Oracle® Retail Analytic Parameter Calculator

User Guide

Release 13.0.2

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Oracle Retail Analytic Parameter Calculator User Guide, Release 13.0.2

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Glossary

Preface

The Analytic Parameter Calculator (APC) is an analytical tool used to calculate demand parameters and produce results in a format appropriate for other applications.

Audience

This document is intended for analysts and scientists who will configure and use APC.

Related Documents

For more information, see the following documents in the Oracle Retail Analytic Parameter documentation set:

- *Oracle Retail Analytic Parameter Calculator Installation Guide*
- *Oracle Retail Analytic Parameter Calculator Configuration Guide*
- *Oracle Retail Analytic Parameter Calculator Release Notes*

Customer Support

- https://metalink.oracle.com

When contacting Customer Support, please provide:

- Product version and program/module name
- Functional and technical description of the problem (include business impact)
- Detailed step-by-step instruction to recreate
- Exact error message received
- Screen shots of each step you take

Review Patch Documentation

For a base release (".0" release, such as 13.0), Oracle Retail strongly recommends that you read all patch documentation before you begin installation procedures. Patch documentation can contain critical information related to the base release, based on new information and code changes that have been made since the base release.

Oracle Retail Documentation on the Oracle Technology Network

In addition to being packaged with each product release (on the base or patch level), all Oracle Retail documentation is available on the following Web site:

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

Documentation should be available on this Web site within a month after a product release. Note that documentation is always available with the packaged code on the release date.

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

Getting Started

This chapter contains the following:

- APC Data on page 1-1
- User Requirements on page 1-2
- Overview of APC User Interface on page 1-2
- The APC Process on page 1-5
- Tools Bar on page 1-7

The Analytic Parameter Calculator (APC) is an analytical tool used to calculate demand parameters, seasonality and price elasticity, and view the results. These demand parameters are produced in the format required by the analytic application.

This chapter provides a general overview to the features and functionality found in the APC application. The APC application is organized into stages. Each stage occupies a separate screen in the UI. Each stage contains parameters that are configurable. The functionality of the UI is the same in each screen. That functionality is described in this chapter. The details of each stage is described in subsequent chapters.

APC Data

APC requires at least two years of historical data. However, long life cycle customers will need more data. These requirements exist because the data at the beginning and end of the historical period may have to be removed from the data analysis for the following reasons:

- The year-dependent season codes that overlap the first eight weeks (on average) of historical data can, in general, not be used. Year-dependent season codes are used to classify items by their start dates, and a year-dependent season code that overlaps the first eight weeks of historical data generally contains items whose true start date occurred before the start of the historical data.
- The last eight weeks (on average) also cannot be used because the year-dependent season codes may contain items that extend past the end of the historical data

Which season codes cannot be used depends on the length of the life cycles of the items in the data.

The seasonality correlation determines which seasonality curves are reliable by comparing one season code to another season code one year earlier or one year later. Because of this, the process requires at least two years of historical data. Without two years of data, APC will skip running the correlation.

The Corrections stage generates a catch-all curve and a padding curve. This requires a complete set a historical data for the specified fiscal year. This requirement can be satisfied with at least two years of historical data.

Historical data must be aggregated to a high enough level that APC can provide meaningful demand parameters. If APC performs calculations at levels such as color/store, the weekly rate of sales may be too low (below five units per week). The typical solution is to aggregate to a higher location level.

User Requirements

As an APC user, you must have an understanding of the historical data and an understanding of how the retail industry works in order to use APC effectively. In particular, you must have enough of an understanding of the historical data and the length of the life cycle of the items in the data to be able to identify:

- the weeks at the beginning of the historical data that contain the tail end data for items whose life cycle began before the start of the historical data
- the weeks at the end of the historical data that contain items whose life cycle ends after the historical data

You must also understand which promotions and holidays provide the most lift. Only the most significant events should be enabled for the APC to be effective. If you enables more than 25 events a year, the results may not be reliable.

Overview of APC User Interface

The interface for the APC application consists of a series of nine screens that represent the nine stages you must complete to generate the analytic parameters. Each stage screen has the same basic layout. Each stage screen has different fields for the parameters that you configure for that particular stage. The stage screens have both common and unique buttons for navigation and operation.

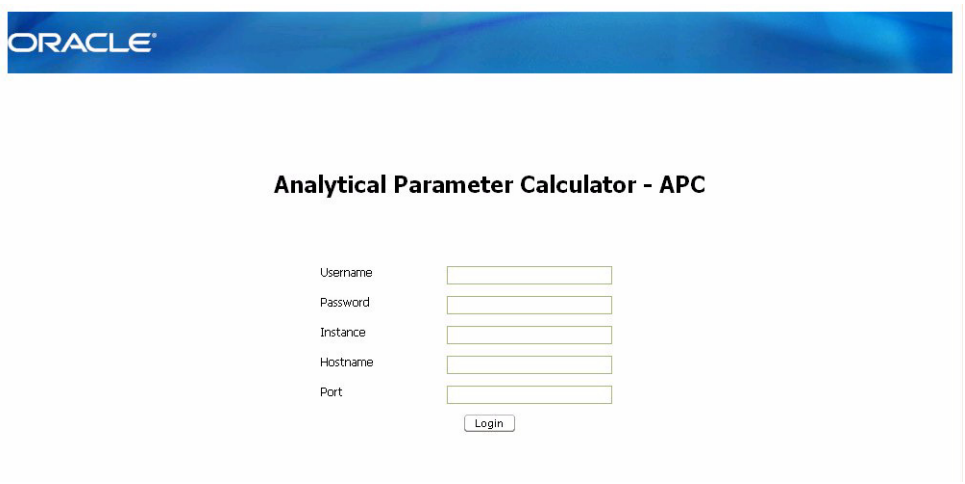
Each of the nine stages is described in a separate chapter of this guide. The nine stages are:

1. Preprocessing – filters the historical data and does the first determination of item eligibility.
2. Season Code Setup – determines season codes to use and maps them to items.
3. Raw AP – produces demand parameters.
4. Smoothing – calculated seasonality correlations.
5. Pruning – removes merchandise/location/season code partitions.
6. Corrections – corrects seasonality curves to account for holidays and promotions.
7. Propagation – removes holiday lift and promotion lift.
8. Output – converts APC results into the format required for data export.
9. Parameter Export – output text file generation.

Logging Into APC

The login screen, shown in Figure 1–1, "Login Screen", requires the user to provide the user name and password for the database. Once the database authenticates the user, the APC application is available. Only one user can log into the application at a time. APC is a single-user application.

Figure 1–1 Login Screen



Features of the Stage Screens

Once you log into the APC, you see the Preprocessing stage screen, shown in Figure 1–2, "Item Week Filters"and Figure 1–3, "Item Filters".

Figure 1–2 Item Week Filters

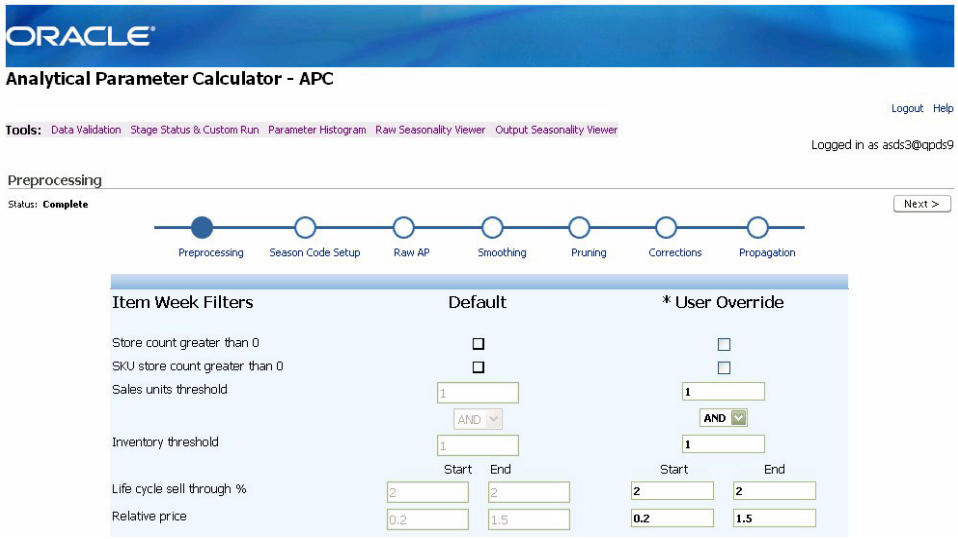
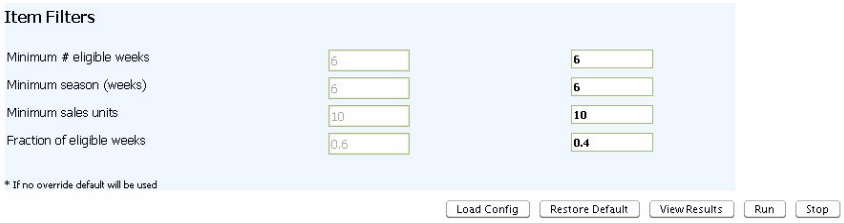


Figure 1–3 Item Filters



The following features, illustrated in the Preprocessing stage screen, are common to all the stage screens.

Tools

The Tools Bar, shown in Figure 1–4, "Tools Bar", is located at the top of each stage screen.

Figure 1–4 Tools Bar

It provides access to Data Validation, Stage Status and Custom Run, Parameter Histogram, Raw Seasonality Viewer, and Output Seasonality Viewer, which are used for supplementary processes in some of the stages. The functionality of each of these tools is discussed in "Tools Bar"page 1-7.

Process Train

Below the Tools bar, you see the Process Train, shown in Figure 1–5, "Process Train".

Figure 1–5 Process Train

You use the Process Train to navigate between stages. The Process Train displays the stage names, from left to right, in the order in which they are generally run. (A stage can be re-run. All stages subsequent to that stage must then be re-run.) Click on the name of a stage to access that stage.

The Process Train also displays the status of each stage. A closed circle indicates that the user is currently accessing the associated stage. Only one circle can be filled in at a time; all the other circles will be open.

The Status value indicates the status of the associated stage. The possible values for the status include:

Table 1–1 Stage Status Values

Status Value	Meaning of Status Value
Complete	The stage ran to completion.
Running	The stage is currently in the process of executing.

Table 1–1 (Cont.) Stage Status Values

Status Value	Meaning of Status Value
Stopped	The user terminated the run.
Incomplete	The stage has not finished.
Exception	An error occurred.

Other Screen Features

Here is a list of the common features generally available in the User Interface. Features limited to specific stage screens are described in the specific stage chapter.

