target, use the proportions of the reference source.

  Note If there are no valid combinations in the target, the chaining will not work and an error message appears. That is, Demantra Spectrum must be able to find a reference combination to use for each target combination.

Series Manipulation and Other Chaining Options

Within a chaining operation, you can copy data for multiple series. For each series that you copy, you can specify the following:

- Series to paste data into (often but not always the same as the copied series)
- Factor to multiply data before pasting
- Option to paste the same aggregated data to each combination rather than splitting it.

You also specify a range of dates in the source data; Demantra Spectrum selects series data in that span of time. And you specify a starting date in the target, where Demantra Spectrum starts pasting the selected series.

Defining a New Chaining Operation

Step 1: Specifying the Target

In this step, you specify the **Target Members** and **Population** fields.

To specify the target

1. Start Chaining Management, as described in “Opening Chaining Management” on page 70.
2. In the **Name** column of the new row, enter a unique name for this chaining operation.
3. Double-click in **SKU** or **Ship to** column of the new row.

   Demantra Spectrum displays a window where you select a target combination, at any aggregation level.
4. Select a combination, as described in “Selecting Combinations” on page 71. As you do so, optionally apply a filter, if needed.
5. If there is a similarity between target and source, choose **source** for either **Population**/**Item** column or **Population**/**Location** column

   The following table summarizes the settings to use here.

	Target Members		Population	
Case	**sku**	**ship to**	**Item**	**Location**
Item similarity	all	a specific location*	source	target
Location similarity	a specific item*	all	target	source
No similarity	a specific item*	a specific location*	target	target

*This member can be at any aggregation level and can be filtered.

See also

“Target and Source” on page 74

Step 2: Specifying the Sources

You must specify at least one source combination for each chaining operation. You can choose a source at any aggregation level, and you can choose multiple sources. Typically you choose sources that have a demand history that is similar to the target.

To specify a source

1. Right-click in the **Source** area and then select **Insert**.

   A new row appears in the source area.
2. Double-click in the new row.

Demantra Spectrum displays a window where you select a source combination, at any aggregation level.

3. Select a combination, as described in “Selecting Combinations” on page 71. As you do so, optionally apply a filter, if needed.

   If there is a similarity between target and source, make sure to choose source combinations that can be matched to the target combinations. The following table summarizes the settings to use here:

	Source**	
Case	**sku**	**ship to**
Item similarity	all (in this context, this means all SKUs associated with the source location)	a specific location*, different from the target location
Location similarity	a specific item* , different from the target	all (in this context, this means all ship-to’s associated with the source item)
No similarity	a specific item*, different from the target	a specific location*, different from the target

*This member can be at any aggregation level and can be filtered.

**Chaining Management ignores any dead source combinations.

See also

“Target and Source” on page 74

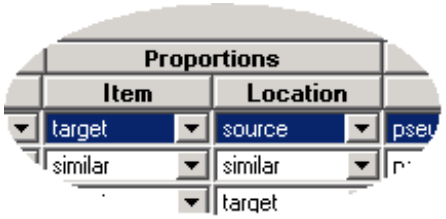
Step 3: Specifying How to Split Across Target Combinations

For each series, the data is aggregated across all the source combinations and is then split to the target combinations as specified within the chaining operation. In the **Proportions** columns, you determine how the split is performed for the items and for the locations. The available split styles are as follows

Setting	Meaning
Target	Use the stored proportions of the existing targets. (This option applies only when all the specified target combinations already exist.)
Equal	Split the values equally between all lowest level targets. This option is suitable if you have no information about how to split across this dimension.
Source	Match each target combination to a source combination. Then for each target, use the proportions of the corresponding source.
Similar	Choose a third set of combinations to use as a reference, and match each target combination to a reference combination. Then for each target, use the proportions of the reference source.

To specify chaining proportions

1. In the **Proportions/Item** column, click and select a split style, described above.



   If you clicked **Similar**, then the **Similar Location for Item** tab is enabled (in the **Source** area). Now Demantra Spectrum needs a set of reference combinations that contain the same items as the target combinations. To specify these reference combinations, you select another location where the target items are sold.

   a. Click the **Similar Location for Item** tab.

   b. Double-click the empty field in this tab. Demantra Spectrum displays a window where you select a location at any level.

   c. Select a location member as usual.

   Note In this case, you cannot apply a filter when you select the member.

   d. Click **Chaining Management** to accept your selection and return to Chaining Management.

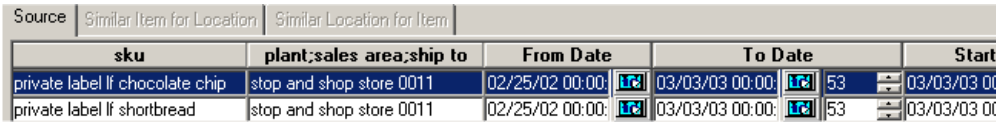
2. In the **Proportions/Location** column, click and select a split style, described above.

If you clicked **Similar**, then the **Similar Item for Location** tab is enabled. Now Demantra Spectrum needs a set of reference combinations that contain the same locations as the target combinations. To specify these reference combinations, you select another item that is sold at the same locations as the target items. The steps are similar to the preceding.

Note These options are ignored if you click the **Same Value for All Members** check box; see "Step 5: Specifying the Series to Copy" on page 80.

Step 4: Specifying Chaining Dates

For each source, you specify a range of source dates, as well as a date to start pasting. For the source dates, you specify a start date and either an end date or a number of base time buckets.



To specify the chaining dates

1. For each row in the **Source** area, specify the following:

From Date	Starting date for the source data. (You can use a calendar by clicking the **Calendar** button.)
Length	The number of base time buckets for which to copy series data.
To Date	Ending date for the source data.
Start At	Date at which to start pasting series data from this source.

Step 5: Specifying the Series to Copy

The **Series** area of the screen lists the series whose data will be copied during this chaining operation. Note that when you copy data from one series, you can paste into a different series. You can also specify a scaling factor.

To specify the series to copy

For each series whose data you want to copy during this operation, do the following:

1. Right-click in the **Series** area and then select **Insert**.

   A new row appears.

2. For **Source**, select the series from which you want to copy data.
3. For **Target**, select the series into which you want to paste this data.
4. For **Factor**, optionally specify a factor to multiply this data by before pasting it.

5. If you want to paste the same aggregated data to each target combination rather than splitting it across the combinations, click the **Same Value for All Members** checkbox.

Note If you choose this option, your choices for item and location proportions are ignored.

Step 6: Enabling Partial Chaining Indicators (Optional)

If you have specified item similarity or location similarity, then Demantra Spectrum matches up each target combination with one or more corresponding source combinations (depending on the number of chaining sources you choose). However, if the source combinations do not have sales for some or all dates, the chaining operation might be considered incomplete.

To alert yourself of such cases, you might want to enable some or all of the partial chaining indicators, which are internal flags that mark the combinations and dates for which the last chaining operation was incomplete. These indicators are used in different ways depending on the implementation. They are most commonly used as levels, which then group the combinations so that you can readily see which ones require further work.

There are two general types of partial chaining, with subtypes:

- All sources are missing. This occurs when there are issues with *all* the source combinations. That is, none of the source combinations has data for all the dates. For all the source combinations, the data is either completely missing (no data for any dates) or just partially missing (data for only some dates).
- Some sources are missing. This occurs when there are issues with *some* source combinations. For some of the source combinations, the data is either completely missing (no data for any dates) or just partially missing (data for only some dates). Some of the source combinations, however, do have data for all dates.

