Oracle® Retail Regular Price Optimization

Implementation Guide

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Preface

The Oracle Retail Regular Price Optimization Implementation Guide describes post-installation tasks that need to be performed in order to bring Regular Price Optimization online and ready for production use.

Audience

This Implementation Guide is intended for the Regular Price Optimization application integrators and implementation staff, as well as the retailer's IT personnel. This guide is also intended for business analysts who are looking for information about processes and interfaces to validate the support for business scenarios within Regular Price Optimization and other systems across the enterprise.

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For more information, see the following documents in the Oracle Retail Regular Price Optimization 13.2 documentation set:

- *Oracle Retail Regular Price Optimization Release Notes*
- *Oracle Retail Regular Price Optimization Installation Guide*
- *Oracle Retail Regular Price Optimization User Guide*

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- Functional and technical description of the problem (include business impact)
- Detailed step-by-step instructions to re-create
- Exact error message received
- Screen shots of each step you take

Review Patch Documentation

When you install the application for the first time, you install either a base release (for example, 13.2) or a later patch release (for example, 13.2.1). If you are installing the base release, additional patch, and bundled hot fix releases, read the documentation for all releases that have occurred since the base release before you begin installation. Documentation for patch and bundled hot fix releases can contain critical information related to the base release, as well as information about code changes since the base release.

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Documentation is packaged with each Oracle Retail product release. Oracle Retail product documentation is also available on the following Web site:

http://www.oracle.com/technology/documentation/oracle_retail.html

(Data Model documents are not available through Oracle Technology Network. These documents are packaged with released code, or you can obtain them through My Oracle Support.)

Documentation should be available on this Web site within a month after a product release.

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

1
Introduction

Oracle Retail Regular Price Optimization (RPO) assists retail price mangers in pricing hard-line and grocery items. It is suited for long lifecycle items with infrequent price changes. It recommends permanent prices based on initial estimates of an item's total sales volume over a planning period and on price-related sales of items and related items.

RPO includes grouping in its pricing analysis because it considers cross-item elasticities; that is, RPO considers how price changes for one item may affect the sales volume of other items that belong to the same demand group. Users can input objective functions and pricing constraints that define the optimization problem. Once these inputs are defined, the pricing optimizer recommends prices and associated volumes. What–if cases can also be created and evaluated side by side within the context of a pricing scenario. Once an analysis of the what–if cases and recommended prices is complete, the user can make a final decision to submit the recommended prices for the given set of merchandise items and locations.

For a more detailed overview of the functionality within RPO, see the *Oracle Retail Regular Price Optimization User Guide*.

Contents of this Guide

This implementation guide addresses the following topics:

- Chapter 1: Introduction. Overview of the RPO business workflow and skills needed for implementation.
- Chapter 2: Implementation Considerations. Explanation of the factors to take into consideration before performing the implementation.
- Chapter 3: Build Script. Information on building and patching the RPO - RPAS domain.
- Chapter 4: Loading and Extracting Data. Lists the measures that should be loaded to load functionally coherent set of data.
- Chapter 5: Integration. Overview of integration and explanation of the RPO data flow and integration script.
- Chapter 6: Configuration Considerations. Information on the functional changes or enhancements that can be made for RPO.
- Chapter 7: Internationalization. Translations provided for RPO.

RPO and the Oracle Retail Enterprise

Figure 1–1 shows the architecture of RPO and Oracle Retail Predictive Application Server (RPAS).

Figure 1–1 RPO and the Oracle Retail Enterprise

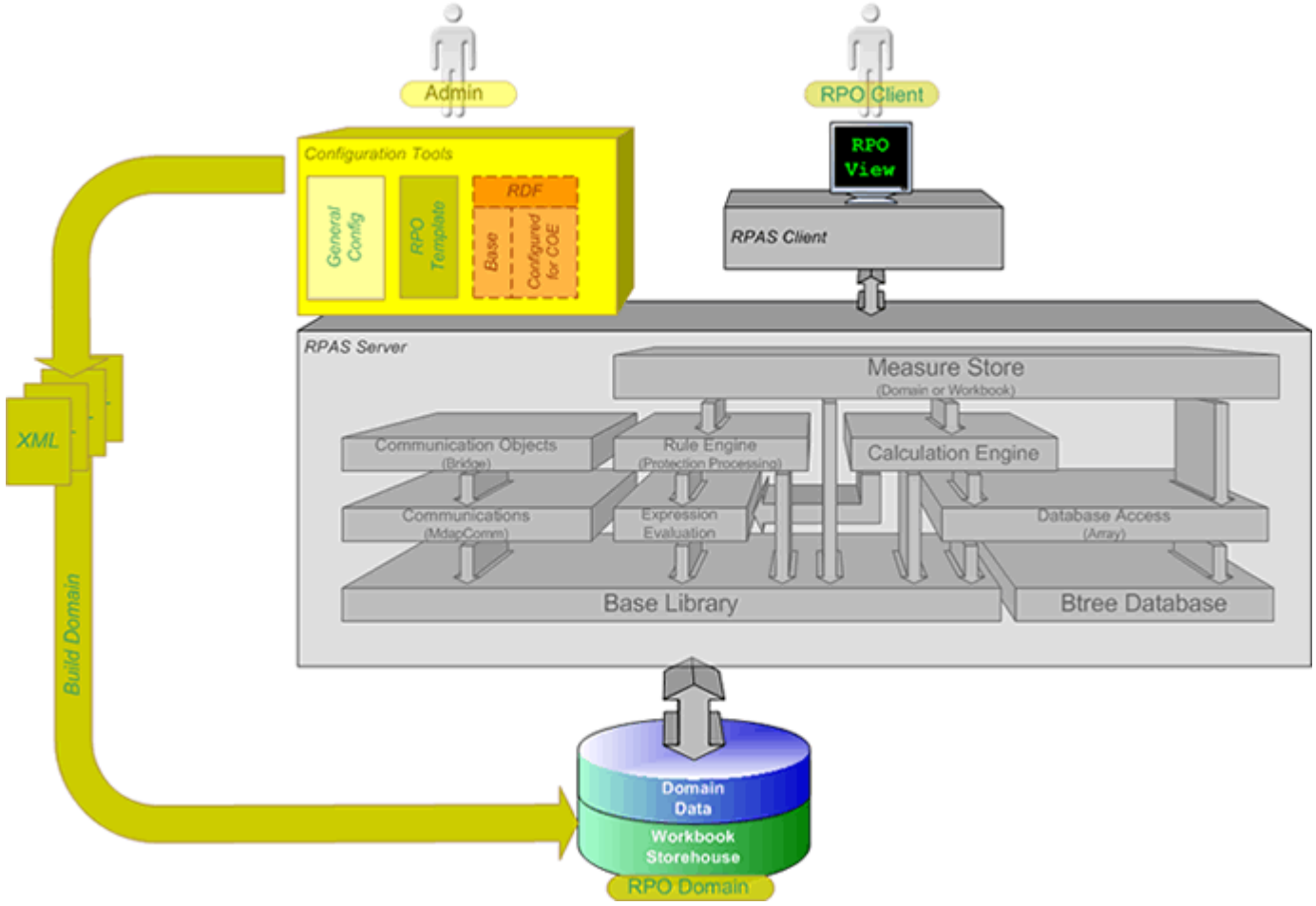


Figure 1–1 describes the RPO template applications. In the truest sense, RPO and other templates are not applications in the same way that the RPAS client is an application, since end users are not presented a user interface specific to the template. The RPO and other templates are predefined means to view specific types of data in the domain such that the RPAS client user interface is used to read and write to the domain.

The system administrator responsible for maintaining the RPAS Configuration Tools ensures that the appropriate templates are available. Each template has the following associated information to define its predefined attributes:

- Measures
- Special expressions
- Rules
- Workbook layout

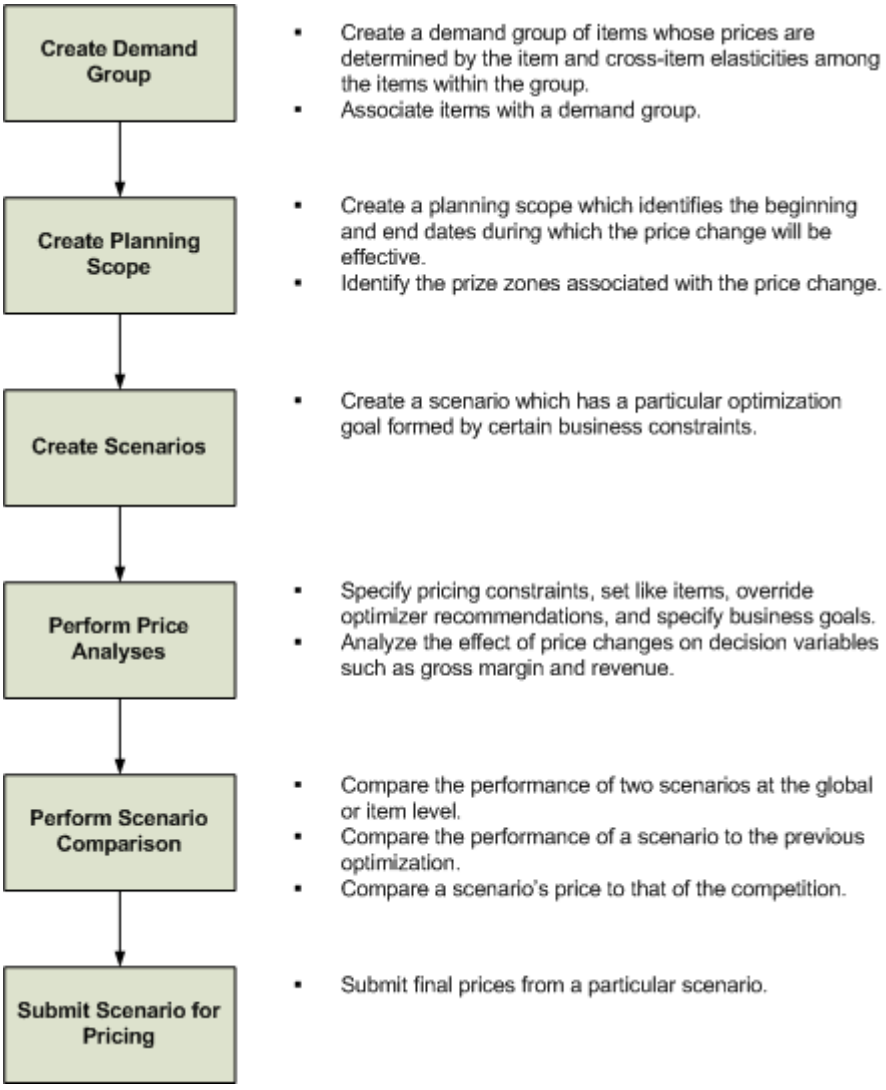
A client requests use of one of the templates by using the Configuration Tools. A number of XML files are then output which define the domain to be created. These XML files are used to build the specified domain incorporating all the attributes mentioned above that have been defined specifically.