- Back – returns to previous page.
- Next – navigates to the next stage in the process train.
- Restore Default – clears any values that you have entered into the override fields and replaces them with the defaults.
- Run – starts the processing of a stage.
- Stop – terminates the current run.
- Logout and Help – available at the top of each screen.
- For all options in all stages, a check box is used for parameters that are enabled or disabled and a text entry box is used to enter alternate values.
- A caution symbol indicates a parameter that should at least be examined to see if it should be configured.
- The headings Start/End, Minimum/Maximum, Low/High, and Preceding/Following are used for ranges of values.

The APC Process

The operation of the APC is divided into stages. Each stage gathers related information and calculations together. The results of the computation of each stage can be kept for as long as the computation is valid. The stages can be run in order or a stage can be skipped if the results are still valid. Skipping stages, if a valid option, can improve performance.

Within each stage, you can perform the following three operations:

- Modifying the input values for the stage. Each stage has default values that you can change. Changing default values requires an in-depth understanding of how the APC works and of the retail details of your business. You can modify the fields without immediately running the stage. Note that modifying the Base Historical Period can only occur after the Season Code stage is successfully run. This dependency exists because the Base Period dialog box displays the results of the Season Code stage calculations.

  Note: You must examine certain parameters, labelled with a Caution icon, before running any stages. See "Changing Parameter Settings"page 1-7 for details.

- Running the stage. Each stage performs its calculations during the run operation. Stages cannot be run simultaneously. After you run a stage, you can modify some of the fields in the stage. However, until you re-run the stage, the results of the

stage do not change. Thus, you can continue to modify the fields or change them back to original values. It is recommended that you retain the results of a stage for as long as possible.

- Viewing the stage results. You can view the calculated results for the Preprocessing and Pruning stages after that stage has finished running.

You cannot in general run all stages of APC on the very first run. You need at least two runs. In the first run, run the APC through the Smoothing Stage, but not beyond. Based on this first run, set the Base Historic Period (in the Pruning Stage) by visually examining the chain-level seasonality curves using the Raw Seasonality Viewer. If the curve has a sharp fall-off, you should look at the sales dollars. You should make sure you have between 80% and 90% of the original sales dollars. After you have properly set the Base Historic Period, you can run the remaining stages (from Pruning onward). But to set the Base Historic Period from the results of Raw-AP you must run at least two runs when you first use APC with brand-new data. (Of course, after the Base Historic Period is set, you can run all stages in a single run.).

Here is a summary of the complete APC workflow.

1. Logging in – one user can log in at a time. Only one user can use APC at a time.
2. Data Validation – a summary of historical data can be used to check that the historical data has been loaded correctly. This information only needs to be checked when the historical data is new or has been reloaded during a data refresh.
3. Preprocessing – these settings can be changed.
4. Examination of Preprocessing Results – view details about how much data was filtered out by preprocessing. Verify that at least 80% of the sales dollars remain.
5. Season Code Selection – used to define the season code.
6. Levels Selection – within the Raw AP stage, select the merchandise and location levels for which APC will calculate the demand parameters.
7. Entering Raw AP Filtering Parameter – Raw AP filtering (in addition to preprocessing filtering).
8. Running Raw AP Calculation – produces the demand parameters.
9. Examination of Demand Parameters – view seasonality curves using the Raw Seasonality viewer.
10. Performing Smoothing – calculation of seasonality correlations.
11. Entering Base Historical Period – used to override a fiscal year. This can only be set after the Season Code Setup stage is run.
12. Pruning – the pruning of partitions by setting reliability tolerances for demand parameters. This is used to eliminate unreliable partitions.
13. Examination of Pruning Results – view results of the partition filtering by using the Parameter Histogram viewer.
14. Examination of Summary Statistics – click **View Results** to view details about the pruning filtering (the partitions after pruning).
15. Performing Corrections – adjust curves for holidays and promotions.
16. Performing Propagation of Seasonality Curves – copy curves to other fiscal years.

17. Entering Escalation Path – this is used by APC for the output. The default is to escalation along the merchandise hierarchy first, and then along the location hierarchy.
18. Output Stage – specify the output path.
19. Parameter Export – generate files for other analytic products.

Changing Parameter Settings

The following parameters, labelled with a Caution icon, must be examined before running any of the stages in the APC, in order to determine whether or not the parameter values should be changed. Usually these are the only parameters you will need to change to run APC.

- Season Code Setup
  - Start Date Code
  - End Buckets
  - Map Attributes
- Raw AP
  - Merchandise Hierarchy
  - Location Hierarchy
  - Pruning Base Historical Period
- Corrections
  - Catch-All Curve Fiscal Year
  - Padding Curve Fiscal Year (The fiscal year for this parameter and the above parameter must be a complete fiscal year.)
  - Holidays
  - Promotions (Only enable promotions and holidays that have a large traffic lift.)
- Output – escalation path

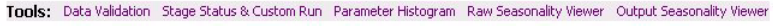
Dependencies

Each stage must be run in the order listed in the process train. Each stage is dependent on the previous one (i.e., all previous stages must have a status of complete before the current stage can be run).

Tools Bar

The Tools Bar appears at the top of each screen.

Figure 1–6 Tools Bar



It provides access to:

- Data Validation – provides a summary of the historical data for a given period of time.
- Stage Status and Custom Run - provides access to the stage status and provides a way to run all the stages or a subset of the stages sequentially without interruption.
- Parameter Histogram - displays a histogram of the elasticities or inventory effect for selected partitions that have passed pruning.
- Raw Seasonality Viewer – displays a graph of selected seasonality curves after the Raw AP stage has been run.
- Output Seasonality Viewer – displays a graph of selected seasonality curves after the Output stage has been run.

Data Validation

Here is an example of the Data Validation data.

Figure 1–7 Data Validation

Summary		
merchandise count	115423	
location count	1	
item count	115423	
calendar extent	11-MAR-01	28-OCT-18
data extent	09-OCT-05	25-NOV-07
merchandise levels	9	
location levels	3	
data merchandise level	COLOR	
data location level	STORE_CLSTR	

Level Desc	Element Count
Location-STORE	65
Location-STORE_CLSTR	1
Location-CHAIN	1
Merchandise-COLOR	115427
Merchandise-ARTICLE/STYLE	62401
Merchandise-SUBMERCHANDISE_GROUP	2660
Merchandise-MERCHANDISE_GROUP	1311
Merchandise-MAJORMERCH_GROUP	399
Merchandise-DEPARTMENT	62
Merchandise-FASHION_WORLD	6
Merchandise-MAJOR_AREA	3
Merchandise-CHAIN	1

The APC validates historical data and loads it into the APC database after the application is first configured. The data validation chart is useful for examining a summary of the data after a change, such as a data refresh, has occurred in the historical data.

The data validation chart contains the following:

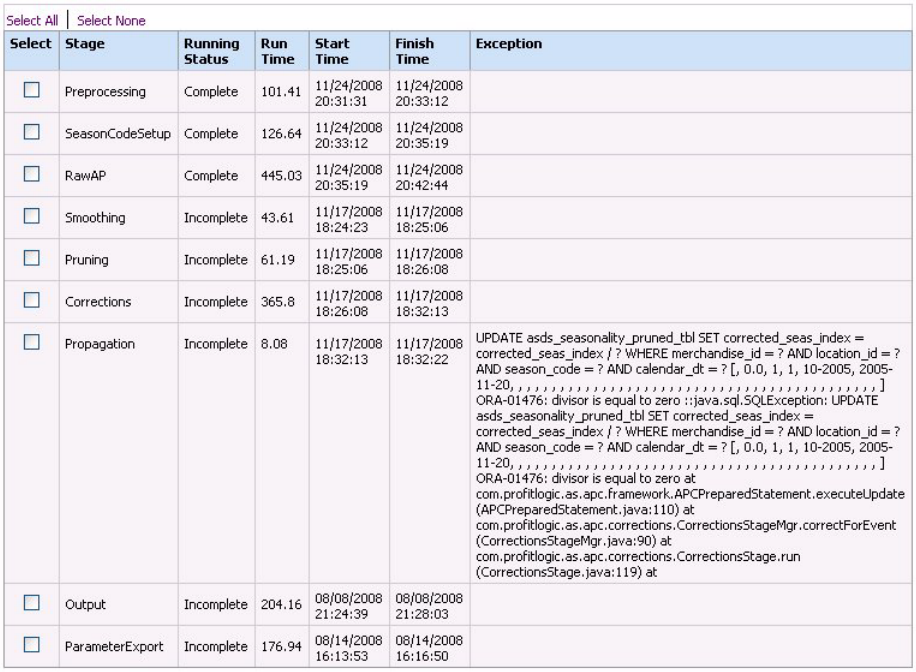
- merchandise count – the number of distinct merchandise IDs in the historical items.
- location count – the number of distinct location IDs in the historical items.
- item count – the total number of historical items.
- calendar extent – the extent of the asds_calendars_in_tbl imported from the related application.

- data extent – the extent of the historical data.
- merchandise levels – from the asds_client_hierarchy_tbl, which is the input table constructed from the merch_hierarchy_in_tbl.
- location levels – the count of the location levels.
- data merchandise levels – the name of the merchandise level used
- data location levels – the name of the location level used
- Level Desc/Element Count – the counts for each location and merchandise hierarchy level.

Stage Status and Custom Run

Here is an example of the Stage Status and Custom Run data.

Figure 1–8 Stage Status and Custom Run



Select All | Select None

Select	Stage	Running Status	Run Time	Start Time	Finish Time	Exception
☐	Preprocessing	Complete	101.41	11/24/2008 20:31:31	11/24/2008 20:33:12	
☐	SeasonCodeSetup	Complete	126.64	11/24/2008 20:33:12	11/24/2008 20:35:19	
☐	RawAP	Complete	445.03	11/24/2008 20:35:19	11/24/2008 20:42:44	
☐	Smoothing	Incomplete	43.61	11/17/2008 18:24:23	11/17/2008 18:25:06	
☐	Pruning	Incomplete	61.19	11/17/2008 18:25:06	11/17/2008 18:26:08	
☐	Corrections	Incomplete	365.8	11/17/2008 18:26:08	11/17/2008 18:32:13	
☐	Propagation	Incomplete	8.08	11/17/2008 18:32:13	11/17/2008 18:32:22	UPDATE asds_seasonality_pruned_tbl SET corrected_seas_index = corrected_seas_index / ? WHERE merchandise_id = ? AND location_id = ? AND season_code = ? AND calendar_dt = ? [, 0.0, 1, 1, 10-2005, 2005-11-20, , , ,

The Custom Run column allows you to select all the stages or some subset of the stages and run them sequentially without interruption. By using this feature, you can set up APC to run without monitoring the process.