Check with your implementor or your system administrator to understand whether your system is set up to take advantage of the partial chaining indicators. If it is, when you define a chaining operation, be sure to enable the indicators for that operation.

To enable partial chaining indicators

1. In the Target area of the chaining manager, scroll to the right, to see the following columns:

This area lists four possible indicators; you can enable any or all of them.

2. To enable a partial chaining indicator, select a data column from the dropdown list. The chaining operation will write that type of chaining indicator into the

internal data column, in the row for a given target combination, if there is a mismatch between target and source.

Demantra Spectrum provides default columns that you can use to store partial chaining indicators. Typically, for any given indicator, you specify the data column that has the same name as the indicator, as follows:

See also

"Target and Source" on page 74

Final Step: Saving the Chaining Operation

To save a chaining operation

1. Make sure that you have given the chaining operation a good name.
2. Optionally add a description, in the **Description** column in the far right of the target area.
3. Click **Save** at the bottom of the screen.

See also

"Performing a Chaining Operation" on page 82

Performing a Chaining Operation

You can perform any saved chaining operation. The chaining operation overwrites any existing data for the target combinations, for the chained dates

Note In order for chaining to occur, the Scheduler must be running and the **CHAINING** procedure must be active.

To perform a chaining operation

1. Click **Tools** > **Chaining Management**.

   The Chaining Management window opens.
2. Click **Retrieve Targets**. Chaining Management is updated to display all past chaining operations.
3. Click the chaining operation that you want to perform.
4. Click **Chain**.

Demantra Spectrum displays a dialog box that summarizes your selections.

5. Click **OK**.
6. Scroll to the middle of the target area of the screen, to the **Process Status** column. This column shows the status of each chaining operation.

The status is one of the following:

not chained	This chaining operation has not been run yet or was run recently but was not successful.
ready in chain	This chaining operation has been sent to the queue and will be performed as soon as possible.
done	The chaining operation was completed successfully the last time it ran.
failed	The chaining operation was not successful.

Scenario 1: Copying at Lowest Level (No Similarity)

In this scenario, we copy data for one combination at the lowest level and we paste into a user-defined combination, also at the lowest level. This is not a common scenario but is a useful exercise to try.

Example Data

Suppose that SKU 009 is sold in Wal-Mart 001. This combination has the following sales (shown here by quarter):

Time	Pseudo	Demand	Base Frcst
04/23/2001		34,000	33,952
07/23/2001		61,200	62,767
10/22/2001		24,500	28,831
01/21/2002		0	7,165
04/22/2002		0	414
07/22/2002		0	415
10/21/2002		0	176
01/20/2003		0	1,179
04/21/2003			3,538
07/21/2003			1,937
10/20/2003			593
Summary		119,700	140,967
		119,700	140,967

Suppose that we have already used Member Management to create a new item called SKU 999, and then to create a combination for SKU 999 at Wal-Mart 001.

The Chaining Operation

We would like to copy the forecast for SKU 009 and Wal-Mart 011 and use that data as Pseudo for SKU 999 at Wal-Mart 011. We would like to shift the dates, however, by a year.

To copy this data, we set up the following chaining operation:

Option In Chaining Management			Setting	Notes
Target	Target Members	sku	sku 999	We have already created this combination via Member Management.
		ship to	walmart store 001	
	Population	Item	target	
		Location	source	
	Proportions	Item	source	Because there is no sales data yet for the target combination, we cannot use target proportions. However, the proportions do not actually matter, because we are working at the lowest level.
		Location	source	

Option In Chaining Management		Setting	Notes
Source	sku	sku 009	
	ship to	walmart store 001	
	From Date	04/23/01	
	To Date	01/05/04	
	Start At	04/22/02	This is the date into which we will start copying the requested data. This is approximately a year after the chosen starting date.
Series	Target	Pseudo	These options copy data for the Base Frcst series (for the chosen source), multiply that data by a factor of 1, and then paste the results into the Pseudo series (for the target), shifting the dates as described above.
	Source	Base Frcst	
	Factor	100%	

Result

After Demantra Spectrum performs the chaining operation, SKU 999 at Wal-Mart 001 has the following data:

Time	Pseudo	Demand	Base Frcst
04/23/2001		0	
07/23/2001		0	
10/22/2001		0	
01/21/2002			
04/22/2002	33,952	33,952	
07/22/2002	62,767	62,767	
10/21/2002	28,831	28,831	
01/20/2003	7,081	7,081	0
04/21/2003			0
07/21/2003			0
10/20/2003			0
Summary	132,631	132,630	0

Note that Demantra Spectrum does not paste data into Pseudo after 01/20/03; this is because Pseudo is editable only in the history. Also, the value for 01/20/03 is slightly different from the corresponding value in the source because we are viewing data by quarter. If we viewed data at the lowest level (by week), the numbers would be identical.

Scenario 2: New Product (Location Similarity)

We want to introduce a new item to the market. We want this item to be sold in all locations where an existing item is sold, with the same sales data, multiplied by one half and shifted ahead by one year.

Example Data

The item Chocolate Ice Cream is sold in three stores. For example, the demand for this item for the quarter Q1 2003 is as follows:

Store	Demand
Store A	1000
Store B	2000
Store C	3000

Suppose we just used Member Management to create a new item called Double Chocolate Ice Cream. It will be sold in the same stores as Chocolate Ice Cream, and we believe its sales will be the same.

Also, in Member Management, we created the new item (Double Chocolate Ice Cream), but we did not create any combinations for it.

The Chaining Operation

We would like Double Chocolate Ice Cream to be in combinations with all the same stores as Chocolate Ice Cream. For those combinations, we would like the Demantra Spectrum database to contain the same demand data, multiplied by 50% and shifted by a year.

To create the combinations and copy this data, we use the following chaining operation:

Option In Chaining Management			Setting	Notes
Target	Target Members	sku	Double Chocolate Ice Cream	
		ship to	all	
	Population	Item	target	
		Location	source	
	Proportions	Item	source	
		Location	source	

Option In Chaining Management		Setting	Notes
Source	sku	Chocolate Ice Cream	
	ship to	all	
	From Date	04/23/01	
	To Date	01/05/04	
	Start At	04/22/02	This is the date into which we will start copying the requested data. This is approximately a year after the chosen starting date.
Series	Target	Pseudo	These options copy data for the Base Frcst series (for the chosen source), multiply that data by a factor of 1, and then paste the results into the Pseudo series (for the target), shifting the dates as described above.
	Source	Base Frcst	
	Factor	50%	

Result

The Demantra Spectrum database now includes the following combinations:

- Double Chocolate Ice Cream at Store A
- Double Chocolate Ice Cream at Store B
- Double Chocolate Ice Cream at Store C

Also, the database contains data for these combinations. For example, the data includes these values for Pseudo for the quarter Q1 2004:

Store	Pseudo
Store A	500
Store B	1000
Store C	1500

Scenario 3: Merging Two Locations

We have one store in east Manhattan, and one store on the west side of Manhattan. We decided to close down the East location and sell its entire items in the West location (merge two locations into one of them). We expect no change in the total sales of each product.

Population		Proportion	
Item	**Location**	**Item**	**Location**
Source	Target	Source	Target

Before Chaining

Source						Target		
Store East			Store West			Store West		
Item	**Loc**	**Quan**	**Item**	**Loc**	**Quan**	**Item**	**Loc**	**Quan**
I1	L1	10	I2	L2	20	I2	L2	20
I2	L1	20	I4	L2	40	I4	L2	40
I3	L1	30	I2	L2	20			

After Chaining

Target			
Store West	**Item**	**Location**	
	I1	L2	10
	I2	L2	40
	I3	L2	30
	I4	L2	40

Target		
Item	**Location**	
I2	L1	10
I2	L2	20
I2	L3	30

Scenario 4: Two New Products

We want to introduce a new item to the market. This item has two versions, ‘Classic’ and ‘light’. We want these items to be sold in all locations where an existing item is sold, and we expect these two versions to have similar sales (all together) as existing product.

