Oracle® Retail Demand Forecasting Cloud Service

User Guide

Release 18.0

F16498-15

October 2020

ORACLE

Oracle Retail Demand Forecasting Cloud Service User Guide, 18.0

F16498-15

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- Do you need different information or graphics? If so, where, and in what format?
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Preface

The Oracle Retail Demand Forecasting Cloud Service User Guide describes the application's user interface and how to navigate through it.

Audience

This document is intended for the users and administrators of Oracle Retail Demand Forecasting Cloud Service. This may include merchandisers, buyers, and business analysts.

Documentation Accessibility

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Related Documents

For more information, see the following documents in the Oracle Retail Demand Forecasting Cloud Service Release 18.0 documentation set:

- *Oracle Retail Demand Forecasting Cloud Service Administration Guide*
- *Oracle Retail Demand Forecasting Cloud Service Implementation Guide*
- *Oracle Retail Demand Forecasting Cloud Service Release Notes*
- *Oracle Retail Demand Forecasting Cloud Service Starter Kit*
- *Oracle Retail Demand Forecasting Cloud Service User Guide*
- Oracle Retail Predictive Application Server Cloud Edition documentation

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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

Improved Process for Oracle Retail Documentation Corrections

To more quickly address critical corrections to Oracle Retail documentation content, Oracle Retail documentation may be republished whenever a critical correction is needed. For critical corrections, the republication of an Oracle Retail document may at times not be attached to a numbered software release; instead, the Oracle Retail document will simply be replaced on the Oracle Help Center (docs.oracle.com), or, in the case of Data Models, to the applicable My Oracle Support Documentation container where they reside.

This process will prevent delays in making critical corrections available to customers. For the customer, it means that before you begin installation, you must verify that you have the most recent version of the Oracle Retail documentation set. Oracle Retail documentation is available on the Oracle Help Center (docs.oracle.com) at the following URL:

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An updated version of the applicable Oracle Retail document is indicated by Oracle part number, as well as print date (month and year). An updated version uses the same part number, with a higher-numbered suffix. For example, part number E123456-02 is an updated version of a document with part number E123456-01.

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Oracle Retail Documentation on the Oracle Help Center (docs.oracle.com)

Oracle Retail product documentation is available on the following web site:

https://docs.oracle.com/en/industries/retail/index.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.)

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 Demand Forecasting Cloud Service (RDF CS) provides accurate forecasts that enable retailers to coordinate demand-driven outcomes that deliver connected customer interactions. With a single view of demand, RDF CS provides pervasive value across retail processes, including driving optimal strategies in planning, increasing inventory productivity in supply chains, decreasing operational costs and driving customer satisfaction from engagement to sale to fulfillment. RDF CS is a comprehensive solution that maximizes the forecast accuracy for the entire product lifecycle, with tailored approaches for short and long lifecycle products, the ability to adapt to recent trends, seasonality, out-of-stocks and promotions, and reflect the unique demand drivers of each retailer.

Today's progressive retail organizations know that store-level demand drives the supply chain. The ability to forecast consumer demand productively and accurately is vital to a retailer's success. The business requirements for consumer responsiveness mandate a forecasting system that more accurately forecasts at the point of sale, handles difficult demand patterns, forecasts promotions and other causal events, processes large numbers of forecasts, and minimizes the cost of human and computer resources.

Forecasting drives the business tasks of planning, replenishment, purchasing, and allocation. As forecasts become more accurate, businesses run more efficiently by buying the right inventory at the right time. This ultimately lowers inventory levels, improves safety stock requirements, improves customer service, and increases the company's profitability.

Forecasting Challenges and RDF CS Solutions

A number of challenges affect the ability of forecast demand accurately including:

- Selecting the Best Forecasting Method
- Overcoming Data Sparsity through Escalation and Pooling Levels
- Forecasting Demand for New Products and Locations
- Managing Forecasting Results Through Automated Exception Reporting
- Incorporating the Effects of Promotions and Other Event-Based Challenges on Demand
- Support for Short Lifecycle Merchandise
- 53 Week Calendar

Selecting the Best Forecasting Method

One challenge to accurate forecasting is the selection of the best model to account for level, trending, seasonal, and spiky demand. Oracle Retail's automatic evaluation of several methods eliminates this complexity. The automated approach can pick the best fit method among a large selection, like Simple Exponential Smoothing, Holt Exponential Smoothing, Additive and Multiplicative Winters Exponential Smoothing, Croston's Intermittent Demand Model, and Seasonal Regression forecasting.

Another approach is to combine the output of the competing methods to create a more robust forecast and minimize the risk of overfitting.

Overcoming Data Sparsity through Escalation and Pooling Levels

Demand at low levels, such as item/store, is usually too noisy to identify clear selling patterns, both for baseline and promotional sales. In such cases, generating a reliable forecast requires analyzing historical data at a higher level (escalation or pooling levels) in the hierarchy in which demand patterns can be consistently detected. The forecasting components estimated at these high levels, like seasonality curves and promotion effects, are combined with low level information, like base demand and trend, to create the low level forecast that is needed to drive the supply chain.

Forecasting Demand for New Products and Locations

RDF CS also forecasts demand for new products and locations for which no sales history exists. There are several options for new products. First, there is the option to go on auto mode, and the user does not have to do anything. Another option is model the new product’s demand based on that of an existing similar product for which you do have a history. The existing item selection can be automatically done by matching item attributes. There is also the option to manually select the item. Forecasts for the new products are copied from one item or can be a combination of multiple items. The level for the new products are copied from Like Item, the seasonal curve, and the promotional effects are from escalation.

Managing Forecasting Results Through Automated Exception Reporting

The RDF CS end user is typically responsible for managing the forecast results for thousands of items, at hundreds of stores, across many weeks at a time. The Oracle Retail Predictive Application Server Cloud Edition (RPAS CE) platform provides users with an automated exception reporting process that indicates to you where a forecast value may lie above or below an established threshold, thereby reducing the level of interaction needed from you. The framework for exception management is implemented using multiple features.

First there is the exception dashboard profile, where the user can filter down to desired merchandise/locations to view a hit count and the variance from the desired value of the forecast. Based on that information, the user can launch in a workspace where she can review only the exceptions inside the product and location’s space defined in the dashboard filter settings.

Once in the workspace, the user navigates to flagged positions using the workspace alerts which are synchronized with the exception dashboards. When an exception is resolved, the result is committed to the domain, and the dashboard exception count—upon refresh—reflects the change.

Incorporating the Effects of Promotions and Other Event-Based Challenges on Demand

Promotions, non-regular holidays, and other causal events create another significant challenge to accurate forecasting. Promotions such as advertised sales and free gifts with purchase might have a significant impact on a product's sales history, as can fluctuating holidays such as Easter.

The causal forecasting functionality estimates the effects that such events have on demand. The results are used to predict future sales when conditions in the selling environment are similar. This type of advanced forecasting identifies the behavioral relationship of the variable you want to forecast (sales) to both its own past and explanatory variables such as promotion and advertising.

Suppose that your company has a large promotional event during the Back To School season each year. The exact date of Back To School varies from year to year; as a result, the standard time-series forecasting model often has difficulty representing this effect in the seasonal profile. The Promotional Forecasting module allows you to identify the Back To School season in all years of your sales history, and then define the upcoming Back To School date. By doing so, you can causally forecast the Back To School-related demand pattern shift.

Support for Short Lifecycle Merchandise

Short lifecycle items have the unique trait that they sell for a relatively short period of time and then never again. This type of merchandise can be divided as fashion items, and items that have replacements. For fashion items, the demand is modeled based on items that started selling around the same time of year in the past years. For instance, a spring collection for this coming year, is modeled based on a Spring collection that started selling in February in the past year.

The items that replace other items are treated differently. The demand for an item that will start selling is going to be modeled after the demand of the item that it is replacing.

53 Week Calendar

For the majority of retailers, the business is managed using a calendar (364 days organized into 13 week quarters) that periodically includes an extra 53rd week so that the year end stays in about the same time of the year. It is useful to have some control over how this 53rd week will be managed within the forecasting system's time dimension. Management of this issue causes customers the pain, time and cost of configuring their data every few years that this happens.

The problem described has two implications. The first case is when two years—each with 52 weeks—of historical sales are available, and the retailer needs to forecast for the following year, which has 53 weeks. The second case is when one of the years of historical sales has 52 weeks, and the other has 53 weeks.

The correction for the extra week happens as part of forecasting. RDF CS creates a measure **Week 53 indicator** with the base intersection that is entered by the user in the RDF plug-in. This measure has to be loaded by the user.

There is also the **Week 53 options** measure, that indicates how to calculate the forecast value for a week that was flagged as 53rd, or extra week. This measure can be accessed in the Forecast Setup Workbook.

Forecasting Process

The forecasting process represents a next generation approach engineered to provide transparency, responsiveness and accuracy through the application of retail sciences using the scale of our modern Retail Cloud Platform.

- ***Transparency*** enables analytical processes and end-users to understand and engage with the forecast. This is accomplished by representing the demand model as the decomposition of intuitive components that include base rate of demand, seasonality and causal effects. The forecasting process provides transparency to the final results, individual model components and underlying decisions by the system and end-user.
- ***Responsiveness*** enables the coordination and simulation of demand-driven outcomes using forecasts that adapt immediately to new information and without a dependency on batch processes. This is accomplished by separating the calculation of the forecast from the analytical processes that determine components within the forecasting model.
- ***Accuracy*** enables retailers to deliver connected customer interactions while driving efficiencies to increase profits. Maximizing forecast accuracy is paramount to RDF CS. This is accomplished through the application of best-fit sciences throughout the forecasting process.

Process Summary

Following is a summary of the forecasting process:

1. **Prepare Reference Data**

   The purpose of this step is to prepare reference data for subsequent estimation, pruning and escalation processes. The emphasis in the preparation processes is to treat anomalies in historical data, such as out-of-stock, outliers and promotions, where the objective is to increase reliability of the reference data. For long-lifecycle items where data tends to be reliable over long time periods, the anomalies are corrected. For short-lifecycle items where data tends to be unreliable over short periods, the anomalies are omitted.

2. **Estimated Demand Parameters**

   The purpose of this step is to estimate all demand parameters and at all possible escalation levels. An escalation level represents a grouping of items and locations for robust parameter estimation to overcome sparsity and sensitivity. Escalation levels can be tied to explicit hierarchy levels (for example: subclass/region) or flexible item/location groupings (for example: optimized analytical clusters). As each demand parameter is estimated, multiple machine learning methods are applied, individually optimized and evaluated for accuracy. The final model can represent the best-fit method or a robust method calculated as an intelligent blending of multiple methods weighted by accuracy.

3. **Prune**

   The purpose of this step is to prune escalation levels that do not pass analytical quality checks. These include data, estimation and correlation quality checks. The result is a candidate pool of high quality parameter estimates for the escalation process.

4. **Escalate**

The purpose of this step is to select the demand parameter estimate for each component of the forecast model using the candidate pool of escalation levels. The escalation process reflects the optimal balance of richness and reliability.

5. **Forecast**

   The purpose of this step is to calculate the forecast through the application of demand parameter estimates from the analytical processes in conjunction with the known demand drivers and user-overrides. The demand model is completely responsive to changes in demand drivers and updates to the demand model itself (for example: user-defined override). This step also includes support for responsive new-item forecasting, with tailored approaches for new-item scenarios, such as dynamic, repeatable and similar assortments.

User Experience and Workflow

The user experience is delivered on our experience-inspired RPAS Cloud Edition (RPAS CE) user interface (UI). RPAS CE provides end-users with a next generation cloud-native UI that is purpose-built to accelerate intent into action for planners and forecasters. This includes interactive and visual dashboards to assess priorities, responsive and flexible workspaces to implement decisions and a coordinated exceptions framework that ties business process all the way from dashboard to cell.

The business process is engineered to maximize the productivity of end-users through exception-driven processes and emphasis on workflow simplification. The day-in-the-life processes begin with dashboard views that enable the end-user to assess the effectiveness and quality of their forecasts and prioritize exceptions. From the dashboards, the end-user is able to contextually launch into the appropriate workspace. For exception-driven processes, the end-user is guided to the point-of-resolution, with visibility to progress and the ability to iteratively work through forecasting priorities throughout the day.

Dashboard Views and Workspaces

The dashboard views and workspaces that support day-in-the-life forecasting workflows are summarized as follows:

- **Forecast Overview Dashboard**

  This dashboard leads with Key Performance Indicators (KPIs) that provide macro-level insight into forecasting priorities and the effectiveness of the forecasts in driving demand-driven outcomes. This enables end-users to assess forecasting complexity drivers, such as frequent promotions, and forecasting performance towards business objectives, such as fill rates.

- Forecast Scorecard Dashboard

  This dashboard provides insight to forecast accuracy (for example: MAPE, Bias) along with clear visibility to system performance and the impact of end-user contributions to the forecasting process. This enables forecast analysts and managers to identify forecast process improvement priorities.

- Exception Dashboards

  The exception dashboards represent the primary starting point for day-in-the-life processes. The short and long lifecycle forecasting processes each have a dedicated dashboard that enables end-users to efficiently drive decisions through focused exception-driven processes. From here, end-users are able to define the scope of exceptions to be managed through dashboard filters and launch directly to

workspace views tailored for resolution. As exceptions are resolved, the dashboard is updated to enable end-users to iteratively work through forecasting priorities.

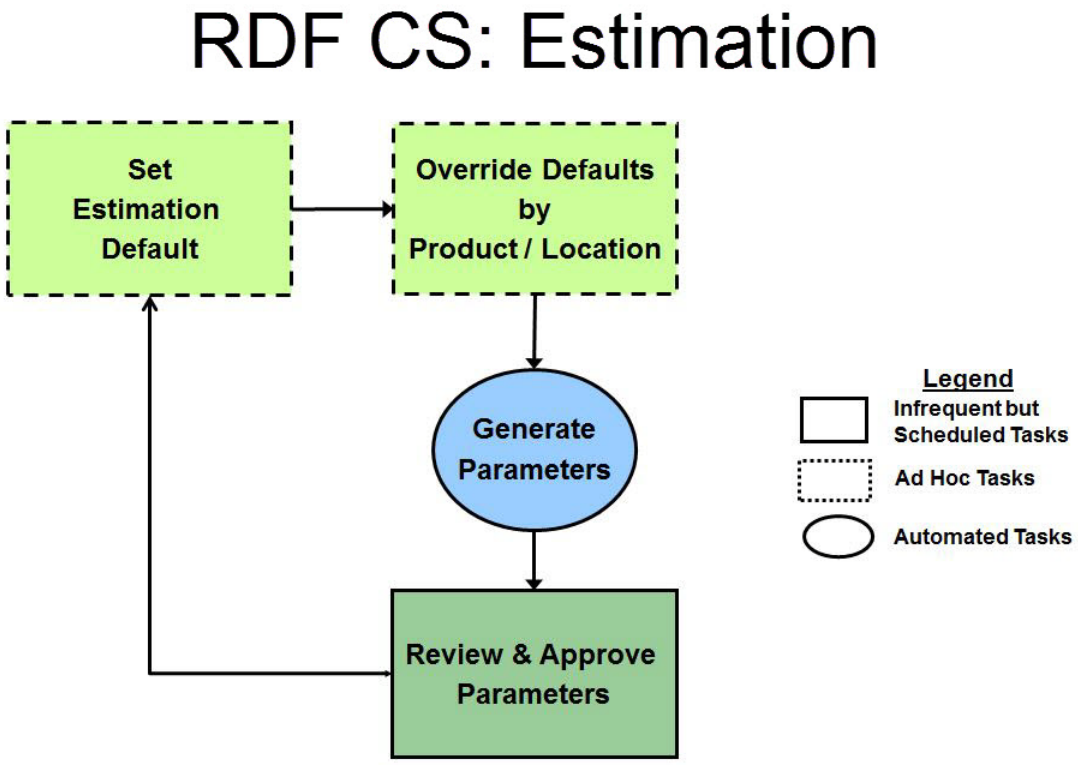
- **Forecast Review Workspaces**

  The forecast approval workspaces represent the primary point of interaction with the demand forecasts. The short and long lifecycle forecasting processes each have a dedicated forecast approval workspace to enable end-users to efficiently review, adjust, and approve their forecasts. This is supported by a rich set of decision support metrics and the ability to responsively simulate forecast updates based on new demand drivers and different forecasting methods. The workspace also features real-time alerts and dedicate exception management views that navigate end-users to the point resolution.

Forecast Engine

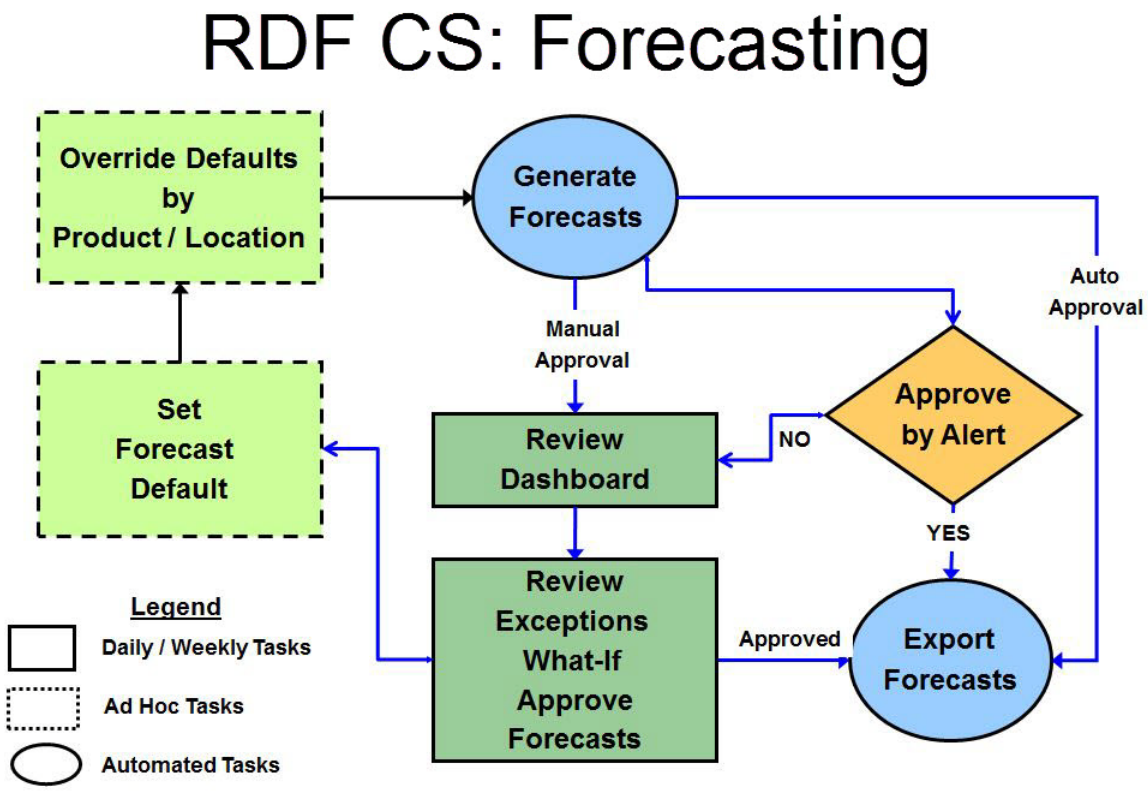
Not visible to the end user is the forecast engine, and all the tasks happening behind the scenes. The batch is split between estimation and forecasting. Estimation consists of the heavy data mining of historical demand to generate the necessary forecast parameters like seasonality, price and promo effects. Following are tasks which comprise the estimation workflow.

Figure 1–1 RDF CS Estimation



After estimation is run, the forecast parameters are computed, and everything is available to generate the forecast. Since most metrics are already pre-calculated during estimation, this step is very quick, allowing for extensive What-if in the Forecast review workspace. Following are the tasks related to generating, reviewing, and approving forecasts.

Figure 1–2 RDF CS Forecasting

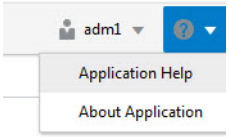


2

Dashboard

The Dashboard is the workspace that is seen upon login. You can use the dashboard to quickly analyze the health of the business. The dashboard will need to be refreshed periodically as new products, locations, and demand-related data are added. This typically happens weekly, but depends on your administrator's settings. The measure data of existing products and locations in the dashboard can be refreshed at any time to view updated changes.

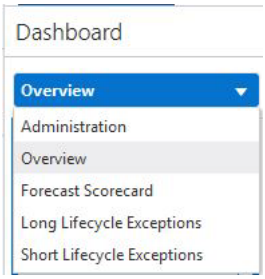
Note: For additional information about the user interface, dashboard, and workspaces, click **Application Help** from the Help icon on the dashboard.



RDF CS has two dashboard profile types and includes two profiles for each type:

- Metric profile type
  - Overview
  - Forecast Scorecard
- Exception profile type
  - Long Lifecycle Exceptions
  - Short Lifecycle Exceptions

Figure 2–1 Dashboard Profiles



The information in the metric and exception profiles is summarized in tiles, which can be filtered on the product, location, or any other hierarchy that makes sense as shown

in Figure 2–2 and Figure 2–3.

Figure 2–2 Product Filter

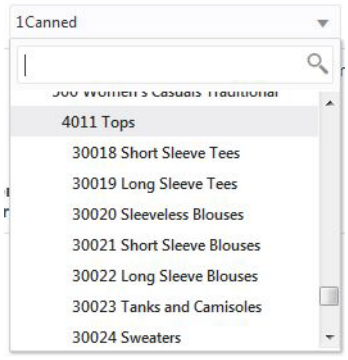
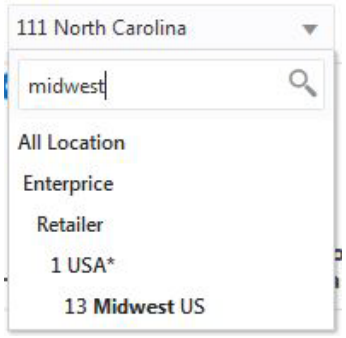


Figure 2–3 Location Filter



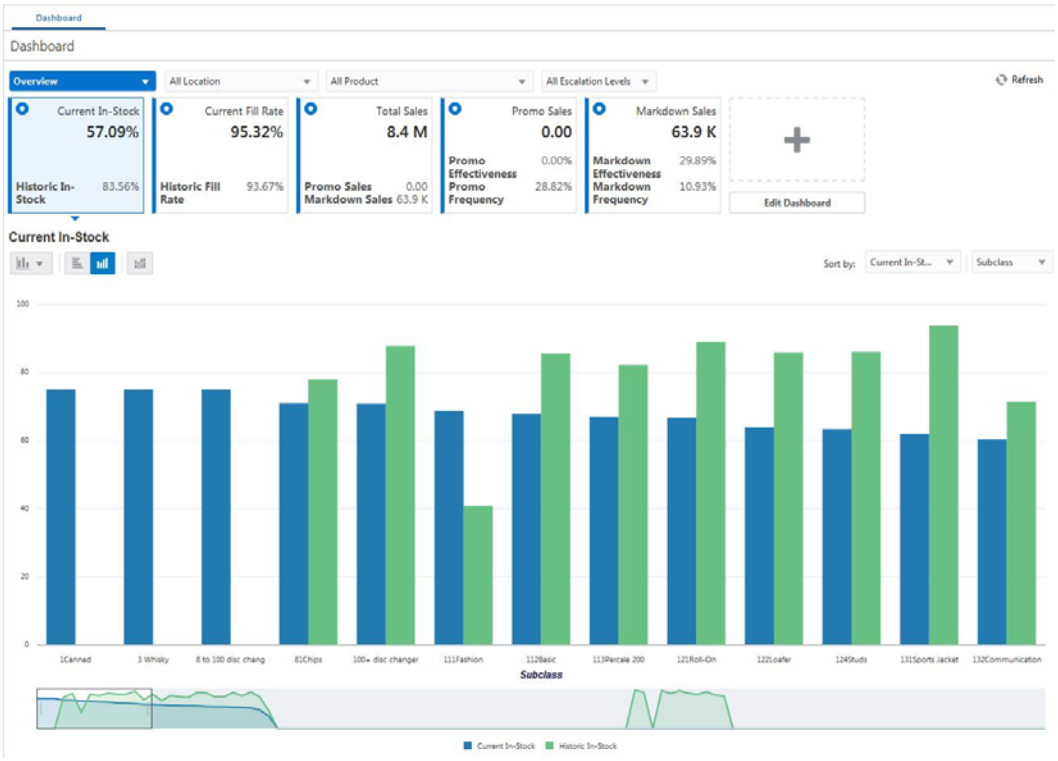
The information that is presented condensed in the tile metrics, is also presented in a chart with more detail.