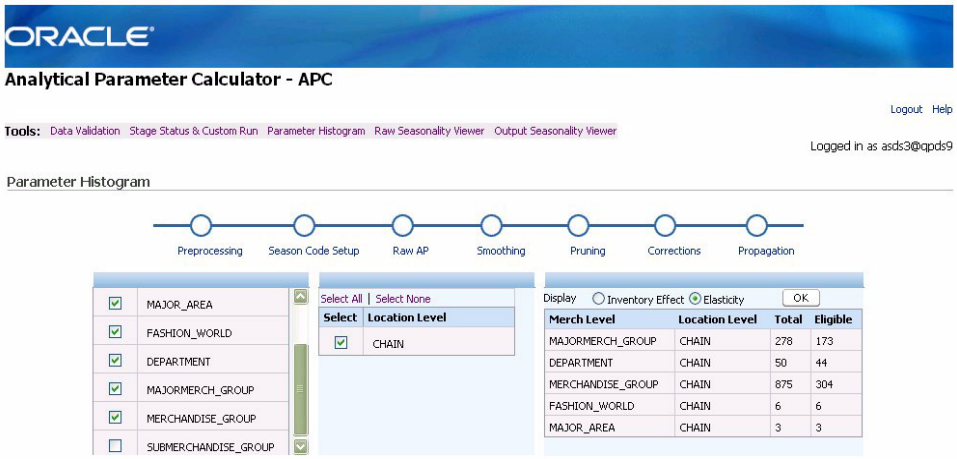
Parameter Histogram

The Parameter Histogram option provides a histogram of the demand parameters elasticity or inventory effect for partitions after pruning is complete. The histogram provides information that can be used to adjust the parameter configuration.

The Histogram screen is divided into two major sections, shown in Figure 1–9, "Parameter Histogram Options" and Figure 1–10, "Parameter Histogram Chart".

Here is an example of the options section.

Figure 1–9 Parameter Histogram Options



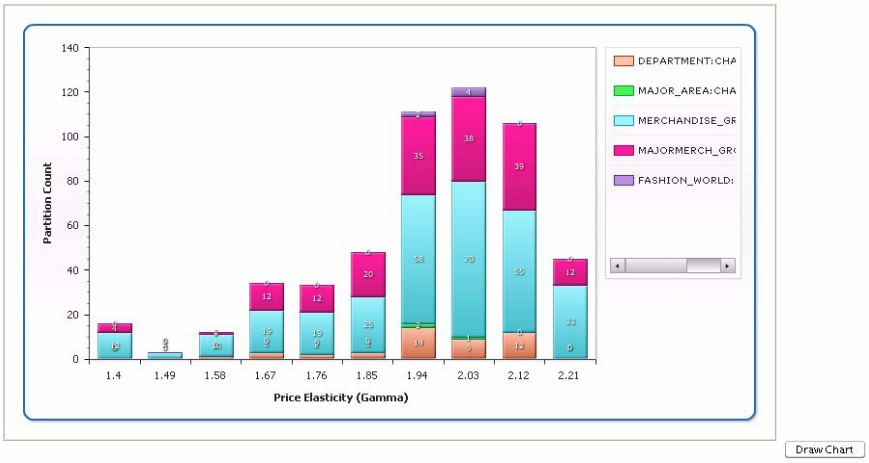
The top section contains select lists for merchandise levels and location levels. These levels are derived from the levels you selected during the Raw AP stage. Using these two lists, you select the merchandise levels and locations levels you are interested in seeing charted.

Once you have selected the levels you are interested in, you must also select the demand parameter you are interested in seeing charted: Inventory Effect or Elasticity. Select one of these options and click **OK**. The display list is populated with all the combinations of the merchandise and location levels you originally selected. To maximize the display quality of the histogram, this list of combinations should be no greater than 6.

After you have made all the necessary selections in the top part of the screen, click **Draw Chart** in order to generate the histogram.

Here is an example of the chart section.

Figure 1–10 Parameter Histogram Chart



Each of the merchandise level/location level combinations is assigned a different color. The partitions and their associated colors are listed in the top right hand corner.

The histogram itself is dynamic: The size of the bars and the numbers used for the partition count along the y axis and the number used for the price elasticity or inventory effect along the x axis will depend on the data used to generate the histogram.

The numbers along the x axis refer to the center of each bar. The bars are divided proportionally by the color of each partition.

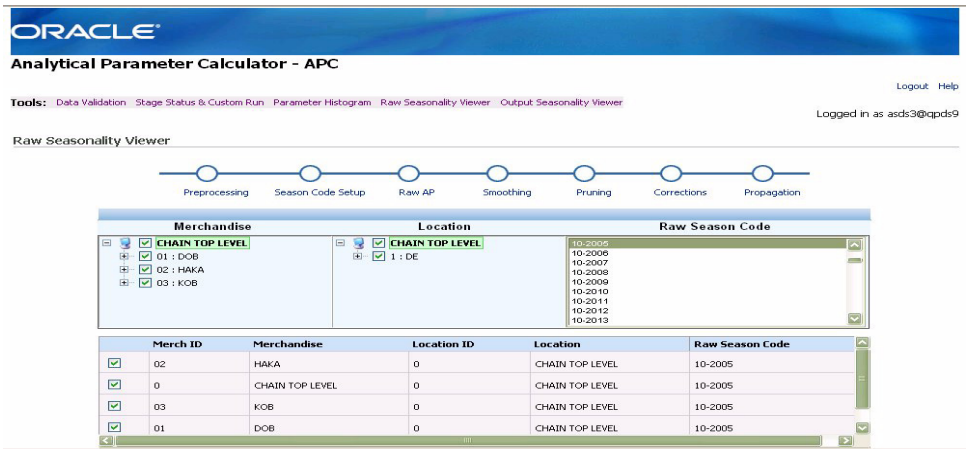
You can click any of the color sub-divisions of any of the bars. The color of the selected sub-division changes color for easier visualization.

Raw Seasonality Viewer

The Raw Seasonality Viewer, shown in Figure 1–11, "Raw Seasonality Viewer Options" and Figure 1–12, "Raw Seasonality Viewer Chart", provides a graph of the seasonality curves after the Raw AP stage has been run.

Here is an example of the Raw Seasonality options.

Figure 1–11 Raw Seasonality Viewer Options

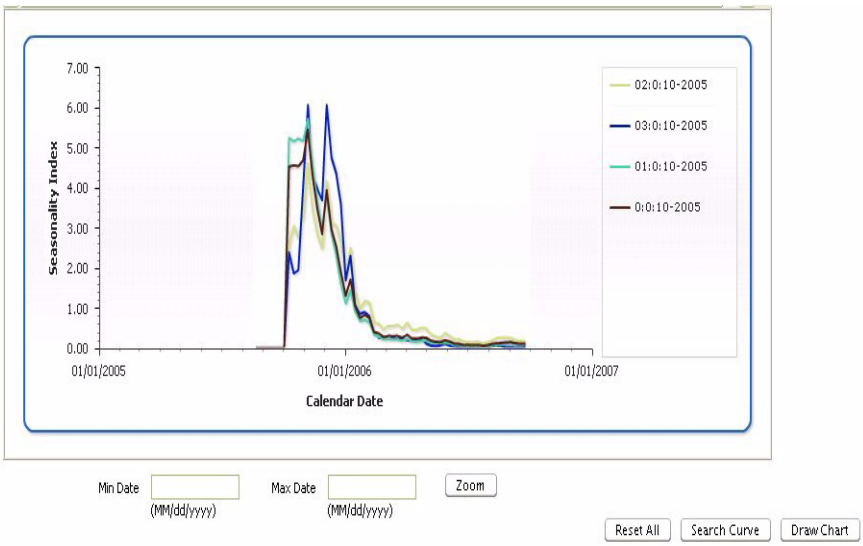


Use the topmost section to select the merchandise levels, location levels, and season codes you are interested in seeing graphed. Click **Search Curve**. You will see a list of the available seasonality curves.

To generate the graph, click the check boxes for the seasonality curves you want to display and click **Draw Chart**.

Here is an example of the Raw Seasonality Viewer chart.

Figure 1–12 Raw Seasonality Viewer Chart



The list of available seasonality curves and their associated colors are listed in the top right hand corner of the bottom section of the screen. A graph is displayed for each seasonality curve listed. The values used in the x axis and the y axis are dynamic, depending on the data used to generate the graphs.

You can narrow the time range used in the x axis by entering the Minimum and Maximum dates you are interested in, using the format MM/DD/ YYYY), and clicking **Zoom**. The display changes to show the time range you specified. To change the date range, enter the new dates and click **Zoom** again.

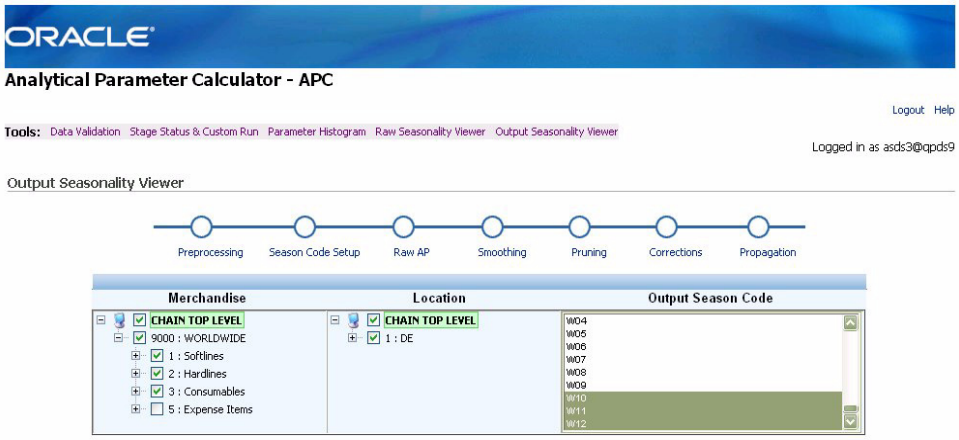
Use **Reset All** to clear all the fields and make new selections.

Output Seasonality Viewer

The Output Seasonality Viewer, shown in Figure 1–13, "Output Seasonality Viewer Options" and Figure 1–14, "Output Seasonality Viewer Chart", provides a graph of the seasonality curves after the Output stage has been run.

Here is an example of the Output Seasonality options.

Figure 1–13 Output Seasonality Viewer Options



Use the topmost section to select the merchandise levels, location levels, and season codes you are interested in seeing graphed. Click **Search Curve**. You will see a list of the available seasonality curves.

To generate the graph, click the check boxes for the seasonality curves you want to display and click **Draw Chart**.

Here is an example of the Output Seasonality Viewer chart.

Figure 1–14 Output Seasonality Viewer Chart

The list of available seasonality curves and their associated colors are listed in the top right hand corner of the bottom section of the screen. A graph is displayed for each

seasonality curve listed. The values used in the x axis and the y axis are dynamic, depending on the data used to generate the graphs.