- I1: Existing product, G2: hierarchy level of I21;I22
- I21;I22: New products (‘Classic’ and ‘light’, were never chained.
- East coast: L1, L2, L3

Population		Proportion	
Item	**Location**	**Item**	**Location**
Target	Source	Equal	Source

Before Chaining

Source			Target		
I1			**G2**		
Item	**Location**	**Quantity**	**Item**	**Location**	**Quantity**
I1	L1	10	I21		
I1	L2	20	I22		
I1	L3	30			

Target			
G2	**Item**	**Location**	
	I21	L1	5
	I21	L2	10
	I21	L3	15
	I22	L1	5
	I22	L2	10
	I22	L3	15

After Chaining

Each of the new products should be sold in all source locations. Sales data of each source product-location now needs to be split between two products.

The split mechanism for ‘non-low level’ member will be ‘equal’. In case of integer data type and non-integer results when splitting equally (for example, sales: 15, needs to be split between two items), the same mechanism currently being used in ‘Manual update’ of aggregated level query, should be applied here.

Scenario 5: Multiple Sources

The data from two source items is split with multiple series.

A company is about to introduce Product Z to Saver-Store. Product Z is equivalent to 3 X Product A and 1 X Product B in a different package, but with a price of just 2 X A and 1 X B. Soon after the introduction, the company will execute a campaign with a large nation-wide supermarket chain; it will be the same type of campaign as with product A.

The user selects Product Z and Saver-Store as the target. For the sources, the user selects Product A and Product B with Saver-Store as the location.

Sources					**Target**	
Item	**Location**	**From Series**	**To Series**	**Factor %**	**Item**	**Location**
A	Saver-Store	Demand	Pseudo	300	**Z**	**Saver-Store**
		Price	Price	200		
		Discount	Discount	100		
		Event	Event	100		
		Event Intensity	Event Intensity	100		
B	Saver-Store	Demand	Pseudo	100		
		Price	Price	100		
		Discount	Discount	100		

9 Allocation Management

You use Allocation Management to quickly split an amount across multiple combinations. This chapter includes the following sections:

Starting Allocation Management *91*
Keeping the Same Total but Changing Proportions *93*
Fixing an Absolute Amount and Changing the Remainder *95*
Accepting or Rejecting Recalculated Values *95*
Resetting Values *95*
Working with the Pie Chart *96*
Examples of Allocation *96*
Exiting Allocation Management and Saving Changes *98*

Starting Allocation Management

Before you start working with Allocation Management, you set up by specify the combinations to work with and the series among which you want to allocate values.

To start Allocation Management

1. Create a worksheet that includes at least one editable series (the series you will edit in Allocation Management) and at least two levels. The editable series must be proportional, must not be defined as a percentage, and must not be a dropdown series.

   The worksheet should use the same time resolution that you want to use in Allocation Management. That is, if you want to specify data at the monthly level and split that data accordingly, the worksheet should view data at the monthly level.

   Also, if you want to split data according to the proportions of another series, the worksheet should include that series.

2. Run the worksheet and display its results in the worksheet format.

3. In the worksheet, select a member from the second lowest level of the worksheet. (Select from the dropdown menu that is second to the furthest right dropdown menu.)

4. Select a member from the lowest level of the worksheet (select from the furthest right dropdown menu). You will be able to allocate values across all members that are siblings of this member.

5. If you make any manual changes to the data in the worksheet, save them before starting Allocation Management. To save the changes, click **Edit > Update.**

6. 
Click **Edit > Allocation Management**. Or click the Allocation Management button

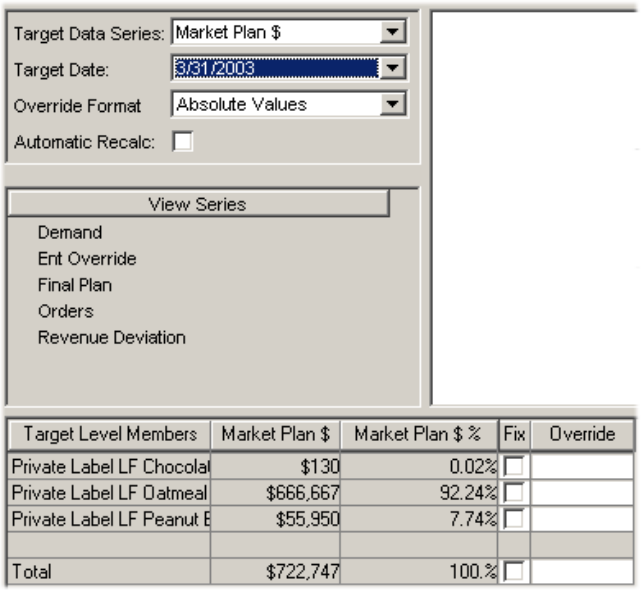
   The **Allocation Management** dialog box appears.

7. In the **Target Data Series** field, select the series for which you want to allocate values.

8. In the **Target Date** field, select the date on which to allocate values.

   Note that Allocation Management displays only dates that are relevant to the selected series and worksheet.

   As soon as you select a date, Allocation Management updates the bottom part of the worksheet. This display includes one row for each combination that belongs to the level you selected in Step 3 on page 91.



9. Optionally click each series listed in **View Series**.

   Allocation Management updates the bottom part of the worksheet to include data for the selected series.

   For each series, the bottom part of this worksheet lists a column for that series, as well as a column that indicates the relative proportions that correspond to each combination. In the following example, the worksheet shows series **Final Plan**

and another column (**Final Plan %**) that shows how each combination contributes to the total:

Target Level Members	Market Plan $	Market Plan $ %	Fix	Override	Final Plan	Final Plan %
Private Label LF Chocolat	$130	0.02%	☐		130	0.08%
Private Label LF Oatmeal	$666,667	92.24%	☐		97,721	63.53%
Private Label LF Peanut B	$55,950	7.74%	☐		55,950	36.39%
Total	$722,747	100.%	☐		153,801	100.%

10. Now you can make different kinds of changes. See the following:
    - “Keeping the Same Total but Changing Proportions” on page 93
    - “Keeping the Same Proportions but Changing the Total” on page 94
    - “Fixing an Absolute Amount and Changing the Remainder” on page 95

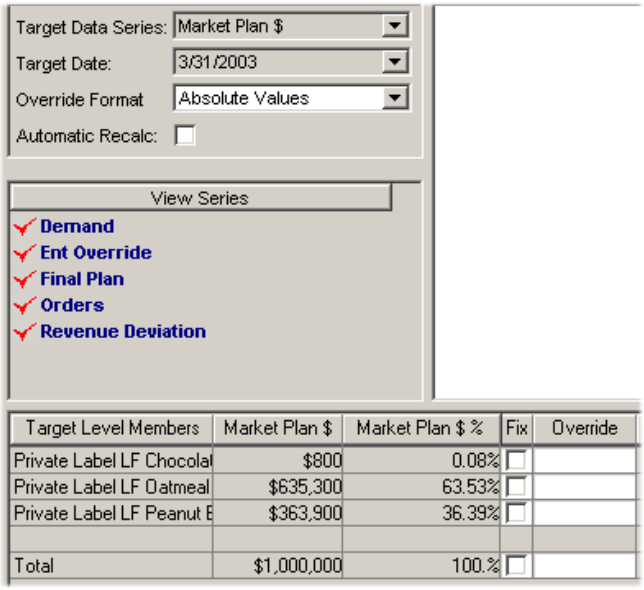
Keeping the Same Total but Changing Proportions

First see “Starting Allocation Management” on page 91.