In addition there is the Administration dashboard which gives information about scheduled OAT tasks, or workspace build information. More about the Administration dashboard can be found in the *Oracle Retail Predictive Application Server Cloud Edition User Guide*.

Overview Dashboard

There are five GA tiles in the Overview dashboard.

Figure 2–4 Overview Dashboard



Current and Historical In-stock Rates

The first tile displays information about how often stockouts occurred. If every four weeks, a stockout is registered, the in-stock rate would be 75%. This information is driven by how often stockouts occur. The tile displays current and historical fill rates.

Stockouts

The second tile displays information about the current and historical fill rates, which are related to service levels. This information is directly tied to the amount of lost sales caused by total or partial stockouts.

Breakdown of Sales

The third tile shows the breakdown of sales. The total sales are the sum of regular, promotional and markdown sales. The promotional and markdown sales are displayed as secondary metrics to gauge the amount of sales driven by these extraordinary events.

Promotional and Markdown Sales

The last two tiles display information about promotional and markdown sales. Besides the total units, additional information is displayed as secondary metrics. For instance, the tiles display how often the merchandise are promoted or marked down, as the promo or markdown frequency. Also, it shows the effectiveness of how promoting or marking down merchandise is increasing demand as compared to regular demand.

Forecast Scorecard Dashboard

The information displayed in this dashboard helps the forecast analyst or forecast manager determine how accurate the forecasts are.

Figure 2–5 Forecast Scorecard Dashboard

Error Metrics

These are the error metrics:

- Mean Absolute Percentage Error
- Root Mean Squared Error
- Mean Absolute Error
- Forecast Bias
- Percent Adjusted

The error metrics are detailed in Appendix B, "Appendix: Forecast Errors in the Forecast Scorecard Dashboard." They are calculated for both the user-adjusted, as well as for the system-generated forecasts, allowing a fair evaluation of the performance of the analyst versus the system.

Forecast Bias

Another tile is dedicated to the forecast bias, a useful metric in determining if the forecast is consistently over or under the actual demand.

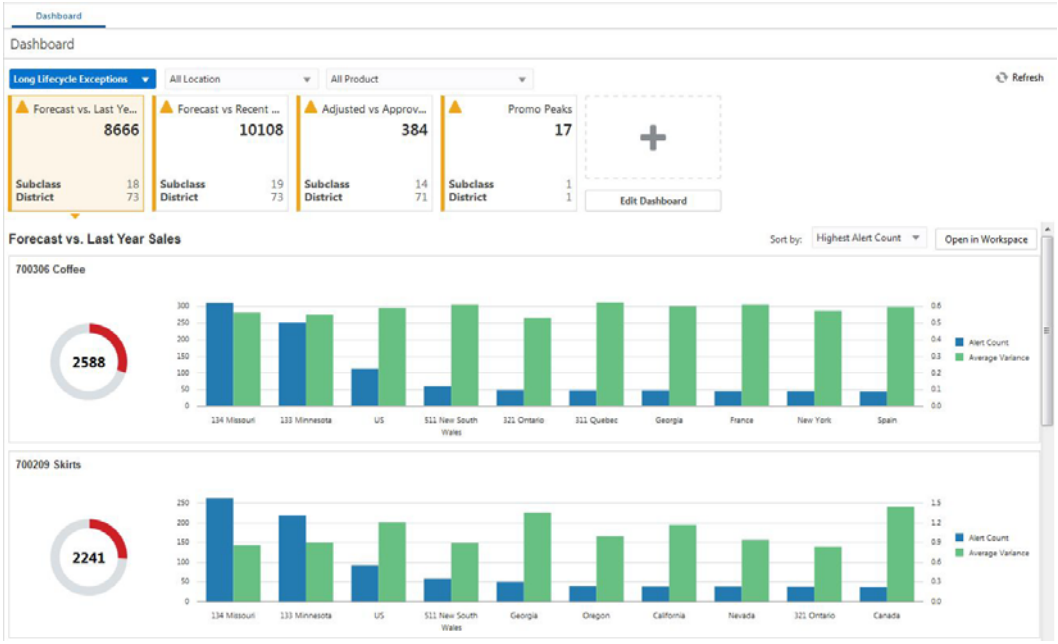
Percent Adjusted and Adjusted Volume

Finally, there is the Percent Adjusted tile, with the Adjusted Volume as the secondary metric. Here is displayed the percent of adjusted forecasts, and the volume resulted as the result of the adjustments. For instance, if the percent adjustment is high, but the adjusted volume is not significant, the analyst may want to spent time and effort on other areas of the merchandise.

Long Lifecycle Exceptions

This is the first of the exception profile types available in RDF CS. It is relevant to merchandise that sells year over year, like hardlines, grocery items or basic fashion items.

Figure 2–6 Long Lifecycle Exceptions



Exceptions

The information displayed in the tiles is based on exceptions, or business rules defined to check if the forecasts are within bounds with respect to some thresholds. The exceptions definitions and expressions are detailed in Appendix A, "Appendix: Forecast Exceptions & Alerts."

Number of Hits Count

The main metric in the tiles is the number of hits count which is based on the product and location filter settings. If the filter settings range products and locations to a narrower selection than, *All Product* and *All Location*, then the number should be reflected in the tile; that is, it should decrease.

Number of Subclass and Districts

The secondary metric on the tiles display the number of subclass and districts that are affected. Note that the dimensions are configurable.

Charts

Each tile comes with a set of charts where the hit count information is broken down to lower levels and sorted based on hit count, or average variance.

Note: The average variance represents how much off the forecast is versus its target. For example we compare the forecast against last year sales. If the sales are 10 units and the forecast is 15 units, the variance is 5 units. The average variance is the average of all the differences between forecast and last year sales.

The hit count represents how many times the forecast did not pass the configured business rules. The average variance represents by how much the forecasts were off. This is useful, because if a subclass is heavily alerted, but the forecasts only barely miss the threshold, the user may want to concentrate on other merchandise, potentially less alerted, but where the forecasts were off by a larger amount.

Forecast Review Workspace

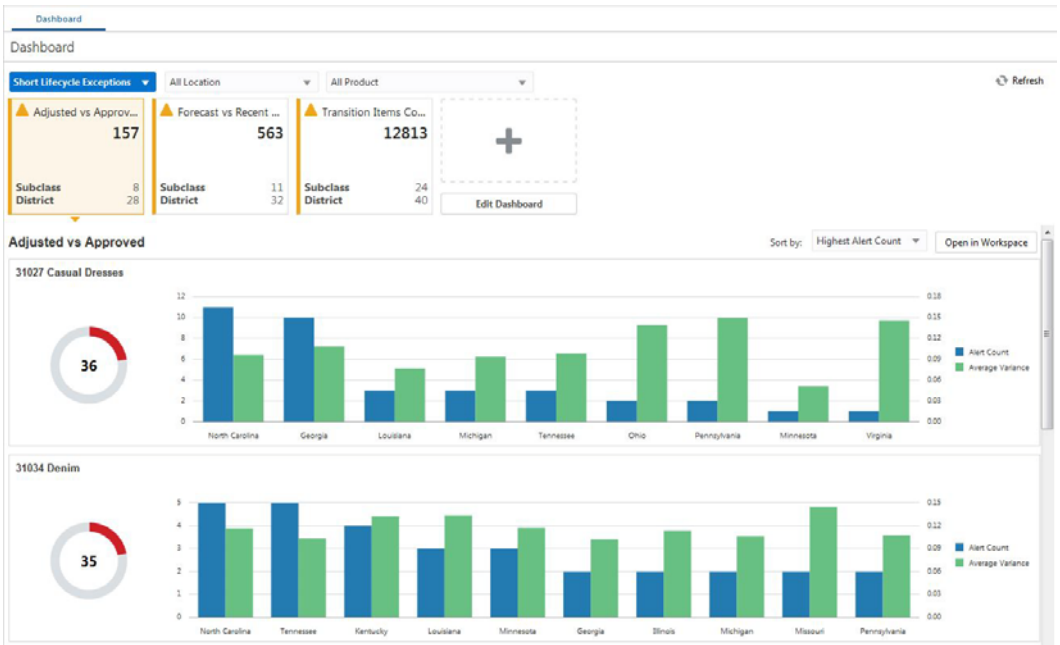
Finally, when a user makes a decision as to which merchandise and locations to review, the user can launch directly in the Forecast Review workspace by clicking **Open in Workspace**, with the locations and product ranged down to the desired selection.

Once in the workspace, the navigation is elegantly assisted by the workspace alerts.

Short Lifecycle Exceptions

This is the second of the exception profile types available in RDF CS. It is relevant to merchandise that sell for a relatively short period of time and then never again. This type of merchandise can be divided in fashion items, and items that have replacements.

Figure 2–7 Short Lifecycle Exceptions



Exceptions

The information presented in this dashboard is conceptually the same as the information for long lifecycle items. The difference is the business rules that are setup for this type of merchandise. The exceptions definitions and expressions are detailed in Appendix A, "Appendix: Forecast Exceptions & Alerts."

Forecast Review Workspace

Almost every exception has a counterpart in the Forecast Review workspace, as workspace alerts. Once the user decides in the dashboard what merchandise to review, she launches in the workspace, and navigates using the workspace alerts. The only exception that is a bit different is the "Transition Items Count." This exception alerts the user on the number of pre-season items that will start selling in the next few periods, and hence have to be managed. There is no workspace alert counterpart, because the items do not actively sell, and a review is not needed. The alert is useful to let the user know of the additional workload coming up in the next few periods.

3

New Item & Locations Task

This chapter describes these two features:

- Item attributes — which are used to make automatic like item recommendations for new items.
- New items — including:
  - workflow around handling
  - reviewing and approving their automatic like item recommendation
  - the manual process for like stores selection with new stores

In general, an item is eligible to be considered new if it satisfies the following condition:

- Forecast start date override is in the future *or* Sales history length is less than the time series duration parameter

In general, an item is eligible to be considered a like-item if its recent sales density is acceptable.

These workspaces help you achieve this task:

- New Item Maintenance Workspace
- New Store Maintenance Workspace
- Attribute Maintenance Workspace

New Item & Locations Workspaces, Steps, and Views

The following table lists the workspaces, steps, and views for the New Item & Locations task.

Workspace	Steps	Views
New Item Maintenance Workspace	Like Item - Select And Approve Step	Select and Approve View
	New Item Settings Step	New Item Basic Parameters View Eligible Like Item View
New Store Maintenance Workspace	Like Store Assignment Step	Product Like Store Assignment View

Workspace	Steps	Views
Attribute Maintenance Workspace	Review - Attributes Step	Attribute Match View New Item Attributes View Existing Item Thresholds Maintenance View Similarity Score View
	Review - Recommendations Step	Aggregate Level View Item & Location Recommendation View

New Item Maintenance Workspace

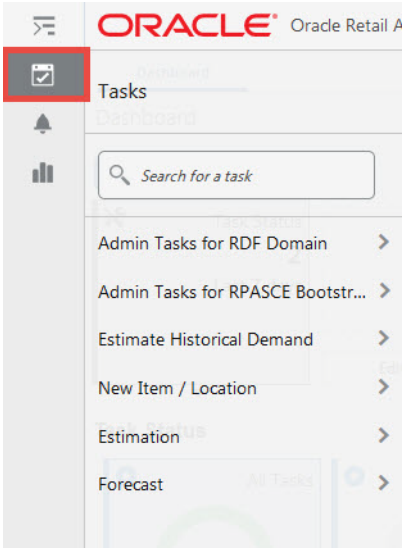
Note: The full functionality of the New Item Maintenance workspace is available only when item attributes are loaded and thus the like item recommendation is automated.

When item attributes are not available the like item has to be selected manually. However, the workspace is the same for both attribute and non-attribute cases. If at a later point in time, attributes become available, the automated like item recommendation can be used, without the need to patch the environment.

To build the New Item Maintenance workspace, perform these steps:

1. From the left sidebar menu, click the Task Module to view the available tasks.

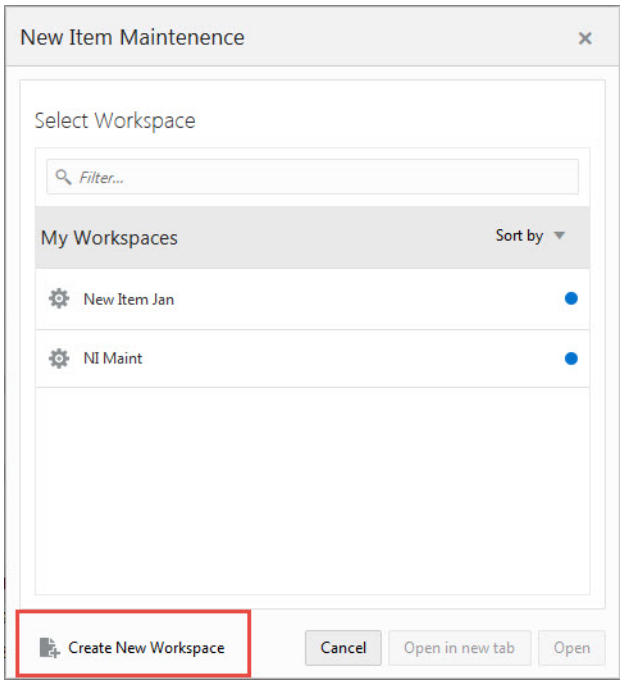
Figure 3–1 Task Module



2. Click the **New Item/Location** activity to access the available workspaces.
3. Click **New Item Maintenance**. The New Item Maintenance wizard opens.

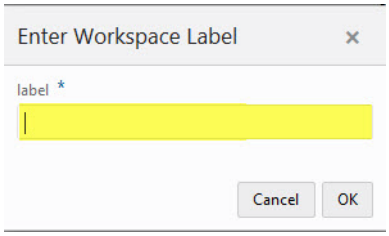
   You can open an existing workspace, but to create a new workspace, click **Create New Workspace**.

Figure 3–2 New Item Maintenance Wizard



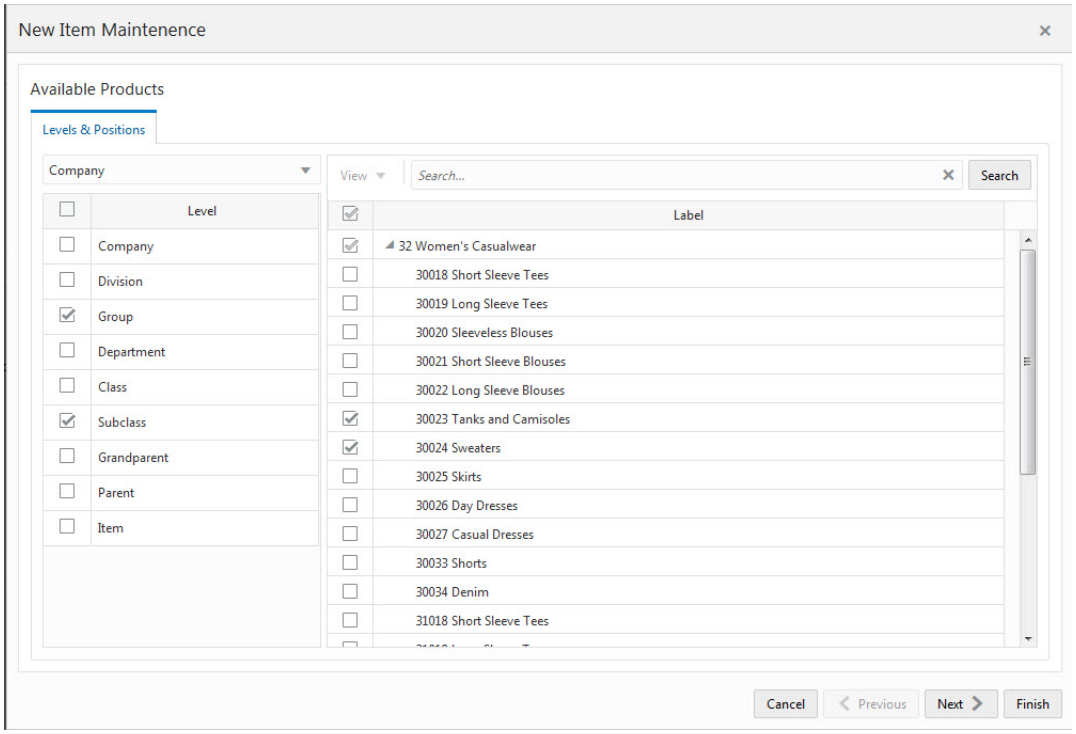
4. Enter a name for your new workspace in the label text box and click **OK**.

Figure 3–3 Enter Workspace Label



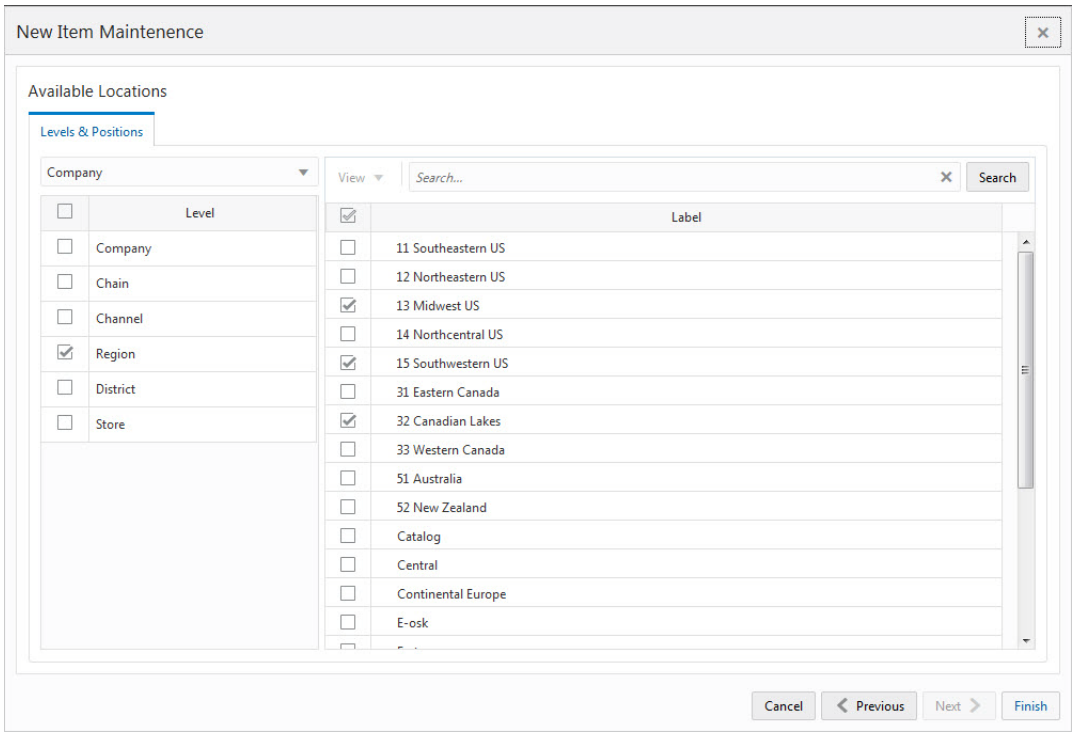
5. The Workspace wizard opens. Select the products you want to work with and click **Next**.

Figure 3–4 Workspace Wizard: Select Products



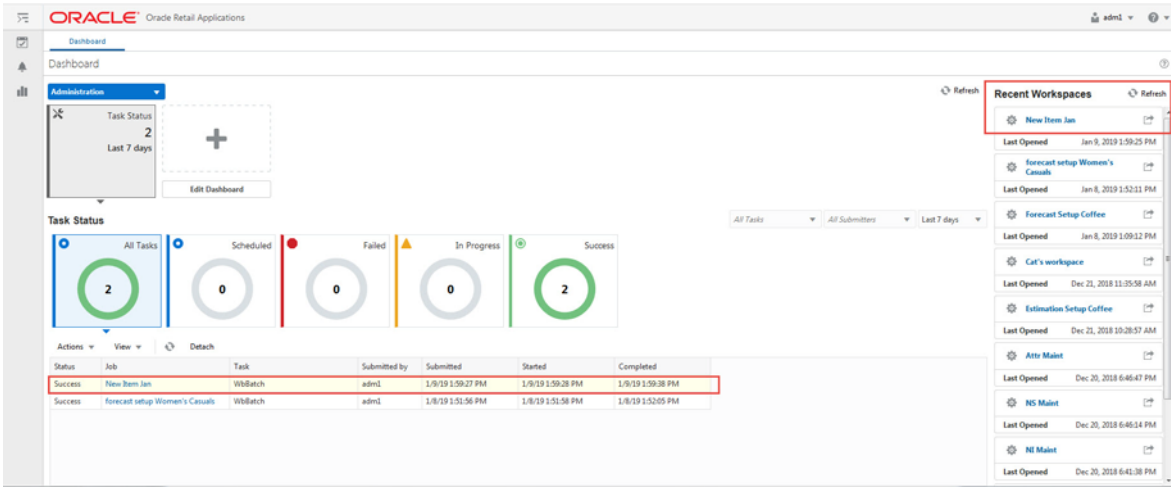
6. Select the locations you want to work with and click **Finish**.

Figure 3–5 Workspace Wizard: Select Locations



7. The wizard notifies you that your workspace is being prepared. Successful workspaces are available from the Dashboard.

Figure 3–6 Successful Workspace Build



Like Item - Select And Approve Step

This step contains views that allow you to review and approve like item recommendations, when item attributes are available. If attributes are not available, the like item selection is done manually. You also have visibility to which items are eligible to serve as like items for the new items by location.