Once the domain has been created, the end user can access the domain data through the RPAS client.

Business Process Workflow

Figure 1–2 shows a typical workflow for RPO.

Figure 1–2 RPO Workflow



Key Features of RPO

RPO provides the following features:

- Optimization of retail, grocery, and hard-line item regular prices for a defined time period subject to constraints
- Choice of optimization metrics: revenue, margin, highest item price, volume, Competitive Price Index (CPI), or any combination thereof
- Attention to global constraints on revenue, margin, and volume
- Attention to item and group price range and inter-item constraints
- Attention to discrete price ladder constraints
- Differentiation of prices across price zone or store level

Skills Needed for Implementation

The implementer needs an understanding of the following technical concepts:

- UNIX system administration, shell scripts, and job scheduling
- Performance constraints based on the retailer's infrastructure
- Technical architecture for RPO
- Retailer's hierarchical (SKU/store/day) data
- How to set up an RPAS domain
- A basic understanding of RPAS configuration and how to use the RPAS Configuration Tools
- Understanding of how RPAS rule language works
- Understanding of measures and dimension constructs
- Basic merchandising
- Basic forecasting
- The interaction of prices and volumes for items in assortment

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Implementation Considerations

The following information needs to be considered before implementing RPO:

- Input Data
- Parametric Data
- Hardware Space Impacts
- Domain Partitioning
- Formatting
- Plug-ins
- Patch Considerations
- Batch Scheduling
- Optimization Options
- Security
- Internationalization

Input Data

RPO uses the following required data:

- Base demand
- Current cost
- Current price

The following is optional data:

- Competition prices
- Price family data
- Unit of measure (UOM)
- Equivalent unit of measure (EUOM)
- Parametric data (see the Parametric Data section)

Parametric Data

Item and cross-item elasticities quantify the effect of price on volume for both a single item and for other items whose demand is correlated with that item. Parametric data is used in various capacities for the different optimization options. For the rule management option, parametric data is not needed. For the price simulation option, just item elasticities are required. For the full optimization option, both item and cross-item elasticities are required. For more information, see Optimization Options.

Hardware Space Impacts

The following factors can affect hardware space requirements:

- SKU - Number of distinct items.
- Store - Number of physical, Web, and other distinct retail outlets.
- Calendar - Number of historical and future time periods in the domain. This impacts the overall size of the environment.
- Workbooks - Amount of space used by workbooks. This is typically greater than the domain itself. The number of workbooks is related to the number of users.

Domain Partitioning

Partitioning is done to avoid contention for resources. Building a workbook and committing data are two processes that can cause contention.

How data is partitioned has an impact on the business process. The RPO domain is defined as a global domain. For performance reasons, a simple domain is not recommended. There should be an even distribution of users across a set of local domains. For example, dairy products could be in one domain, dry cereal in another, and canned goods in a third. When a user is committing data in the dairy products domain, it does not affect the users in the dry cereal or canned goods domains because of the use of partitioning.

Consider the following questions when defining the partitioning of the domain:

- How do I partition to meet my business needs?
- How do I partition my users?
- How do I create groups of users to further partition the solution?

Domain partitioning is supported on any dimension of the Product (PROD) hierarchy at or above Category. It is recommended that the RPO domain only be partitioned along the Product hierarchy. It is not recommended that the user partition along the Location (LOC) hierarchy, primarily because Price Zone is not along the partitioned branch (it is an alternate, dynamic rollup) of the Location hierarchy, and all Price Zone level data would be stored in the Global Domain.

In RPO, all analytics are performed within the workbook and measures are not created during workbook creation. All DPM-enabled dimensions are Higher Base Intersections, and therefore there is a possibility of contention when too many DPM positions are created simultaneously.

Note: Demand groups cannot cross domains. Any cross-category requirements must exist in the same domain.

Formatting

Formatting can be done in the configuration or the workbook after the domain is built.

- An implementer can create generic styles for the measures and assign them to measure components or realized measures. For each measure, these styles can be overridden on each workbook template. Formatting can only be changed by using the RPAS Configuration Tools. For more information, see the *Oracle Retail Predictive Application Server Configuration Tools User Guide*.
- Once the domain is built, the implementer can set up worksheet sizes and placements, exception value formatting, gridlines, and other formatting. The implementer instantiates a workbook of the template to set up specific formatting by using the Format menu. The updated format is then saved to the template so that it is available to all users for any newly created workbooks. For information on how to use the Format menu, see the *Oracle Retail Predictive Application Server User Guide*.

Plug-ins

Note: There is no Configuration Tools plug-in for RPO.

Plug-ins are application-specific Java code modules that run inside and automate the RPAS Configuration Tools to assist the implementer with specific application configuration. There are rules that an implementer must follow when configuring an application. A plug-in makes such adherence easier by automating parts of the configuration process and validity-checking entries that are made.

Patch Considerations

With a new release, there are two types of patches that can affect the RPO RPAS domain:

- Changes to the code in the RPAS libraries

  The configuration is not affected by this type of patch. For these types of changes, applying the patch is a straight forward process.

- Changes to the configuration

  These types of changes can be more complex. If a retailer has customizations in the configuration, the customizations must be redone on the new configuration before the patch is installed.

Patching Process

The RPO patch/upgrade process is not automated. As a result, any customizations achieved through configuration have to be manually reinstated for every configuration patch. Each RPO patch is accompanied with documentation that indicates the changes that were made so that the process of patching can be a focused effort.

Use the Configuration Tools Generate Reports utility to find differences between customized configurations and the released version of the configuration. The utility also finds the differences between patch or upgrade versions and the original released versions of the configuration. This facilitates manual patching of the specific customized solution.

Batch Scheduling

Batch scripts are lists of commands or jobs executed without human intervention. A batch window is the time frame in which the batch process must run. It is the upper limit on how long the batch can take.

RPO has no batch scripts that are central to optimization. Batch scripts are only needed for loading hierarchies and data files, as well as for exporting the recommended prices. The time that batch scripts are scheduled to run varies by implementation.

Optimization Options

Many retailers want a way to manage rules for everyday pricing, while still maintaining the flexibility and foundation to layer on elasticity understanding and optimization as their organization and pricing practices mature. Some retailers just need to manage their rules (competitive rules, margin requirements, price families, inter-item rules) and do not need to consider elasticities or optimization. Other retailers would like to use elasticities to predict and understand volumes. Then, there are some retailers who would not only like to manage rules and consider elasticities but also perform optimization to recommend prices.

As a result of these business needs, RPO can be used in three different ways, allowing the user to benefit from the various degrees of complexity of RPO. These three options—rule management, price simulation, and full optimization— are described below.

Rule Management

Rule management provides robust rules management capability. It does not consider price elasticities; it only satisfies the constraints set by the user. Using rule management, the price change does not impact the sales volume during the what-if simulation. To use RPO for rule management, select rule management as the optimization capacity option in the Price Analysis workbook.

Price Simulation

Price simulation provides robust rules management capability and what-if simulation which shows the item volume/financial impact based on the item elasticity. Using price simulation, the price change impacts the sales volume during the what-if simulation, but it does not consider the cross-item elasticities. To use RPO for price simulation, select price simulation as the optimization capacity option in the Price Analysis workbook.

Full Optimization

Full optimization builds on the functionality of price simulation, but it also considers cross-item elasticities in the what-if simulation and in the optimization. In a full optimization, the revenue, gross margin, volume, CPI, and combination of global goals can be employed. By using cross-item elasticities, RPO captures cannibalization and halo effects among items. Using full optimization, the price change impacts the sales volume during the what-if simulation, but both item elasticity and cross-item elasticity are considered.

To use RPO for full optimization, select full optimization as the optimization capacity option in the Price Analysis workbook.

Changing Optimization Options

To change RPO from one optimization option to another, there is no need to patch the domain or upgrade any code. However, for the price simulation option, you must load the item elasticity data. For the full optimization option, you must load both the item elasticity data and the cross-item elasticity data.

For more information about using the different optimization options, see the *Oracle Retail Regular Price Optimization User Guide*.

Security

To define workbook template security, the system administrator grants individual users, or user groups, access to specific workbook templates. Granting access to workbook templates provides users the ability to create, modify, save, and commit workbooks for the assigned workbook templates. Users are typically assigned to groups based on their user application (or solution) role. Users in the same group can be given access to workbook templates that belong to that group alone. Users can be assigned to more than one group and granted workbook template access without belonging to the user group that typically uses a specific workbook template. Workbook access is either denied, read-only, or full access. Read-only access allows a user to create a workbook for the template, but the user cannot edit any values or commit the workbook. The read-only workbook can be refreshed.

When users save workbooks, they assign one of three access permissions:

- World - Allow any user to open and edit the workbook.
- Group - Allow only those users in their same group to open and edit the workbooks.
- User - Allow no other users to open and edit the workbook.

Note: A user must have access to the workbook template in order to access the workbook, even if the workbook has world access rights.

For more information on security, see the *Oracle Retail Predictive Application Server Administration Guide*.

Internationalization

For more information on translation for RPO, see Chapter 7, "Internationalization".

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Build Scripts

This chapter describes the setup that must be done before building the RPO - RPAS domain and the batch script that must be executed to build the domain.

Installation Dependencies

RPAS and RPO must be installed before setting up and configuring RPO.

- For information on installing RPAS, see the *Oracle Retail Predictive Application Server Installation Guide*.
- For information on installing RPO, see the *Oracle Retail Regular Price Optimization Installation Guide*.

Environment Setup

Before downloading the installation package to the UNIX server, a central directory structure to support the environment needs to be created. This central directory is referred to as `<rpo_directory>`. Set `<rpo_directory>` to the full path name to RPO home.