To keep the same total but change the proportions

1. For **Override Format**, select **Absolute Values**.

   Allocation Management updates the bottom section of the window to include the **Override** column.



2. Click the **Fix** check box for **Total**. Now the **Total** cell is uneditable.
3. Edit the values in the **Override** column in either or both of the following ways:
   - Edit the cells in the **Override** column manually.

- Copy the header of one of the columns (except for one of the **%** columns) elsewhere in the worksheet. Then click **Edit > Copy**. Click the header of the **Override** column and then click **Edit > Paste.**

4. Click **File** > **Recalc**. Or click the **Recalc** button.
5. If you are done, accept or reject the changes. See "Accepting or Rejecting Recalculated Values" on page 95.

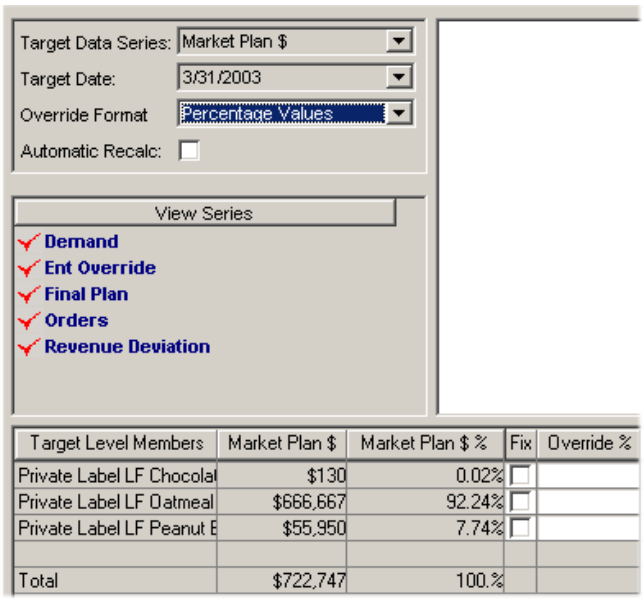
Keeping the Same Proportions but Changing the Total

First see "Starting Allocation Management" on page 91.

To keep the same proportions but change the total

1. For **Override Format**, select **Percentage Values**.

   Allocation Management updates the bottom section of the window to include the **Override%** column.



2. Edit the values in the **Override %** column in either or both of the following ways:

   - Edit the cells in the **Override %** column manually.
   - Copy the header of one of the **%** columns elsewhere in the worksheet. Then click **Edit > Copy**. Click the header of the **Override %** column and then click **Edit > Paste.**

3. Click **File** > **Recalc**. Or click the **Recalc** button.
4. If you are done, accept or reject the changes. See "Accepting or Rejecting Recalculated Values" on page 95.

Fixing an Absolute Amount and Changing the Remainder

First see “Starting Allocation Management” on page 91.

To fix an amount and change the remainder

1. For **Override Format**, select **Absolute Values**.
2. For any series data that you want to keep, click the **Fix** check box to make that cell uneditable.
3. Edit the other values in the **Override** column in either or both of the following ways:
   - Edit the cells in the **Override** column manually.
   - Copy the header of one of the columns (except for one of the **%** columns) elsewhere in the worksheet. Then click **Edit > Copy**. Click the header of the **Override** column and then click **Edit > Paste.**
4.  Click **File** > **Recalc**. Or click the **Recalc** button.
5. If you are done, accept or reject the changes. See “Accepting or Rejecting Recalculated Values” on page 95.

Accepting or Rejecting Recalculated Values

First see “Starting Allocation Management” on page 91.

To accept recalculated values

-  Click **Edit** > **Accept**. Or click the **Accept** button.

To reject recalculated values

-  Click **Edit** > **Reject**. Or click the **Reject** button.

See also

“Exiting Allocation Management and Saving Changes” on page 98

Resetting Values

You can reset recalculated values so that the last modification will be displayed.

To reset values

-  Click **Edit** > **Reset**. Or click the **Reset** button.

Working with the Pie Chart

Once mix data has been recalculated, the **Allocation Management** dialog box displays a pie chart that shows the respective series.

To explode the pie chart

- Click **Data** > **Pie Explode**. Or click the **Pie Explode** button.

To display and position the chart legend

1. Click **Data** > **Legend**.
2. Click the required legend position.

Examples of Allocation

Example 1

In this example, we allocate a limited amount based on other data series mix. Suppose the total production forecast is 180 (USA: 50, Europe: 60, Asia: 70) for product A. Also suppose that the total supply available for product A is 120.

In this example, we allocate the final supply based on the percentage values of the production forecast for each of the markets. For example, final supply for the USA market is 33 units (= 120 supply * 28% production forecast mix):

		Prod. Forecast		Final Supply	
Date	**Market**	**Absolute value**	**% value**	**Absolute value**	**% value**
1/1/2000	USA	50	28%	33	28%
	Europe	60	33%	40	33%
	Asia Pacific	70	39%	47	39%
	Total	180	100%	120	100%

Example 2

In this example, we allocate a limited amount by first satisfying firm orders and then allocating the rest. In this case, first the firm orders are met at each location, and the remaining supply will be split based on the production forecast mix by location.

		Firm Orders		Prod. Forecast		Final Supply	
Date	Market	Absolute value	% value	Absolute value	% value	Absolute value	% value
1/1/2000	USA	20	22%	50	28%	28	24%
	Europe	30	33%	60	33%	40	33%
	Asia Pacific	40	44%	70	39%	52	43%
	Total	90	100%	180	100%	120	100%

In order to accomplish this, we would work in several stages as follows:

1. Create a series that computes the supply that is available for allocation:

   Available Supply = Final Supply - Firm Orders

Market	Firm Orders	Final Supply	Avail Supply
USA	20	28	8
Europe	30	40	10
Asia Pacific	40	52	12
Total	90	120	30

2. Allocate the total Available Supply (30) based on percentages in the Production Forecast.

Market	Resulting Avail Supply
USA	28% of 30 is 8
Europe	33% of 30 is 10
Asia Pacific	39% of 30 is 12
Total	100% of 30 is 30

3. Make sure that Final Supply is calculated as follows:

   Final Supply = Firm Orders + Available Supply

Market	Avail Supply	Firm Orders	Final Supply
USA	8	20	28
Europe	10	30	40
Asia Pacific	12	40	52
Total	30	90	120

Exiting Allocation Management and Saving Changes

To close the Allocation Management dialog box

1. Click **Query** > **Close**. Or click **Close**.
2. In the regular worksheet, click **Data > Update.**

A Desktop System Menu

If you have access to the **System** *menu, you can perform assorted maintenance tasks. This appendix includes the following sections:*

Reloading the Configuration *99*
Monitoring Desktop User Sessions *99*
Changing Global Settings *100*

Note In order to access the **System** menu, you must have the **System Manager** permission level.

Reloading the Configuration

After making changes in the Business Modeler, you need to restart the desktop products *or* reload the configuration as follows.

Note This does not load the changes into the Web-based products.

To reload the configuration

- Click **System > Reload Configuration**.

Monitoring Desktop User Sessions

You can monitor the sessions of all users who are currently logged into the desktop products (Demand Planner or Demand Replenisher). This has no effect on users who are working in the Web products such as Demand Planner Web or Collaborator Workbench.