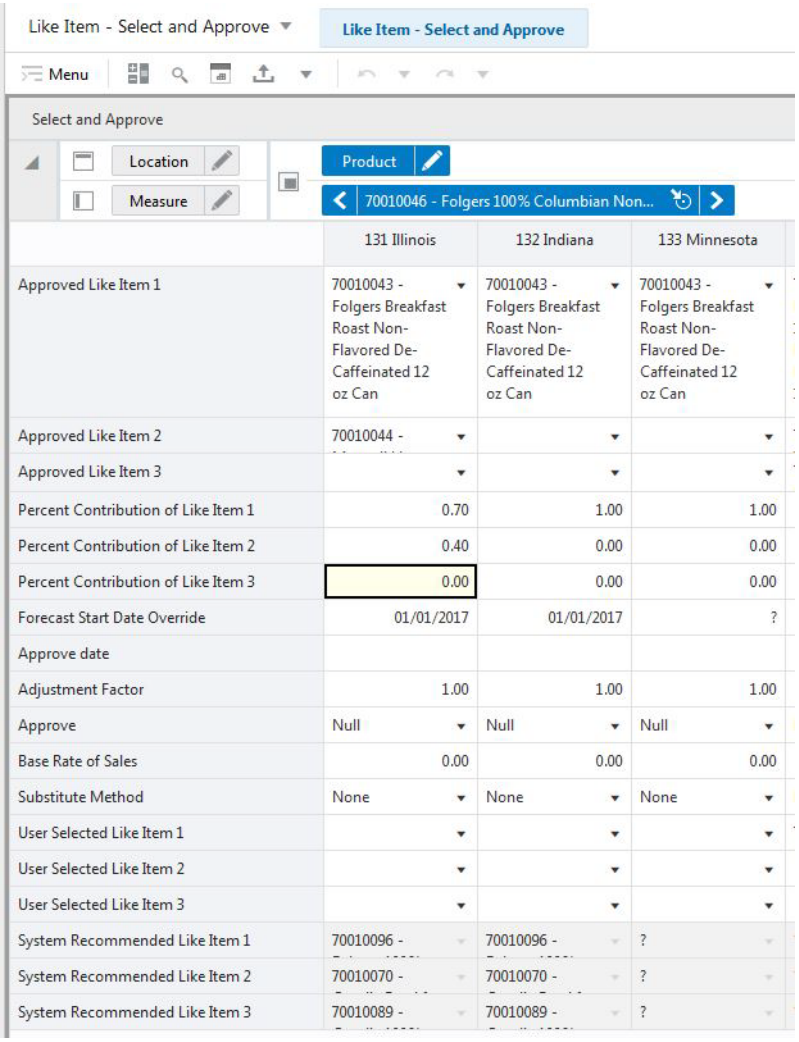
The available view is:

- Select and Approve View

Select and Approve View

The Select and Approve view is used to review the system generated like item recommendations if attributes are available. You can overwrite the recommendations, and/or trigger the approval, at the granular item / store intersection. This view has a custom menu, Approve New Items, and it approves the like items recommendations for new items. The recommendations are the system recommended or overrides, depending on the approve settings.

Figure 3–7 Select and Approve View



Measures: Select and Approve View

The Select and Approve view contains the following measures:

Approve Date

This measure displays the date when the like item recommendation was approved by running the custom menu.

Approve

This measure determines which recommendations are approved the next time the custom menu is run. The options are:

- Null— no like item is recommended.
- Approve System — the system recommended like item is approved.
- Approve Override — your selected like item is approved. Note that if no user selections are available, then no like item is approved.

Substitute Method

This measure displays a list where you can select the substitute method. When a Substitute Method is used to forecast, the method set for an intersection is cleared once the Default Forecast Start Date is greater than the Forecast Start Date Override plus the Like TS Duration for the intersection. Valid options are:

Substitute Method	Description
None	No forecast is created for the time series.
Like Item	The forecast is created based on the forecast of up to three like items. The three like items can be selected manually, and the choices are entered in the User Selected Like items measures. The task can also be automated if attributes are available. RDF CS then suggests three like items in the system recommended like item measures. The forecast for the new item will be a combination of the forecasts of the like items, given by: *Forecast new item = (forecast like item1*percentage contribution of like item1 + forecast like item2*percentage contribution of like item2 + forecast like item3*percentage contribution of like item3) * Adjustment Factor*
Base Rate of Demand	RDF CS calculates a base rate of demand based on items in the same class (dimension is configurable). The forecast for the new item calculates as: *Forecast at time t = base rate of demand * seasonality at time t (coming from escalation level) * promo and price effects (coming from pooling level)*
User Input	This method is very similar to Base Rate of Demand, with the difference that you have to manually specify a base rate of demand. The forecast is then generated using the same formula as for Base Rate of Demand.

Percent Contribution of Like Item 1

This measure determines the percentage of Like item 1's forecast that is going to be applied towards the forecast of the new item.

Percent Contribution of Like Item 2

This measure determines the percentage of Like item 2's forecast that is going to be applied towards the forecast of the new item.

Percent Contribution of Like Item 3

This measure determines the percentage of Like item 3's forecast that is going to be applied towards the forecast of the new item.

Adjustment Factor

This measure determines how much the combined forecasts are scaled up or down to create the forecast of the new item.

System Recommended Like Item 1

This measure displays the top like item for a given store.

System Recommended Like Item 2

This measure displays the second like item for a given store.

System Recommended Like Item 3

This measure displays the third like item for a given store.

User Selected Like-Item 1

This measure allows you to override the top like item for a given store.

User Selected Like-Item 2

This measure allows you to override the second like item for a given store.

User Selected Like-Item 3

This measure allows you to override the third like item for a given store.

Base Rate of Sales

This measure represents the average sales of a new item/store combination. It is used when specifying *Base Rate of Sales New SKU* as the Substitution Method to create a forecast for the new item/store combination. The measure can be generated in another application and loaded into RDF, or it can be manually entered by a user.

Forecast Start Date Override

This measure represents the date to start forecasting for an item/location combination. This measure can be set in the future if using like-item or Sister-Store functionality, and, upon reaching that time, the forecast is generated. If this date is set to the past, it is ignored in favor of the Forecast Start Date from the Forecast Setup Workspace. This means that the Forecast Start Date for this intersection needs to be edited once it is no longer in the future. For like-item or sister store, the Forecast Start Date and the History Start Date should be set to the same date. It is important to understand how Forecast Start Date should be used in conjunction with Forecast End Date. No value is in this measure if the system default set in the Forecast Setup Workspace is to be used.

Note: This measure can also be set in the Forecast Setup Workspace. Changes to this measure can be seen in the Forecast Setup task. The most recent commit (between either of the tasks) is the value used by the system.

New Item Settings Step

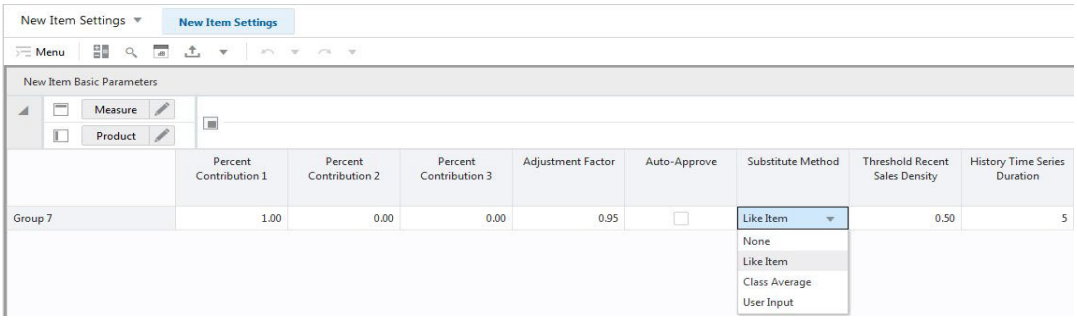
The available views are:

- New Item Basic Parameters View
- Eligible Like Item View

New Item Basic Parameters View

The New Item Basic Parameters view is used to set default values for some parameters related to the new item functionality.

Figure 3–8 New Item Basic Parameters View



Measures: New Item Basic Parameters View

The New Item Basic Parameters view contains the following measures:

Percent Contributions

Percent Contribution1, Percent Contribution2, Percent Contribution3

If the like item substitution method is selected, the contribution methods specify what percent of a like item's forecast will be copied to the new item.

Adjustment Factor

If the forecast for the new item is generated using the like item substitution method, the value of the adjustment factor is multiplied to the like items forecast, to allow the flexibility to adjust up or down.

Auto-approve

You decide if automatic like item recommendations are automatically approved by selecting this measure. If the automatic like item recommendations are not automatically approved, the system suggested like items are still displayed, but not used in forecast generation.

Substitute Method

This measure displays a list where you can select the substitute method. When a Substitute Method is used to forecast, the method set for an intersection is cleared once the Default Forecast Start Date is greater than the Forecast Start Date Override plus the Like TS Duration for the intersection. Valid options are:

Substitute Method	Description
None	No forecast is created for the time series.
Like Item	The forecast is created based on the forecast of up to three like items. The three like items can be selected manually, and the choices are entered in the User Selected Like items measures. The task can also be automated if attributes are available. RDF CS then suggests three like items in the system recommended like item measures. The forecast for the new item will be a combination of the forecasts of the like items, given by: *Forecast new item = (forecast like item1*percentage contribution of like item1 + forecast like item2*percentage contribution of like item2 + forecast like item3*percentage contribution of like item3) * Adjustment Factor*

Substitute Method	Description
Base Rate of Demand	RDF CS calculates a base rate of demand based on items in the same class (dimension is configurable). The forecast for the new item calculates as: *Forecast at time t = base rate of demand * seasonality at time t (coming from escalation level) * promo and price effects (coming from pooling level)*
User Input	This method is very similar to Base Rate of Demand, with the difference that you have to manually specify a base rate of demand. The forecast is then generated using the same formula as for Base Rate of Demand.

Threshold Recent Sales Density

In this measure, you enter the threshold for the data density. If the actual density is larger than the threshold, the time series qualifies to serve as like item/location for a new/item/location. The data density is calculated as:

data density = number of periods with demand larger than zero / total length of demand

For a time series with the following demand values:

0,1,0,1,0,today

The data density is 2/4 = 50%

History Time Series Duration

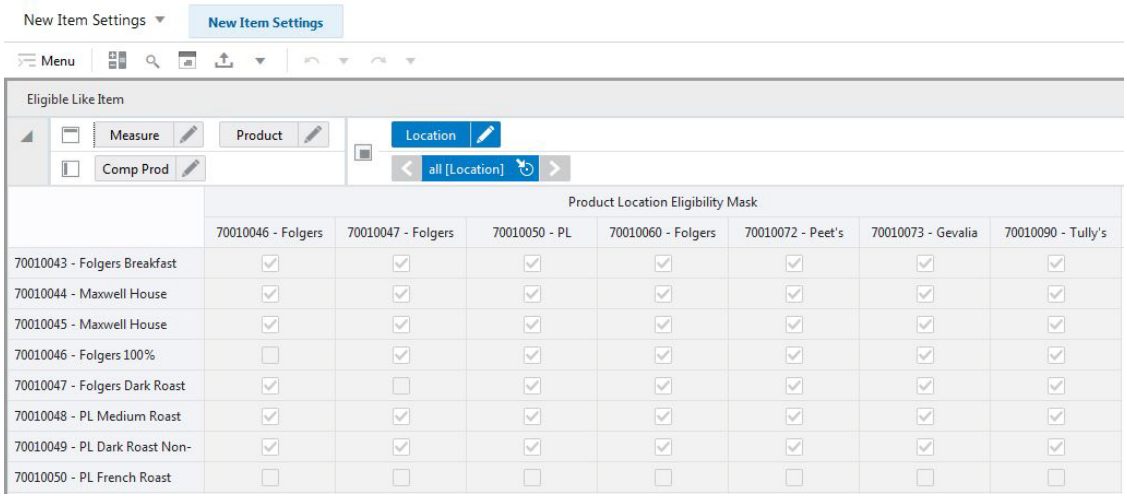
In this measure you can enter the threshold for the historical demand duration to determine if a time series is considered. If the demand history is less than the threshold, the forecast of the new time series is generated using the new item/store functionality. If the demand length is larger than the threshold, the time series is not considered new anymore, and its own demand is used to generate the forecast.

> **Tip:** Consider the threshold is set to five periods, and the first week of sales is 10 weeks ago, In this case, the item is not considered new anymore. Whatever like item strategy was selected for the item is not applied anymore and the forecast is generated based on its own demand.

Eligible Like Item View

The Eligible Like Item view is used to display what items are eligible to be like items for each new item included in the view.

Figure 3–9 Eligible Like Item View



Measures: Eligible Like Item View

The Eligible Like Item view contains the following measure:

Product Location Eligibility Mask

This measure displays what items are eligible to be like items for each new item included in the view. Note how the eligibility of an item can be different by location.

New Store Maintenance Workspace

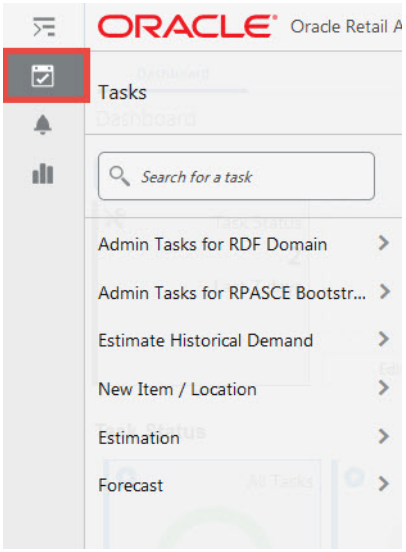
Use this workspace to assign like stores to handle forecasting for new stores. The like store assignment is manual and there is a good reason for it. New stores have a large financial impact, so it makes sense having a business person making the like store selection.

It is probably more appropriate than going with an automatic selection based on something like store attributes. Also, new store introductions are infrequent compared to new item introductions, so manually handling new stores is not a significant overhead activity.

To build the New Store Maintenance workspace, perform these steps:

1. From the left sidebar menu, click the Task Module to view the available tasks.

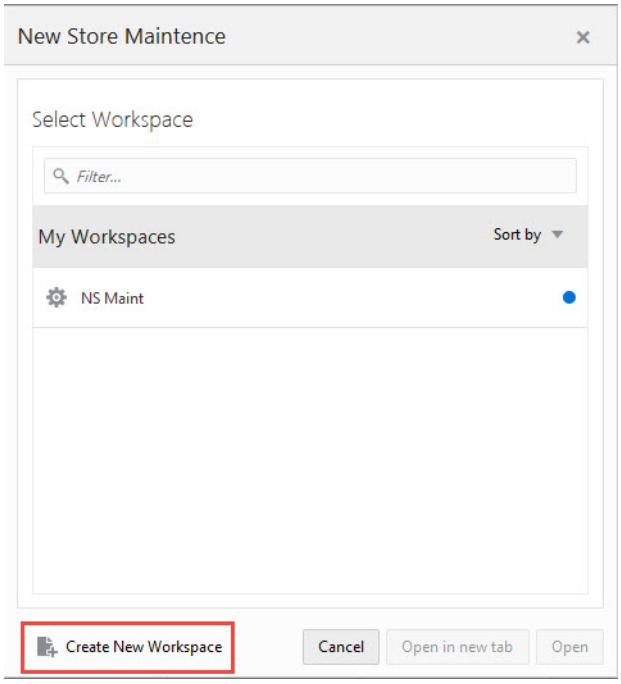
Figure 3–10 Task Module



2. Click the **New Item/Location** activity to access the available workspaces.
3. Click **New Store Maintenance**. The New Store Maintenance wizard opens.

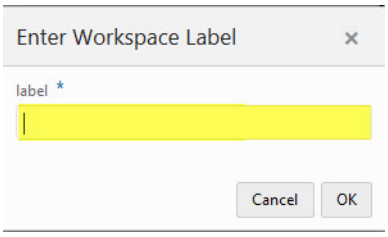
   You can open an existing workspace, but to create a new workspace, click **Create New Workspace**.

Figure 3–11 New Store Maintenance Wizard



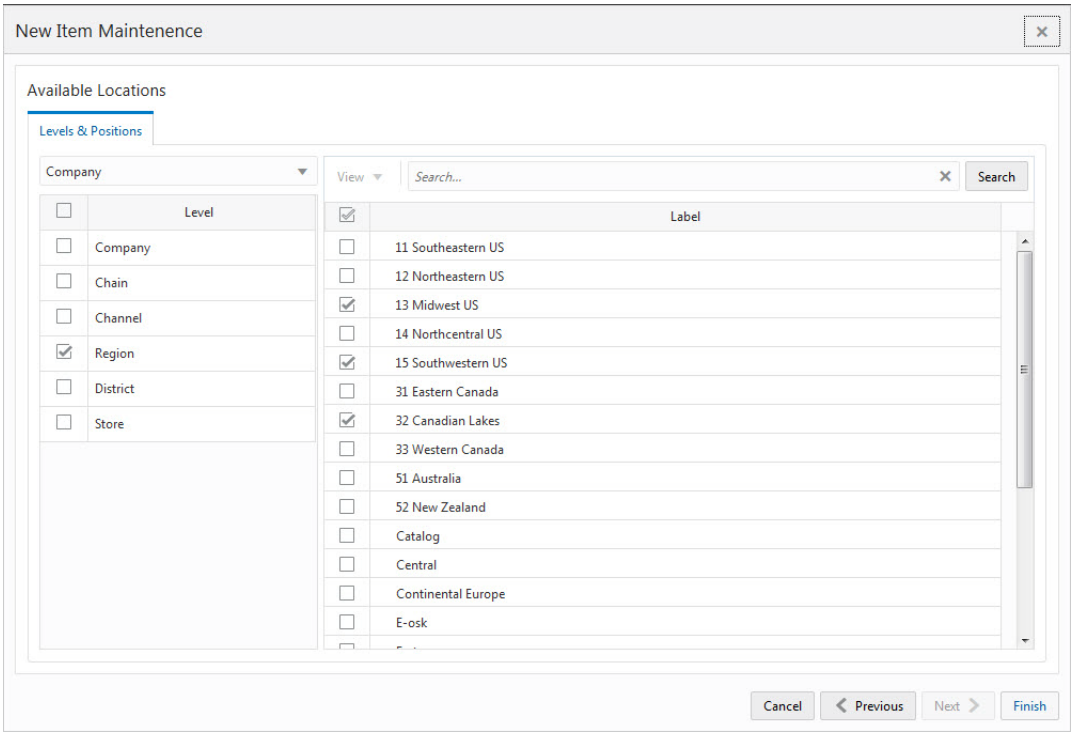
4. Enter a name for your new workspace in the label text box and click **OK**.

Figure 3–12 Enter Workspace Label



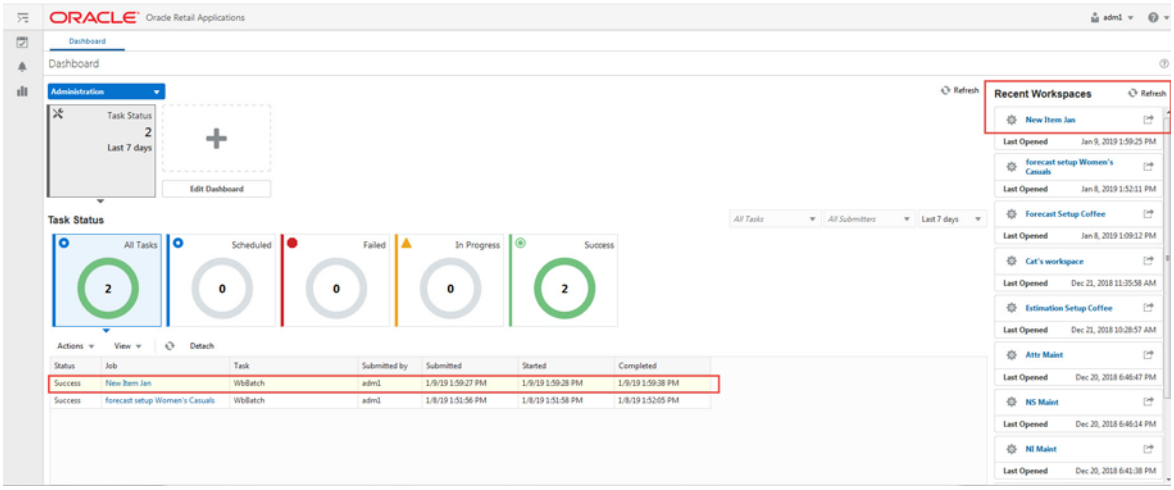
5. Select the locations you want to work with and click **Finish**.

Figure 3–13 Workspace Wizard: Select Locations



6. The wizard notifies you that your workspace is being prepared. Successful workspaces are available from the Dashboard.

Figure 3–14 Successful Workspace Build



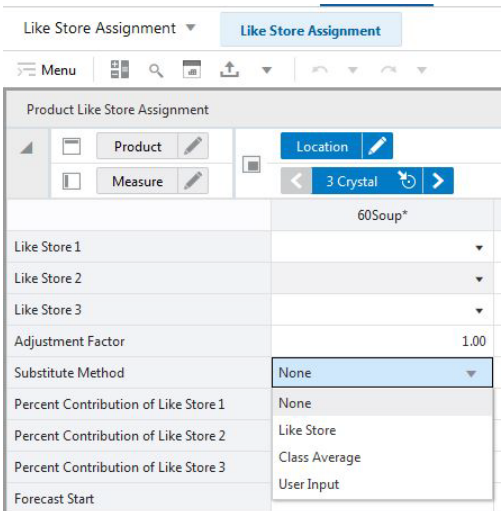
Like Store Assignment Step

This step contains the Product Like Store Assignment View.

Product Like Store Assignment View

The Product Like Store Assignment view is at the intersection of prod/location, so all parameters can vary by product. For example, a new store opening in the Midwest can have a Like Store from Alaska for items in the Shovels department. However, for summer items, the Like Store is picked from the Northeast region.

Figure 3–15 Product Like Store Assignment View



Measures: Product Like Store Assignment View

The Product Like Store Assignment view contains the following measures:

Like Store 1

In this measure, you can specify the first like store. Note how the like store can be different by product. In RDF, a different first like store selection can be made for every subclass.

Like Store 2

In this measure, you can specify the second like store. Note how the like store can be different by product. In RDF, a different second like store selection can be made for every subclass.

Like Store 3

In this measure, you can specify the third like store. Note how the like store can be different by product. In RDF, a different third like store selection can be made for every subclass.

Adjustment Factor

This measure determines how much the combined forecasts are scaled up or down to create the forecast of the new item.

Substitute Method

This measure displays a list where you can select the substitute method. When a Substitute Method is used to forecast, the method set for an intersection is cleared once the Default Forecast Start Date is greater than the Forecast Start Date Override plus the Like TS Duration for the intersection. Valid options are:

Substitute Method	Description
None	No forecast is created for the time series.
Like Store	You can provide up to three stores with similar seasonality patterns. The forecast for the new store will be a combination of the forecasts of the like stores that you selected. *Forecast new store = (forecast like store1*percentage contribution of like store1 + forecast like store2*percentage contribution of like store2 + forecast like store3*percentage contribution of like store3) * Adjustment Factor*
Base Rate of Demand	RDF CS calculates a base rate of demand based on the stores in a similar region (dimension is configurable). The forecast for the new store is then calculated as: *Forecast at time t = base rate of demand * seasonality at time t (coming from escalation level) * promo and price effects (coming from pooling level)*
User Input	This method is very similar to Base Rate of Demand, with the difference that you have to manually specify a base rate of demand. The forecast is then generated using the same formula as Base Rate of Demand.

Percent Contribution of Like Store 1

This measure determines the percentage of Like Store 1's forecast that is going to be applied towards the forecast of the new store.

Percent Contribution of Like Store 2

This measure determines the percentage of Like Store 2's forecast that is going to be applied towards the forecast of the new store.

Percent Contribution of Like Store 3

This measure determines the percentage of Like Store 3's forecast that is going to be applied towards the forecast of the new store.

Forecast Start

This measure specifies the first date for which forecast is generated for the new store.

Attribute Maintenance Workspace

This workspace is intended to review like item recommendations, as well as metrics that support the recommendations. The recommendations are driven by similarity among items, which in turns is based on how close a new item's attributes are compared to all existing items' attributes. Note that attributes and attribute weights need to be provided to make full use of the attribute-based like item recommendation functionality. If they are not provided this results in similarity scores to be zero. However, it does not prevent the workbook being built.