Note: The `$RPO_HOME` variable is not used.

RPAS Installation

The Java-based RPAS installation programs that are included with the installation package are used to install the server-side RPAS components on UNIX operating systems.

The RPAS installer performs the following functions:

- Installs the RPAS server
- Installs the Configuration Tools on the server

  On Windows, an InstallShield package is used to install the Configuration Tools.
- Defines the DomainDaemon port

RPO Installation

In addition to the RPAS installer, the installation package also includes the Java-based RPAS installation program for the RPO application.

The RPO installer performs the following functions:

- Downloads the configuration and batch scripts into the `<rpo_directory>/config` and `<rpo_directory>/bin` directories
- Downloads a set of sample hierarchy and data files into the `<rpo_directory>/input` directory
- Builds a sample domain at `<rpo_directory>/domain/RPO`

Custom Domain Build

To do a custom build of a domain:

1. Update the globaldomainconfig.xml file with the correct domain paths.
2. If needed, update the default environment variables in environment.sh.
3. Execute the buildRegPrice.sh script: ./buildRegPrice.sh

It is expected that the first time buildRegPrice.sh is executed, an error occurs when it tries to remove the old log file because a log file does not yet exist.

Environment Variables

In addition to the regular RPAS environment variables, including RPAS_HOME, you need to set up the following environment variables and export them:

- RPAS_JAVA_CLASSPATH
- RIDE_HOME
- PATH

Files Needed to Build the RPO RPAS Domain

Before the domain is built, the following types of files need to be set up:

- Standard RPAS hierarchy files
- RPO specific hierarchy files
- Data files

Standard RPAS Hierarchy Files

The following hierarchy files are needed:

- Calendar (CLND) Hierarchy File
- Product (PROD) Hierarchy File
- Location (LOC) Hierarchy File

Note: As with all standard RPAS hierarchies, these hierarchies are configurable. For information about configuring these hierarchies, see Chapter 6, "Configuration Considerations".

Calendar (CLND) Hierarchy File

File name: clnd.csv.dat
File format: comma-separated values file

The following table describes the fields in the file:

Table 3–1 Calendar Hierarchy Fields

Field	Description
Day	Day ID
Day label	Day label
Week	Week ID
Week label	Week label
Mnth	Month ID
Mnth label	Month label
Qrtr	Quarter ID
Qrtr label	Quarter label
Year	Year number
Year label	Year label

Example:

```
20050130,01/30/2005,w01_2005,01/30/2005,JAN_2005,January 2005,Q1_2005,Quarter 1
2005,A2005,Year 2005
```

Product (PROD) Hierarchy File

File name: prod.csv.dat
File format: comma-separated values file

The following table describes the fields in the file:

Table 3–2 Product Hierarchy Fields

Field	Description
Item	SKU ID
SKU label	SKU label
Clss	Class ID
Clss label	Class label
Scat	Sub Category ID
Scat label	Sub Category label
Cat	Category ID
Cat label	Category label
Dept	Department ID
Dept label	Department label
Chnl	Chain ID
Chnl label	Chain label

Example:

```
10426485,Bskt Lg Gld Wlw W/Red Vlv Lnr,217771339880,Cmas Storage
Baskets,21777133,Basket Collections,21777,Baskets & Storage,217,Home Decor,0,Chain
Top Level
```

Location (LOC) Hierarchy File

File name: loc.csv.dat
File format: comma-separated values file

The following table describes the fields in the file:

Table 3–3 Location Hierarchy Fields

Field	Description
Str	Store ID
Str label	Store label
Zone	Zone ID
Zone label	Zone label
Regn	Region ID
Regn label	Region label
Cnty	Country ID
Cnty label	Country label
Chnl	Chain ID
Chnl label	Chain label
Entp	Enterprise ID
Entp label	Enterprise label
Przn	Price Zone ID
Przn label	Price Zone label

Example:

```
2068,Atl-Cumming,8,Atlanta GA DMA,H2,Hobby Mart,1,US,1,retailer chnl
,0,retailer,9,Price Zone 9
```

RPO Hierarchy Files

The following are required hierarchy files needed for RPO:

- RHS Product (PROR) Hierarchy File
- Competition Product (COMP) Hierarchy File
- Price Ladder Hierarchy File
- Price Point Hierarchy File
- Planning Scope Hierarchy File
- Item Group Hierarchy File
- Demand Group Hierarchy File
- Inter-Item Constraints Hierarchy File
- Inter-Item Group Constraints Hierarchy File
- Competition Constraints Hierarchy File
- Competition Item Group Constraints Hierarchy File
- Item Link Group Hierarchy File
- What-If Hierarchy File
- Scenario Hierarchy File

RHS Product (PROR) Hierarchy File

RHS Product (PROR) hierarchy has the same format and content as Product (PROD) hierarchy. You should copy the Product hierarchy file and load it again for the RHS Product hierarchy.

File name: pror.csv.dat
File format: comma-separated values file

The following table describes the fields in the file:

Table 3–4 RHS Product Hierarchy Fields

Field	Description
Item	SKU ID
SKU label	SKU label
Clss	Class ID
Clss label	Class label
Scat	Sub Category ID
Scat label	Sub Category label
Cat	Category ID
Cat label	Category label
Dept	Department ID
Dept label	Department label
Chnl	Chain ID
Chnl label	Chain label

Example:

```
10426485,Bskt Lg Gld Wlw W/Red Vlv Lnr,217771339880,Cmas Storage
Baskets,21777133,Basket Collections,21777,Baskets & Storage,217,Home Decor,0,Chain
Top Level
```

Competition Product (COMP) Hierarchy File

File name: comp.csv.dat
File format: comma-separated values file

The following table describes the fields in the file:

Table 3–5 Competition Product Hierarchy Fields

Field	Description
Itec	Competitor SKU ID
Itec label	Competitor SKU label
Scac	Sub-category ID
Scac label	Sub-category label
Catc	Category ID
Catc label	Category label
Cmpt	Competitor ID
Cmpt label	Competitor label

Example:

```
RET10427707,Green BOWL,Bowl,Bowl Sub Category,Storage,Storage category,Department,
Department Example,Retail,Retail Example
```

Price Ladder Hierarchy File

A price ladder is a collection of acceptable price points for an item. Price ladders are loaded to ensure appropriate recommended prices are provided based upon optimization results. RPO only recommends a price that is a price point on the price ladder.

For example, if the optimization engine recommends a price of $11.93, but your price strategy is that all prices must end in .00 and price breaks must occur every $2.00, then RPO recommends $12.00 instead of $11.93.

> **Note:** Only a single price ladder can be deployed for each item at a time. It is suggested to load as few price ladders as possible.

File name: pl.csv.dat
File format: comma-separated values file

The following table describes the fields in the file:

Table 3–6 Price Ladder Hierarchy Fields

Field	Description
Pldr	Price Ladder ID
Pldr label	Price Ladder label

Example:

```
1,Price Ladder from 0.99 to 99.99
```

Price Point Hierarchy File

A price point is an acceptable price for an item. A price ladder is a collection of price points for an item. RPO only recommends a price that is a price point on the price ladder.

File name: pp.csv.dat
File format: comma-separated values file

The following table describes the fields in the file:

Table 3–7 Price Point Hierarchy Fields

Field	Description
Ppnt	Price Point ID
Ppnt label	Price Point label

Example:

```
1,price point 001
2,price point 002
3,price point 003
…
99,price point 099
```

Planning Scope Hierarchy File

Planning scopes can be created manually within the RPO application or they can be loaded in a periodic hierarchy load. This hierarchy requires a planing scope position named `example`. Therefore, you should include `example, example` as the first line in this hierarchy's loading file. See the Planning Scope Loading section in this chapter for details on how to load the planning scope.

File name: ps.csv.dat
File format: comma-separated values file

The following table describes the fields in the file:

Table 3–8 Planning Scope Hierarchy Fields

Field	Description
Pcsp	Planning Scope ID
Pcsp label	Planning Scope label

Example:

```
example,example
Pl001,Example planning scope
```

Item Group Hierarchy File

Item groups can be created manually within the RPO application or they can be loaded in a periodic hierarchy load. There are two major purposes for item groups in RPO. First, item groups allow the user to group all the items together and set constraints for all of them rather than for each item individually. For example, if you have an item group called Brand X Soda, you can set group level constraints so that the price of Brand X soda is always less than Brand Y soda.

Secondly, it allows users to set up the price family constraint. For example, if a group is defined for all Brand X 12-ounce sodas (diet, regular, caffeine free, cherry), you can designate a price family to that group so that all types of Brand X's 12-ounce soda have the same price. See the Item Group Loading section in this chapter for details on how to load the item group.

File name: ig.csv.dat
File format: comma-separated values file

The following table describes the fields in the file:

Table 3–9 Item Group Hierarchy Fields

Field	Description
Igrp	Item Group ID
Igrp label	Item Group label

Example:

```
itgp001,Item Group Example
```

Demand Group Hierarchy File

Demand Group represents a group of items for which the optimization solver runs. For example, a beverage demand group could contain name brand and store brand items that are in different product hierarchies but should be optimized together.

> **Note:** Although demand groups can include items from different product hierarchies, those items must belong to the same category.

Demand groups can be created manually within the RPO application or they can be loaded in a periodic hierarchy load. See the Demand Group Loading section in this chapter for more details on how to load the demand group.

File name: dg.csv.dat
File format: comma-separated values file

The following table describes the fields in the file:

Table 3–10 Demand Group Hierarchy Fields

Field	Description
Dgrp	Demand Group ID
Dgrp label	Demand Group label

Example:

```
Demand001,Demand Group Example
```

Inter-Item Constraints Hierarchy File

Inter-item Constraints hierarchy is used to assign a unique identifier to each individual inter-item constraint. Inter-item constraints can be created manually within the RPO application, but they are usually loaded in a periodic hierarchy load.

File name: iicn.csv.dat
File format: comma-separated values file

The following table describes the fields in the file:

Table 3–11 Inter-Item Constraints Hierarchy Fields

Field	Description
Iicn	Inter-item Constraints ID
Iicn label	Inter-item Constraints label

Example:

```
001,Inter item constraint 001
```

Inter-Item Group Constraints Hierarchy File

Inter-item Group Constraints hierarchy is used to assign a unique identifier to each individual inter-item group constraint. Inter-item group constraints can be created manually within the RPO application, but they are usually loaded in a periodic hierarchy load.