To monitor the desktop sessions

1. Click **System** > **Sessions Monitor**.

   The **Sessions Monitor** dialog box appears.

   This dialog box displays the session status of all users who are currently logged in to the desktop products. In the Active column, users with active sessions appear selected.

2. Here, do any of the following:

- To send a message to a desktop user who is currently logged in, click that user and click **Send Message**. (If the user is not currently logged in, he or she does not receive the message, and the message is not resent later.)
- To terminate a user's desktop session, click the user and optionally click the **Send message before killing** check box. Enter a message when prompted. Then click **Kill Session**. If you chose to send a message, Demantra Spectrum prompts you for that message. Type a message and then click **OK**.

Changing Global Settings

To change global settings

1. Click **System** > **Maintain** > **Edit Global Parameters**.
2. The system displays the following dialog box, where you can set parameters that control how Demantra Spectrum operates:

Parameter	If parameter is checked...	Note
Use of items aggregation	The Analytical Engine will run more slowly but will give more accurate results.	Setting is not saved. It is applied only to this login session.
Debug messages	Demantra Spectrum displays debug messages if errors occur.	Setting is not saved. It is applied only to this login session.
Autorun mode	Demantra Spectrum automatically runs worksheets as soon as you open them.	Setting is saved in the database and is applied to all Demantra Spectrum sessions, in the desktop and in Web user interfaces.
Receive Collaboration Messages	Any user of the desktop (Demand Planner or Demand Replenisher) will receive messages if the currently displayed data has been changed by another user (who is logged onto either the desktop or the Web products).	Setting is saved in the database, but enables messages only in the desktop.

B Details for Advanced Users

This appendix provides additional details for interested users.

How Series Are Calculated and Stored.....101
The Proport Mechanism 102

How Series Are Calculated and Stored

Demantra Spectrum stores data only at the lowest possible level. When you run a worksheet that uses a specific aggregation level, the series in it are calculated for that level. The definition of a series determines how that calculation is done:

- In some cases, the series retrieves data from the database and aggregates it to the level in the worksheet. (In these cases, the series is using a *server expression*.) Here, a background database procedure is responsible for maintaining the data.
- In other cases, the series calculates data based on other data that is available at the aggregation level in the worksheet. (In these cases, the series is using a *client expression*.) This data is recalculated immediately whenever you make changes in the worksheet.

Similarly, when you edit data at an aggregated level, Demantra Spectrum must determine how that affects the lowest level in the database. The definition of a series controls what happens:

- If a series is *proportional*, the parent value is split among the child members according to the relative proportions of those members. For example, if one item-location combination had four times as many sales as another, the former combination should receive four times as much of the forecast. If a series is calculated by summing from lower levels, that series is usually defined as proportional.

  For more information on splitting, see “The Proport Mechanism” on page 102.
- If a series is non-proportional, the value for each child member is set equal to value of parent. If a series is defined as averaging lower level data or taking the minimum or maximum, that series is usually defined as non-proportional.

The Proport Mechanism

The Demantra Spectrum *proport* mechanism is used a wide variety of situations. This section describes how the proportions are chosen, how they are used, and when proport is called.

How Proportions Are Chosen

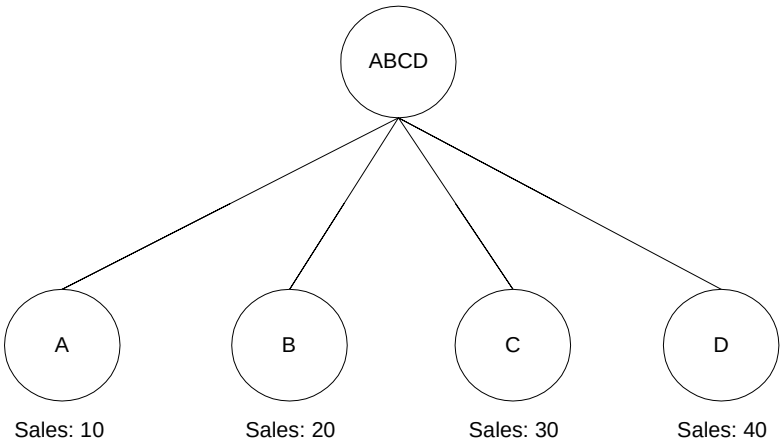
Demantra Spectrum provides three general ways to specify the relative proportions of different combinations:

Kind of proportions	Details	When used
Proportions of a reference series	A proportional series uses a reference series, usually one of the following: • **Demand** (suitable for a historical series) • **Final Plan** (suitable for a forecast series)	• Automatically used when you edit data at an aggregated level
"Actual proportions"	Split higher-level data according to the proportions of the **Demand** series.	• Option when importing data
"Matrix proportions"	Proportions that Demantra Spectrum has previously calculated and stored. The calculation is based upon the demand, but also considers recent average demand, month-to-month variations, and so on.	• Option when importing data • Automatically used when forecast must be created at higher level

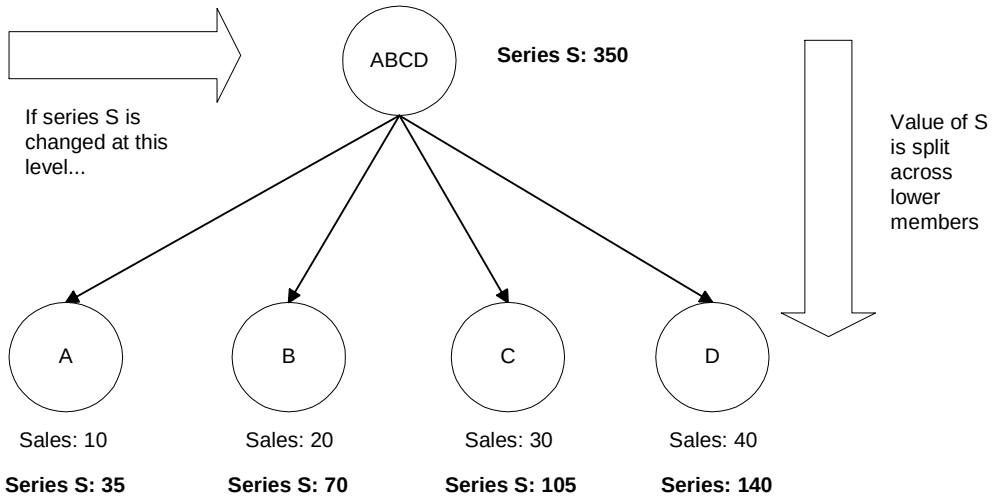
For chaining, you have additional options for specifying how to split the data.

How Proportions Are Used

The following figure shows an upper-level member, ABCD, and its four child members. It also shows a reference series (Sales), and it shows the value of that series for each child member, all within the same time bucket.