The product wizard has a pre-range mask applied; it filters the products such that only items that were identified as new by the system are displayed.

If the system has not identified any new items, then the pre-range mask is empty and the workbook will not build.

For an item to be considered new, one of these two conditions needs to be true:

- The New Item Forecast Start Date measure stores a date that is in the future (past RPAS_TODAY). The measure is available in the New Item Maintenance workbook, and the dates can be loaded - if interfaced from a legacy system such as RMS - or the user can manually set them.
- The item has been selling but only for a short period of time. The length is defined by the History Time Series Duration. So an item is still considered new if the date it started selling plus the number stored in the History TS Duration is larger than RPAS_TODAY. The History Time Series Duration is also available in the New Item Maintenance workbook.

> **Note:** If either of these two measures are updated in the New Item Maintenance workspace, some measures are calculated. Specifically, the `nitfcststovr` measure, which is fed into the calculation of the prerange mask for the Attribute Maintenance workspace.

In the views, the product hierarchy positions represent the new items. The Comp Prod hierarchy positions represent existing items. The new items dictate which existing items are automatically brought in the workbook. For instance, if all new items belong to the coffee class, only the existing items from the coffee class are brought in the workbook as Comp Prod positions.

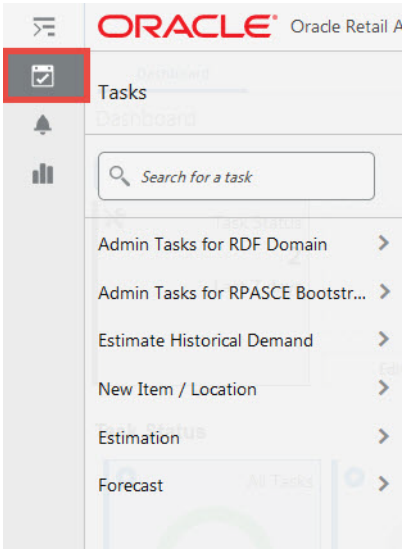
If there are two new items, a soda and a new coffee brand, then the existing items brought in the workbook are only items from the coffee and the soda classes.

The definition for an existing item is that it has been selling for a period longer than defined in the History TS Duration measure.

To build the Attribute Maintenance workspace, perform these steps:

1. From the left sidebar menu, click the Task Module to view the available tasks.

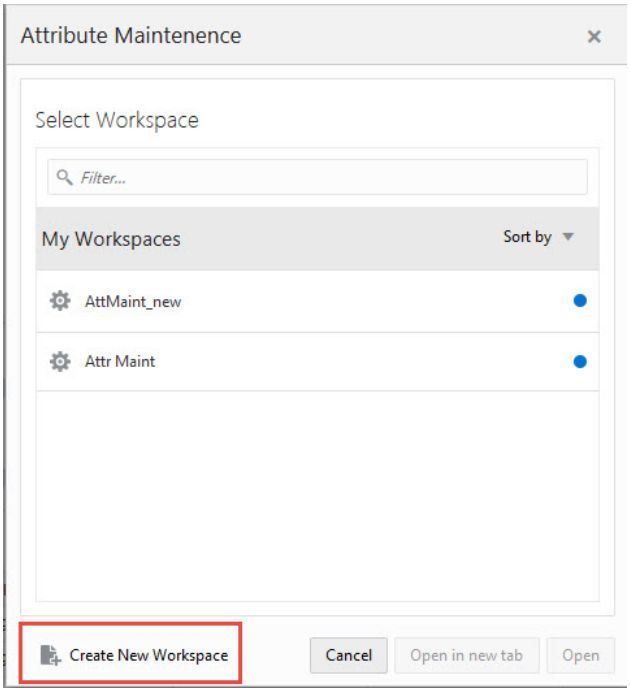
Figure 3–16 Task Module



2. Click the **New Item/Location** activity to access the available workspaces.
3. Click **Attribute Maintenance**. The Attribute Maintenance wizard opens.

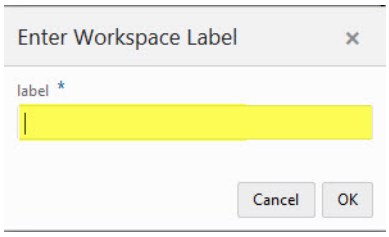
   You can open an existing workspace, but to create a new workspace, click **Create New Workspace**.

Figure 3–17 Attribute Maintenance Wizard



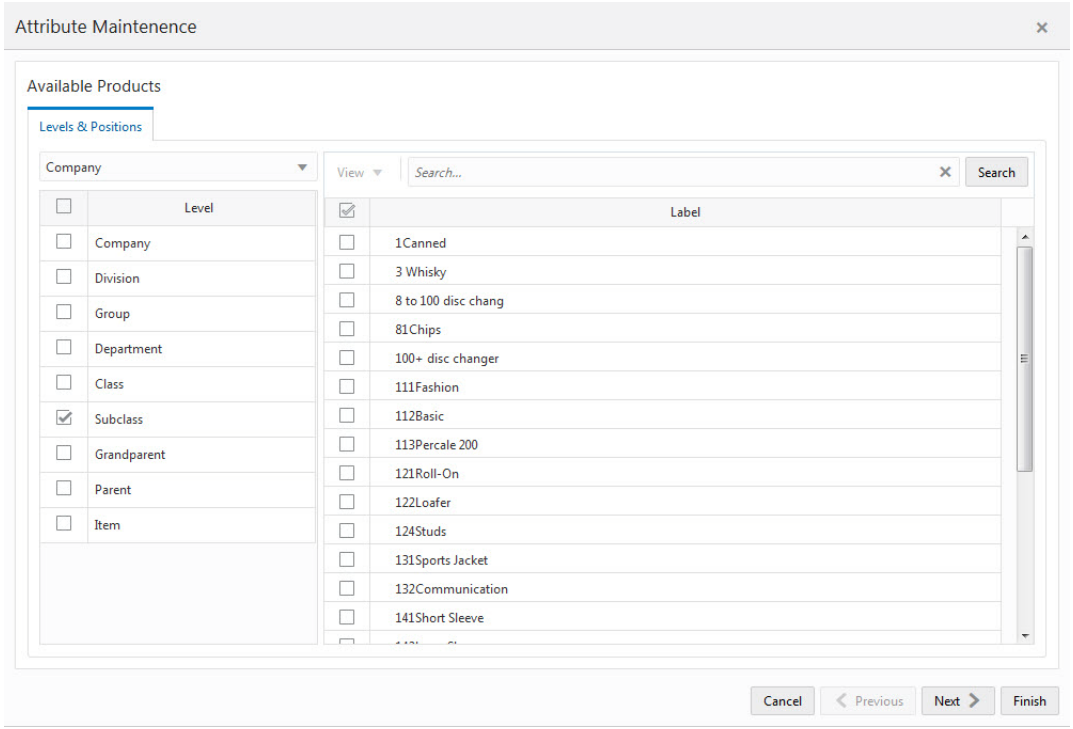
4. Enter a name for your new workspace in the label text box and click **OK**.

Figure 3–18 Enter Workspace Label



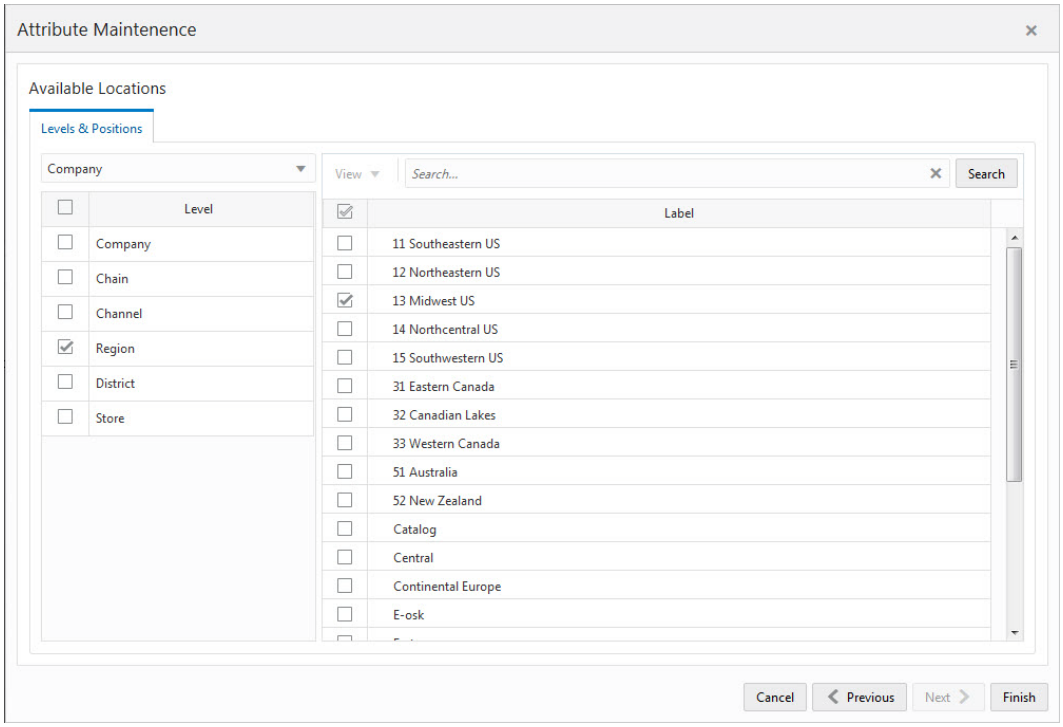
5. Select the products you want to work with and click **Next**.

Figure 3–19 Workspace Wizard: Select Products



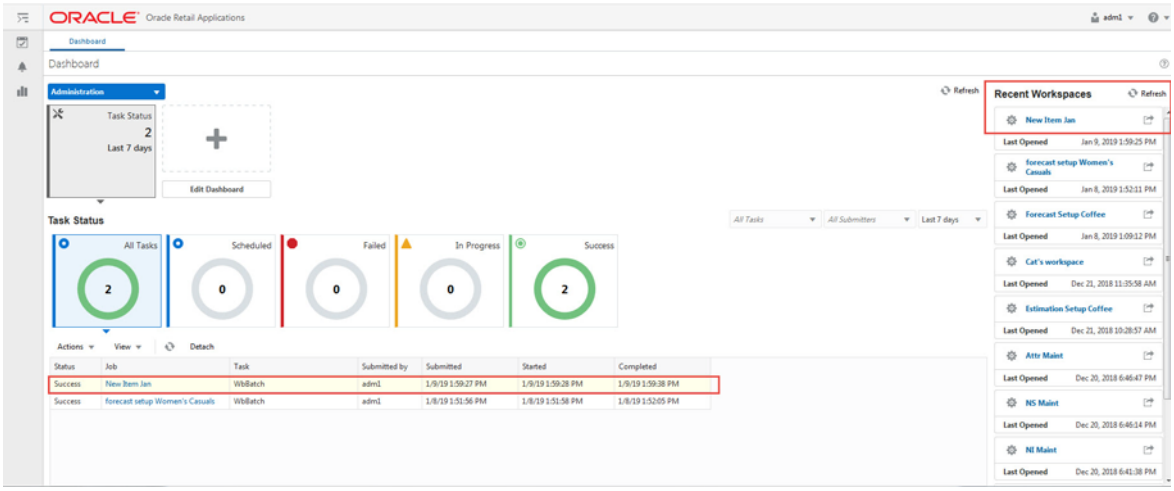
6. Select the locations you want to work with and click **Finish**.

Figure 3–20 Workspace Wizard: Select Locations



7. The wizard notifies you that your workspace is being prepared. Successful workspaces are available from the Dashboard.

Figure 3–21 Successful Workspace Build



The Attribute Maintenance workspace is built.

Review - Attributes Step

This step contains views that allow you to review attributes for new and existing items. Also, they show how much alike items are and the best choices for like items.

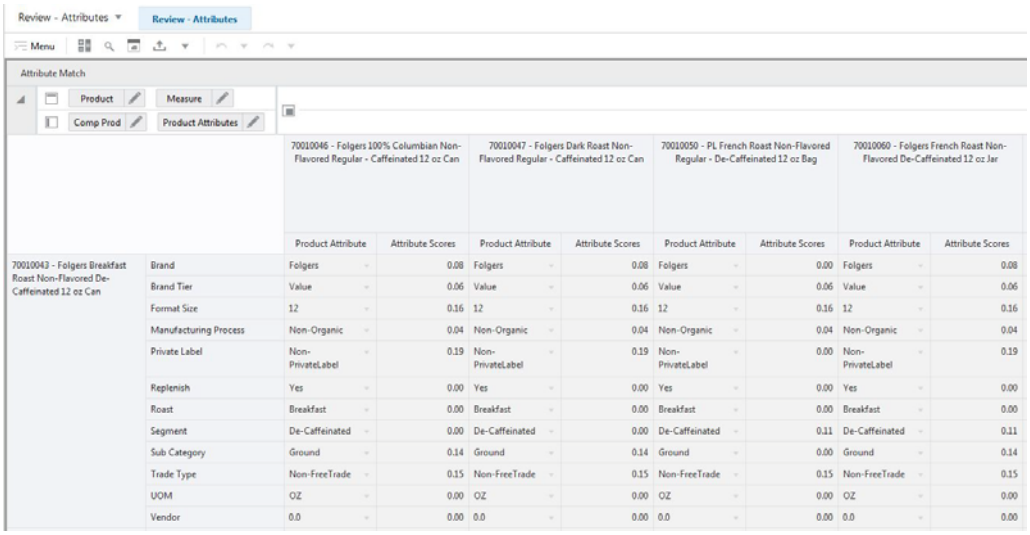
The available views are:

- Attribute Match View
- New Item Attributes View
- Existing Item Thresholds Maintenance View
- Similarity Score View

Attribute Match View

The Attribute Match view is used to review the attributes of new and existing items and how well they match.

Figure 3–22 Attribute Match View



Measures: Attribute Match View

The Attribute Match view contains the following measures:

Product Attribute Label

This measure displays the label of the product attribute. For instance for the brand attribute the label can be 'private label'. Or for size, it can be 12oz.

Attribute Scores

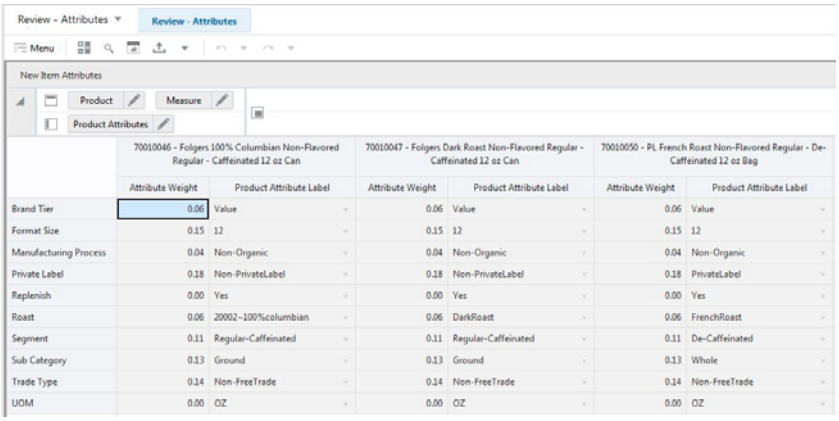
This measure displays the quantitative fit of the attribute values between new and existing items. For instance we can compare the UOM attribute between a coffee pack and a pair of jeans. The relevance of matching ounces and inches may not be very high, and the attribute score is likely zero. However, if we compare the color attribute of a shirt and a t-shirt, the match be more relevant and the score is larger than zero.

This measure incorporates the goodness of the fit in attributes between new and existing items, as well as how important an attribute is for the new item. If the new item is a carbonated drink, the brand attribute may be much more relevant than the price tier, because the consumer is prepared to pay a higher price for a brand item.

New Item Attributes View

The New Item Attributes view displays attribute information about new items.

Figure 3–23 New Item Attributes View



	70010046 - Folgers 100% Columbian Non-Flavored Regular - Caffeinated 12 oz Can		70010047 - Folgers Dark Roast Non-Flavored Regular - Caffeinated 12 oz Can		70010050 - PL French Roast Non-Flavored Regular - De-Caffeinated 12 oz Bag	
	Attribute Weight	Product Attribute Label	Attribute Weight	Product Attribute Label	Attribute Weight	Product Attribute Label
Brand Tier	0.06	Value	0.06	Value	0.06	Value
Format Size	0.15	12	0.15	12	0.15	12
Manufacturing Process	0.04	Non-Organic	0.04	Non-Organic	0.04	Non-Organic
Private Label	0.18	Non-PrivateLabel	0.18	Non-PrivateLabel	0.18	PrivateLabel
Replenish	0.00	Yes	0.00	Yes	0.00	Yes
Roast	0.06	20002~100%columbian	0.06	DarkRoast	0.06	FrenchRoast
Segment	0.11	Regular-Caffeinated	0.11	Regular-Caffeinated	0.11	De-Caffeinated
Sub Category	0.13	Ground	0.13	Ground	0.13	Whole
Trade Type	0.14	Non-FreeTrade	0.14	Non-FreeTrade	0.14	Non-FreeTrade
UOM	0.00	OZ	0.00	OZ	0.00	OZ

Measures: New Item Attributes View

The New Item Attributes view contains the following measures:

Attribute Weight

This measure displays the relative importance of the attributes for a given new item. While the flavor family may not be important for a t-shirt, and the attribute has a weight of zero, the brand and color attributes definitely are. Their relative importance may be 0.2 for the color and 0.3 for the brand.

> **Note:** That the sum of all attribute weights does not need to be 1 for every item. The automatic like item recommendation algorithm is taking care of it. The most likely scenario is that this measure is calculated in a data mining application and loaded into RDF CS.

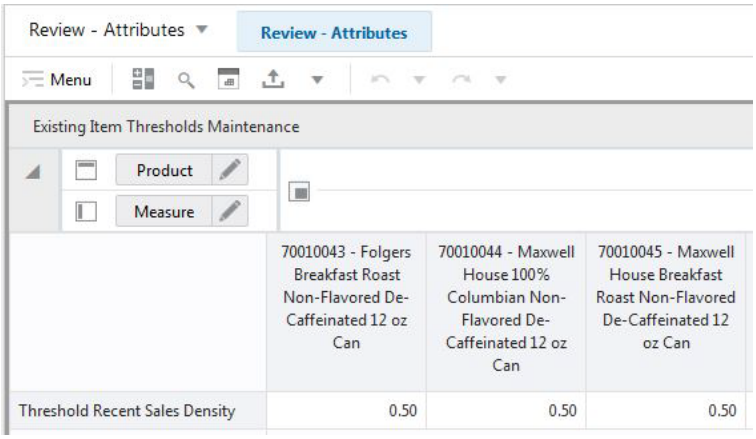
Product Attribute Label

This measure displays the label of the product attribute. For instance for the brand attribute the label can be private label. Or for size, it can be 12oz.

Existing Item Thresholds Maintenance View

The Existing Item Thresholds Maintenance view is used to adjust the parameter that decides if an item is eligible to be selected as like item for a new item.

Figure 3–24 Existing Item Thresholds Maintenance View



Measure: Existing Item Thresholds Maintenance View

The Existing Item Threshold view contains the following measure:

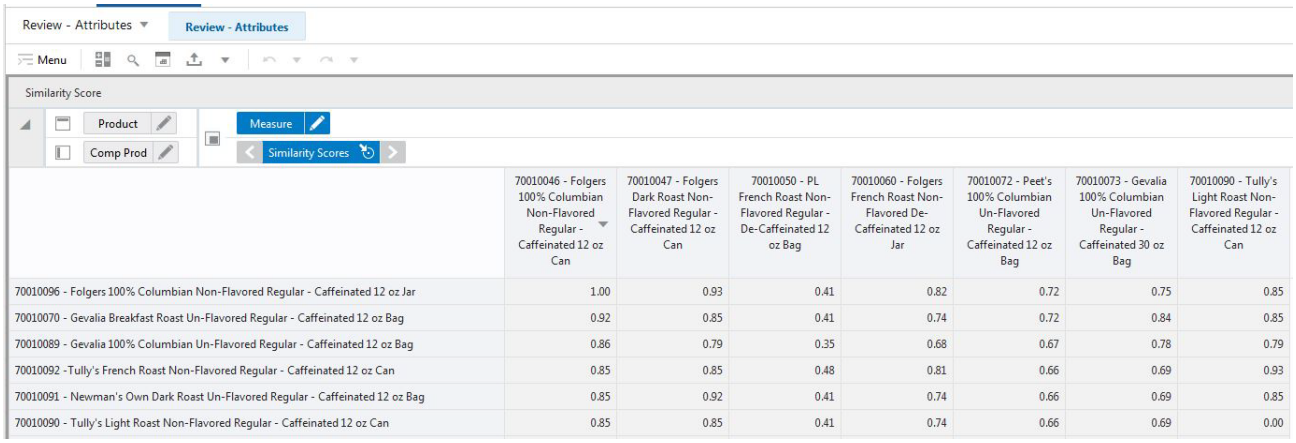
Threshold Recent Sales Density

The value of this measure decides if an item can be recommended as like item for new items. The idea behind determining the eligibility is that an item needs to be actively selling to be eligible. We don't want a stale item, or item with no sales to be selected as like item even if item attributes match very well. To determine the eligibility we first calculate the count of non-zero sales in the most recent periods given by the TS duration. Then we divide the count by the TS duration to get the sales density. Finally, the density is compared with the value of the threshold. If it is larger, then the item can be assigned as like item.

Similarity Score View

The Similarity Score view is at the item/item RHS/attribute intersection. The item dimension contains new item which are manually selected during the wizard process. The new item alert can also be used to range down the items to a relevant selection. The item RHS dimension is ranged to only relevant existing items that are eligible to be like items. The measure shows the calculated similarity between new and existing items.

Figure 3–25 Similarity Score View



	70010046 - Folgers 100% Columbian Non-Flavored Regular - Caffeinated 12 oz Can	70010047 - Folgers Dark Roast Non-Flavored Regular - Caffeinated 12 oz Can	70010050 - PL French Roast Non-Flavored Regular - De-Caffeinated 12 oz Bag	70010060 - Folgers French Roast Non-Flavored De-Caffeinated 12 oz Jar	70010072 - Peet's 100% Columbian Un-Flavored Regular - Caffeinated 12 oz Bag	70010073 - Gevalia 100% Columbian Un-Flavored Regular - Caffeinated 30 oz Bag	70010090 - Tully's Light Roast Non-Flavored Regular - Caffeinated 12 oz Can
70010096 - Folgers 100% Columbian Non-Flavored Regular - Caffeinated 12 oz Jar	1.00	0.93	0.41	0.82	0.72	0.75	0.85
70010070 - Gevalia Breakfast Roast Un-Flavored Regular - Caffeinated 12 oz Bag	0.92	0.85	0.41	0.74	0.72	0.84	0.85
70010089 - Gevalia 100% Columbian Un-Flavored Regular - Caffeinated 12 oz Bag	0.86	0.79	0.35	0.68	0.67	0.78	0.79
70010092 -Tully's French Roast Non-Flavored Regular - Caffeinated 12 oz Can	0.85	0.85	0.48	0.81	0.66	0.69	0.93
70010091 - Newman's Own Dark Roast Un-Flavored Regular - Caffeinated 12 oz Bag	0.85	0.92	0.41	0.74	0.66	0.69	0.85
70010090 - Tully's Light Roast Non-Flavored Regular - Caffeinated 12 oz Can	0.85	0.85	0.41	0.74	0.66	0.69	0.00

Measures: Similarity Score View

The Similarity Score view contains the following measure:

Similarity Scores

The Similarity Score is a measure of how well a new item's demand behavior can be modeled after a certain existing item's. The higher the score, the better the fit, and the better the chance that the existing item is going to be the like item

Review - Recommendations Step

This step contains views that allow you to review the top choices for like items for the new items, based on similarity among items.