File name: iig.csv.dat
File format: comma-separated values file

The following table describes the fields in the file:

Table 3–12 Inter-Item Group Constraints Hierarchy Fields

Field	Description
Iigc	Inter-item Group Constraint ID
Iigc label	Inter-item Group Constraint label

Example:

```
C001,Inter-item group constraint 001
```

Competition Constraints Hierarchy File

Competition Constraints hierarchy is a dynamic hierarchy which is used to assign a unique identifier to each individual competition constraint. Competition constraints can be created manually within the RPO application, but they are usually loaded in a periodic hierarchy load.

File name: cmc.csv.dat
File format: comma-separated values file

The following table describes the fields in the file:

Table 3–13 Competition Constraints Hierarchy Fields

Field	Description
Cmpc	Competition Constraint ID

Example:

```
C001,Item competition constraint 001
```

Competition Item Group Constraints Hierarchy File

Competition Item Group Constraints hierarchy is used to assign a unique identifier to each individual competition item group constraint. Competition item group constraints can be created manually within the RPO application, but they are usually loaded in a periodic hierarchy load.

File name: cig.csv.dat
File format: comma-separated values file

The following table describes the fields in the file:

Table 3–14 Competition Item Group Constraints Hierarchy Fields

Field	Description
Cigc	Competition Item Group Constraint ID
Cigc label	Competition Item Group Constraint label

Example:

```
C001,Competition item-group constraint 001
```

Item Link Group Hierarchy File

This hierarchy is necessary to define the item link group. For more information about how items link to other items, see the Item Link Group Mapping File section in this chapter.

File name: ilg.csv.dat
File format: comma-separated values file

The following table describes the fields in the file:

Table 3–15 Item Link Group Hierarchy Fields

Field	Description
Ilg	Item Link Group ID
Ilg label	Item Link Group label

Example:

```
Ilg001,Item Link Group 001
```

What-If Hierarchy File

What-if hierarchy is a dynamic hierarchy which can be created manually in the RPO application or loaded in a periodic hierarchy load. This hierarchy requires the following three positions: original, recommend, and user. You should include these positions in the first three lines of this hierarchy's loading file:

- Original, Original
- Recommended, Recommended
- User, User

File name: wi.csv.dat
File format: comma-separated values file

The following table describes the fields in the file:

Table 3–16 What-If Hierarchy Fields

Field	Description
Wtif	What-if ID
Wtif	What-if label

Example:

```
Original, Original
Recommended, Recommended
User, User
Wtif001, what if example
```

Scenario Hierarchy File

Scenario hierarchy is a dynamic hierarchy which can be loaded in a periodic hierarchy load, but it is usually created manually within the RPO application. This hierarchy requires an example position. Therefore, you should include `example, example` in the first line of hierarchy file.

File name: scn.csv.dat
File format: comma-separated values file

The following table describes the fields in the file:

Table 3–17 Scenario Hierarchy Fields

Field	Description
Scnr	Scenario ID
Scnr label	Scenario label

Example:

```
example,example,
Max_margin,max margin scenario
```

Required Data Files

The following data files are required:

- Base Demand File
- Current Item Cost File
- Current Item Price File
- Price Ladder Value File
- Item Default Price Ladder Assignment File

> **Note:** In this guide, all the required data files are assumed to be at the item/price zone optimization level. The location dimension in the file's intersection means price zone.

Base Demand File

The demand forecast for the item at this specific location and week. It is assumed that this forecast already includes the seasonality factor. The location dimension is dependent on the optimization level, meaning that if the optimization level is item/price zone, then the location dimension is price zone.

File name: dl1itbdsp.csv.rpl
File format: comma-separated values file
Intersection: item/*location*/week

The following table describes the fields in the file:

Table 3–18 Base Demand Fields

Field	Description
Week	Week ID
Item	Item ID
Location	Optimization level's location dimension
Value	The forecast value

Example:

```
w01_2006,10033240,6,8.50
```

Current Item Cost File

The current cost of the item at that location. The location dimension is dependent on the optimization level, meaning that if the optimization level is item/price zone, then the location dimension is price zone.

File name: dl1orgitcst.csv.rpl
File format: comma-separated values file
Intersection: item/*location*

The following table describes the fields in the file:

Table 3–19 Current Item Cost Fields

Field	Description
Item	Item ID
Location	Optimization level's location dimension
Cost Value	Item cost at a certain location

Example:

```
10033240,1,3.17
```

Current Item Price File

The current price of the item at that location. The location dimension is dependent on the optimization level the user chooses, meaning that if the optimization level is item/price zone, then the location dimension is price zone.

File name: ol1orgitpc.csv.rpl
File format: comma-separated values file
Intersection: item/*location*

The following table describes the fields in the file:

Table 3–20 Current Item Price Fields

Field	Description
Item	Item ID
Location	Optimization level's location dimension
Price Value	Item price at a certain location

Example:

```
10033240,1,4.12
```

Price Ladder Value File

The price ladder defines the price value of each price point on a price ladder.

File name: pldrppt.csv.rpl
File format: comma-separated values file
Intersection: price ladder/price point

> **Note:** Only a single price ladder can be deployed for each item at a time. It is suggested to load as few price ladders as possible.

The following table describes the fields in the file:

Table 3–21 Price Ladder Value Fields

Field	Description
Pldr	Price Ladder ID
Ppnt	Price Point ID
Value	The price value

Example:

```
1,1,0.49
2,1,0.59
3,1,0.69
```

Item Default Price Ladder Assignment File

The item's default price ladder used when pricing for a specified location. The location dimension is dependent on the optimization level the user chooses, meaning that if the optimization level is item/price zone, then the location dimension is price zone.

File name: ol1itpcldr.csv.rpl
File format: comma-separated values file
Intersection: item/*location*

The following table describes the fields in the file:

Table 3–22 Item Default Price Ladder Assignment Fields

Field	Description
Item	Item ID
Location	Optimization level's location dimension
Value	The default Price Ladder ID

Example:

```
21777131,1,1
21777131,2,1
```

Optional Data Files

These data files are optional:

- Price Family File
- Unit of Measure File
- Equivalent Unit of Measures File
- Competitor Current Price File
- Competitor Last Price Check Date File
- Competitor Price Type File
- Competitor to Retailer Item Linkage File
- Item Link Group Mapping File
- Category/Store Price Zone Mapping File

Price Family File

The price family to which the item belongs. The price family is a product attribute. If the item does not belong to a price family, leave the field empty. RPO can create an item group based on this file, but the user also can create the item group manually.

File name: ol1pcfml.csv.rpl
File format: comma-separated values file
Intersection: item

The following table describes the fields in the file:

Table 3–23 Price Family Fields

Field	Description
Item	Item ID
Price Family	The item family that the item belongs to

Example:

```
10213430 ,
10412409,1
```

Unit of Measure File

Unit of Measures (UOM) describes the unit of measure of the item (such as 6-pack, 12-pack, case, and so on). The UOM is not a required attribute for every item. It is useful when the user needs to make a distinction between several pack sizes of the same product. For example, Brand X packages its canned soda in 6-packs and 12-packs. The UOMs for those two products are 6 and 12, respectively.

This file is necessary if the user needs to set up inter-item constraints at UOM type. The unit price of 6-pack soda should be greater than the unit price of the 12-pack.

> **Note:** The Unit of Measure (UOM) must be an integer.

File name: ol1ituom.csv.rpl
File format: comma-separated values file
Intersection: item

The following table describes the fields in the file:

Table 3–24 Unit of Measure Fields

Field	Description
Item	Item ID
UOM Value	The sellable unit packsize. This must be an integer.

Example:

```
10213430 , 6
```

Equivalent Unit of Measures File

Equivalent Unit of Measures (EUOM) describes the multiple of a standard unit of measure (such as ounces, pounds, liters) contained in one unit. Like UOM, EUOM is not a required attribute for every item. It is useful when the user needs to make a distinction between several pack sizes, pack weights, or volumes of the same product. For example, Brand X packages its bottled soda in 1- and 2- liter bottles. The EUOM of the 1-liter soda is 1.0. The EUOM of the 2-liter is 2.0.

This file is needed if the user needs to set up inter-item constraints at EUOM type. The unit price of the 1 liter soda should be greater than the unit price of the 2 liter.

File name: ol1itequiu.csv.rpl
File format: comma-separated values file
Intersection: item

The following table describes the fields in the file:

Table 3–25 Equivalent Unit of Measures Fields

Field	Description
Item	Item ID
EUOM Value	The multiple of a standard unit of measure (such as ounces, pounds, etc.) contained in one unit.

Example:

```
10213430 , 2.0
```

Competitor Current Price File

The competitor's current price of an item at that location. The location dimension is dependent on the optimization level the user chooses, meaning that if the optimization level is item/price zone, then the location dimension is price zone.

File name: ol1cmpcurpc.csv.rpl
File format: comma-separated values file
Intersection: itec/*location*

The following table describes the fields in the file:

Table 3–26 Competitor Current Price Fields

Field	Description
Itec	Competitor's Item ID
Location	Optimization level's location dimension
Price	Competitor's Item Price

Example:

```
Comp10359233,1,4.49
```

Competitor Last Price Check Date File

The date of the last time the competitor's item price was checked at that location. The location dimension is dependent on the optimization level the user chooses, meaning that if the optimization level is item/price zone, then the location dimension is price zone.

File name: ol1cmppcchkdt.csv.rpl
File format: comma-separated values file
Intersection: itec/*location*

The following table describes the fields in the file:

Table 3–27 Competitor Last Price Check Date Fields

Field	Description
Itec	Competitor's Item ID
Location	Optimization level's location dimension
Date	The date of the last time the competitor's item price was checked at that location

Example:

```
Comp10343969,1,20080212
```

Competitor Price Type File

The competitor's item price type, such as promotion price or regular price, at that location. The location dimension is dependent on the optimization level the user chooses, meaning that if the optimization level is item/price zone, then the location dimension is price zone. If the competitor price type is not loaded, is does not impact the functionality of RPO.

File name: ol1cmppctp.csv.rpl
File format: comma-separated values file
Intersection: itec/*location*

The following table describes the fields in the file:

Table 3–28 Competitor Price Type Fields

Field	Description
Itec	Competitor's Item ID
Location	Optimization level's location dimension
Type	Competitor's item price type, such as promotional, regular, etc.