You can narrow the time range used in the x axis by entering the Minimum and Maximum dates you are interested in, using the format MM/DD/ YYYY), and clicking **Zoom**. The display changes to show the time range you specified. To change the date range, enter the new dates and click **Zoom** again.

Use **Reset All** to clear all the fields and make new selections.

2

Preprocessing

This chapter contains the following:

- "Introduction" on page 2-1
- "The Preprocessing Interface" on page 2-1
- "Item Week Filters" on page 2-2
- "Item Filters" on page 2-3
- "Preprocessing Results Page" on page 2-4

Introduction

The Preprocessing stage filters the historical data to produce a subset of data that will produce reliable demand parameters. It filters at the item and week level. It performs the initial pruning of bad activity data. It does the first stage of determining item eligibility and figures certain values that can later be used in the calculation of raw parameters.

This chapter contains descriptions of the parameters contained in the Preprocessing stage, which are used for filtering, as well as the default values and range of values for each parameter and an example of the Preprocessing results.

The default values of the parameters of the Preprocessing stage can be used to run the Preprocessing stage.

The Preprocessing Interface

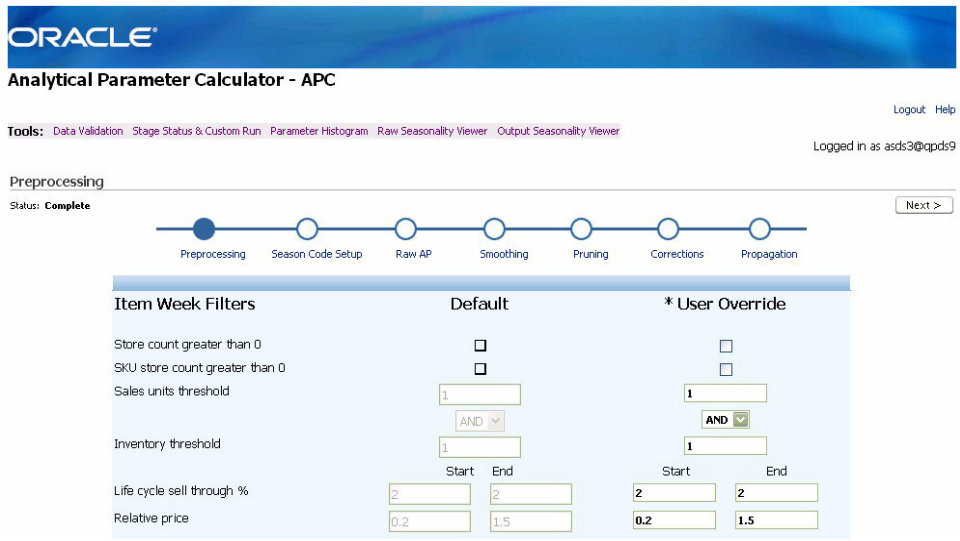
The Preprocessing page is accessed by clicking **Preprocessing** on the Process Train.

Details about using the interface to the APC can be found in Chapter 1, "Getting Started".

Item Week Filters

The Item Week Filters section of the Preprocessing stage is shown in Figure 2–1, "Item Week Filters".

Figure 2–1 Item Week Filters



These filters are used to filter out values that do not meet the requirement defined as specified for each filter, as described below.

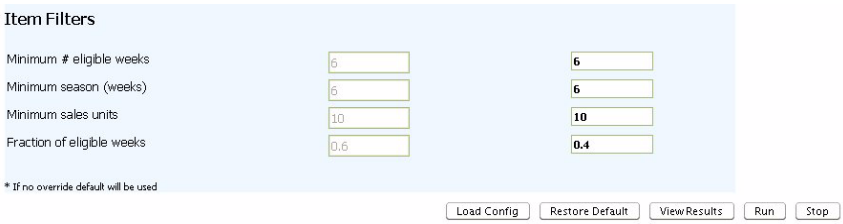
Table 2–1 Item Week Filters

Filter Name and Description	Default Value	Range of Values
Store count greater than 0 – used to filter store count activities with null or zero store and sku-store count.	False	True/False
SKU store count greater than 0 – used to filter SKU store count activities with null or zero store and sku-store count.	False	True/False
Sales unit threshold – used to filter sales unit activities with sales units and/or inventory units below threshold values.	1	> = 1
Inventory threshold – used to filter inventory activities with sales units and/or inventory units below threshold values.	1	> = 1
Life cycle sell thru % – the item start and end dates are based on high and low sales unit quantities that are used to cut off the tails of the curve. Expressed as a percentage for the start date and the end date. Start sell thru is when the amount of sales reaches a certain quantity. The end date is calculated as 98% sell thru. So end date sell thru is 100% - end %.	Start: 2.0 End: 2.0	Start: > = 0; < = 50 End: > = 0; < start date
Relative price – relative price thresholds are used to filter out item weeks with a ratio of sales price to maximum ticket price falling outside the specified range for the start date and the end date.	Start: 0.2 End: 1.5	Start: > 0 End: > start value

Item Filters

The Item Filters section of the Preprocessing stage is shown in Figure 2–2, "Item Filters".

Figure 2–2 Item Filters



These filters are used to filter out values that do not meet the requirement defined as specified for each filter, as described below.

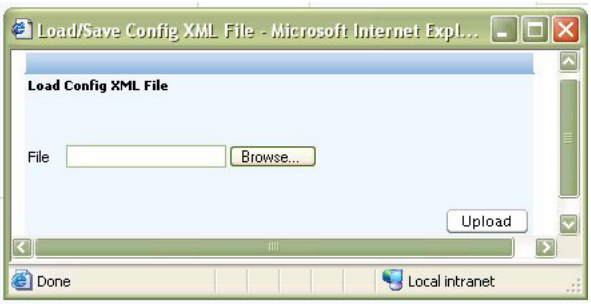
Table 2–2 Item Filters

Filter Name and Description	Default Value	Range of Values
Minimum # eligible weeks – a certain number of weeks are necessary in order to determine item eligibility.	6	> 0
Minimum season (weeks) – a certain season length (the number of weeks between the first and last activity) is required in order to determine item eligibility.	6	> 0
Minimum sales units – the total number of units sold must be at least this value.	10	> 0
Fraction of eligible weeks – the percentage of eligible weeks, expressed as a fraction of the season length. The season length is the number of weeks between the start and end dates. (See Life cycle sell thru % above.)	0.6	> 0.0; < = 1.0

Loading a Configuration

When you click Load Config, you see the following dialog box.

Figure 2–3 Load Config



Use this dialog box to load the xml file that contains the configuration you created in the Output stage. This xml file contains a snapshot of your APC configuration.

Preprocessing Results Page

The Preprocessing Results table is shown in Figure 2–4, "Preprocessing Results".

Figure 2–4 Preprocessing Results

Filter Name	Items Initial Count	Item Final Count	Activities Initial Count	Activities Final Count	NetSales Units Initial Count	NetSales Units Final Count	NetSales Dollars Initial Count	NetSales Dollars Final Count
1 : Preliminary filtering	99084	51861	0	0	0	0	0	0
2 : Low/High Sales %	0	0	4362385	1057723	17415715	16491026	333736764	318171958
3 : Low/High Relative Price	0	0	4362385	1034266	17415715	16351552	333736764	317410401
4 : Min # Eligible Weeks	99084	50065	4362385	1026064	17415715	15939026	333736764	312211900
5 : Min Sales Units	99084	49173	4362385	1019927	17415715	15931374	333736764	312027100
6 : Min Season Length	99084	49173	4362385	1019927	17415715	15931374	333736764	312027100
7 : Min % Eligible Weeks	99084	44753	4362385	958692	17415715	15772806	333736764	308333754

The Preprocessing Results page displays when you click **View Results** on the Preprocessing stage screen. Use the results of the preprocessing filtering to alter the settings, if necessary. The filters are applied in the order listed in the table. The initial count is the value before the filters are applied. Items are defined as the intersection of the Merchandise Hierarchy and the Location Hierarchy. Activities are defined per item week. Net Sales units are defined as the sum total in units for all weeks/all items. Net Sales dollars are defined as the sum total in dollars for all weeks/all items.

Note that even if the percentage of surviving activities or items is much lower than 90%, it is still possible for a very high percentage of the units sold and dollars sold to survive filtering since the activities or items that did not survive filtering could be responsible for only a very low percentage of units sold and dollars sold. In fact, typically when you view the preprocessing filter results page, you will see that a high percentage of units sold and dollars sold have survived filtering even though the percentage of surviving activities and items is quite low

3

Season Code Setup

This chapter contains the following sections:

- "Introduction" on page 3-1
- "The Season Code Setup Interface" on page 3-1
- "Item Week Filters" on page 3-2
- "Adjacent Weeks" on page 3-4
- "Attribute Mapping" on page 3-4

Introduction

The Season Code Setup stage determines the season codes to be used and maps them to items. It creates additional partitioning in the dataset by introducing a time dimension. This stage contains parameters for start week, end buckets, adjacent weeks, and attributes, which are discussed in the following sections.

The Season Code Setup Interface

The Season Code Setup page is accessed by clicking **Season Code Setup** on the Process Train.

Details about using the interface to the APC can be found in Chapter 1, "Getting Started".

Item Week Filters

The Item Week Filters section of the Season Code Setup stage is shown in Figure 3–1, "Item Week Filters".

Figure 3–1 Item Week Filters

This section describes the start date code, end buckets, adjacent weeks, and attributes.

Start Date Code

Items (the intersection of the merchandise hierarchy and the location hierarchy) are assigned to a season code. Season codes identify the division of items by a time dimension. Seasonality curves are associated with season codes. The start date code is another name for the season code.

Season codes can be year-dependent or year-independent. All the season codes used in the Season Code Setup stage are year-dependent.

The start date is defined by the beginning of the life cycle (life cycle sell through of 2%) and the end of the life cycle (life cycle sell through of 98%) These are defined in the Preprocessing stage.

The default start date code type is Monthly. Other options (that you choose from the drop-down list) include Weekly, Biweekly, Quarterly, and Custom. All the items within a given start date code type are assigned the same start date code, which is associated with that type.

Start date codes are formatted as MM-YYYY. For example:

Table 3–1 Start Date Code Formats

Start Date Code Type	Format
Weekly	01-2008
	02-2008
	03-2008
	.....
	07-2008
BiWeekly	01-2008

Table 3–1 (Cont.) Start Date Code Formats

Start Date Code Type	Format
	02-2008
	03-2008
	.....
	26-2008
Monthly	01-2008
	02-2008
	03-2008
	.....
	12-2008
Quarterly	01-2008
	02-2008
	03-2008
	04-2008

End Buckets

End Buckets can be used to further partition the start date codes, based on the season length. The end buckets define the extensions to the start date code lengths at either end of the start date code. Each start date code can have a maximum of four buckets. The numbers defining the length of the buckets must be listed sequentially, beginning with the lowest number. End buckets are optional.