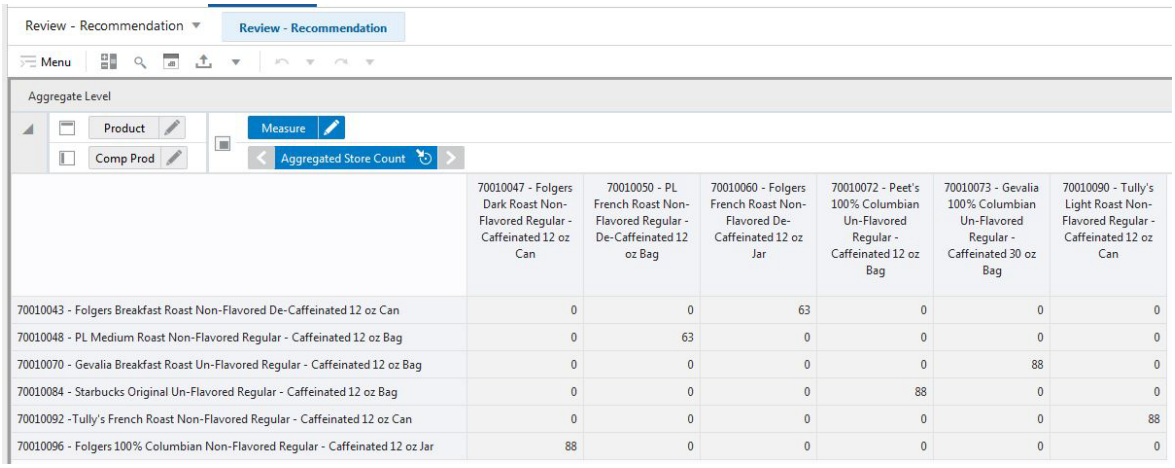
The available views are:

- Aggregate Level View
- Item & Location Recommendation View

Aggregate Level View

The Aggregate Level view is at the item/item RHS intersection. The item represents the new items, while the item RHS represents the like items. The item RHS dimension has only positions that were identified as like items for new items.

Figure 3–26 Aggregate Level View



	70010047 - Folgers Dark Roast Non-Flavored Regular - Caffeinated 12 oz Can	70010050 - PL French Roast Non-Flavored Regular - De-Caffeinated 12 oz Bag	70010060 - Folgers French Roast Non-Flavored De-Caffeinated 12 oz Jar	70010072 - Peet's 100% Columbian Un-Flavored Regular - Caffeinated 12 oz Bag	70010073 - Gevalia 100% Columbian Un-Flavored Regular - Caffeinated 30 oz Bag	70010090 - Tully's Light Roast Non-Flavored Regular - Caffeinated 12 oz Can
70010043 - Folgers Breakfast Roast Non-Flavored De-Caffeinated 12 oz Can	0	0	63	0	0	0
70010048 - PL Medium Roast Non-Flavored Regular - Caffeinated 12 oz Bag	0	63	0	0	0	0
70010070 - Gevalia Breakfast Roast Un-Flavored Regular - Caffeinated 12 oz Bag	0	0	0	0	88	0
70010084 - Starbucks Original Un-Flavored Regular - Caffeinated 12 oz Bag	0	0	0	88	0	0
70010092 -Tully's French Roast Non-Flavored Regular - Caffeinated 12 oz Can	0	0	0	0	0	88
70010096 - Folgers 100% Columbian Non-Flavored Regular - Caffeinated 12 oz Jar	88	0	0	0	0	0

Measures: Aggregate Level View

The Aggregate Level view contains the following measure:

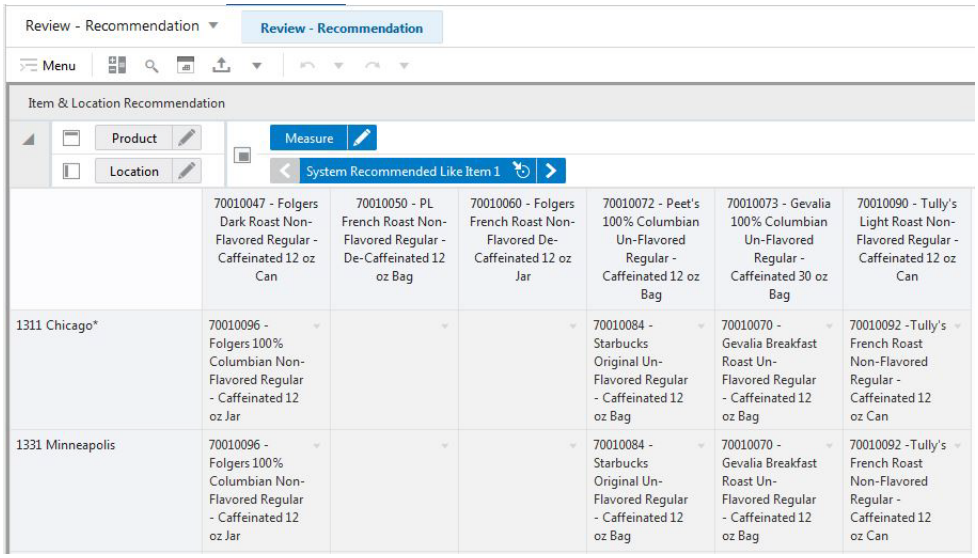
Aggregated Store Count

This measure displays the number of stores at which an item RHS position was identified as the most suitable like item for a new item. For instance, for new item A, item BA was identified to be the like item for 20 stores. For the rest of 42 stores, it was item CA. This can happen simply because the best fit - in this case item BA - is not sold in all stores. Item CA is the second best fit, but it's sold in more stores, and thus the subjective better fit.

Item & Location Recommendation View

The Item & Location Recommendation view is at the item / store intersection. For new items it displays the top three matching items for a certain store.

Figure 3–27 Item & Location Recommendation View



	70010047 - Folgers Dark Roast Non-Flavored Regular - Caffeinated 12 oz Can	70010050 - PL French Roast Non-Flavored Regular - De-Caffeinated 12 oz Bag	70010060 - Folgers French Roast Non-Flavored De-Caffeinated 12 oz Jar	70010072 - Peet's 100% Columbian Un-Flavored Regular - Caffeinated 12 oz Bag	70010073 - Gevalia 100% Columbian Un-Flavored Regular - Caffeinated 30 oz Bag	70010090 - Tully's Light Roast Non-Flavored Regular - Caffeinated 12 oz Can
1311 Chicago*	70010096 - Folgers 100% Columbian Non-Flavored Regular - Caffeinated 12 oz Jar			70010084 - Starbucks Original Un-Flavored Regular - Caffeinated 12 oz Bag	70010070 - Gevalia Breakfast Roast Un-Flavored Regular - Caffeinated 12 oz Bag	70010092 -Tully's French Roast Non-Flavored Regular - Caffeinated 12 oz Can
1331 Minneapolis	70010096 - Folgers 100% Columbian Non-Flavored Regular - Caffeinated 12 oz Jar			70010084 - Starbucks Original Un-Flavored Regular - Caffeinated 12 oz Bag	70010070 - Gevalia Breakfast Roast Un-Flavored Regular - Caffeinated 12 oz Bag	70010092 -Tully's French Roast Non-Flavored Regular - Caffeinated 12 oz Can

Measures: Item & Location Recommendation View

The Item & Location Recommendation view contains the following measures:

System Recommended Like Item 1, 2, 3

This measure displays the top three like items (based on similarity and store ranging) for every store. For a given new item, the like items may be different by store. The reason is that for some stores, the existing item with the highest similarity is not available for sale. Then, the algorithm is picking the existing item with the highest score for that store.

4

Data Cleansing for Seasonality Estimation Task

This chapter describes the functionality of the Data Cleansing for Seasonality Estimation Task which includes:

- Preprocessing Administration, see About Preprocessing Administration
- Source Measure Maintenance see About Source Measure Maintenance

Data Cleansing for Seasonality Estimation Workspace, Steps, and Views

The following table lists the workspaces, steps, and views for the Forecast Review task.

Workspace	Step	Views
Preprocess Administration Workspace	Preprocess Parameters Step	Preprocess Admin Seasonality View Preprocess Method Parameters for Seasonality View Preprocess Method Parameters Override for Seasonality View Preprocess Panel for Seasonality View
Source Measure Maintenance Workspace	Preprocess Parameters Step	Preprocess Admin Seasonality View Preprocess Method Parameters for Seasonality View Preprocess Method Parameters Override for Seasonality View Preprocess Panel for Seasonality View
	Review Step	Source Measure Maintenance for Seasonality View

About Preprocessing Administration

This section describes how the preprocessing functionality is implemented in RDF using the Preprocess Administration Workspace.

Use the Preprocess Administration Workspace to perform this step:

- Preprocess Parameters Step

> **Note:** Similar to the Preprocess Administration Workspace is the Source Measure Maintenance Workspace. For functionality differences, see Source Measure Maintenance Functionality.

About Preprocessing

Preprocessing is a module that is used to correct historical data prior to forecast generation when history does not represent general demand patterns. It is meant to automatically make adjustments to the raw POS (Point Of Sales) data so the next demand forecasts do not replicate undesired patterns.

Data Preprocessing is commonly used to:

- Correct for lost sales due to stock-outs
- Cleanse data for effects of promotions and short-term price changes (optional)
- Correct for outliers – unusually high or low values introduced by human error or special events (hurricane that left a store closed for a week)
- Scrub data manually to fake history and override user history
- Adjust demand for the occasional 53rd calendar week
- Manage demand created during events and holidays that do not occur in the same period every year, for example, Back to School.

Preprocessing runs after the data has been loaded from the host system and prior to forecast generation. Use the Preprocess Administration Workspace to select the techniques used to transform sales to unconstrained demand. It is common for an environment to require preprocessing to run multiple times to properly smooth the history. Commonly, there are up to three or four runs to go from raw sales to the data source that is used to generate the forecast. For RDF, a maximum of six runs is allowed for one data source. For example, if there is one baseline and one causal level, there can be up to six preprocessing runs allowed to create the data source for the baseline forecast, and up to six runs allowed to create the data source for the causal forecast.

Preprocessing Data in the RDF Workflow

Preprocessing offers a variety of algorithm methods to support the business requirements. The main reason for preprocessing is to transform the raw sales data into a measure that gets as close as possible to unconstrained demand.

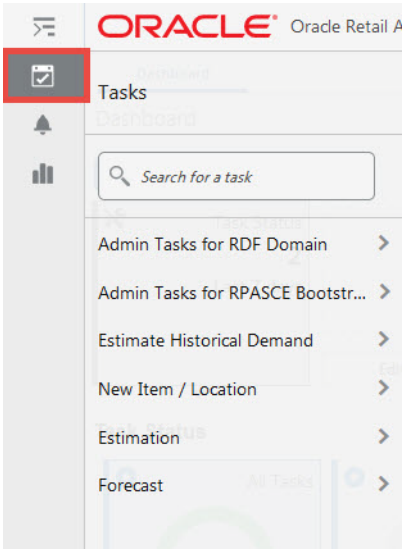
The preprocessing step is most often implemented in batch, by invoking a preprocessing special expression. The special expression takes several measures as input. For instance, one needs to specify the measure to be corrected, the desired algorithm, and the number of periods to be considered. However, you can go into more detail, and specify several filter window lengths, or exponential smoothing parameters.

Preprocess Administration Workspace

To build the Preprocess Administration workspace, perform these steps:

1. From the left sidebar menu, click the Task Module to view the available tasks.

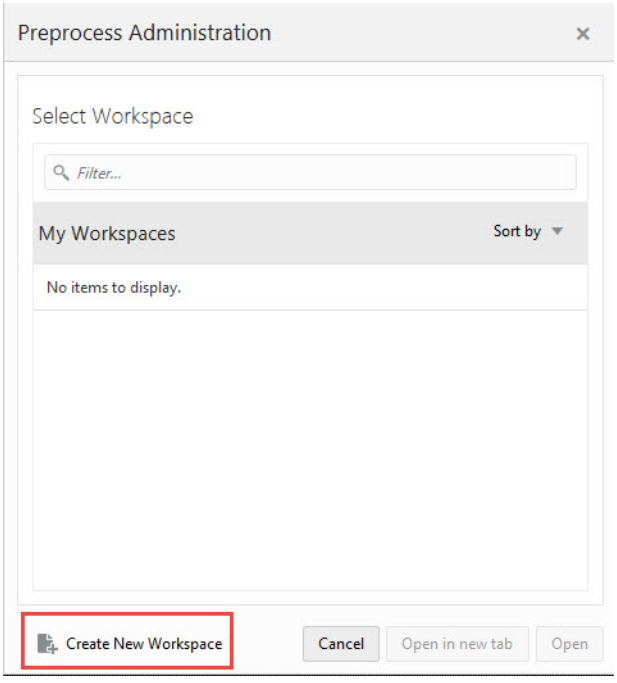
Figure 4–1 Task Module



2. Click the **Estimate Historical Demand** activity and then click **Seasonality** to access the available workspaces.
3. Click **Preprocess Administration**. The Preprocess Administration wizard opens.

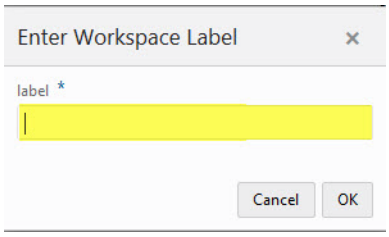
   You can open an existing workspace, but to create a new workspace, click **Create New Workspace**.

Figure 4–2 Preprocess Administration Wizard



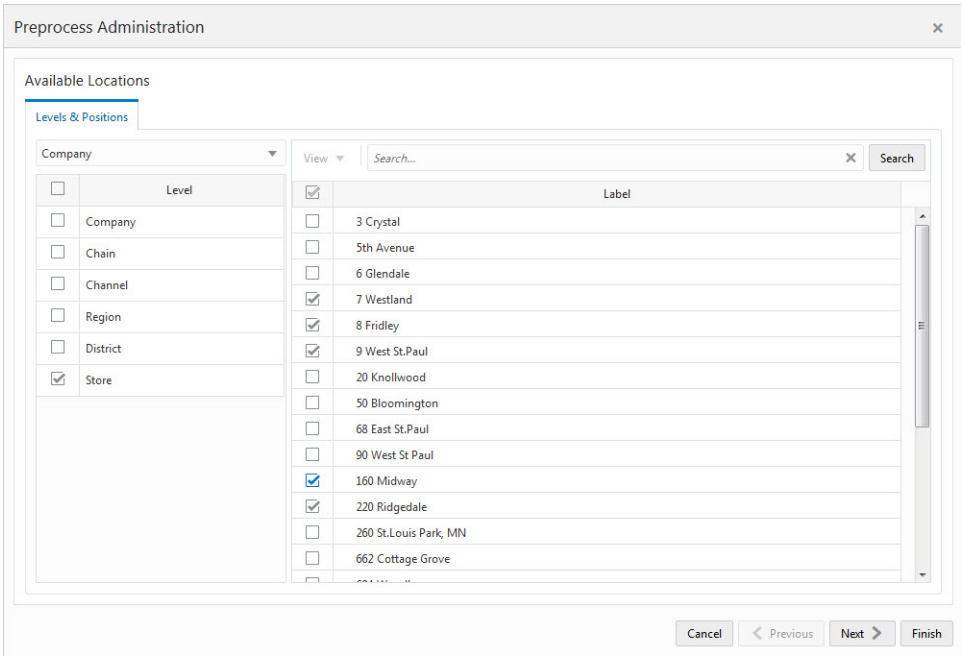
4. Enter a name for your new workspace in the label text box and click **OK**.

Figure 4–3 Enter Workspace Label



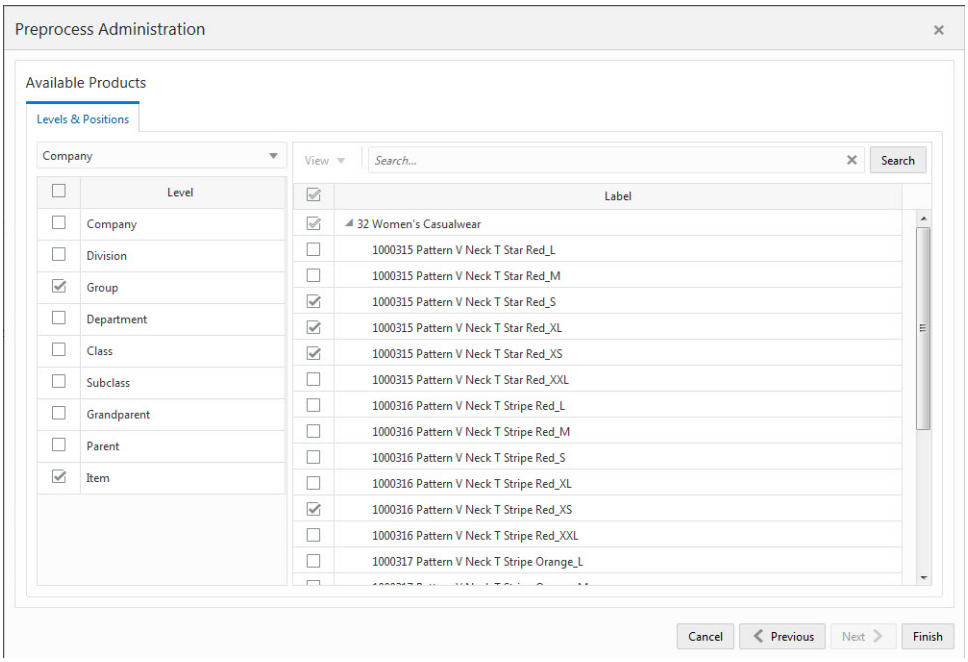
5. The Workspace wizard opens. Select the locations you want to work with and click **Next**.

Figure 4–4 Workspace Wizard: Select Locations



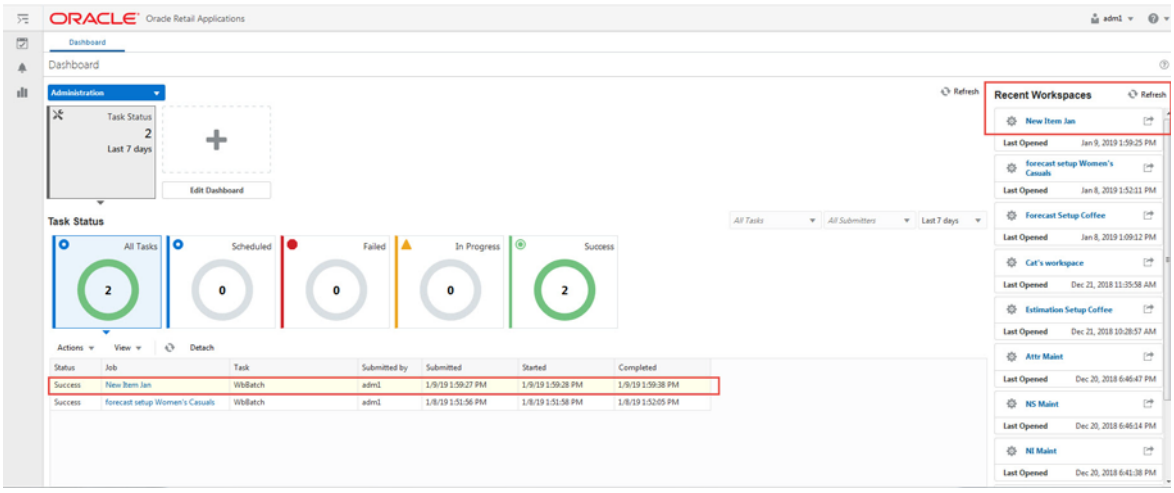
6. Select the products you want to work with and click **Finish**.

Figure 4–5 Workspace Wizard: Select Products



7. The wizard notifies you that your workspace is being prepared. Successful workspaces are available from the Dashboard.

Figure 4–6 Successful Workspace Build



Preprocess Parameters Step

This step has these views:

- Preprocess Admin Seasonality View
- Preprocess Method Parameters for Seasonality View

- Preprocess Method Parameters Override for Seasonality View
- Preprocess Panel for Seasonality View

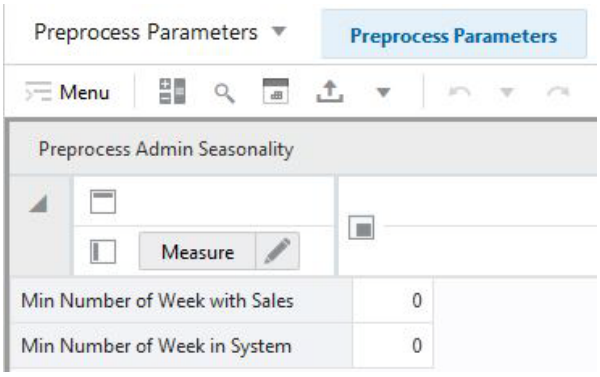
These views make available the preprocessing parameters for four rounds of preprocessing runs, necessary to calculate the data source for baseline forecasting and promotional forecasting.

In RDF, preprocessing is configured to create the data sources for baseline forecasting, as well as, causal forecasting. The creation of each of the sources can go through at most six runs of preprocessing. For example, to generate the Causal Data Source, it is configured for three runs and for the baseline data source, it is configured for four runs.

Preprocess Admin Seasonality View

The Preprocess Admin Promo view allows you to define the scope of the preprocessing run, as well as filter out item/locations where preprocessing does not make sense because of lack of enough historical sales.

Figure 4–7 Preprocess Admin Seasonality View



Measures: Preprocess Admin Seasonality View

The Preprocess Admin Seasonality view contains the following measures:

Min Number of Weeks in System

This parameter defines the number of periods from when an item was introduced in the system. Usually the introduction time is considered to be the date when the item first sold. This check is also introduced to stop making data corrections for items that are very new, and where cleansing would be unreliable.

Min Number of Weeks with Sales

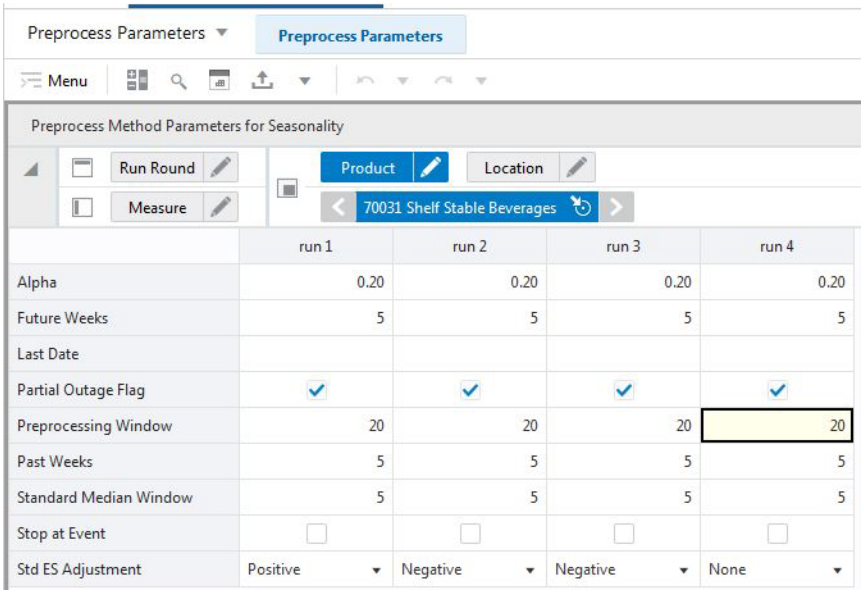
This parameter defines the number of weeks with sales that an item/store combination needs to have to qualify for data cleansing. The reasoning behind this check is that for items without enough data, corrections may not be reliable. Once there is enough data, and trends become clearer, corrections can be made.