Example:

```
Comp_10343969,1,Promo Price
```

Competitor to Retailer Item Linkage File

The linkage between the retailer item and competitor item at that location. This file is needed if the retailer needs to set up the competition constraints.

The location dimension is dependent on the optimization level the user chooses, meaning that if the optimization level is item/price zone, then the location dimension is price zone.

File name: ol1ilgcomp.csv.rpl
File format: comma-separated values file
Intersection: item/competitor item/*location*

The following table describes the fields in the file:

Table 3–29 Competitor to Retailer Item Linkage Fields

Field	Description
Item	Retailer's Item ID
Itec	Competitor's Item ID
Location	Optimization level's location dimension
Linkage Value	Set to "T" in order to link the items. The absence of a record means there is no link between the retailer and the item.

Example:

```
10398713,competitor_10398713,1,T
```

Item Link Group Mapping File

This measure defines the item and RHS (right hand side) item linkage in the specified item link group. The value indicates if the item and RHS item are linked in the item link group. Use this file to define the inter-item constraint at the item group level.

If this file is not loaded, the functionality of RPO is not impacted since the mapping can be created later within the RPO application.

File name: ol1ilgititrmp.csv.rpl
File format: comma-separated values file
Intersection: item/iter/ilg

The following table describes the fields in the file:

Table 3–30 Item Link Group Mapping Fields

Field	Description
Item	Item ID
Iter	RHS (right hand side) Item ID
Ilg	Item Link Group ID
Linkage Value	Set to "T" in order to link the item and the RHS item in the item link group. The absence of a record means there is no link.

Example:

```
10412332,10412330,ilg1,T
```

Category/Store Price Zone Mapping File

Defines how the store maps to the price zone with various categories. This is not needed if the store to price zone rollup does not depend on the product hierarchy.

File name: pzdynhrmp.csv.rpl
File format: comma-separated values file
Intersection: cat/store

The following table describes the fields in the file:

Table 3–31 Category/Store Price Zone Mapping Fields

Field	Description
Cat	Category ID
Str	Store ID
Price Zone Value	Price Zone ID

Example:

```
Cat_21777,store_1536,pricezone_7
```

Loading Optional Dynamic Hierarchies

The following section describes how to load the following optional hierarchies:

- Demand Group Loading
- Item Group Loading
- Planning Scope Loading

Demand Group Loading

The steps to load the demand group are as follows.

1. Load Demand Group Hierarchy File

See the Demand Group Hierarchy File section in this chapter for instructions.

2. Load Demand Group Description

Defines the demand group's description.

File name: dgrpdesc.csv.rpl
File format: comma-separated values file
Intersection: dgrp (Demand Group ID)

Table 3–32 Demand Group Description Fields

Field	Description
Dgrp	Demand Group ID
Description	Demand Group description

Example:

```
Dgrp1,description of dgrp1
```

3. Load Demand Group Optimization Level

Defines the demand group's optimization level. The optimization level specifies at which level the user optimizes the price, such as item/price zone. The optimization level is customizable and is defined in the configuration.

File name: optlvl.csv.rpl
File format: comma-separated values file
Intersection: dgrp (Demand Group ID)

Table 3–33 Demand Group Optimization Level Fields

Field	Description
Dgrp	Demand Group ID
Optlvl	Optimization level

Example:

```
Dgrp1,1
```

4. Load Demand Group/Demand Level

Defines the demand group's demand level. The demand level specifies which level the base demand cost is loaded. The demand level must be the same as the optimization level. That is, if optimization level 1 is assigned to the demand group, then demand level 1 should be assigned to it as well.

File name: dmndlvl.csv.rpl
File format: comma-separated values file
Intersection: dgrp (Demand Group ID)

Table 3–34 Demand Group/Demand Level Fields

Field	Description
Dgrp	Demand Group ID
Dmndlvl	Demand level

Example:

```
Dgrp1,1
```

5. Load Demand Group/Item Association

Defines whether the item belongs to the price zone.

File name: dgitmbr.csv.rpl
File format: comma-separated values file
Intersection: item/dgrp (Item, Demand Group ID)

Table 3–35 Demand Group/Item Association Fields

Field	Description
Item	Item ID
Dgrp	Demand Group ID
Value	Set to "T" in order to make the item belong to a price zone. The absence of a record means there is no association.

Example:

```
10033240, Dgrp1, T
```

Item Group Loading

The steps to load the item group are as follows.

1. Load Item Group Hierarchy File

See the Item Group Hierarchy File section in this chapter for instructions.

2. Load Item Group Description

Defines the item group's description.

File name: igrpdesc.csv.rpl
File format: comma-separated values file
Intersection: igrp (Item Group ID)

Table 3–36 Item Group Description Fields

Field	Description
Igrp	Item Group ID
Description	Item Group description

Example:

```
Igrp1,description of item group igrp1
```

3. Load Price Family Indicator

Specifies whether the item group should be treated as a price family.

File name: familyind.csv.rpl
File format: comma-separated values file
Intersection: igrp (Item Group ID)

Table 3–37 Price Family Indicator Fields

Field	Description
Igrp	Item Group ID
Value	Set to "T" to indicate that the item group should be treated as a price family. The absence of a record indicates that the item group is not treated as a price family.

Example:

```
Igrp1,T
```

4. Load Item/Item Group Association

Defines the item group and item association. This association is used to range the data while building the workbook.

File name: ol1igitasmt.csv.rpl
File format: comma-separated values file
Intersection: igrp/item (Item Group ID, Item ID)

Table 3–38 Item/Item Group Association Fields

Field	Description
Igrp	Item Group ID
Dgrp	Demand Group ID
Dmndlvl	Set to "T" to associate the item to the item group. The absence of a record means there is no association.

Example:

```
10033240,Igrp1, T
```

Planning Scope Loading

The steps to load the item group are as follows.

1. Load Planning Scope Hierarchy File

See the Planning Scope Hierarchy File section in this chapter for instructions.

2. Load Planning Scope Description

Defines the planning scope's description.

File name: pscpdesc.csv.rpl
File format: comma-separated values file
Intersection: pscp/dgrp (Planning Scope ID, Demand Group ID)

Table 3–39 Planning Scope Description Fields

Field	Description
Pscp	Planning Scope ID
Dgrp	Demand Group ID
Description	Planning Scope's description

Example:

```
Pscp001,dgrp1,description of planning scope
```

3. Load Planning Scope Begin Date

Defines the planning scope's begin date.

File name: pscpbgndt.csv.rpl
File format: comma-separated values file
Intersection: pscp/dgrp (Planning Scope ID, Demand Group ID)

Table 3–40 Planning Scope Begin Date Fields

Field	Description
Pscp	Planning Scope ID
Dgrp	Demand Group ID
Date	Planning Scope's begin date

Example:

```
Pscp001,dgrp1,20090705
```

4. Load Planning Scope End Date

Defines the planning scope's end date.

File name: pscpenddt.csv.rpl
File format: comma-separated values file
Intersection: pscp/dgrp (Planning Scope ID, Demand Group ID)

Table 3–41 Planning Scope End Date Fields

Field	Description
Pscp	Planning Scope ID
Dgrp	Demand Group ID
Date	Planning Scope's end date

Example:

```
Pscp001,dgrp1,20090705
```

5. Load Planning Scope/Demand Group Association

Defines the planning scope and the demand group association. It is used to associate the demand group and planning scope. Each demand group can have multiple planning scopes.

File name: dgpscpmbr.csv.rpl
File format: comma-separated values file
Intersection: pscp/dgrp (Planning Scope ID, Demand Group ID)

Table 3–42 Planning Scope/Demand Group Association Fields

Field	Description
Pscp	Planning Scope ID
Dgrp	Demand Group ID
Value	Set to "T" in order to associate the planning scope to a demand group. The absence of a record means there is no association.

Example:

```
Pscp001,dgrp1,T
```

6. Load Planning Scope/Price Zones Association

Defines how many price zones are in the specified planning scope. Each planning scope may include multiple price zones. The association between the planning scope and demand group is used to filter the planning scope options in the RPAS wizard. The association between the planning scope and price zone is use to filter the location hierarchy when building the price workbook.

File name: dgpscpprznmbr.csv.rpl
File format: comma-separated values file
Intersection: pscp/dgrp (Planning Scope ID, Demand Group ID)

Table 3–43 Planning Scope/Price Zones Association Fields

Field	Description
Przn	Price Zone ID
Pscp	Planning Scope ID
Value	Set to "T" in order to associate the planning scope to a price zone. The absence of a record means there is no association.

Example:

```
Przn01,pscp1,T
```

Parametric Data

The parametric data includes item elasticities and cross-item elasticities. Parametric data is not needed for the rule management option. The price simulation option requires item elasticities. The full optimization option requires both item and cross-item elasticities.

Item and Cross-Item Elasticities

Item elasticities represent the relationship of price to volume. For example, if an item has a higher price point, you can expect that it has a lower volume. Cross-item elasticities also represent the relationship of price to volume, but for the volume of other items that are related to that item. For example, if the price of item A changes, this affects the prices of items B, C, and D.

The location dimension is dependent on the optimization level the user chooses, meaning that if the optimization level is item/price zone, then the location dimension is price zone.

File name: ol1gammasp.csv.rpl
File format: comma-separated values file
Intersection: item/RHS item/*location*

Table 3–44 Item and Cross-Item Elasticities Fields

Field	Description
Item	Retailer's Item ID
Iter	RHS (right hand side) Item ID
Location	Optimization level's location dimension
Value	Cross-item elasticity value

Example:

```
10033240,10320667,1,-0.0192
10033240,10320665,1,0.0104
10033240,10320664,1,-0.0051
10033240,10320661,1,0.0465
```

Output from RPO to Legacy Systems

RPAS has a standard utility to export the data to a CSV flat file.

Final Price Recommendation

The final price recommendation. The location dimension is dependent on the optimization level the user chooses, meaning that if the optimization level is item/price zone, then the location dimension is price zone.

File name: ol1fitpc.csv
File format: comma-separated values file
Intersection: item/week/*location*

Table 3–45 Item and Cross-Item Elasticities Fields

Field	Description
Item	Retailer's Item ID
Week	Week ID
Location	Optimization level's location dimension
Price	Output price from RPO

Example:

```
10033240,week01,1,5.99
```

Building the RPO - RPAS Domain

The script used to build or patch the RPO RPAS domain is described in this section. The script is located in the `<rpo_directory>/batch` directory.