End buckets are formatted as an extension of the start date code formatting. For example:

01-2008-10 is used for an item that is in the start date code 01-2008 and has a bucket of <= 10 weeks.

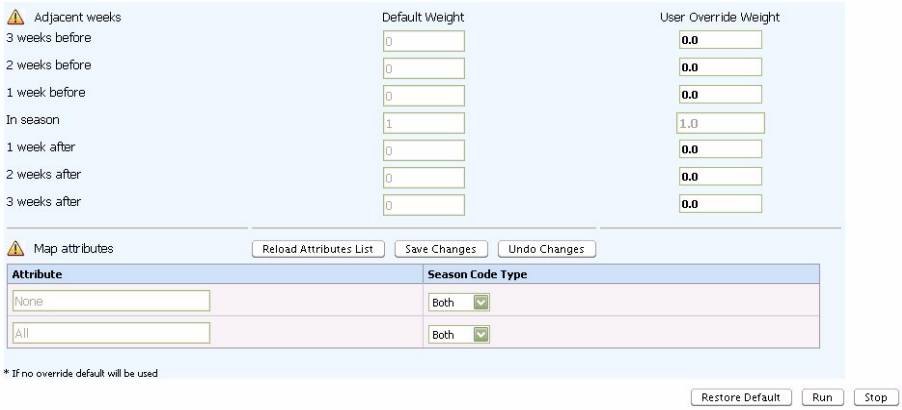
01-2008-40 is used for an item that is in the start date code of 01-2008 and has a bucket of <= 40 weeks.

The default value for the end buckets is no season lengths. The range of values in a sequence of 0, 1, 2, 3, or 4 positive integers. The sequence must be a strictly increasing sequence.

Adjacent Weeks

The Adjacent Week and Attribute Mapping sections of the Season Code Setup stage are shown in Figure 3–2, "Adjacent Weeks and Attribute Mapping".

Figure 3–2 Adjacent Weeks and Attribute Mapping



Adjacent weeks are infrequently used. When adjacent weeks are used, the start date code includes items adjacent to a season that contribute to the smoothing of the seasonality curve. The weeks before extend the beginning of the start date code. The weeks after extend the end of the start date code.

The weight is a multiplier used in the construction of the seasonality curve. A weight of zero does not assign the item to the adjacent season code. A weight of one treats the item as if it were a normal item in the season code. The weighting does not affect the normal contribution of an item to its base season code.

The values for the adjacent weeks are:

Table 3–2 Adjacent Weeks Parameters

Name	Default Value	Range of Values
Adjacency weight (start - 3)*	0.0	> = 0.0, < = 1.0
Adjacency weight (start - 2)*	0.0	> = 0.0, < = 1.0
Adjacency weight (start - 1)*	0.0	> = 0.0, < = 1.0
Adjacency weight (end+ 1)*	0.0	> = 0.0, < = 1.0
Adjacency weight (end + 2)*	0.0	> = 0.0, < = 1.0
Adjacency weight (end + 3)*	0.0	> = 0.0, < = 1.0

The In Season value cannot be changed.

Attribute Mapping

Attributes are used to associate every piece of merchandise with a customer-specific classification. Attributes serve to sub-divide the merchandise. Attributes are loaded from the APC database table asds_item_level_user_attr by clicking the **Reload Attributes List** button.

Seasonality curves can be regular, basic, or both. Basic curves ignore the start date.

If, for example, a retailer uses a set of classifications such as short, long, and basic, then the Attribute Mapping table would look like this.

Table 3–3 Example Attribute Mapping Table

Attribute	Basic	Regular
Short (S)	<check box>	<check box>
Long (L)	<check box>	<check box>
Basic (B)	<check box>	<check box>
None	<check box>	<check box>
All	<check box>	<check box>

Note that the Save Changes button and the Undo Changes button are used only with the Attribute Mapping table. If both regular and basic are checked, then both calculations are used to determine the seasonality curve. The Attribute Mapping table must contain at least one entry.

Every customer has the attributes None and All. If All is checked, then the attributes are disregarded.

Attributes are formatted as follows (including buckets):

S-01-2008-10

S-02-2008-20

The attribute mapping table must have at least one check box checked. The default value is that the All row has both the Regular and Basic check boxes checked and all other check boxes unchecked.

4

Raw AP

This chapter contains the following:

- "Introduction" on page 4-1
- "The Raw AP Interface" on page 4-1
- "Selecting Hierarchy Levels" on page 4-1
- "Seasonality Settings" on page 4-2
- "Item-Week Filters" on page 4-3
- "Markdowns" on page 4-4
- "Partition Filters" on page 4-4
- "Elasticity Target" on page 4-5

Introduction

The Raw AP stage produces the demand parameters. It analyzes the filtered and partitioned data to estimate raw parameters seasonality and price elasticity. The results are summarized at various merchandise/location hierarchy levels.

The Raw AP Interface

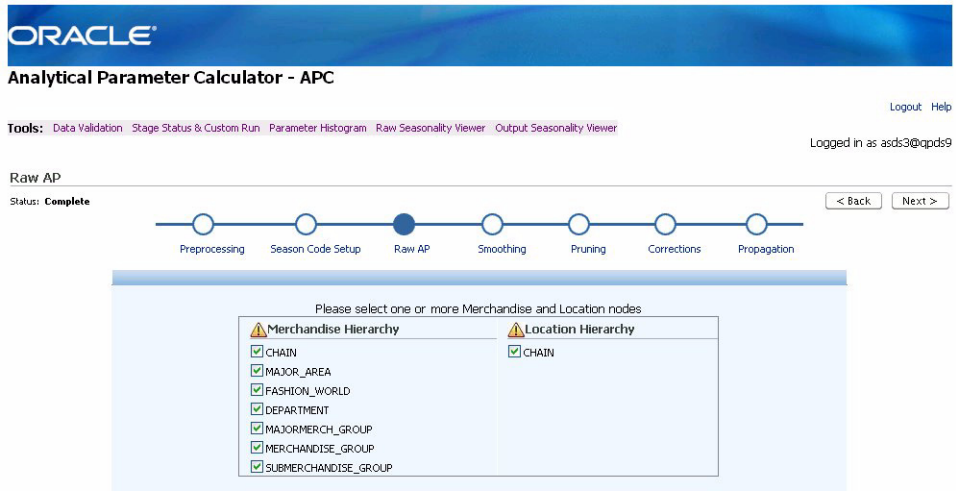
The Raw AP page is accessed by clicking **Raw AP** on the Process Train.

Details about using the interface to the APC can be found in Chapter 1, "Getting Started".

Selecting Hierarchy Levels

The Hierarchy Levels section of the Raw AP stage is shown in Figure 4–1, "Hierarchy Levels".

Figure 4–1 Hierarchy Levels



Select the merchandise and location levels for which APC should calculate demand parameters. The APC calculates demand parameters for the partitions of the levels that are the cross products of all the levels you select. For example, if you select Chain and Division for the merchandise levels and Chain and Region for the location levels, then APC calculates demand parameters for the partitions in Chain/Chain, Chain/Region, Division/Chain, and Division/Region.

The APC UI uses the "Used" column in asds_client_hierarchy_tbl to determine which merchandise hierarchy and location hierarchy levels to display in the Raw AP stage display. The "Used" column is configurable. A value of N indicates the levels that are at or below the optimization level.

Seasonality Settings

The Seasonality Settings section of the Raw AP stage is shown in Figure 4–2, "Raw AP Seasonality Settings".

Figure 4–2 Raw AP Seasonality Settings

The seasonality settings establishes the length and start date of the raw seasonality curve.

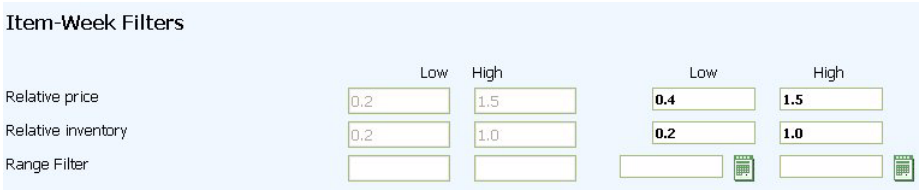
Table 4–1 Seasonality Settings

Setting Name and Description	Default Value	Range of Values
Seasonality length – determines the length of the raw curves for regular (non-basic) season codes. The length from the start determines how many weeks after the start date are in the curve. This value does not take length buckets into consideration.	52	> = 1
Start week – raw curves for basic season codes are always 53 weeks long. This parameter sets the starting week of the basic season code curves in terms of fiscal week number.	1	> = 1, < = 52
Eligible items threshold – the minimum number of items that a Merchandise Hierarchy/Location Hierarchy/Season Code partition must contain so that Raw-AP can produce a seasonality curve for the partition.	10	> = 0, < = 50

Item-Week Filters

The Item Week Filters of the Raw AP stage is shown in Figure 4–3, "Raw AP Item Week Filters".

Figure 4–3 Raw AP Item Week Filters



The following item-week filters are more stringent than the preprocessing filters.

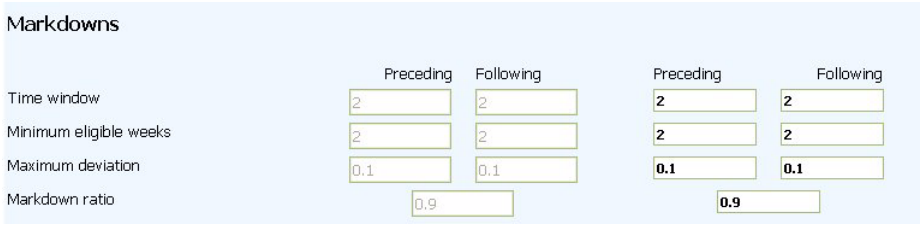
Table 4–2 Item Week Filters

Filter Name and Description	Default Values	Range of Values
Relative price - used to filter out item-weeks with a ratio of sales price to maximum ticket price that falls outside the specified range.	Low: 0.2 High: 1.5	Low: > = 0 High: > Lower value
Relative inventory - the upper and lower bounds for the value for inventory relative to maximum inventory.	Low: 0.2 High: 1.5	Low: > = 0 High: > Lower value; < = 1.0
Range Filter - used to eliminate unreliable data using start date and end date for the period. Both the start date and the end date are Null by default. a Null value menas that the field is not used in the filter. One of the fields or both of the fields can have a vlaue of Null. If both of the fields are Null, then the data is not filtered.	Start Date: Null End Date: Null	The Start Date must be at least one year earlier than the end date.