Preprocess Method Parameters for Seasonality View

There are actually two views with the same set of measures, where, you can enter values for parameters specific for some of the preprocessing methods available in the special expression to create the data sources for the baseline and causal forecasts.

There is a set of parameters for each of the maximum six runs allowed. However, very likely not all six are configured. For example, when generating the Causal Data Source, three runs are configured. The parameters are entered at the class/store intersection

Figure 4–8 Preprocess Method Parameters for Seasonality View



Measures: Preprocess Method Parameters for Seasonality View

The Preprocess Method Parameters for Seasonality view contains the following measures:

Alpha

Exponential smoothing coefficient used to calculate past and future velocities.

Future Weeks

This represents the maximum number of data points to calculate the future velocity, when using the Standard Exponential Smoothing or Lost Sales Standard Exponential Smoothing preprocessing methods.

Last Date

This represents the end date of the preprocessing window; it is typically today's date, but can be any date in the past.

Past Weeks

This represents the maximum number of data points to calculate the past velocity, when using the Standard Exponential Smoothing or Lost Sales Standard Exponential Smoothing preprocessing methods.

Preprocessing Window

Number of historical data points that are preprocessed.

Standard Median Window

Filter window length for the Standard Median preprocessing method.

Partial Outage

A scalar parameter indicating if the period immediately following an out-of-stock period should be adjusted. The default behavior is for the flag to be True.

Stop at Event

This parameter determines which periods are included in the calculation of past/future velocities.

If the flag is set to True, then the algorithm only includes periods before the first event flag or event indicator.

If the flag is False, then all available, non-flagged periods, within the windows defined by Past Weeks and Future Weeks, are used in the calculation of the past and future velocities.

The default setting for the flag is False.

Window#

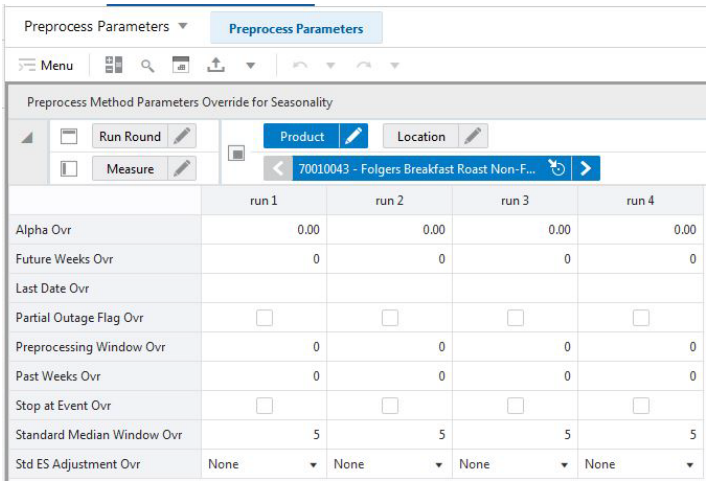
Additionally, there are five measures, Window1 thru Window5. These measures define the lengths of the five Standard Median filter windows that are run as part of the Retail Median preprocessing method.

Preprocess Method Parameters Override for Seasonality View

In this view at the item/store level, you can override values for parameters specific for some of the preprocessing methods available in the special expression. There are two views, corresponding to the preprocessing runs necessary to create the data sources for the baseline and causal forecasts.

After all parameters are set and committed back to the domain, usually a batch job will run the pre-processing steps and prepare the data source s for forecast generation.

Figure 4–9 Preprocess Method Parameters Override for Seasonality View



Measures: Preprocess Method Parameters Override for Seasonality View

The Preprocess Method Parameters Override for Seasonality view contains the following measures:

Alpha Override

Exponential smoothing coefficient used to calculate past and future velocities.

Future Weeks Override

This represents the maximum number of data points to calculate the future velocity, when using the Standard Exponential Smoothing or Lost Sales Standard Exponential Smoothing preprocessing methods.

Last Date Override

This represents the end date of the preprocessing window; it is typically today's date, but can be any date in the past.

Past Weeks Override

This represents the maximum number of data points to calculate the past velocity, when using the Standard Exponential Smoothing or Lost Sales Standard Exponential Smoothing preprocessing methods.

Preprocessing Window Override

Number of historical data points that are preprocessed.

Standard Median Window Override

Filter window length for the Standard Median preprocessing method.

Partial Outage Override

A scalar parameter indicating if the period immediately following an out-of-stock period should be adjusted. The default behavior is for the flag to be True.

Stop at Event Override

This parameter determines which periods are included in the calculation of past/future velocities.

If the flag is set to True, then the algorithm only includes periods before the first event flag or event indicator.

If the flag is False, then all available, non-flagged periods, within the windows defined by nfut and npast, are used in the calculation of the past and future velocities.

The default setting for the flag is False.

Window#

Additionally, there are five measures, Window1 thru Window5. These measures define the lengths of the five Standard Median filter windows that are run as part of the Retail Median preprocessing method.

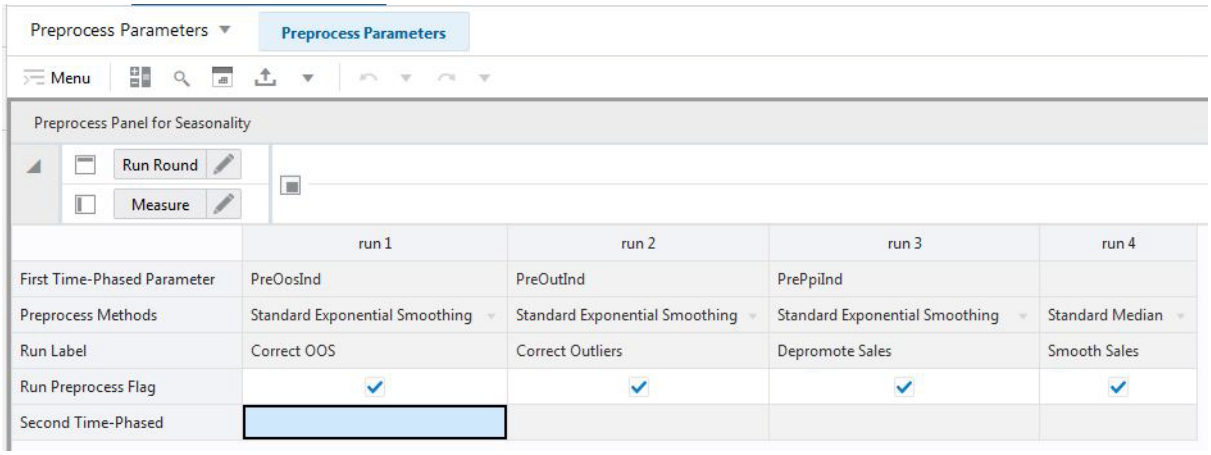
Preprocess Panel for Seasonality View

The view displays the measures necessary to create the data source for baseline forecasting. This involves four rounds of preprocessing that run in batch or online.in this order:

1. Correcting for stockouts
2. Correcting for outliers
3. Depromoting sales

4. Smooth sales

Figure 4–10 Preprocess Panel for Seasonality View



Measures: Preprocess Panel for Seasonality View

Note: Measures are replicated for each round of preprocessing.

The Preprocess Panel for Seasonality view contains the following measures:

Input Data Source

Indicates the measure that will be corrected. This is the input to the first preprocessing run. There are no inputs available for other runs other than the first run.

First Time-Phased Parameter

This measure stores the first time-phased measure that is required for some preprocessing methods. For instance, for the STD ES LS method, this measure would store the measure name of the outage flag. Or for the STD ES method, it could store the name of the outlier flag.

Preprocess Method

Name of the preprocessing method to be used for each run. This method is selected in the Configuration Tools

Output Data Measure

Indicates the measure that stores the result of the last configured preprocessing run. For instance, for the Preprocess Panel for Baseline, the output comes from run 4.

Run Label

A label denoting the purpose of the preprocessing run, for example, Correct Outliers, or Depromote Sales.

Run Preprocess Flag

Boolean measure indicating if this run should be enabled or skipped.

Second Time-Phased Parameter

This measure stores the second time-phased measure that is required for some preprocessing methods. For instance, for the Forecast Sigma method, this measure would store measure name of the confidence intervals. Or for the Override method it could store the measure name of the outage flag.

About Source Measure Maintenance

This section describes how the preprocessing functionality is implemented in RDF using the Source Measure Maintenance Workspace.

The functionality in the Source Measure Maintenance Workspace is a superset of the functionality in the Preprocess Administration Workspace. The purpose and functionality between the two is described in Source Measure Maintenance Functionality.

Use the Source Measure Maintenance Workspace to perform these steps:

- Preprocess Parameters Step
- Review Step

> **Note:** For information about preprocessing and RDF, see Preprocessing Data in the RDF Workflow

Source Measure Maintenance Functionality

The Preprocess Administration Workspace and the Source Measure Maintenance Workspace have a large set of common content.

The main difference is that while the Source Measure Maintenance Workspace has the calendar hierarchy, on top of the product and location, and the Preprocess Administration Workspace has only the product and location.

The additional hierarchy allows the review of the time-phased preprocessing measures, as well as the calculated forecasting data sources.runs.

Due to their additional dimension of *week*, these measures add to the size of the workspace, and also make workspace operations slower. For instance, workspace build, refresh, commit, and so on, take longer than in the otherwise similar Preprocess Administration Workspace.

Preprocess Administration Workspace

The Preprocess Administration Workspace is at the product/location intersection, so it can be built with a lot of positions, without experiencing poor performance. The purpose is to set preprocessing parameters, which are inputs to the special expression that is run in batch.

Source Measure Maintenance Workspace

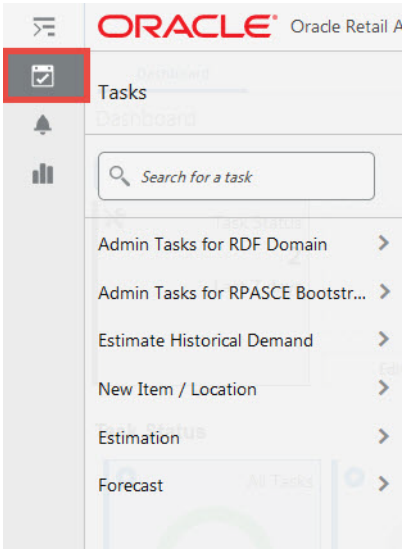
The Source Measure Maintenance Workspace, described in this chapter, is at the product/location/calendar intersection, and is a lot more data intensive. The purpose is to set preprocessing parameters and run the data filtering online, with the ability to review the results without having to wait for an overnight batch. If the results are not as expected, or you want to experiment with different settings, you can make changes to the parameters and rerun the custom menus. To achieve this it is expected that only a small subset of the available product/locations is included in the workspace.

Source Measure Maintenance Workspace

To build the Source Measure Maintenance workspace, perform these steps:

1. From the left sidebar menu, click the Task Module to view the available tasks.

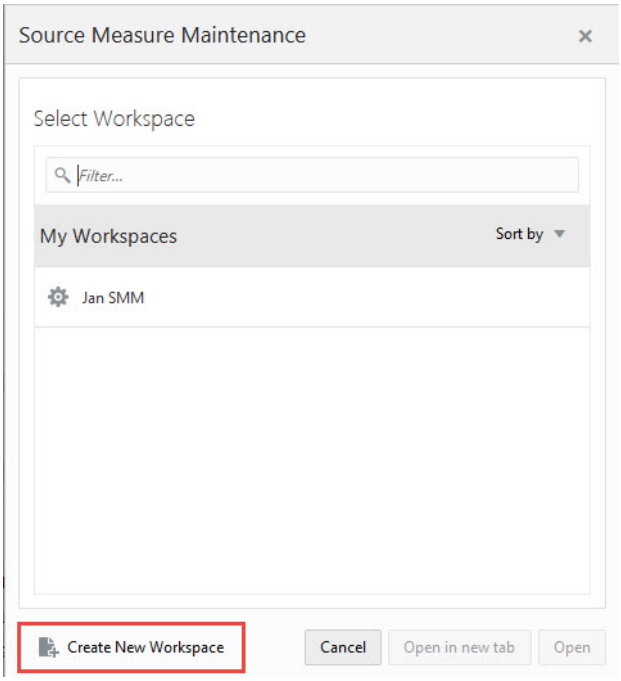
Figure 4–11 Task Module



2. Click the **Estimate Historical Demand** activity and then click **Seasonality** to access the available workspaces.
3. Click **Source Measure Maintenance**. The Source Measure Maintenance wizard opens.

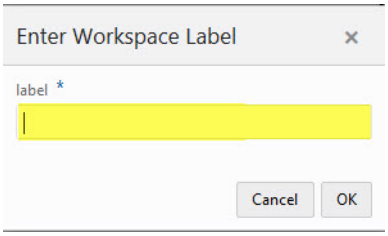
   You can open an existing workspace, but to create a new workspace, click **Create New Workspace**.

Figure 4–12 Source Measure Maintenance Wizard



4. Enter a name for your new workspace in the label text box and click **OK**.

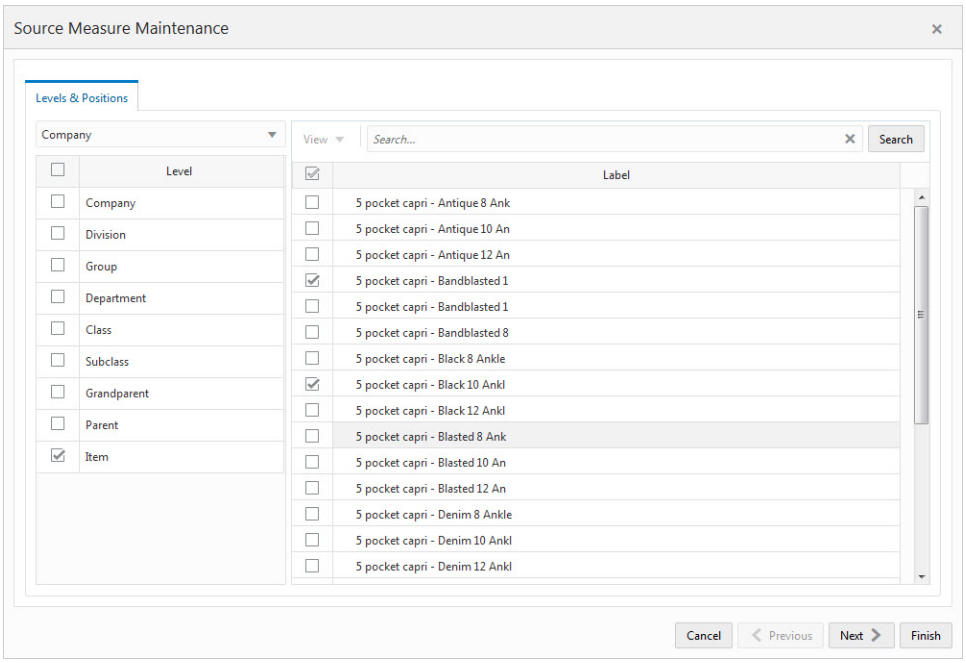
Figure 4–13 Enter Workspace Label



5. The Workspace wizard opens. Select the products you want to work with and click **Next**.

> **Note:** It is important to include all products that are members of the Merchandise dimensions in the forecast levels to be analyzed. For example, if you select to view a forecast level that is defined at subclass/store/week, you must include all items that are members of the particular subclass to be analyzed. It is recommended that Position Query functionality or selection from aggregate levels in the Merchandise hierarchy is employed if the task supports an AutoTask build.

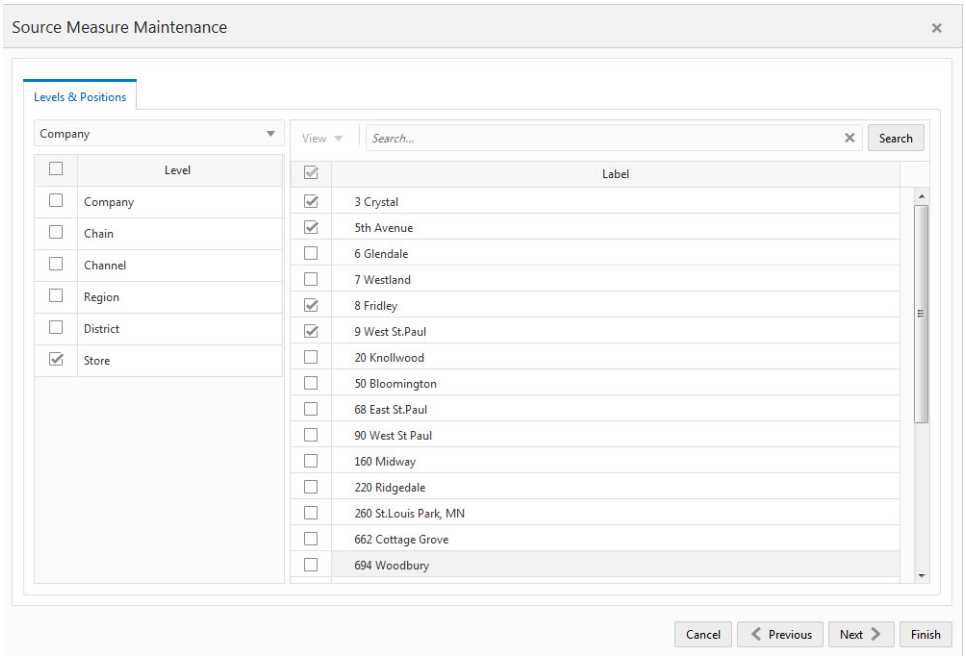
Figure 4–14 Workspace Wizard: Select Products



6. Select the locations you want to work with and click **Next**.

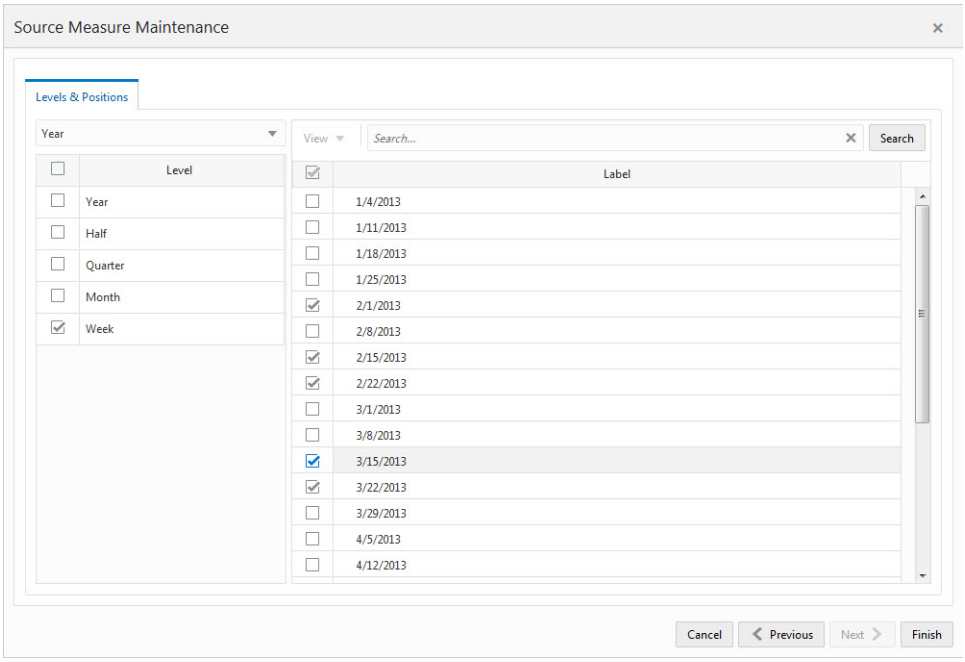
Note: It is important to include all locations that are members of the location dimensions in the forecast levels to be analyzed. For example, if you select to view a forecast level that is defined at item/chain/week, you should include all locations that are members of the particular chain to be analyzed. It is recommended that Position Query functionality or selection from aggregate levels in the location hierarchy is employed if the task supports an AutoTask build.

Figure 4–15 Workspace Wizard: Select Locations



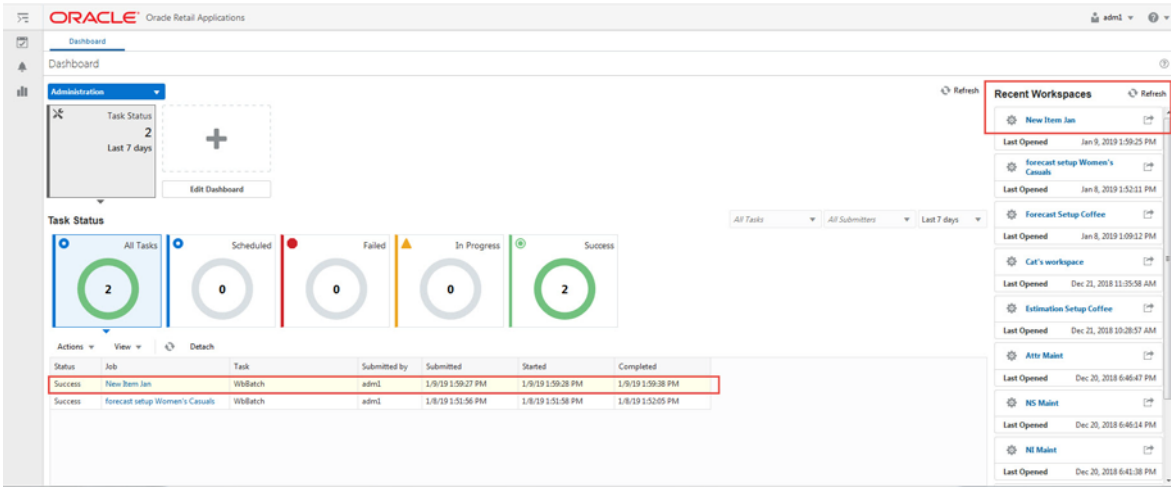
7. Select the weeks of the forecast you wish to review and click **Finish**.

Figure 4–16 Workspace Wizard: Select Available Calendar Positions



8. The wizard notifies you that your workspace is being prepared. Successful workspaces are available from the Dashboard.

Figure 4–17 Successful Workspace Build



The Source Measure Maintenance workspace is built and includes these steps:

- Preprocess Parameters Step
- Review Step

Preprocess Parameters Step

This step has these views:

- Preprocess Admin Seasonality View
- Preprocess Method Parameters for Seasonality View
- Preprocess Method Parameters Override for Seasonality View
- Preprocess Panel for Seasonality View

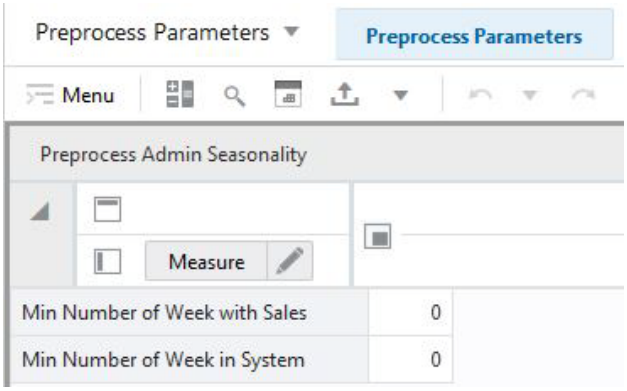
These views make available the preprocessing parameters for four rounds of preprocessing runs, necessary to calculate the data source for baseline forecasting and promotional forecasting.