Batch Designs

This section contains detailed information on the buildRegPrice.sh build script:

Building a Domain

Script
buildRegPrice.sh

Usage
buildRegPrice.sh <options -cdilbo> <flags -tg>

Table 3–46 BuildRegPrice.sh Build Script

Argument	Allowed Values	Description
Options	c	Configuration directory Default is <rpo_directory>/config
	d	Domain path Default is <rpo_directory>/domain
	i	Input directory Default is <rpo_directory>/input
	l	Log directory Default is <rpo_directory>/logs
	b	Demand Level
	o	Optimization Level
Flags	t	Set this flag to make a test build
	g	Set the flag to use debug function libraries (no argument)

Notes:

- The script uses the Configuration Tools rpasInstall utility to build a domain. See the *Oracle Retail Predictive Application Server Administration Guide* for details on this utility.
- The script also uses the mace and loadmeasure RPAS utilities. See the *Oracle Retail Predictive Application Server Administration Guide* for details on these utilities.
- All hierarchy and measure files are placed in `<rpo_directory>/input`
- The script creates two initial users: adm and usr. The passwords are initially set to be the same as the user ID (adm, usr).

Loading and Extracting Data

Data is loaded into RPO using the standard RPAS approach. See the *Oracle Retail Predictive Application Server Administration Guide* for details on formatting the load data files and on the utilities that enable administrators to load data into RPAS.

For specific information about loading and extracting data in RPO, see Chapter 4, "Loading and Extracting Data".

4

Loading and Extracting Data

Data is loaded into RPO using the regular RPAS approach. See the *RPAS Administration Guide* for details on formatting load data files and on utilities that enable administrators to load data into RPAS.

It is recommended that CSV (comma separated variable) format files be used to reduce the size of load files.

The following subsections list the measures that should be loaded to load a functionally coherent set of data, such as demand data. These sections list the measure names and detail any referential integrity requirements.

Loading Demand Data

The following table lists all measures that must be loaded for every item/location to ensure that RPO can properly work with the ScanPro model.

Table 4–1 Demand Data Measures

Measure	Measure ID	Intersection
Base Demand	dl1itbdsp	Product / Demand Level Location
Cross-item Elasticity	ol1gammasp	Product / Optimization Level Location

Loading Prices and Costs

The following table lists all measures that must be loaded for prices and costs for all item locations.

Table 4–2 Price and Cost Measures

Measure	Measure ID	Intersection
Current Cost	dl1orgitcst	Product / Demand Level Location
Current Price	ol1orgitpc	Product / Optimization Level Location

Loading Attribute Data

The following table lists all measures that must be loaded as attributes of items at various optimization levels. These attributes are used in creating price-family constraint, and in creating inter-item constraints that apply on UOM (Unit of Measure) or Equivalent UOMs.

Table 4–3 Attribute Measures

Measure	Measure ID	Intersection
Price Family	ol1pcfml	Merchandise
Unit of Measure	ol1ituom	Merchandise
Equivalent Unit of Measure	ol1itequiu	Merchandise

Loading Price Ladders

Price ladders are series of ascending price points. Each item must have a price ladder assigned to it, or the optimizer displays an error message. Price ladders can be assigned at run time.

The following tables list the hierarchies and measures that must be loaded for price ladders.

Table 4–4 Price Ladder Hierarchies

Hierarchy	Hierarchy ID
Price Point	pp
Price Ladder	pl

Table 4–5 Price Ladder Measures

Measure	Measure ID	Intersection
Price Ladder	pldrppt	Price Point / Price Ladder
Price Ladder Assignment	ol1itpcldr	Product / Optimization Level Location

Loading Competitor Data

The following table lists all measures that must be loaded for competitor data.

Table 4–6 Competitor Data Measures

Measure	Measure ID	Intersection
Competitor Current Price	ol1cmpcurpc	Bottom Level Competitor / Optimization Level Location
Competitor last price check date	ol1cmppcchkdt	Bottom Level Competitor / Optimization Level Location
Competitor price type	ol1cmppctp	Bottom Level Competitor / Optimization Level Location
Competitor to Retailer Item linkage	ol1ilgcomp	Product / Bottom Level Competitor / Optimization Level Location

Loading Item Link Group Definitions

The following tables list the hierarchy and measures that must be loaded for Item Link Groups used to establish LHS and RHS item relationships in Item Group level inter-item constraints.

Table 4–7 Item Link Group Hierarchy

Hierarchy	Hierarchy ID
Item Link Group	ilgp

Table 4–8 Item Link Group Measure

Measure	Measure ID	Intersection
Item Link Group	ol1ilgititrmp	Product / RHS Product / Item Link Group

Loading Dynamic Clustering of Stores to Price Zones

Price Zone clustering must be loaded in RPO. These two measures are used to load the Store to Price Zone mapping. See the section on dynamic hierarchies in the *RPAS Configuration Guide* for information regarding the content of these measures.

Table 4–9 Price Zone Measures

Measure	Measure ID	Intersection
Price Zone Map	pzdynhrmp	Trigger Product / Store (Location)
Price Zone Label	pzdynhrlbl	Trigger Product / Store (Location)

Loading Demand Group Definitions

At least one demand group definition must be loaded when seeding the system. You can load the demand group hierarchy and not load any measures. If you do load measures, be sure that the optimization and demand level numbers match. That is, if optimization level 1 is assigned to the demand group, then demand level 1 should be assigned to it as well.

Table 4–10 Demand Group Hierarchy

Hierarchy	Hierarchy ID
Demand Group	dg

Table 4–11 Demand Group Measures

Measure	Measure ID	Intersection
Description	dgdesc	Demand Group
Optimization Level	optlvl	Demand Group
Demand Level	dmndlvl	Demand Group
Demand Group Items	dgitmbr	Bottom Level Product / Demand Group

Loading Item Group Definitions

Item group definitions are not required, but they can be loaded into RPO. Because item groups are owned by demand groups, referential integrity rules have to be followed when creating load files:

- Each loaded Item Group must be assigned to one and only one demand group, even though the measure structure allows many-to-one mapping between demand groups and item group.
- All items in an item group must also be in the assigned demand group.

Table 4–12 Item Group Hierarchy

Hierarchy	Hierarchy ID
Item Group	ig

Table 4–13 Item Group Measures

Measure	Measure ID	Intersection
Description	igdesc	Item Group
Price Family Indicator	familyind	Item Group
Item Group - Item Assignment	ol1igitasmt	Product / Item Group

Loading Planning Scopes

Planning scopes are not required, but they can be loaded. A planning scope belongs to a demand group and therefore the following referential integrity rules must be maintained:

- Even though the structure of most measures allows for many-to-many mapping between demand groups and planning scopes, the mapping is one-to-many.
- The begin date must be earlier than the end date.
- Price zones assigned to the planning scope must exist for the merchandises in the demand group.

Table 4–14 Planning Scope Hierarchy

Hierarchy	Hierarchy ID
Planning Scope	ps

Table 4–15 Planning Scope Measures

Measure	Measure ID	Intersection
Description	pscpdesc	Demand Group / Planning Scope
Begin Date	pscpbgndt	Demand Group / Planning Scope
End Date	pscpenddt	Demand Group / Planning Scope
Demand Group - Planning Scope Assignment	dgpscpmbr	Demand Group / Planning Scope
Price Zone - Planning Scope Assignment	dgpscpprznmbr	Price Zone (Location) / Planning Scope

Extracting Price and Volume Recommendations

Only the following measures are meant for extraction from RPO.

Table 4–16 Price and Volume Measures

Measure	Measure ID	Intersection
Item Price Plan	ol1fitpc	Product / Optimization Level Location / Calendar

Elasticities Parameter Estimator Data Requirements

The following data requirements are required for demand parameters to be calculated for RPO.

There are six types of data required:

- Data Requirement 1: Historical Sales and Pricing

  At least two continuous years of data at the item/store/week level for the categories that are intended to be used with RPO. (Three years of data is preferred.)

- Data Requirement 2: Product Hierarchy

  Product hierarchy information for the items included in Data Requirement 1.

- Data Requirement 3: Product Attributes

  Product attribute information for the items included in Data Requirement 1.

- Data Requirement 4: Location Hierarchy and Price Zones

  Location hierarchy and price zone information for the stores included in Data Requirement 1.

- Data Requirement 5: Promotion History

  Promotion history for the item/store/weeks included in Data Requirement 1.

- Data Requirement 6: Substitutable Item Groups

  Definitions of substitutable item groups for the items included in Data Requirement 1.

The most common methods of transfer are a compressed text-delimited file. File names should be in the form of `Data_Requirement_XYZ.dat` where `XYZ` is the data requirement number. The file size should not exceed 2.4Gb. Files larger than this should be divided in multiple files. These files can be transferred through the internet to ftp.oracle.com.

Data Formats

The data requirements listed above have defined formats. These are described in the following tables.

Data Requirement 1: Historical Sales and Pricing

Table 4–17 Data Requirement 1: Historical Sales and Pricing

	Importance	Field Name	Data Type	Format	Comment
1	Required	Item	Text		Item ID (SKU ID)
2	Required	Store	Text		Store ID
3	Required	Calendar_Date	Date	YYYY_MM_DD	Calendar date that corresponds to the last day of a given week (2005-01-30)
4	Required	Gross_Sales_Units	Number	Long Integer	Describes the net number of units sold of the class at the location, excluding returns.

Table 4–17 (Cont.) Data Requirement 1: Historical Sales and Pricing

	Importance	Field Name	Data Type	Format	Comment
5	Required	Gross_Sales_Amount	Number	Currency	Describes the sales amount of the class at the location, excluding returns.
6	Required	Ticket Price	Number	Currency	Item's ticket/sticker/shelf price (the most frequent of daily prices for a given item/store/week). Ticket price represents the price of a given SKU at a given store during a given day as displayed on the SKU label, excluding any temporary and/or promotional price changes.
7	Required	Min_Ticket_Price	Number	Currency	Item's minimum ticket/sticker/shelf price (the lowest of the daily prices for the given item/store/week). Ticket price represents the price of a given SKU at a given store during a given day as displayed on the SKU label, excluding any temporary and/or promotional price changes.
8	Required	Max_Ticket_Price	Number	Currency	Item's maximum ticket/sticker/shelf price (the highest of the daily prices for the given item/store/week). Ticket price represents the price of a given SKU at a given store during a given day as displayed on the SKU label, excluding any temporary and/or promotional price changes.