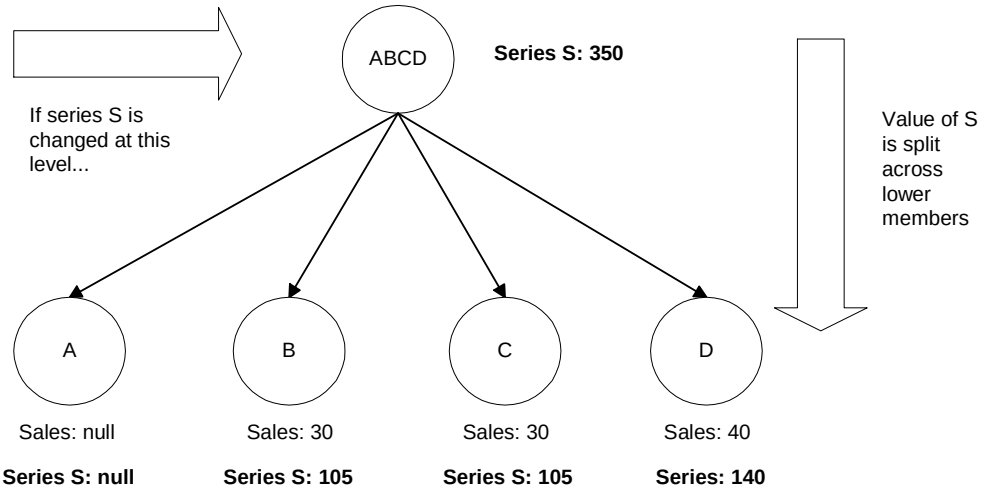


Now suppose that series S is a proportional series that uses Sales as its reference series, and suppose that the value of S is changed to 350 for the parent member. In this case, the series S is split across the child members as follows:



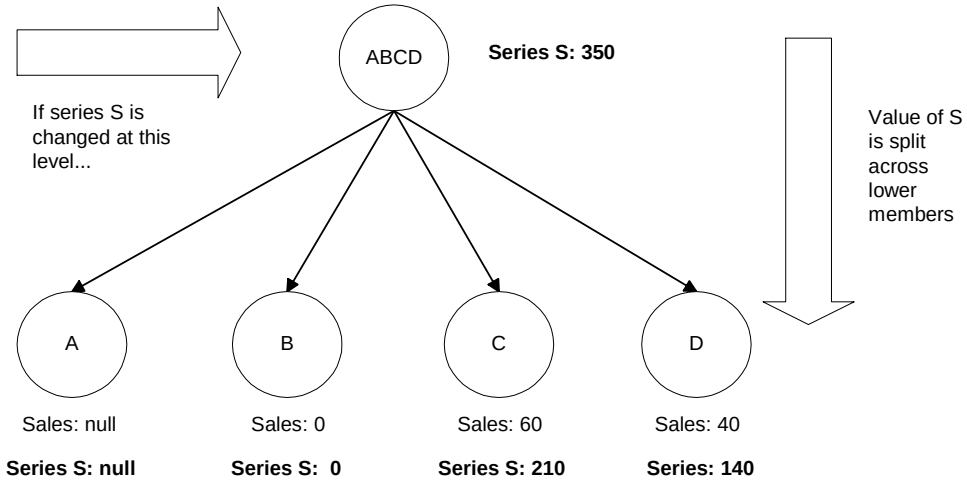
How the Proport Mechanism Handles Null Values

Now consider a case where the reference series has a null value for one of the child member. The proport mechanism ignores that member, as follows:



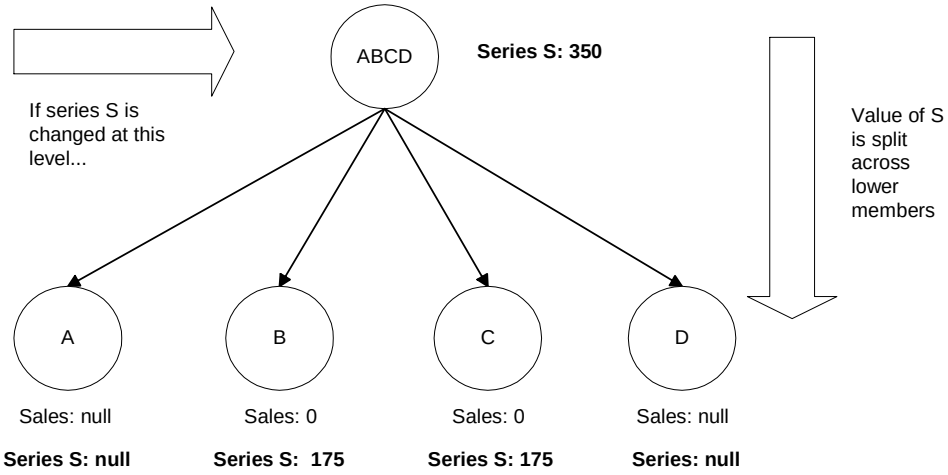
How the Proport Mechanism Handles Zero Values

Now let us consider two cases where child members have zero values. In the first case, the reference series is zero for one of the child members, but has non-zero numbers for other child members. Any member with 0 sales receives 0% of the split, as follows:



Notice that member A that has a null value for the reference series; for this member, the value of series S is null, rather than 0.

In the second case, none of the child members has a non-zero value. In a case like this, the parent value is split equally among all members that have zero values for the reference series.



As always, if a child member has null for the reference series, the proport mechanism ignores that member entirely.

Glossary

4-4-5 calendar

A calendar that consists of financial quarters, in which each quarter consists of a "month" of exactly four weeks, followed by a "month" of exactly four weeks, followed by another "month" of exactly five weeks. In practice, 4-4-5 calendars vary slightly from company to company.

active combination

Item-location combination that is neither dead nor young; see *prediction status*.

advanced analytics

The process of specifying engine models and engine parameters for different *combinations* within the *forecast tree*, rather than using the global settings.

aggregation

The process of adding up or otherwise determining a useful summary of a set of related data. For example, you might add up the sales for all the products in a product group and arrive at an aggregated number for the entire product group. Note that aggregation does not always mean simple addition; you can aggregate data in other ways.

allocation

The general process of dividing a limited amount included in a data series on a product or location group level, to a product or location item level by using the proportions mix of group/items of a different data series.

To perform allocation, you use Allocation Management (within Demand Planner).

batch mode

A mode in which you can run the Analytical Engine. In this mode, the Analytical Engine uses the entire forecast tree. See also *simulation mode*.

base time buckets

The *time buckets* in which data is stored in Demantra Spectrum. Each base time bucket contains data corresponding to one *base time unit*. Users can view data aggregated into larger time buckets as well.

base time unit

The smallest possible *time unit* in your Demantra Spectrum implementation. The base time unit determines the *time resolution* of your system.

causal factor

Additional information that can explain historical data so that you can improve forecast quality (for example: price, CPI, weather, and so on). Specifically, a causal factor is a time-varying quantity (such as a series) that affects demand. Demantra Spectrum provides the following general kinds of causal factors:

- A local causal factor depends on the time, location, and item being sold. For example, it can be a specific discount in a specific store.
- A global causal factor depends only on the time, for example, a holiday. See *global factor*.

You configure causal factors in the Business Modeler. Demantra Spectrum uses this information to better understand the sales history and make more accurate predictions.

chaining

The general process of associating historical patterns of existing series with other series found in a new product or location, with the goal of predicting for the new product or location. To perform chaining, you use Chaining Management (within Demand Planner). You specify sources and targets.

client expression

Calculates data at a given level, referring to other data at the same level. You use client expressions to calculate numbers that cannot be calculated by aggregation from lowest-level data.

A client expression takes precedence over a *server expression*.

Normally, you use a server expression to retrieve data for the series at the lowest aggregation level. For higher aggregation levels, Demantra Spectrum automatically aggregates the results of the server expression. In cases where that aggregation is not suitable, you use a client expression that explicitly uses the data associated with the higher aggregation level.

combination

The combination of an item member (from any hierarchy level) and an location member (from any hierarchy level). Each of the following is a combination:

- Chocolate cookies (at all stores)
- Chocolate cookies at the Fair Haven store
- All cookies at Better Stores, Inc.