In RDF, preprocessing is configured to create the data sources for baseline forecasting, as well as, causal forecasting. The creation of each of the sources can go through at most six runs of preprocessing. For example, to generate the Causal Data Source, it is configured for three runs and for the baseline data source, it is configured for four runs.

Preprocess Admin Seasonality View

This step contains the Preprocess Admin view that allows you to define the scope of the preprocessing run, as well as filter out item/locations where preprocessing does not make sense because of lack of enough historical sales.

Figure 4–18 Preprocess Panel for Baseline View



Measures: Preprocessing Panel for Baseline View

The Preprocessing Panel for Baseline view contains the following measures:

Min Number of Weeks in System

This parameter defines the number of periods from when an item was introduced in the system. Usually the introduction time is considered to be the date when the item first sold. This check is also introduced to stop making data corrections for items that are very new, and where cleansing would be unreliable.

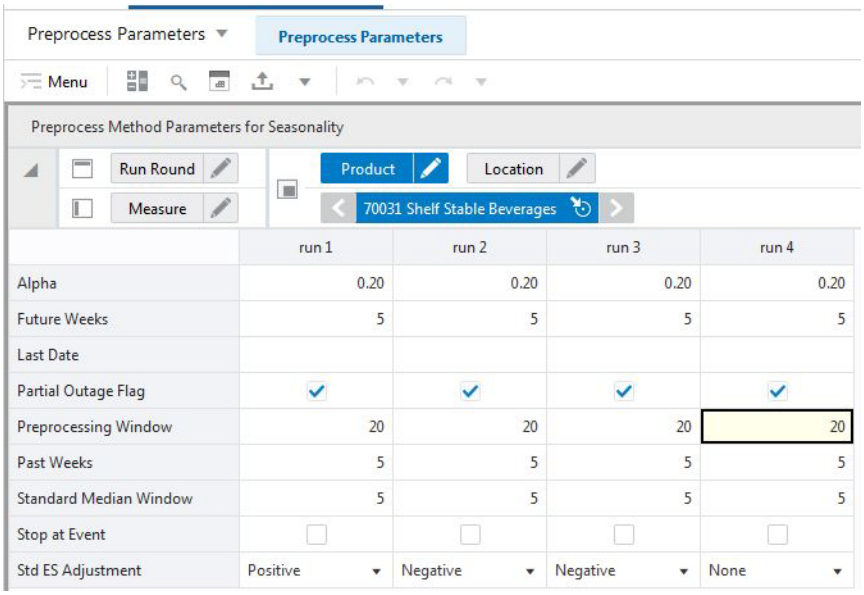
Min Number of Weeks with Sales

This parameter defines the number of weeks with sales that an item/store combination needs to have to qualify for data cleansing. The reasoning behind this check is that for items without enough data, corrections may not be reliable. Once there is enough data, and trends become clearer, corrections can be made.

Preprocess Method Parameters for Seasonality View

There are actually two views with the same set of measures, where, you can enter values for parameters specific for some of the preprocessing methods available in the special expression to create the data sources for the baseline and causal forecasts. There is a set of parameters for each of the maximum six runs allowed. However, very likely not all six are configured. For example, when generating the Causal Data Source, three runs are configured. The parameters are entered at the class/store intersection

Figure 4–19 Preprocess Method Parameters for Seasonality View



Measures: Preprocess Method Parameters for Seasonality View

The Preprocess Method Parameters for Seasonality view contains the following measures:

Alpha

Exponential smoothing coefficient used to calculate past and future velocities.

Future Weeks

This represents the maximum number of data points to calculate the future velocity, when using the Standard Exponential Smoothing or Lost Sales Standard Exponential Smoothing preprocessing methods.

Last Date

This represents the end date of the preprocessing window; it is typically today's date, but can be any date in the past.

Past Weeks

This represents the maximum number of data points to calculate the past velocity, when using the Standard Exponential Smoothing or Lost Sales Standard Exponential Smoothing preprocessing methods.

Preprocessing Window

Number of historical data points that are preprocessed.

Standard Median Window

Filter window length for the Standard Median preprocessing method.

Partial Outage

A scalar parameter indicating if the period immediately following an out-of-stock period should be adjusted. The default behavior is for the flag to be True.

Stop at Event

This parameter determines which periods are included in the calculation of past/future velocities.

If the flag is set to True, then the algorithm only includes periods before the first event flag or event indicator.

If the flag is False, then all available, non-flagged periods, within the windows defined by nfut and npast, are used in the calculation of the past and future velocities.

The default setting for the flag is False.

Window#

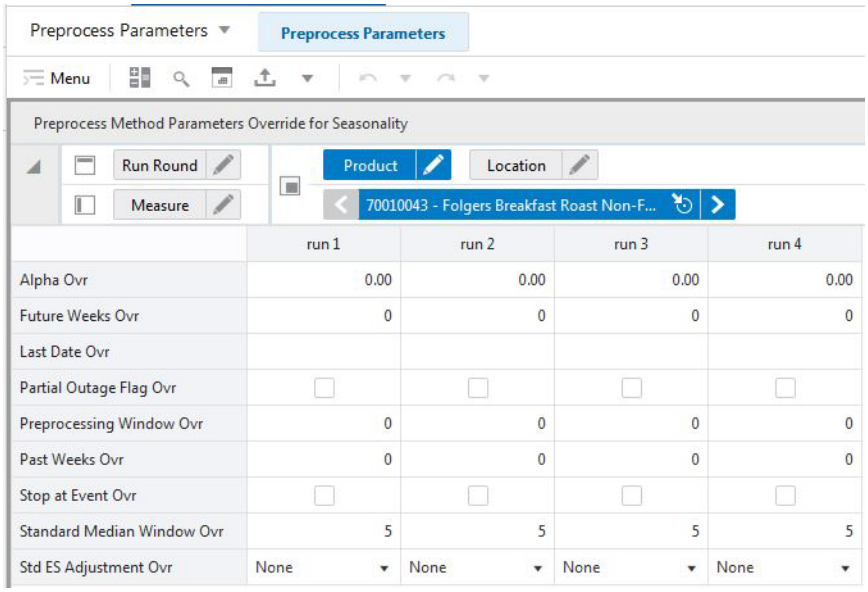
Additionally, there are five measures, Window1 thru Window5. These measures define the lengths of the five Standard Median filter windows that are run as part of the Retail Median preprocessing method.

Preprocess Method Parameters Override for Seasonality View

In this view at the item/store level, you can override values for parameters specific for some of the preprocessing methods available in the special expression. There are two views, corresponding to the preprocessing runs necessary to create the data sources for the baseline and causal forecasts.

After all parameters are set and committed back to the domain, usually a batch job will run the pre-processing steps and prepare the data source s for forecast generation.

Figure 4–20 Preprocess Method Parameters Override for Seasonality View



	run 1	run 2	run 3	run 4
Alpha Ovr	0.00	0.00	0.00	0.00
Future Weeks Ovr	0	0	0	0
Last Date Ovr				
Partial Outage Flag Ovr	☐	☐	☐	☐
Preprocessing Window Ovr	0	0	0	0
Past Weeks Ovr	0	0	0	0
Stop at Event Ovr	☐	☐	☐	☐
Standard Median Window Ovr	5	5	5	5
Std ES Adjustment Ovr	None	None	None	None

Measures: Preprocess Method Parameters Override for Seasonality View

The Preprocess Method Parameters Override for Seasonality view contains the following measures:

Alpha Override

Exponential smoothing coefficient used to calculate past and future velocities.

Future Weeks Override

This represents the maximum number of data points to calculate the future velocity, when using the Standard Exponential Smoothing or Lost Sales Standard Exponential Smoothing preprocessing methods.

Last Date Override

This represents the end date of the preprocessing window; it is typically today's date, but can be any date in the past.

Past Weeks Override

This represents the maximum number of data points to calculate the past velocity, when using the Standard Exponential Smoothing or Lost Sales Standard Exponential Smoothing preprocessing methods.

Preprocessing Window Override

Number of historical data points that are preprocessed.

Standard Median Window Override

Filter window length for the Standard Median preprocessing method.

Partial Outage Override

A scalar parameter indicating if the period immediately following an out-of-stock period should be adjusted. The default behavior is for the flag to be True.

Stop at Event Override

This parameter determines which periods are included in the calculation of past/future velocities.

If the flag is set to True, then the algorithm only includes periods before the first event flag or event indicator.

If the flag is False, then all available, non-flagged periods, within the windows defined by nfut and npast, are used in the calculation of the past and future velocities.

The default setting for the flag is False.

Window#

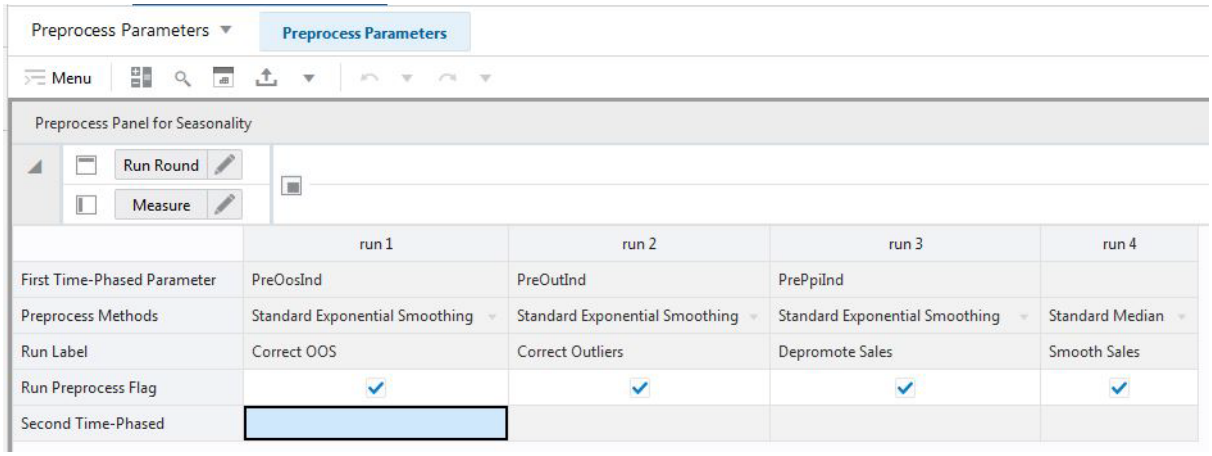
Additionally, there are five measures, Window1 thru Window5. These measures define the lengths of the five Standard Median filter windows that are run as part of the Retail Median preprocessing method.

Preprocess Panel for Seasonality View

The view displays the measures necessary to create the data source for baseline forecasting. This involves four rounds of preprocessing that run in batch or online.in this order:

1. Correcting for stockouts
2. Correcting for outliers
3. Depromoting sales
4. Smooth sales

Figure 4–21 Preprocess Panel for Seasonality View



Measures: Preprocess Panel for Seasonality View

Note: Measures are replicated for each round of preprocessing.

The Preprocess Panel for Seasonality view contains the following measures:

Input Data Source

Indicates the measure that will be corrected. This is the input to the first preprocessing run. There are no inputs available for other runs other than the first run.

First Time-Phased Parameter

This measure stores the first time-phased measure that is required for some preprocessing methods. For instance, for the STD ES LS method, this measure would store the measure name of the outage flag. Or for the STD ES method, it could store the name of the outlier flag.

Preprocess Method

Name of the preprocessing method to be used for each run. This method is selected in the Configuration Tools

Output Data Measure

Indicates the measure that stores the result of the last configured preprocessing run. For instance, for the Preprocess Panel for Baseline, the output comes from run 4.

Run Label

A label denoting the purpose of the preprocessing run, for example, Correct Outliers, or Depromote Sales.

Run Preprocess Flag

Boolean measure indicating if this run should be enabled or skipped.

Second Time-Phased Parameter

This measure stores the second time-phased measure that is required for some preprocessing methods. For instance, for the Forecast Sigma method, this measure

would store measure name of the confidence intervals. Or for the Override method it could store the measure name of the outage flag.

Review Step

The main purpose of this step is to display time-phased measures that represent input and output to the preprocessing stages, run in batch based on the settings selected in Preprocessing Admin.

This step has this view:

- Source Measure Maintenance for Seasonality View

This view can show either the Baseline View or the Causal View.

Baseline View

The baseline view displays the measures necessary to create the data source for baseline forecasting. This involves four rounds of preprocessing that run in batch or online in this order:

1. Correcting for stockouts
2. Correcting for outliers
3. Depromoting sales
4. Smooth sales

Causal View

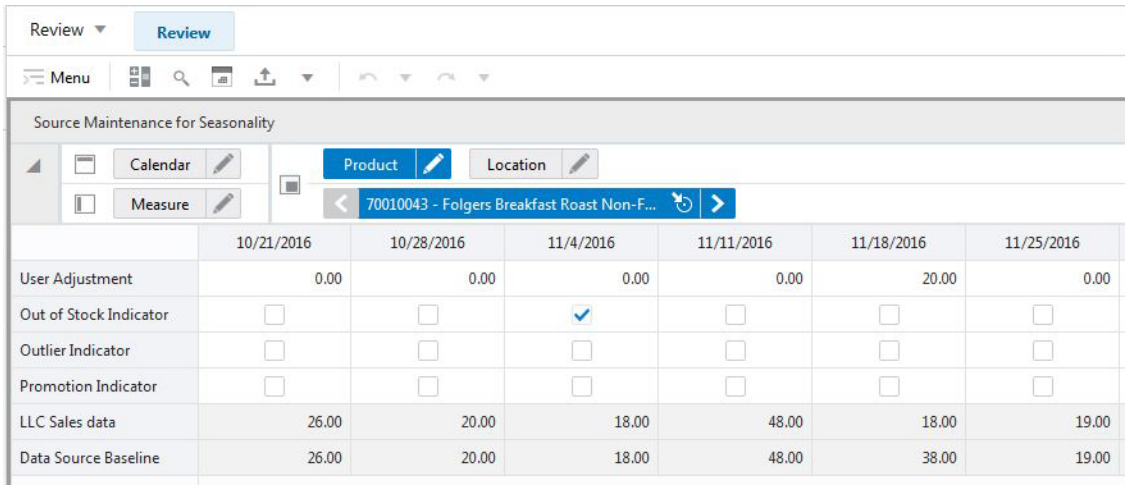
The causal view displays the measures necessary to create the data source for causal forecasting. This involves three rounds of preprocessing that are run in batch:

1. Correcting for stockouts
2. Correcting for outliers
3. Deseasonalizing the measure to create the Causal Data Source

Source Measure Maintenance for Seasonality View

This view displays measures that represent input and output of the preprocessing runs, in table format.

Figure 4–22 Source Measure Maintenance for Seasonality View



Measures: Source Measure Maintenance for Seasonality View

The Source Measure Maintenance for Seasonality view contains the following measures:

User Adjustment

In this measure, you can enter values that are going to be added to the preprocessing adjustments to create the data sources.

The logic is: data source = weekly sales + preprocessing adjustments + user adjustment

This measure is read/write.

Weekly Sales

This measure stores the raw sales loaded in RDF. This is the input to the first run of preprocessing. This measure is read only.

Data Source

This measure represents the output of the preprocessed raw sales, as well as incorporates the user adjustments according to the formula:

data source = weekly sales + preprocessing adjustments + user adjustments.

Out of Stock Indicator

This measure is either loaded or calculated by the rules in the custom menu. It is used during the pre-processing run that corrects sales for lost sales.

Outliers Indicator

This measure is either loaded or calculated by the rules in the custom menu. It is used during the pre-processing run that corrects the sales for outliers.

Promotion Indicator

This measure is usually calculated as the or of all available Boolean promotional variables. It is used during the preprocessing run that removes promotional sales.

5

Data Cleansing for Promo Estimation Task

This chapter describes the functionality of the Data Cleansing for Promo Estimation Task which includes:

- Preprocessing Administration, see About Preprocessing Administration
- Source Measure Maintenance see About Source Measure Maintenance

Data Cleansing for Promo Estimation Workspace, Steps, and Views

The following table lists the workspaces, steps, and views for the Forecast Review task.

Workspace	Step	Views
Preprocess Administration Workspace	Preprocess Parameters Step	Preprocess Admin Promo View Preprocess Method Parameters for Promo View Preprocess Method Parameters Override for Promo View Preprocess Panel for Promo View
Source Measure Maintenance Workspace	Preprocess Parameters Step	Preprocess Admin Promo View Preprocess Method Parameters for Promo View Preprocess Method Parameters Override for Promo View Preprocess Panel for Promo View
	Review Step	Source Measure Maintenance for Promo View

About Preprocessing Administration

This section describes how the preprocessing functionality is implemented in RDF using the Preprocess Administration Workspace.

Use the Preprocess Administration Workspace to perform this step:

- Preprocess Parameters Step

> **Note:** Similar to the Preprocess Administration Workspace is the Source Measure Maintenance Workspace. For functionality differences, see Source Measure Maintenance Functionality.

About Preprocessing

Preprocessing is a module that is used to correct historical data prior to forecast generation when history does not represent general demand patterns. It is meant to automatically make adjustments to the raw POS (Point Of Sales) data so the next demand forecasts do not replicate undesired patterns.

Data Preprocessing is commonly used to:

- Correct for lost sales due to stock-outs
- Cleanse data for effects of promotions and short-term price changes (optional)
- Correct for outliers – unusually high or low values introduced by human error or special events (hurricane that left a store closed for a week)
- Scrub data manually to fake history and override user history
- Adjust demand for the occasional 53rd calendar week
- Manage demand created during events and holidays that do not occur in the same period every year, for example, Back to School.

Preprocessing runs after the data has been loaded from the host system and prior to forecast generation. Use the Preprocess Administration Workspace to select the techniques used to transform sales to unconstrained demand.. Commonly, there are up to three or four runs to go from raw sales to the data source that is used to generate the forecast. For RDF, a maximum of six runs is allowed for one data source. For example, if there is one baseline and one causal level, there can be up to six preprocessing runs allowed to create the data source for the baseline forecast, and up to six runs allowed to create the data source for the causal forecast.

Preprocessing Data in the RDF Workflow

Preprocessing offers a variety of algorithm methods to support the business requirements. The main reason for preprocessing is to transform the raw sales data into a measure that gets as close as possible to unconstrained demand.

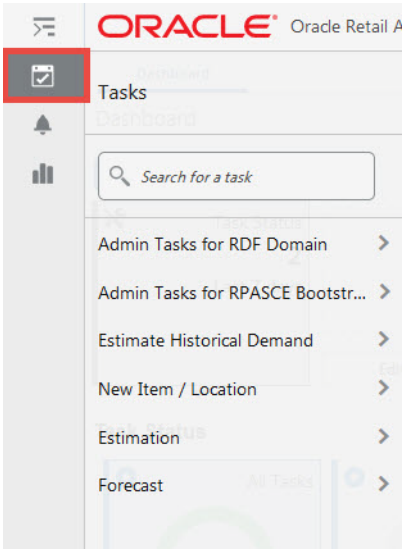
The preprocessing step is most often implemented in batch, by invoking a preprocessing special expression. The special expression takes several measures as input. For instance, one needs to specify the measure to be corrected, the desired algorithm, and the number of periods to be considered. However, you can go into more detail, and specify several filter window lengths, or exponential smoothing parameters.

Preprocess Administration Workspace

To build the Preprocess Administration workspace, perform these steps:

1. From the left sidebar menu, click the Task Module to view the available tasks.

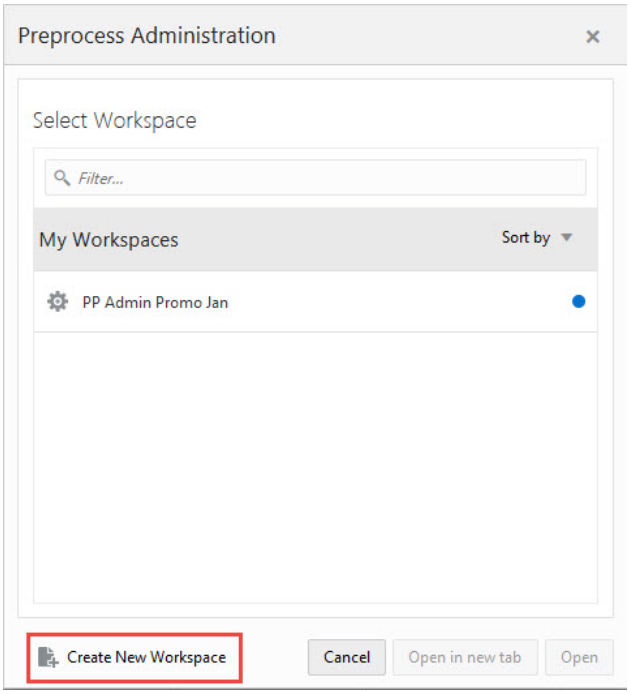
Figure 5–1 Task Module



2. Click the **Estimate Historical Demand** activity and then click **Promo** to access the available workspaces.
3. Click **Preprocess Administration**. The Preprocess Administration wizard opens.

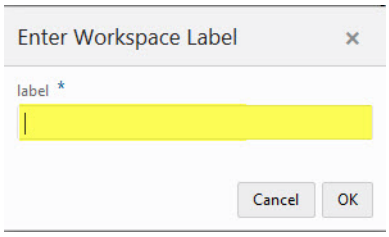
   You can open an existing workspace, but to create a new workspace, click **Create New Workspace**.

Figure 5–2 Preprocess Administration Wizard



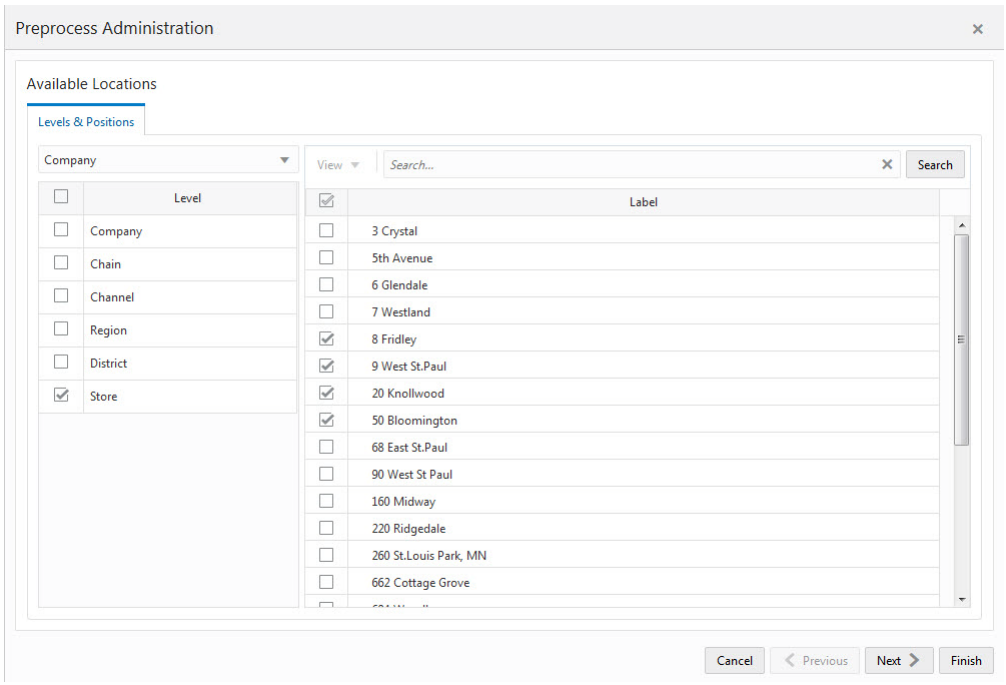
4. Enter a name for your new workspace in the label text box and click **OK**.