Markdowns

The Markdowns Parameters section of the Raw AP stage is shown in Figure 4–4, "Raw AP Markdown Parameters".

Figure 4–4 Raw AP Markdown Parameters



Use the markdowns parameters to define what you consider a markdown to be.

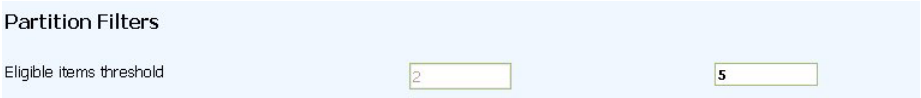
Table 4–3 Markdowns Parameters

Markdowns Parameters Name and Description	Default Value	Range of Values
Time window – defines the weeks before and after the markdown. The preceding weeks value is the # weeks before the markdown occurred. The following weeks value is the # weeks after the markdown and includes the week of the markdown. A week is a calendar week.	2	> = 2
Minimum eligible weeks – the week that precedes two calendar weeks in which an item is actually sold (i.e., two weeks that contain data).	2	2
Maximum deviation – the standard deviation of the regular price in the weeks before and after the markdown. Provides stability on the variance.	0.1	> 0.0
Markdown ratio – the average price in the weeks following the markdown that satisfies all conditions.	0.9	> 0.0; < 1.0

Partition Filters

The Partition Filters section of the Raw AP stage is shown in Figure 4–5, "Raw AP Partition Filters".

Figure 4–5 Raw AP Partition Filters

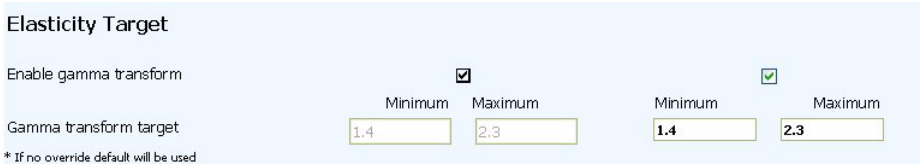


The eligible items threshold filter is used to filter merchandise/location/season code partitions with the number of eligible items below the specified threshold. It looks at the items that have already been filtered using the above filters. This defines the minimum number of items required for raw AP to continue calculating demand parameters. The default value is 10. The range is > = 0.

Elasticity Target

The Elasticity Target section of the Raw AP stage is shown in Figure 4–6, "Raw AP Elasticity Target".

Figure 4–6 Raw AP Elasticity Target



Elasticity is the effect of markdowns on unit sales. If the value is too low, then no markdowns can be recommended.

Table 4–4 Elasticity Target Parameters

Elasticity Parameter Name and Description	Default Value	Range of Values
Enable gamma transform – turns on the gamma transform.	True	True/False
Gamma transform target – minimum and maximum values for transformed gamma.	Minimum: 1.4 Maximum: 2.3	Minimum: > = 0.0 Maximum: > Min

5

Smoothing

This chapter contains the following:

- "Introduction" on page 5-1
- "The Smoothing Interface" on page 5-1
- "Seasonality Correlation Period" on page 5-2

Introduction

The Smoothing stage calculates the seasonality correlations. This process consists of calculating the year-to-year correlation for different years of data by using the portion of the seasonality curve that falls between the low and high sales percentages. By default, the first 2% and the last 15% are not considered in defining the seasonality correlation period. This prevents an artificial inflation of the seasonality curves.

The Smoothing Interface

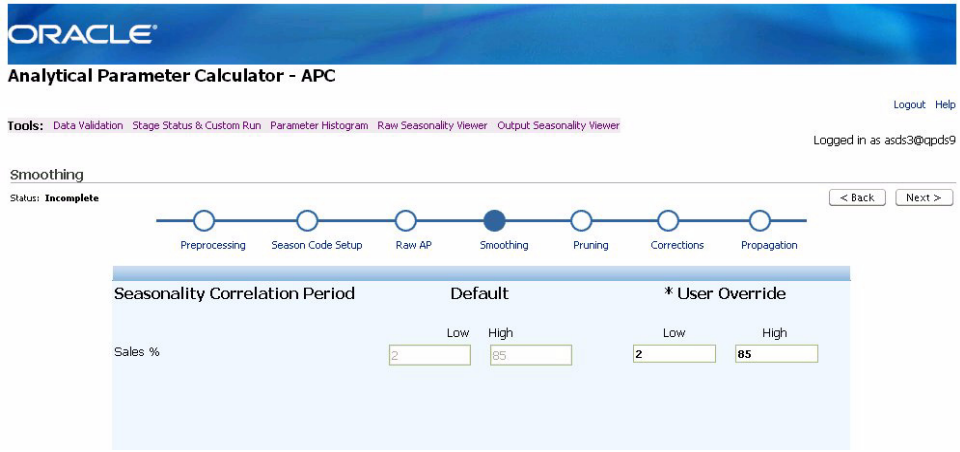
The Smoothing page is accessed by clicking **Smoothing** on the Process Train.

Details about using the interface to the APC can be found in Chapter 1, "Getting Started".

Seasonality Correlation Period

The Seasonality Correlation Period of the Smoothing stage is shown in Figure 5–1, "Seasonality Correlation Period".

Figure 5–1 Seasonality Correlation Period



This stage has two parameters (low and high): the seasonality correlation period Sales %.

Table 5–1 Seasonality Correlation Period

Filter Name Description	Default Value	Range of Values
Sales % - the low and high sales percentage values	Low: 2 % High: 85 %	Low: > = 0 % High: < = 50 %

6

Pruning

This chapter contains the following:

- "Introduction" on page 6-1
- "The Pruning Interface" on page 6-1
- "Data Sufficiency" on page 6-1
- "Item Week Filters" on page 6-2
- "Year-to-Year Pruning" on page 6-3
- "Base Historic Period" on page 6-3
- "Pruning Filtering Results" on page 6-4
- "Pruning Seasonality Results" on page 6-5

Introduction

The Pruning stage is used to remove unreliable demand parameters.It removes merchandise/location/season code partitions from the APC. The two pruning methods are:

- remove all partitions except for those in the Base Historic Period
- determine which curves in the Base Historic Period are sufficient and reliable

The Pruning Interface

The Pruning page is accessed by clicking **Pruning** on the Process Train.

Details about using the interface to the APC can be found in Chapter 1, "Getting Started".

Data Sufficiency

Default data sufficiency thresholds are appropriate for most clients. If a client has low item counts or low rates of sale at the lowest parameter level, then the corresponding threshold can be lowered. More parameters will be kept, but future reliability may suffer. Note that pruning curves with missing dates and top level curves are generally kept enabled.

Item Week Filters

The Item Week Filters section of the Pruning stage is shown in Figure 6–1, "Item Week Filters".

Figure 6–1 Item Week Filters

The following table provides descriptions, default values, and the range of values for the item week filters.

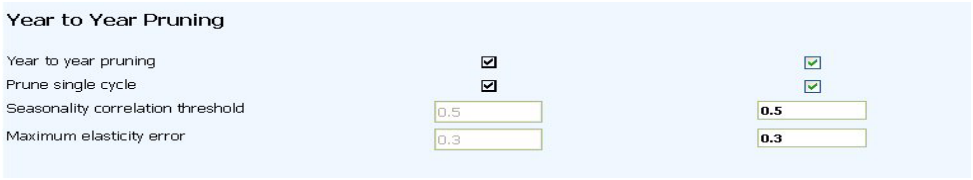
Table 6–1 Item Week Filters

Filter Name and Description	Default Value	Range of Values
Partition-level overrides – pruning can be done at the partition level if all partitions are defined in the ASDS_PRUNING_ PARAMETERS table. This will override the pruning parameters. Any partitions not specified in this table will not be pruned.	True	True/False
Keep top level curves – all the highest level curves are kept, regardless of threshold values.	True	True/False
Prune curves with missing dates – permits pruning of basic curves with missing dates.	True	True/False
Eligible items threshold – partitions with fewer numbers of eligible items than the threshold value are removed. Eligibility is defined during preprocessing.	10	> = 0.0
Average weekly sales threshold – partitions with average weekly sales below the threshold are removed. Weekly sales are the sum of all sales for all activities for a given week.	25	> = 0
Raw seasonality length threshold – allows curves to be discarded when the number of weeks from the first non-zero seasonality value to the last non-zero seasonality value is less than the threshold. It is possible, in Raw AP, that many seasonality values of zero have been added to the curves. Note that basic season codes have a length of 53, so picking a value greater than 53 will prune out any basic season codes.	10	> = 0

Year-to-Year Pruning

The Year-to-Year section of the Pruning stage is shown in Figure 6–2, "Year to Year Pruning".

Figure 6–2 Year to Year Pruning



The year-to-year pruning setting requires additional analysis. The default seasonality correlation is 0.5, but curves between 0.5 and 0.7 should be inspected or run through parent-to-child correlation analysis. Curves with only one year of data should also be inspected or run through parent-to-child correlation analysis.

The following table provides descriptions, default values, and the range of values for the year-to-year pruning parameters.

Table 6–2 Year to Year Pruning

Filter Name and Description	Default Value	Range of Values
Year-to- year pruning - allows pruning based on the BHP.	True	True/False
Pruning single cycle - allows pruning of curves with only one year of data.	True	True/False
Seasonality correlation threshold - removes curves if the maximum correlation between the BHP curve and other curves with that merchandise and location ID and the same year-invariant season code is lower than the threshold. For example, if the merchandise/location of 1/1 had a curve for 2001-01, 2002-01, and 2003-01, and the 2003-01 curve is the BHP curve, if the correlation between either 2001-01 and 2003-01 or 2002-01 and 2003-01 is greater than the threshold, then it passes the threshold.	0.5	> = 0.0, < = 1.0
Maximum elasticity error -	0.3	> 0.0

Base Historic Period

The Base Historic Period (BHP) table, shown in Figure 6–3, "Base Historic Period", can only be loaded by clicking the **Reload Season Codes** button once the Season Code setup stage is complete. The table contains two columns. The first column lists the year-independent client-specific season codes. The second column lists the base fiscal year.

Figure 6–3 Base Historic Period

Different rows can have different years. Alternatively, you can set the fiscal year for all rows by selecting a year using the table tool bar and then clicking the **Set all BHPD** button.

Do not select a year-dependent season code that is too close to the beginning of the historical data or too close to the end of the historical data.

Pruning Filtering Results

The Pruning Filtering Results are shown in Figure 6–4, "Filtering Results".