The word *combination* can also refer to the data associated with that combination, for example, all sales of chocolate cookies at the Fair Haven store.

combination level

A level that contains time-*independent* data for combinations. Sometimes called *matrix level*.

combination series

More often called *matrix series*.

combination-selection list

Drop-down list at the top of a worksheet. A worksheet typically has several of these, and you use them to specify which item-location combination the worksheet should display.

confidence interval

Associated with a forecast, a confidence interval gives a range of values around the forecast line where the 'true' demand can be expected to be located (with a given level of certainty, that is, the *confidence level*, for example, 95% certainty). You specify the desired confidence level for each forecast series within Demantra Spectrum.

constraint

A restriction designed to limit data from a series to a specific range. If no constraint is set for a certain information category, Demand Planner processes all data contained in the series.

crosstab

A worksheet that has been configured with levels on the x-axis and/or y-axis.

dead combination

Combination for which sales are not recent enough to be used for prediction. See also *prediction status*.

dimension

Perspective from which a large volume of complex and interrelated data can be viewed and analyzed. Each dimension organizes data in one or more hierarchies of *levels*, allowing you to view the data in different ways. Your Demantra Spectrum application can have any number of dimensions, which you define in the Business Modeler. See also *level hierarchy*.

exception

If you attach an exception to a worksheet, Demantra Spectrum checks the values of the worksheet data and displays only the combinations that meet the exception criteria.

Specifically, you define an exception condition that consists of a series, a comparison operator (such as equals or greater than), and a value, for example:

Sales > 150000

When you open the worksheet, Demantra Spectrum checks each combination in the worksheet. For each combination, if the condition is met for *any* time in the worksheet date range, Demantra Spectrum displays that combination. For example, the worksheet shows combinations that have Sales values greater than 150000, within the time range included in the worksheet.

If the condition is not met at any time for any of the worksheet combinations, Demantra Spectrum shows the worksheet as empty. That is, if all values in the Sales series are less than or equal to 15000, the worksheet comes up empty.

You can attach multiple exceptions to a worksheet. When you do so, you can relate them to each other via logical AND or logical OR relationships.

fictive

Placeholder. For example, when you first create a member using Member Management, that member is not yet associated with any sales data and is therefore a fictive member.

filtering

The process of limiting the scope of data. Demantra Spectrum provides two general types of filters, each of which allows only certain data to be displayed or otherwise used.

The more common filters are combination filters. For this type of filter, you specify the following:

- An aggregation level. You can filter data at any level in any dimension.
- Members of that aggregation level that are allowed through the filter; other members are not included.

The net result is that a filter allows Demantra Spectrum to display only certain item-location combinations.

In a few places, Demantra Spectrum provides a different type of filter, a value-specific filter that allows only data that contains certain values.

forecast

Predictions about future sales of items at various locations, as a function of time. The forecast is based upon the demand, which in turn is based upon the historical data. The length of time that the forecast spans is called the *forecast horizon*.

The Analytical Engine creates the forecast, either as the result of the batch forecast, or when a user runs and approves a simulation.

forecast model

Mathematical model used to predict forecast. Demantra Spectrum provides a about a dozen forecast models that are in common industry use. To create its forecast, the Analytical Engine tests each model, sees how well it fits the historical data, and uses a weighted combination of the results from all the models.

forecast node

Node within the forecast tree.

forecast tree

A single hierarchy of forecast data, the forecast tree is made up of item-location combinations at different aggregate levels. Each node in this tree represents a time-based series that is subject to forecast. The forecast tree does not need to contain all possible combinations, only those that are relevant to the forecasting process.

global factor

A causal factor that depends only on the date of the sale. A global factor affects all items and locations in the system. For example, global oil prices have an impact on the sales of automobiles. The effect is widespread but changes with time. The effect occurs at all locations where the automobile is sold, and for all models being sold.

Another possible global factor is a holiday, if all locations in your solution follow the same holidays.

group expressions

An expression that defines a subtotal displayed in the desktop user interfaces (Demand Planner and Demand Replenisher).

historical data

In general, this is the record of sales of different items at all locations, for months or years in the past. For each sale, you must know the location of the sale, the product code, price, and quantity. You also typically know information about causal factors (such as holidays and promotions) that may have affected the sales volume. Demantra Spectrum also uses information about returns, inventory levels, and orders.

index

A financial measure used to normalize prices over time. An example is the Consumer Price Index (CPI).

item

One of the dimensions by which you view data. Other typical dimensions are location and time. Each dimension consists of one or more hierarchies of data, allowing you to view data organized in different ways. For example, if you are forecasting demand for muffins, the item dimension could contain a product group hierarchy and a flavor hierarchy.

level

An aggregation of data. For example, the Color level might consist of the sales data aggregated by the color of the items. Each level consists of members. The Color level would have one member for each color.

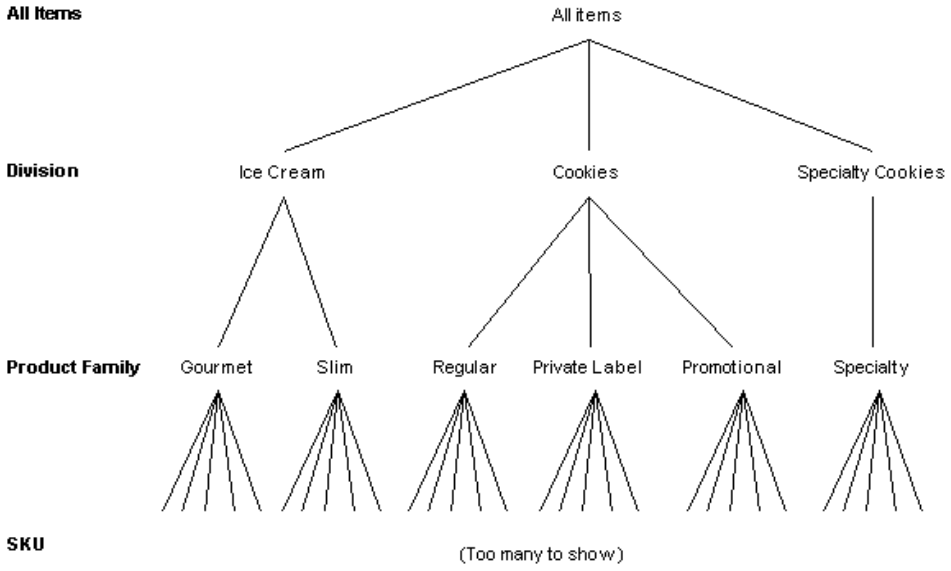
Levels allow you to view the data in different ways. Demantra Spectrum supports the following types of levels:

- *Item* levels, which organize data in ways that reflect product properties such as product family, color, style, and so on. Each member of an item level represents time-dependent data aggregated according to some attribute of the items being sold.
- *Location* levels, which organize data in ways that reflect *where* sales have occurred. Each member of a location-type level represents time-dependent data aggregated according to some attribute of the stores or locations where the items are being sold.

- *Combination levels*, which represent time-*independent* data aggregated by item and location. These are less common.