Table 4–17 (Cont.) Data Requirement 1: Historical Sales and Pricing

	Importance	Field Name	Data Type	Format	Comment
9	Optional	Sales_Price	Number	Currency	Average POS price for the item/store/week. Can be computed from Gross Sales Amount and Gross Sales Units (by taking the ratio of the two.
10	Optional	Stockout_Flag	Number	Integer	0, if there were stock-outs for a given item/store/week. Otherwise, 1.
11	Optional	Inventory_On_Hand	Number	Long Integer	Store inventory on-hand for the class in the location at the end of the week.

Data Requirement 2: Product Hierarchy

See the Product (PROD) Hierarchy File section for more information.

Data Requirement 3: Product Attributes

Table 4–18 Data Requirement 3: Product Attributes

	Importance	Field Name	Data Type	Comment
1	Required	Item	Text	Item ID (SKU ID)
2	Required	Brand Name	Text	Brand name, if applicable.
3	Required	Number of units in item's package.	Number	Number of cans/packs in the item's package, if applicable.
4	Required	Net Volume of Item	Number	Net volume of package, if applicable.
5	Required	Units of Measure of Net Volume	Text	Units of measure (such as fl oz.) of net volume of item, if applicable.
6	Required	Net Weight of Item	Number	Net weight of item if applicable.
7	Required	Units of Measure of Net Weight	Text	Units of measure (such as oz.) of net weight of item, if applicable.
8	Optional	Manufacturer Name	Text	Manufacturer name, if applicable.

Data Requirement 4: Location Hierarchy and Price Zones

See the Location (LOC) Hierarchy File section for more information.

Data Requirement 5: Promotion History

Table 4–19 Data Requirement 5: Promotion History

	Importance	Field Name	Data Type	Format	Comment
1	Required	Item	Text		Item ID
2	Required	Store	Text		Store ID
3	Required	Begin Date	Date	YYYY_MM_DD	Calendar date of the first day of the promotion.
4	Required	End Date	Date	YYYY_MM_DD	Calendar date of the last day of the promotion.
5	Optional	Offer Type	Text		Percent off, BOGO, Fixed Price, and so on.
6	Optional	Promo Price	Number	Currency	Promotional price of an item, if applicable.
7	Required	Promotion Name	Text		Name/description of promotion.

Data Requirement 6: Substitutable Item Groups

Table 4–20 Data Requirement 7: Substitutable Item Groups

	Importance	Field Name	Data Type	Comment
1	Required	Item	Text	Item ID (SKU ID)
2	Required	Subst_Item_Group_ID	Text	ID of substitute item group. (All substitutable/interchangeable SKUs from a given demand group must belong to the same substitutable item group.) Substitutable item groups are not allowed to span multiple demand groups.
3	Optional	Subst_Item_Group_Name	Text	The name of a group of substitutable items.

5

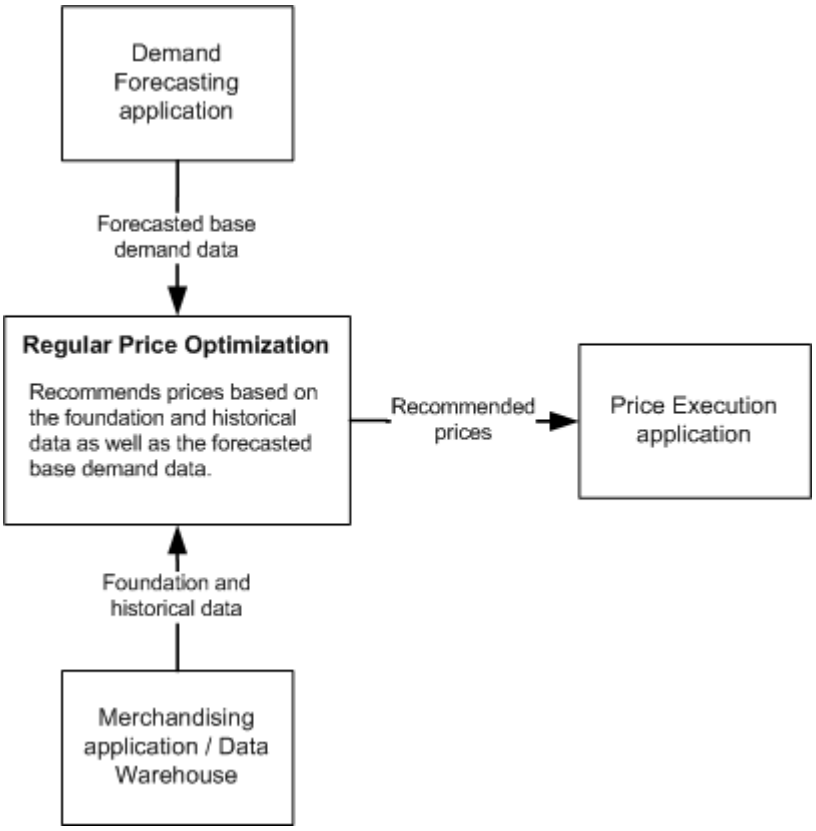
Integration

This chapter describes the interaction between RPO and other applications and the script used to load demand data.

Overview of RPO Data Flow

RPO is formally integrated only with Oracle Retail Demand Forecasting, although it interacts with other applications and data warehouses as well in order to create optimized price recommendations. Figure 5–1 shows the interaction of RPO with other applications and the flow of data between the applications.

Figure 5–1 RPO Data Flow



Integration Interface Data Flow Description

These descriptions explain the each of the data flows in Figure 5–1.

From a Demand Forecasting Application (such as RDF) to RPO

- Sends forecasted base demand data, which includes level, trend, and seasonality of estimated demand. It does not, however, include price effects. The forecasted demand data needs to be time-phased, at item/price zone level.
- If using Oracle Retail Demand Forecasting (RDF), RDF generates the base demand at the item-store level, and RPO aggregates the demand data from the item/store to the item/price zone level.

From a Merchandising Application and Data Warehouse to RPO

- Sends foundation and historical data such as item cost, item price, price ladder, item linkage.

From RPO to a Price Execution Application

- Sends recommended optimized prices.

Demand Data Load Script

Because RPO is not formally integrated with any application, no integration scripts exist. In order to load demand data, use the following load script:

`RPO_load_demand_data.sh`

This script loads forecast demand data at the item/store/week level. By using this specified intersection, the data may come from any forecasting system.

Use the following data format in the fixed width file.

Table 5–1 Demand Data

Data Entry	Description	Start	Width	Format	Example
Week	Date	1	8	YYYYMMDD	20091031
Item	Item ID	9	20	Item_ID	TZ748562A
Store	Store ID	29	20	Store_ID	0543
Value	The value of the forecasted demand of an item for a specified store during a specified week.	49	13	Any real number	27.40

Example:

```
20090101 TZ748562A            0543                27.40
```

6

Configuration Considerations

This chapter provides information on the functional changes or enhancements that can be made for RPO. It is recommended that implementers refrain from removing or changing any existing functionality beyond what is listed here. However, it is acceptable to add new measures and rules in such a way that there is no interference with the operation of existing rules.

Changing the Structure of Hierarchies

RPO has 17 hierarchies. Several of these hierarchies have been created to support abstract notions specific to RPO, and the structure of these hierarchies should not be changed (refer to Table 6–1); however, their load formats can be changed to suit the needs of the customer, except that the prefix length for their dimensions should always be zero (0). The structure of the other hierarchies can be changed but is subject to some conditions that are listed in the following subsections.

New hierarchies can be added for a particular implementation and interspersed between existing hierarchies. However, no existing hierarchies can be removed, nor should the order of existing hierarchies be changed. Additionally, the DPM (Dynamic Position Maintenance) status of any of the hierarchies should not be changed.

No changes should be made to dimensions and their configuration unless no other solution is possible. For example, there is no need to rename a dimension if only the label needs to be changed. Keeping the structure and names as standard as possible makes it easier to obtain product support when needed. Any changes that are made should be documented clearly, in case you need to obtain support.

Table 6–1 Non-Modified Hierarchies

Hierarchy Name	Hierarchy Label
PP	Price Point
PS	Planning Scope
IG	Item Group
DG	Demand Group
PL	Price Ladder
IICN	Inter Item Constraint
IIG	Inter-Item-Group Constraint
CMC	Competition Constraint
CIG	Competition Item Group Constraint
ILGP	Item Link Group
WI	What-if
SCN	Scenario

Calendar (CLND)

The Calendar hierarchy represents time in all RPAS solutions. It is a required hierarchy and must have a dimension named day (DAY). As it relates to RPO, the Calendar hierarchy is needed to store a time series of the seasonality component of the demand forecasts of items. These demand forecasts are used to calculate initial estimates of sales volume for all items.

Seasonality values can be stored at various levels along the Location and Product hierarchies; however, they are all stored along only one level of the Calendar hierarchy. RPO stores seasonality along the week (WEEK) dimension. A particular customer implementation might store seasonality along some other level on the Calendar hierarchy, but this level should represent the calendar and not notions such as week-of-the-month or week-of-the-year that aggregate non-sequential positions from the calendar.

If a customer implementation does store seasonality along a level other than week, the week dimension is not required in the Calendar hierarchy, and the base intersections of all measures in the RPO that utilize the week dimension must be changed to use this other dimension.

Other than abiding by these constraints, a customer implementation can structure the Calendar hierarchy in any way that best suits the customer's functional needs. Dimensions other than day and week have been included in RPO for the purpose of illustration. They can be modified or removed without requiring changes to any other elements of the configuration. Other dimensions and hierarchy branches can also be added without requiring changes to other elements of the configuration.

Note that none of RPO workbooks show the Calendar hierarchy in the worksheets.

Product (PROD)

The Product or Merchandise hierarchy represents the retailer's merchandise (that is, merchandise that the retailer retails through its retail channels). RPO does not enforce any constraints on the structuring of this hierarchy, but the configuration does use a few levels of this hierarchy extensively in workbook wizards, labeled intersections, rules, position queries, and measure values (Single Hier Select measures). Any changes to this hierarchy must be accompanied by changes to all these elements if they employ the particular level that is being modified or removed. Adding levels or branches or changing labels should not require any changes to the configuration.