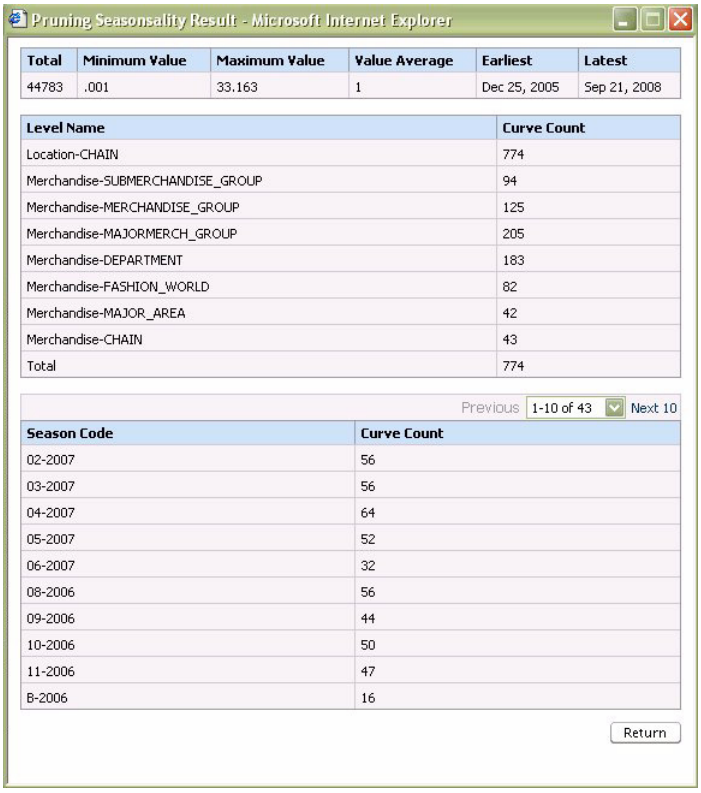
Figure 6–4 Filtering Results

The Filtering Results page displays the initial count before the specified filter is applied and the final count after the specified filter is applied. The filters are listed in the order they are applied.

Pruning Seasonality Results

The Pruning Seasonality results are shown in Figure 6–5, "Seasonality Results".

Figure 6–5 Seasonality Results



The Seasonality Results page displays when you click the **View Seasonality Results** button. It provides a check on the quality of the data. It is divided into three sections and shows the counts of the curves that survived pruning.

The first section displays information about season codes over all partitions. The value for Value Average should be close to 1.

The second section displays the number of curves by level.

The third section displays the number of seasonality curves per season code.

7

Corrections

This chapter contains the following:

- "Introduction" on page 7-1
- "The Corrections Interface" on page 7-1
- "Curve Creation" on page 7-2
- "Events" on page 7-3

Introduction

In the Corrections stage, the curves for the regular season codes are extended, all curves are padded, and corrections are calculated. The purpose is to correct seasonality curves in order to account for holiday and promotion lifts.

The Corrections Interface

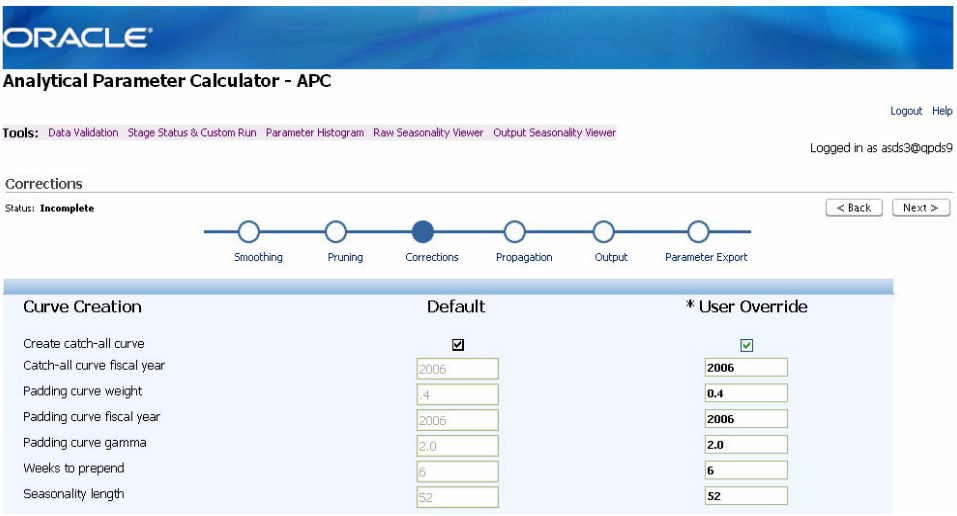
The Corrections page is accessed by clicking Corrections on the Process Train.

Details about using the interface to the APC can be found in Chapter 1, "Getting Started".

Curve Creation

The Curve Creation section of the Corrections stage is shown in Figure 7–1, "Curve Creation".

Figure 7–1 Curve Creation



The following parameters are used to configure the padding of all curves and the extension of regular season code curves.

Table 7–1 Catch-All Curves

Catch-All Curve Parameter Name and Description	Default Value	Range of Values
Create catch-all curve - the catch-all seasonality curve is created above the Chain/Chain level so that all items will be given a minimum of one seasonality curve.	True	True/False
Catch-all curve fiscal year - the year specified for the creation of the seasonality curve.		A fiscal year from the historical data.

The padding curve parameters include Padding Curve Weight, Padding Curve Fiscal Year, Padding Curve Gamma, Weeks to Prepend, and Seasonality Length. These parameters determine:

- the shape of the padding curve
- how much of the curve is applied to each extended curve

The padding seasonality curve is determined by using the value of gamma to create a depriced curve for the highest merchandise/location partition for each season code in the given fiscal year. The final seasonality curve is calculated as weight * padding curve + (1 - weight) * seasonality curve.

Table 7–2 Padding Curves

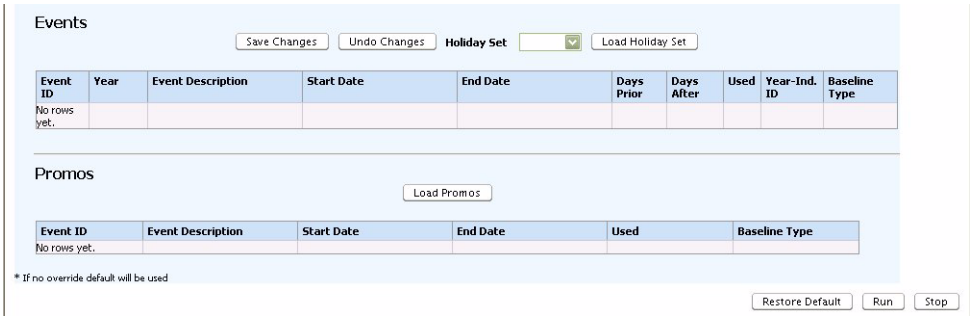
Padding Curve Parameter Name and Description	Default Value	Range of Values
Padding curve weight - the value used in determining the final seasonality curve.	0.4	> 0.0; < 1.0
Padding curve fiscal year - the year specified for the creation of the padding curve.		
Padding curve gamma - price elasticity, i.e., a measure of the increase in sales as the price decreases.	2.0	> 0.0
Weeks to prepend - number of weeks to add to the curve	0	>= 0
Seasonality length - the seasonality curve is extended before it is padded. If the length of the curve from start date to end date is longer than the length of the Raw AP, then the difference is added. Otherwise, it is not changed. This applies to regular season codes only.	52	>= 1

Events

Holidays and promotions must be removed from seasonality curves in this stage, as APC does not correct for holidays and promotions in the Raw AP stage. You should not use too many holidays and promotions for this process. The sum of the holidays and the promotions in a given calendar year should not be greater than 25, on average. If you use more than this, the lift from the event will not impact the APC's calculations.

The Events section of the Corrections stage is shown in Figure 7–2, "Events".

Figure 7–2 Events



Holidays

This section describes the holiday list.

After you select the holiday set from the drop-down list, you can load the holidays into APC using the Load Holiday Set button. The holidays are located in ASDS_EVENT_HOLIDAY_SET_TBL.

The baseline type determines how to smooth the seasonality curve. If you select the linear option, APC looks at X days before and X days after and draws a straight line between them.

Promotions

This section describes the promo list.

You can load promotions into APC using the Load Promos button. The promotions are located in ASDS_EVENT_PROMOS_TBL.

8

Propagation

This chapter contains the following:

- "Introduction" on page 8-1
- "The Propagation Interface" on page 8-1
- "Seasonality Coverage" on page 8-2

Introduction

The Propagation stage is used to copy historical seasonalities backward and forward in time. This includes re-applying event lifts according to the event calendar configured in the previous stage. This stage removes promo lifts and holiday lifts.

During propagation, you can:

- decide whether or not to remove a promotion from a curve
- determine how many years to create output curves for
- determine the type of output seasonality, single cycle or multi-cycle

The Propagation Interface

The Propagation page is accessed by clicking **Propagation** on the Process Train.

Details about using the interface to the APC can be found in Chapter 1, "Getting Started".

Seasonality Coverage

The Propagation stage is shown in Figure 8–1, "Propagation".

Figure 8–1 Propagation

The following parameters are used for propagation.

Table 8–1 Propagation Parameters

Propagation Parameter Name and Description	Default Value	Range of Values
First fiscal year - The first fiscal year and the last fiscal year are used to create copies of the base curves for each of the years you enter. Holidays are re-applied to these curves, so it is important that the coverage matches the events table, or the moving holiday and promotions corrections will not be applied for those years. Seasonality curves should be propagated at least five years beyond the current year.	2005	> 2004
Last fiscal year - The first fiscal year and the last fiscal year are used to create copies of the base curves for each of the years you enter. Holidays are re-applied to these curves, so it is important that the coverage matches the events table, or the moving holiday and promotions corrections will not be applied for those years. Seasonality curves should be propagated at least five years beyond the current year.	2010	> 2004

Table 8–1 (Cont.) Propagation Parameters

Propagation Parameter Name and Description	Default Value	Range of Values
Remove promos from seasonality - used to remove promotions from the seasonality curves.	False	True/False
Apply moving holiday corrections - used to propagate moving holiday corrections. It is recommended that this almost always be enabled.	True	True/False
Seasonality cycles - the value is either single-cycle or multi-cycle. The life cycle length histogram and information about your planned outdates should determine whether you should use multi-cycle or single-cycle seasonalities. For the multi-cycle seasonality type, each curve has multiple yearly seasonal cycles, one cycle per year. The length of the curve is determined by the first fiscal year and the last fiscal year. A multi-cycle is limited to 52 weeks. For the single-cycle seasonality type, each curve has a single-cycle. The length of the curve is determined by the Raw AP and Event Lift stages. The number of curves is determined by the first fiscal year and the last fiscal year. A single-cycle can be longer than 52 weeks.	Multi	Single/Multi

9

Output and Parameter Export

This chapter contains the following:

- "Introduction" on page 9-1
- "The Output Interface" on page 9-1
- "Item Week Filters" on page 9-2
- "Escalation Path" on page 9-2
- "Parameter Export" on page 9-3

Introduction

The Output stage is used after the analyst has completed the configuration. It converts propagated seasonalities and other parameters into the final format required by the analytic application. You can enable or disable particular parameters in the output. You can also specify the merchandise hierarchy-location hierarchy search escalation path. The first time you access the Output stage, the table is empty.