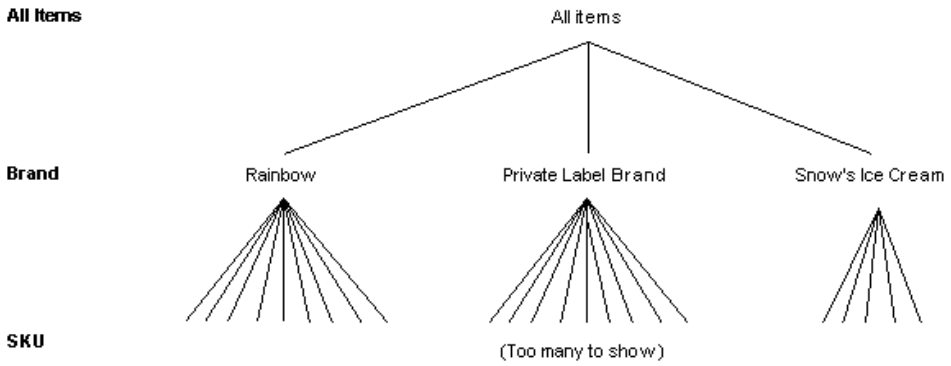
level hierarchy

Each level can belong within any number of independent hierarchies, each of which represents a different way of aggregating data. For example, the SKUs could be organized into product families, which in turn could be organized into divisions as follows, as follows:



In this example, Division, Product Family, and SKU are all levels in Demantra Spectrum.

The SKUs could also be organized into brands as follows:



Note that this hierarchy is independent of the product family hierarchy. That is, there is not necessarily any relationship between brands and product families. Nor is there any relationship between brands and divisions.

Given these relationships, a member can have parents. For example, consider the SKU member Rainbow LF Chocolate Chip. This SKU might have the following parents:

- Regular (parent of this SKU within the product family level)
- Rainbow (parent of this SKU within the brand level)

live combination
Item-location combination that is neither dead nor young; see *prediction status*.

local causal factor
See *causal factor*.

location
A dimension by which you view data. Other typical dimensions are item and time. Each dimension consists of one or more hierarchies of data. For example, the location dimension could be broken down into country and then into states and towns.

matrix level
See *combination level*.

matrix series
A series that consists of time-independent data for each item-location combination. This data is stored in **mdp_matrix**.

member
An element of a *level*. Each level contains one or more members. For example, at the city level, members may include Paris and London.

Each member corresponds to a set of sales data. Each member has properties that apply to the sales data at that level, such as unit, description, and an identifying code.

There are several types of member

Real	Member that was created by import and that has sales data. Most members are real.
New	Member that was created by import but that does not yet have sales data. When sales data is loaded for this member, it will become real.
User-defined or *fictive*	Member that you have created via one of the following: • Members Browser in a Web-based worksheet. • Member Management in Demand Planner and Demand Replenisher. When this member is loaded via import, it will become new or real, depending on whether it has sales data.

member management
The process of creating, editing, and deleting level *members*.

model

Mathematical model that the Analytical Engine uses when creating a forecast.

outlier

An atypical observation, generally infrequent; a data point that does not appear to follow the characteristic distribution of the rest of the data. Outliers may reflect genuine properties of the underlying phenomenon (variable), or may be caused by measurement errors or other anomalies that should not be modeled.

Some of the Demantra Spectrum forecast models automatically identify and exclude outliers, and Demantra Spectrum indicates when that occurs. You can manually identify outliers as well.

POS data

Point-of-sale data.

prediction status

When generating forecasts, the engine considers the prediction status of each item-location combination. Prediction status is one of the following:

Status	Description
Young	Sales for this combination are too new to be used for prediction.
Dead	Sales for this combination are not recent enough to be used for prediction.
Live	Neither young nor dead. Also called *active*.
Create Zero Forecast	A user has specified this prediction status manually for this item-location combination, and this status means that this combination should have a forecast consisting of zero values.

The Analytical Engine ignores any young or dead combinations.

proport

Mechanism that Demantra Spectrum uses for splitting aggregated data across the corresponding lowest-level members. Demantra Spectrum splits data on many occasions, including the following:

- When the Analytical Engine generates a forecast at an aggregated level
- When data is imported at an aggregated level
- When users edit aggregated data
- When users perform chaining at an aggregated level.

proportions

Split proportions used by the *proport* mechanism.

query

See *worksheet.*

regime change

A point in time when a change in the demand pattern occurs. Demantra Spectrum can automatically flag when regime changes occur.

sales series

A series that consists of time-dependent data for each item-location combination. That is, each data point in the series corresponds to a given item-location combination at a given point in time. This type of series is the most common type by far.

seasonality

If historical data has a regular pattern of observations above and below a trend, the data is said to be seasonal. Seasonality is generally observed in data compiled on a less than annual basis (for example, quarterly or monthly).

series

Usually, a time-dependent set of data. For example, sales data and the forecast are both series.

A series can be defined by a *server expression*, a *client expression*, or both.

server expression

The SQL expression that calculates the series data at any level by aggregating the associated lowest-level data. A very common server expression has the following form:

sum (*table_name.update_column_name***)**

Here *table_name.update_column_name* is the table and column that stores data for this series. The server expression often includes the unit of measure in which results are expressed.

A *client expression* takes precedence over a server expression.

simulation

A ‘what if’ scenario in which a user may manipulate measure data (such as History) and examine the way in which the changes affect related measure data (such as Forecasts).

To perform a simulation, you use the Simulation Engine.

simulation mode

A mode in which you can run the Analytical Engine. In this mode, you perform evaluate a scenario, to see what might happen in a given situation. In contrast to batch mode, you use only a small part of the forecast tree and a comparatively small set of data series.

splitting

In general, *splitting* refers to the general process of dividing an aggregated amount into appropriate parts. See *proport*.

spreadsheet

The set of series used in Demantra Spectrum. You can use this set of series in the same way as a spreadsheet. Each *worksheet* generally presents the series within a table or spreadsheet format.

summary report

A variant of a worksheet table that displays one row for each combination that the worksheet contains. This table can be in *crosstab* format.

time

A dimension by which you view data. Other typical dimensions are item and location.

time bucket

Depending on context, this phrase refers to any of the following:

- The *base time buckets*.
- A specific period of time corresponding to a time unit (the week of 1/3/05).
- The data associated with that period of time (the data associated with the week of 1/3/05). If you consider a set of series as a spreadsheet, with time as the horizontal axis, then a time bucket is a vertical slice of the data.
- A *time unit* (a week).

time level

A level that aggregates data across time. Depending on your system, time levels are configured to enable you to analyze data by the specific month of the year, day of the week, and so on.

time resolution

In general, time resolution specifies the amount of visible detail for time-dependent data. Specifically, it refers the time unit by which this data is grouped, for example, by months or weeks. See also *time unit*.

time unit

A unit of time in Demantra Spectrum, such as day, week, month, and others, including the months of a *4-4-5 calendar*.

The *base time unit (or minimum time unit)* is the smallest length of time that your data model represents. This can be either a day, a week, or a month, by default; smaller buckets are possible but require custom work. The size of the base time unit determines the *maximum possible time resolution* of your model.

trend

The long-term behavior of data, over time.

waterfall chart

A chart that displays both the current version and past versions of the same data.

worksheet

A set of data retrieved from the Demantra Spectrum database. In a worksheet, you specify information such as following:

- At least one series to retrieve from the database
- The levels of aggregation to view in the worksheet
- Optional filtering to set the scope of the worksheet

A worksheet can be public (shared with other Demantra Spectrum users) or private. Only the owner of a worksheet can edit it.

A worksheet is also known as a *query.*

x-axis

The horizontal axis of a worksheet graph and correspondingly, the vertical axis of a worksheet table.

y-axis

The vertical axis of a worksheet graph and correspondingly, the horizontal axis of a worksheet table.

young combination

Item-location combination for which sales are too new to be used for prediction. See also *prediction status*.

zero history

Historical data consist of zero sales. You usually create zero history for combinations you create via Member Management, so that there are placeholder records that you can edit.

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