From the hierarchy, the configuration employs Category (CAT), Class (CLSS), and Item (ITEM) in measure intersections, rules, and so on. To reduce patching and upgrade efforts, it is recommended that the names of these levels be left unchanged unless absolutely necessary.

Category is used in the wizard of the workbooks Analyst - Category Assignment and Demand Group Management. In Analyst - Category Assignment, it forms the level at which Product is assigned to price managers for setting prices. Because these merchandise-manager assignments are used by rules in the background to set up price hold constraints for the optimizer, Category is also used in rules to specifically set the level at which certain calculations occur.

In Demand Group Management, Category only serves to select Product at a reasonably high level for building the workbook; that is, it has no other functional significance and can be easily changed to something more suitable to the customer's needs without affecting the rest of the configuration.

Category is also used as the trigger dimension for clustering Store (STR) into Price Zone (PRZN). The dynamic hierarchy trigger dimension does not have to be the same as that used for price manager assignment. The configuration is structured in this way for convenience. You can use two different levels for Analyst - Category Assignment and for the dynamic hierarchy trigger.

Class and Item are used in specification of the three optimization and demand levels in the configuration, and changing them requires several changes in the configuration. For more information, see the sections Changing Optimization Levels and RHS Product (PROR) in this chapter.

Note: When adding a new item to RPO, you must assign new parameters to the new item in the Like Item workbook and then assign it to a demand group in the Demand Group Management workbook. For more information, see the *Oracle Retail Regular Price Optimization User Guide*.

RHS Product (PROR)

The RHS (right hand side) Product is intended to be a clone of the Product hierarchy. This hierarchy must have the same structure and the same positions as the Product hierarchy. Any changes to the Product hierarchy should be accompanied by the same changes to the RHS Product (PROR) hierarchy. This hierarchy is required to establish item linkage in inter-item pricing constraints which are specified with the use of item groups. It is also used to store cross-item elasticities when the ScanPro demand model is in use.

For ease of administration and to reduce the possibility of human error in loading hierarchy data, it is recommended that both the RHS Product and Product hierarchies be loaded in the same batch, from the same hierarchy load file.

Competition (COMP)

The Competition hierarchy represents the competitors' items and is required for loading competition prices and for specifying competition constraints. The structure of this hierarchy is flexible, with the exception of two levels that should not be modified: Competitor (CMPT) and Item (ITEC). The names of these levels are not hard-coded in the C++ implementation, meaning that the names can be changed, but all dependent configuration elements (measures, intersections, rules, and so on) would need to be modified to suit the change in names. To reduce patching and upgrading efforts, it is recommended that these names be left unchanged.

Competition constraints are specified using the Competitor (CMPT) level; therefore, that level should not be modified. Competition metrics, such as competitor prices, last price check date, and so on, are always loaded at the ITEC level, and therefore the ITEC level must always exist in this hierarchy. Such loading is independent of which optimization level is being used for a particular Demand Group (for instance, retailer items), and of the level at which they are priced (item, class, or category); thus, such loading should always link to the ITEC level in the Competition hierarchy. This linkage is necessary to avoid unnecessary complexity in preparing competition data load feeds.

Note: ITEC must always be the lowest level and CMPT must always be the highest level in this hierarchy.

All other levels in this hierarchy are optional and are available only as a convenience for the manager examining competition metrics. These other levels have no functional correspondence to the Product hierarchy, nor to the levels within the Product hierarchy. Any perceived correspondence is loosely semantic or notional.

Note: The load format for this hierarchy can be modified at will.

Location (LOC)

The Location hierarchy represents the retailer's retail locations and their roll-ups. RPO imposes a few constraints on the structure of this hierarchy, but for the most part it is flexible.

The Location hierarchy must always have a level named PRZN (Price Zone). This hard-coded name is extensively used by the custom wizard code to filter data at various mappings in order to appropriately manage Planning Scopes. This must be a dynamic roll-up from the Store (STR) level, and has reasonable infrastructure built around this hierarchical structure. It is not advised to change this structure.

Other than STR and PRZN, all other levels are present for illustration purposes only and can be removed or modified as necessary.

Note: When you create a new price zone, it does not have any elasticity parameters until you load the parametric data from a parametric estimator application. For more information, see the *Regular Price Optimization User Guide*.

Changing Optimization Levels

An optimization level is the product/location level where price recommendations are made. Also known as a planning level, it is the lowest level that prices can be edited and viewed by a user. In RPO, every demand group can have a different optimization level associated with it. RPO comes preconfigured with three optimization levels: item/price zone, class/store, and class/price zone. This section discusses how one or more of these levels can be changed to be along a different intersection.

RPO has hundreds of measures at each optimization level, and the intersection of each must be updated if changes occur to the intersection of an optimization level. To make this task easier, RPO employs labeled intersections in the RPAS Configuration Tools. There are a few dozen labeled intersections that encompass all of the measures. By simply updating a labeled intersection, you can update all of the intersections of the measures that are encompassed in that labeled intersection. For example, if you wanted to change optimization level 1 from item/price zone to class/chain, then you would open the Configuration Tools interface, go to Labeled Intersections, and change the intersection specification of all labeled intersections that have the number '1' in their names to use the dimension CHNL instead of PRZN and to use CLSS instead of ITEM. This automatically updates the measure intersections.

Once the intersection specification is updated, perform the following:

1. Open the measure management tool and filter all measures that have names starting with Dl# and "Ol#" (# represents the demand level or optimization level).
2. Filter the Single Hier Select To column to those that have ITEM and change that column's value to CLSS.
3. Change the NA Value of the measure named Ol#IntNm to CLSSCHNL, where CLSSCHNL is the RPAS specification of the intersection. Each dimension's RPAS name is concatenated in any order. If the dimension name is fewer than four characters, it is padded with an underscore (_) to the right.
4. Update the Range attribute of the measure DmndLvl to reflect the selection of the new optimization level.

> **Note:** Making changes to the optimization level requires you to load the input data such as base demand, cost, price, and so on, at the same level.

5. Update the NA Value of the measure named Dl#IntNm to reflect the RPAS specification of the intersection.
6. Change the Range column for the measure name OptLvl to a value that helps you recognize the new level

All measure specifications are updated to account for the change in the optimization level.

Once measures have been updated, rules need to be updated to account for the change. Rule sets named PrcAnl and ScnAnl have several rule groups. Each optimization level has a subset of these rule groups, which can be identified by the fact that their name starts with "L#" (where # represents the optimization level). For example, if optimization level 1 is being changed, all rule groups that start with the name of L1 should be updated. These updates include changing dimension specification for specific expressions to match the optimization level. In these expressions, M# should be replaced with optimization level along the Product

hierarchy, and R# should be replaced with optimization level along the RHS Product hierarchy. L# should be replaced with optimization level along the Location hierarchy.

Changing Calculation of CPI to Retailer-As-Base

Competitive Price Index (CPI) is essentially a percent ratio that can be calculated either with the use of retailer revenue as base or competitor revenue as base. RPO uses competitor-as-base. To change RPO to use a retailer-as-base metric, services can change all CPI measure calculation rules for retailer-as-base.

Note: Detailed information about these rules is available in the *Oracle Retail Regular Price Optimization Release 13.2 Configuration Specification* document (Doc ID 1072188.1), available at My Oracle Support:

https://support.oracle.com

For more information, contact Oracle Customer Support.

These changes need to be made in rule groups for the Price Analysis and Scenario Comparison workbooks.

Additionally, the optimizer input must be changed so that it works towards the CPI goal as described by this new metric. In RPO, user input is directly passed along to the optimizer. This should be changed by introducing an intermediate measure which is calculated as:

*Intermediate = (-100 * CPI Goal) / (CPI Goal + 100)*

This intermediate measure should be passed along to the optimizer instead of the original CPI goal. It is possible to make the denominator zero, and so it is advised to have a limit of -50 for the retailer-as-base CPI goal.

Adding New Analytic Measures

New measures can be added to any workbook to suit your needs. However, when adding measures and rules to calculate those measures, do not edit any of the existing rules; that is, you should not add expressions to existing rules and should not edit calculation of any measure in RPO (except those that have been explicitly mentioned in this guide).

In several cases it may be required to add measures that are calculated from other measures.

Note: For measure descriptions, refer to the *Oracle Retail Regular Price Optimization Release 13.2 Configuration Specification* document (Doc ID 1072188.1), available at My Oracle Support:

https://support.oracle.com

For more information, contact Oracle Customer Support.

Adding Product Attributes

Attributes and dimension splitting can be used to aid in the creation of demand groups and item groups. Additionally, attributes can be used in a customer environment to help with price analysis by sorting or grouping (dimension splitting) items based on attributes. Any number of attributes can be added, and RPO does not impose any restriction on the addition of attributes. However, none of the existing attributes can be removed.

Changing the Workflow

None of the RPO workbooks can be removed from the solution except for the Optimizer Configuration workbook. The workbooks' access can be controlled in any way that suits your needs. The custom wizards, custom menus, and position queries of the workbooks cannot be changed. Additional workbooks and custom menus can be added; however, it should be ensured that these do not overlap in functionality with what already exists. Workbooks cannot be merged, and worksheets cannot be merged or removed.

7

Internationalization

Internationalization is the process of creating software that can be translated more easily. Changes to the code are not specific to any particular market. This section describes configuration settings and features of the software that ensure that the base application can handle multiple languages.

Oracle Retail applications have been internationalized to support multiple languages.

Translation

Translation is the process of interpreting and adapting text from one language into another. Although the code itself is not translated, components of the application that are translated include the following:

- Graphical user interface (GUI)
- Error messages

The following components are not translated:

- Documentation (online help, release notes, installation guide, user guide, operations guide)
- Batch programs and messages
- Log files
- Configuration tools
- Reports
- Demonstration data
- Training materials

The user interface has been translated into the following languages:

- Brazilian Portuguese
- Dutch
- French
- German
- Greek
- Hungarian
- Italian
- Japanese

- Korean
- Polish
- Russian
- Simplified Chinese
- Spanish
- Swedish
- Traditional Chinese
- Turkish

Note: For more information about internationalization, see the *Oracle Retail Predictive Application Server Administration Guide*.