The output files are produced in the format required by the analytic application. Once you are finished with the Output stage, you are taken to the Parameter Export stage.

The Output Interface

The Output page is accessed by clicking **Output** on the Process Train.

Details about using the interface to the APC can be found in Chapter 1, "Getting Started".

Item Week Filters

The Item Week Filters section of the Output stage is shown in Figure 9–1, "Item Week Filters".

Figure 9–1 Item Week Filters

The following values determine the APC output.

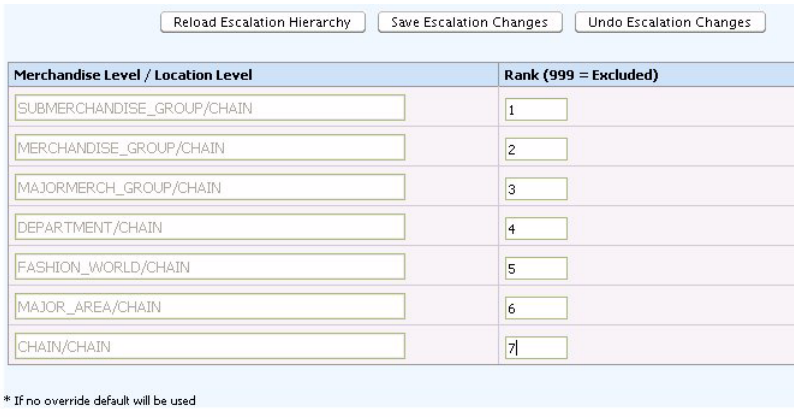
Table 9–1 Item Week Filters

Filter Name and Description	Default Value	Range of Values
Write event lifts - enables event lifts as an output value.	True	True/False

Escalation Path

The Escalation Path section of the Output stage is shown in Figure 9–2, "Escalation Path".

Figure 9–2 Escalation Path



You load the escalation hierarchy using the Reload Escalation Hierarchy button. The Rank defines the escalation path, which is part of the APC output (but is not used by APC). The default escalation path is first along the location hierarchy, and then along

the merchandise hierarchy. It is based on the levels selected in the Raw AP stage and is only available after the Raw AP stage has been run. It runs consecutively from the lowest value to the highest value. The value 999 indicates that the associated level should not be included in the escalation path.

Use the Save Config button to save the configuration you have created. You are prompted to indicate where the file should be saved. This configuration file can be used in the Preprocessing stage, as described in "Loading a Configuration" on page on page 2-3.

Use the Restore Default button to return to the original default values.

Parameter Export

Once all the previous stages are complete, you see the Parameter Export screen, shown in Figure 9–3, "Parameter Export". Run this stage to generate the flat files that contain the APC output. These text files, stored as a zip file, are required by the analytic application.

Figure 9–3 Parameter Export

Glossary

Aggregation

Combining data to a higher level in order to obtain more effective data that has a higher rate of sales.

Alpha

The learning rate. A large alpha places high weight on the last week. Alpha can be considered as the inverse of the number of weeks of sales to consider. For example, when considering ten weeks of sales, then alpha = 0.1.

Attribute

Used to categorize an item's season, inventory flow, or...., and to distinguish between different selling patterns.

Attribute Mapping

Mapping the type of seasonality curve to the type of merchandise (indicated by the attribute for the merchandise). The two types of seasonality curves are Basic and By Start Date.

Analytic Services (AS)

The section of the retail business unit that performs the analytical work for an analytic implementation.

ASDS

The database schema used by APC.

Base Historical Period

The year-specific season code for each year-independent season code that is used to calculate the output demand parameters. For example, the base historical period for the season code January is January-2005.

Basic Season Code

A season code that does not have a start date or an end date. It is year-independent.

Catch-all Curve

This curve is defined at the highest merchandise/location level and is associated with a single season code that is mapped to all historical items.

Corrections Stage

One of the APC stages. It extends regular season code curves and calculates the event lift.

Data Sufficiency

Enough data for reasonably meaningful calculations.

Demand Model

It consists of a set of demand parameters that are combined to determine the modeled sales units for a given item/week.

Demand Parameters

A set of numeric values that are required for the calculation of forecast model values for the customer. Demand parameters include seasonality values, price elasticity, inventory effect parameters, store count effect parameters, and promotional lifts.

Depriced

Corrected value for sales based on price elasticity (price effect removed).

Effective End Date

The last day a markdown can be recommended.

Effective Start Date

The first day a markdown can be recommended.

Eligible Item

An item that meets the defined eligibility requirements. This is defined in the Preprocessing stage. Only eligible items can be used to generate demand parameters.

Eligible Week

Historical data that corresponds to a particular week for an eligible item. Only eligible weeks can be used to generate demand parameters.

Escalation Path

The order to use when searching through the merchandise levels and the location levels. The first level to be searched is always the top search level and the last level to be searched is always the bottom search level.

Filter

The process of removing historical data that should not be used in calculating demand parameters.

Filtered Eligible Item/Week

The eligible item/weeks that pass the following three filters:

- the ration of sales price to max ticket price is within the user-specified range
- the weeks of a particular item belong to the date range that corresponds to the user-specified min/max percent of cumulative sales units of the item
- the ratio of end-of-week inventory units on hand to the max end-of-week inventory units for that item is greater than or equal to the user-specified threshold.

Gamma

The value for the demand parameter price elasticity.

Historical Data

Past sales data that is used by AS to determine demand parameters.

Inventory Effect

Inventory effect is intended to approximate the effect of inventory depletion on the sales rate. As the inventory of an item depletes, it is possible for the sales rate to slow down. This can happen because the customer is unable to find the correct size or preferred color, for example. It can also happen because some stores stock out.

Inventory Ratio

The ratio of inventory at the end of the week to the maximum inventory of all weeks.

Item

A combination of merchandise and location nodes at a certain merchandise and location level. For example, possible items are Style/Region, SKU/Chain, or Chain/Chain.

Item Partition

A set of items for which the APC calculates a single set of demand parameters. The APC does not calculate demand parameters for a single item. Instead, the APC assigns demand parameters to a set of items. The APC divides the entire set of items in the historical data into partitions, and, for each partition, it calculates a single set of demand parameters for that partition. A single set of demand parameters consists of one seasonality curve and on value for each of the other demand parameters.

Level

One of the following:

- any element of the merchandise hierarchy or the location hierarchy
- any combination of levels in the individual hierarchies

Life Cycle

The time period during which an item is sold.

Lift

An increase in the sales for an item as a result of a promotion or a holiday sale.

Location Hierarchy

The levels or groupings of stores in your company. Typically the levels in location hierarchies are chain, region (or zone), and store

Lowest Pass Level

The merchandise/location level combination that corresponds to the lowest merchandise and location levels from the list of merchandise and location levels that are used to calculate demand parameters.

Merchandise Hierarchy

The levels or groupings of product in your company, typically extending from SKU or size at the lowest level to company at the highest.

Merchandise/Location Partition

A combination of the merchandise hierarchy node, the location hierarchy node, and the season code, used to create a grouping that is suitable for statistical analysis.

Moving Holiday

A moving holiday is defined as any holiday whose fiscal week can change over the course of multiple years, and whose presence causes a lift in sales. Examples include Labor Day and Thanksgiving.

A moving holiday's date is defined as the actual calendar date that the moving holiday occurs on. A moving holiday is also defined with a range of dates in which sales are affected by the holiday

Multi-cycle Curve

A multi-cycle curve contains multiple cycles of the seasonality pattern, one for each future year. A cycle is limited to 52 weeks.

Output Stage

One of the APC stages. It determines output parameters, sets values for alpha, and sets the escalation path.

Padding Curve

The time series of weekly sums of depriced sales, normalized for weeks that belong to the user-specified fiscal year.

Preprocessing Stage

One of the APC stages. It is used for the initial filtering of bad weeks of data and bad items.

Price Effect

The price effect is a function of the relative price, which is computed as Relative price = salesPrice / fullPrice. The relative price is combined with input and configuration parameters to determine the price effect.

Price Elasticity

A measure of the increase in sales as the price decreases. Some items, such as Halloween candy, do not have price elasticity because demand is not determined by price.

Propagation Stage

One of the APC stages. This stage is used to remove moving holiday lifts and promotional lifts from seasonality curves.

Pruning Stage

One of the APC stages. It removes the demand parameters and seasonality curves that are unreliable.

Raw

Before pruning.

Raw AP Stage

One of the APC stages. This stage calculates the demand parameters.

Regular Season Code

A season code that has a start date and an end date. It is year-dependent.

Relative Price

relative price = sales price / full price.

Reliable Partition

A partition that has passed the pruning stage.

Richness

The number of items that are mapped, using the escalation logic defined in the search tables, to each merchandise level. Richness is a measure of the hierarchy levels at which items are mapped to parameters. Richness can change after seasonality curves are filtered out.

Sales Units

The number of units sold for a week.

Season Code

The item attribute that represents an item's inventory flow. Season codes can be monthly, quarterly (for example, Spring or Summer), or based on a client-provided merchandise attribute.

Two types of season code exist within APC: year-dependent season codes and year-independent season codes.

A year-dependent season code is associated with an item that began or was selling during a particular fiscal year (for example, January 2004 or the first quarter of 2005).

A year-independent season code is associated with an item that began or was selling during a time period that is not identified with a particular year (for example, January or first quarter).

Season Code Setup Stage

One of the APC stages. It defines season codes and maps season codes to items.

Seasonality

Seasonal variations in the demand for merchandise.

Seasonality Correlation

A calculation of the year-to-year correlation for different years of data.

Single Cycle Curve

A single-cycle is specific to a future year and contains only one cycle. A cycle can be longer than 52 weeks.

Smoothing Stage

One of the APC stages. It calculates the seasonality curve reliability that is used to prune unreliable seasonality curves during the Pruning stage.

Stage

Data processing in APC consists of multiple stages that are executed sequentially. The input and output data for each stage persists in the database.

Standard Interface

The specification for the formatting of the historical data feeds.

Start Date

The earliest calendar date that the item started selling. The start date is associated with a year-dependent season code only.

Store Count Effect

The reduction in the relative strength of sales due to size/store level stockouts.

Store Effect

The number of unique stores for a given item/week that either have positive sales units or positive end-of-week inventory units for that item.