Figure 5–3 Enter Workspace Label



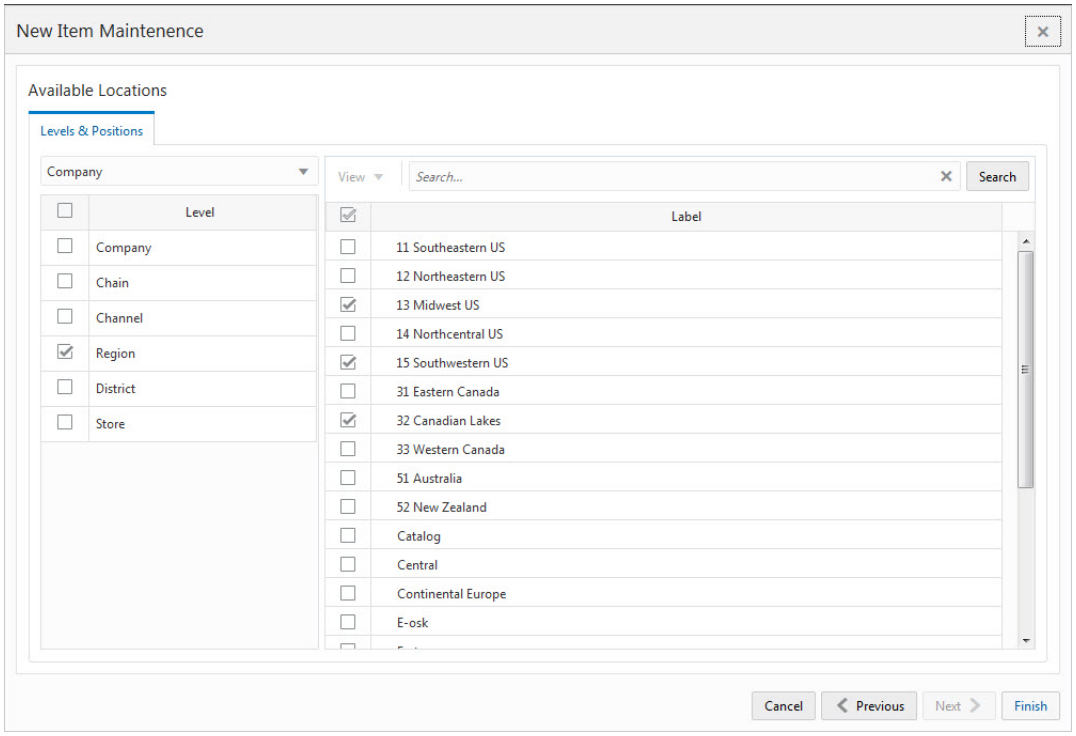
5. The Workspace wizard opens. Select the locations you want to work with and click **Next**.

Figure 5–4 Workspace Wizard: Select Locations



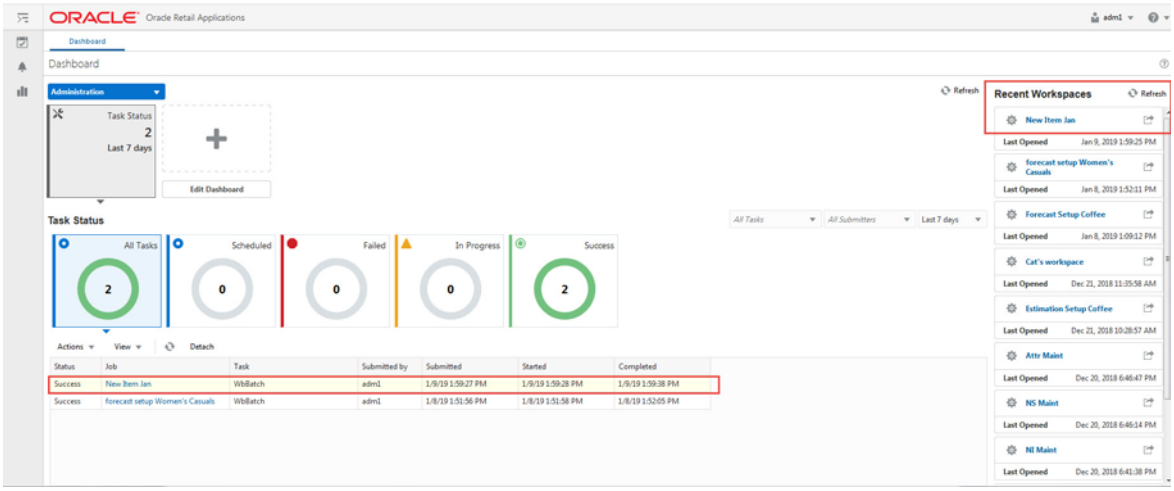
6. Select the products you want to work with and click **Finish**.

Figure 5–5 Workspace Wizard: Select Products



7. The wizard notifies you that your workspace is being prepared. Successful workspaces are available from the Dashboard.

Figure 5–6 Successful Workspace Build



The Preprocess Administration workspace is built.

Preprocess Parameters Step

This step has these views:

- Preprocess Admin Promo View

- Preprocess Method Parameters for Promo View
- Preprocess Method Parameters Override for Promo View
- Preprocess Panel for Promo View

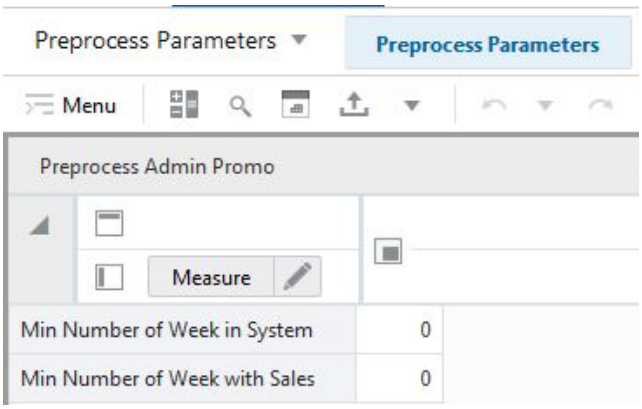
These views make available the preprocessing parameters for four rounds of preprocessing runs, necessary to calculate the data source for baseline forecasting and promotional forecasting.

In RDF, preprocessing is configured to create the data sources for baseline forecasting, as well as, causal forecasting. The creation of each of the sources can go through at most six runs of preprocessing. For example, to generate the Causal Data Source, it is configured for three runs and for the baseline data source, it is configured for four runs.

Preprocess Admin Promo View

The Preprocess Admin Promo view allows you to define the scope of the preprocessing run, as well as filter out item/locations where preprocessing does not make sense because of lack of enough historical sales.

Figure 5–7 Preprocess Admin Promo



Measures: Preprocess Admin Promo View

The Preprocess Admin Promo view contains the following measures:

Min Number of Weeks in System

This parameter defines the number of periods from when an item was introduced in the system. Usually the introduction time is considered to be the date when the item first sold. This check is also introduced to stop making data corrections for items that are very new, and where cleansing would be unreliable.

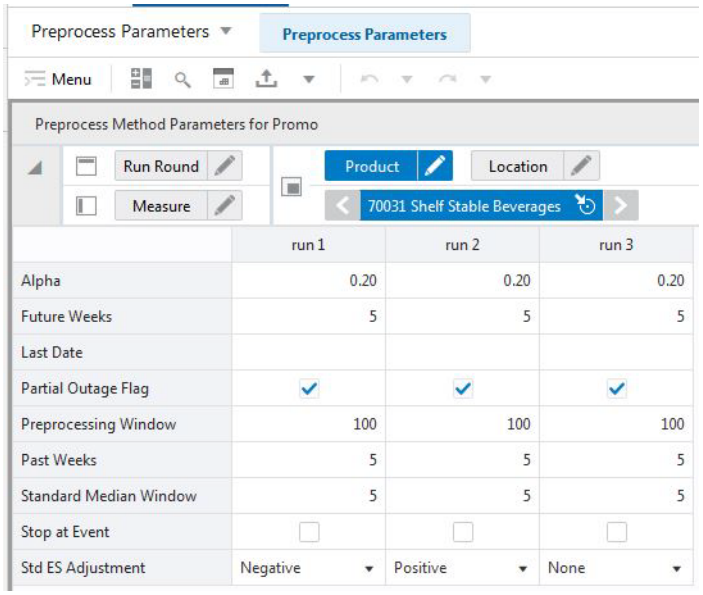
Min Number of Weeks with Sales

This parameter defines the number of weeks with sales that an item/store combination needs to have to qualify for data cleansing. The reasoning behind this check is that for items without enough data, corrections may not be reliable. Once there is enough data, and trends become clearer, corrections can be made.

Preprocess Method Parameters for Promo View

There are actually two views with the same set of measures, where, you can enter values for parameters specific for some of the preprocessing methods available in the special expression to create the data sources for the baseline and causal forecasts. There is a set of parameters for each of the maximum six runs allowed. However, very likely not all six are configured. For example, when generating the causal data source, three runs are configured. The parameters are entered at the class/store intersection

Figure 5–8 Preprocess Method Parameters for Promo View



Measures: Preprocess Method Parameters for Promo View

The Preprocess Method Parameters for Promo view contains the following measures:

Alpha

Exponential smoothing coefficient used to calculate past and future velocities.

Future Weeks

This represents the maximum number of data points to calculate the future velocity, when using the Standard Exponential Smoothing or Lost Sales Standard Exponential Smoothing preprocessing methods.

Last Date

This represents the end date of the preprocessing window; it is typically today's date, but can be any date in the past.

Past Weeks

This represents the maximum number of data points to calculate the past velocity, when using the Standard Exponential Smoothing or Lost Sales Standard Exponential Smoothing preprocessing methods.

Preprocessing Window

Number of historical data points that are preprocessed.

Standard Median Window

Filter window length for the Standard Median preprocessing method.

Partial Outage

A scalar parameter indicating if the period immediately following an out-of-stock period should be adjusted. The default behavior is for the flag to be True.

Stop at Event

This parameter determines which periods are included in the calculation of past/future velocities.

If the flag is set to True, then the algorithm only includes periods before the first event flag or event indicator.

If the flag is False, then all available, non-flagged periods, within the windows defined by Past Weeks and Future Weeks, are used in the calculation of the past and future velocities.

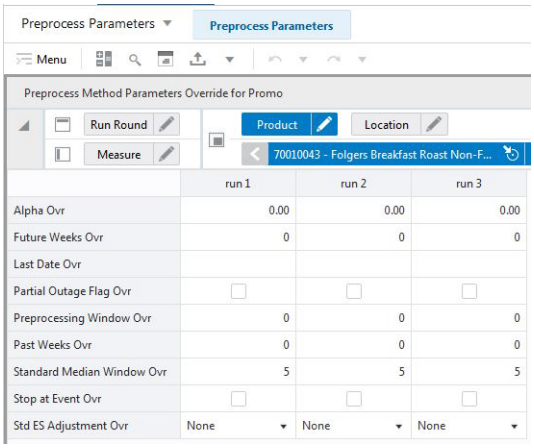
The default setting for the flag is False.

Preprocess Method Parameters Override for Promo View

In this view at the item/store level, you can override values for parameters specific for some of the preprocessing methods available in the special expression. There are two views, corresponding to the preprocessing runs necessary to create the data sources for the baseline and causal forecasts.

After all parameters are set and committed back to the domain, usually a batch job will run the pre-processing steps and prepare the data source s for forecast generation.

Figure 5–9 Preprocess Method Parameters Override for Promo View



Measures: Preprocess Method Parameters Override for Promo View

The Preprocess Method Parameters Override for Promo view contains the following measures:

Alpha Override

Exponential smoothing coefficient used to calculate past and future velocities.

Future Weeks Override

This represents the maximum number of data points to calculate the future velocity, when using the Standard Exponential Smoothing or Lost Sales Standard Exponential Smoothing preprocessing methods.

Last Date Override

This represents the end date of the preprocessing window; it is typically today's date, but can be any date in the past.

Past Weeks Override

This represents the maximum number of data points to calculate the past velocity, when using the Standard Exponential Smoothing or Lost Sales Standard Exponential Smoothing preprocessing methods.

Preprocessing Window Override

Number of historical data points that are preprocessed.

Standard Median Window Override

Filter window length for the Standard Median preprocessing method.

Partial Outage Override

A scalar parameter indicating if the period immediately following an out-of-stock period should be adjusted. The default behavior is for the flag to be True.

Stop at Event Override

This parameter determines which periods are included in the calculation of past/future velocities.

If the flag is set to True, then the algorithm only includes periods before the first event flag or event indicator.

If the flag is False, then all available, non-flagged periods, within the windows defined by Past Weeks and Future Weeks, are used in the calculation of the past and future velocities.

The default setting for the flag is False.

Preprocess Panel for Promo View

Depending on your wizard selection for either baseline or causal, the view shows the preprocessing parameters for each relevant run. For example if baseline is selected, the view displays preprocessing information for the four runs that are configured. If causal is selected, the view shows preprocessing parameters for three runs.

Baseline View

The view displays the measures necessary to create the data source for baseline forecasting. This involves four rounds of preprocessing that run in batch or online.in this order:

1. Correcting for stockouts
2. Correcting for outliers

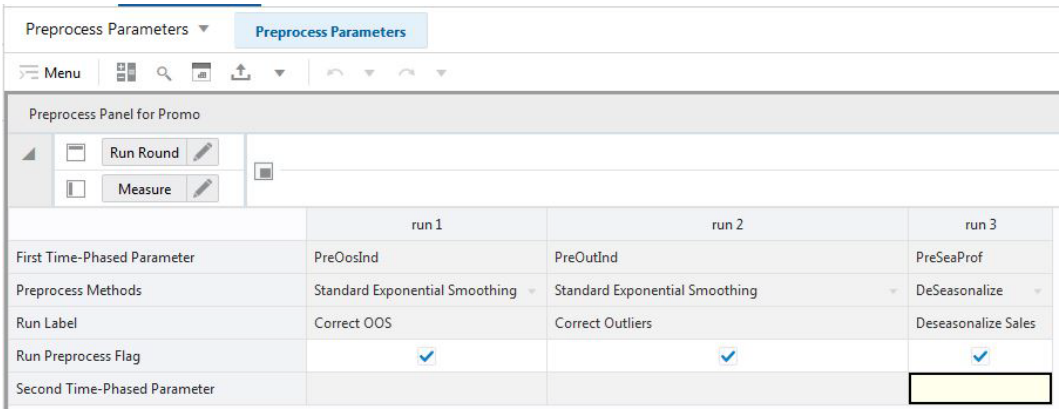
3. Depromoting sales
4. Smooth sales

Causal View

This view displays the measures necessary to create the data source for baseline forecasting. This involves three rounds of preprocessing that run in this order:

1. Correcting for stockouts
2. Correcting for outliers
3. Deseasonalizing the measure to create the Causal Data Source

Figure 5–10 Preprocess Panel for Promo View



Measures: Preprocess Panel for Promo View

The Preprocess Panel for Promo view contains the following measures:

First Time-Phased Parameter Causal

This measure stores the first time-phased measure that is required for some preprocessing methods. For instance, for the STD ES LS method, this measure would store the measure name of the outage flag. Or for the STD ES method, it could store the name of the outlier flag.

Preprocess Method

Name of the preprocessing method to be used for each run. This method is selected in the Configuration Tools

Output Data Measure

Indicates the measure that stores the result of the last configured preprocessing run. For instance, for the Preprocess Panel for Baseline, the output comes from run 4.

Run Label

A label denoting the purpose of the preprocessing run, for example, Correct Outliers, or Depromote Sales.

Run Preprocess Flag

Boolean measure indicating if this run should be enabled or skipped.

Second Time-Phased Parameter Causal

This measure stores the second time-phased measure that is required for some preprocessing methods. For instance, for the Forecast Sigma method, this measure would store measure name of the confidence intervals. Or for the Override method it could store the measure name of the outage flag.

About Source Measure Maintenance

This section describes how the preprocessing functionality is implemented in RDF using the Source Measure Maintenance Workspace.

The functionality in the About Source Measure Maintenance is a superset of the functionality in the About Preprocessing Administration. The purpose and functionality between the two is described in Source Measure Maintenance Functionality.

Use the Source Measure Maintenance Workspace to perform these steps:

- Preprocess Parameters Step
- Review Step

Note: For information about preprocessing and RDF, see Preprocessing Data in the RDF Workflow

Source Measure Maintenance Functionality

The Preprocess Administration Workspace and the Source Measure Maintenance Workspace have a large set of common content.

The main difference is that while the Source Measure Maintenance Workspace has the calendar hierarchy, on top of the product and location, and the Preprocess Administration Workspace has only the product and location.

The additional hierarchy allows the review of the time-phased preprocessing measures, as well as the calculated forecasting data sources.runs.

Due to their additional dimension of *week*, these measures add to the size of the workspace, and also make workspace operations slower. For instance, workspace build, refresh, commit, and so on, take longer than in the otherwise similar Preprocess Administration Workspace.

Preprocess Administration Workspace

The Preprocess Administration Workspace is at the product/location intersection, so it can be built with a lot of positions, without experiencing poor performance. The purpose is to set preprocessing parameters, which are inputs to the special expression that is run in batch.

Source Measure Maintenance Workspace

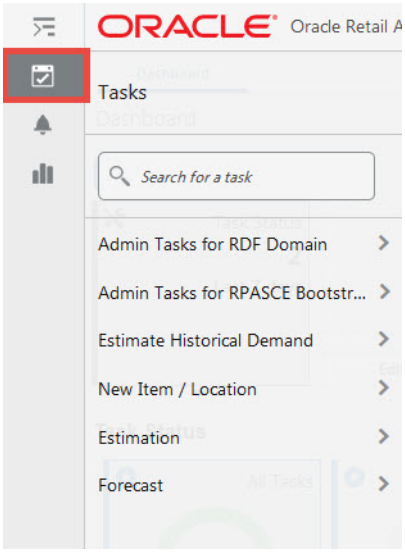
The Source Measure Maintenance Workspace, described in this chapter, is at the product/location/calendar intersection, and is a lot more data intensive. The purpose is to set preprocessing parameters and run the data filtering online, with the ability to review the results without having to wait for an overnight batch. If the results are not as expected, or you want to experiment with different settings, you can make changes to the parameters and rerun the custom menus. To achieve this it is expected that only a small subset of the available product/locations is included in the workspace.

Source Measure Maintenance Workspace

To build the Source Measure Maintenance workspace, perform these steps:

1. From the left sidebar menu, click the Task Module to view the available tasks.

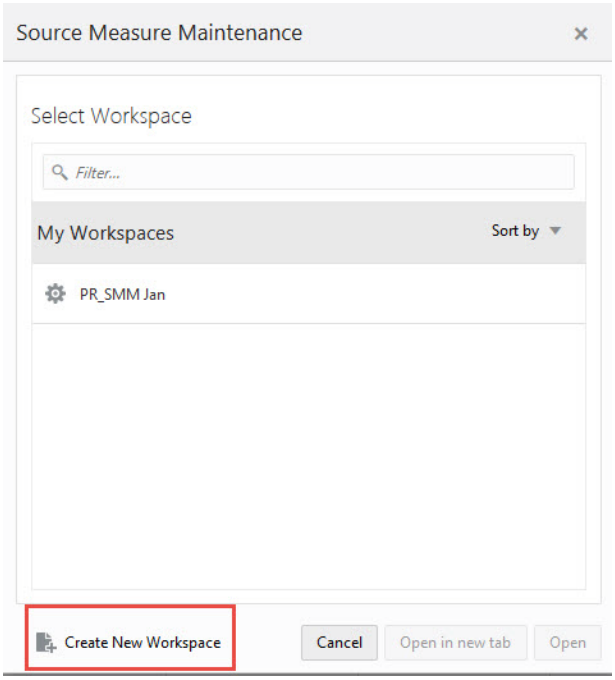
Figure 5–11 Task Module



2. Click the **Estimate Historical Demand** activity and then click **Promo** to access the available workspaces.
3. Click **Source Measure Maintenance**. The Source Measure Maintenance wizard opens.

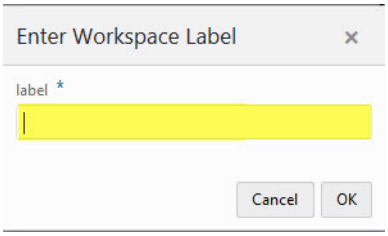
   You can open an existing workspace, but to create a new workspace, click **Create New Workspace**.

Figure 5–12 Source Measure Maintenance Wizard



4. Enter a name for your new workspace in the label text box and click **OK**.

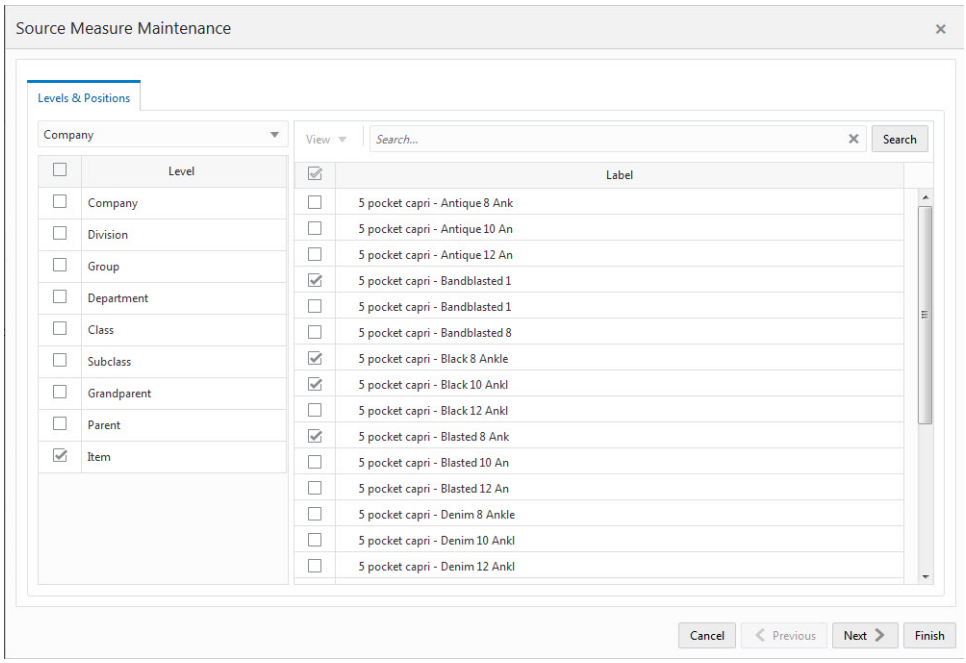
Figure 5–13 Enter Workspace Label



5. The Workspace wizard opens. Select the products you want to work with and click **Next**.

> **Note:** It is important to include all products that are members of the Merchandise dimensions in the forecast levels to be analyzed. For example, if you select to view a forecast level that is defined at subclass/store/week, you must include all items that are members of the particular subclass to be analyzed. It is recommended that Position Query functionality or selection from aggregate levels in the Merchandise hierarchy is employed if the task supports an AutoTask build.

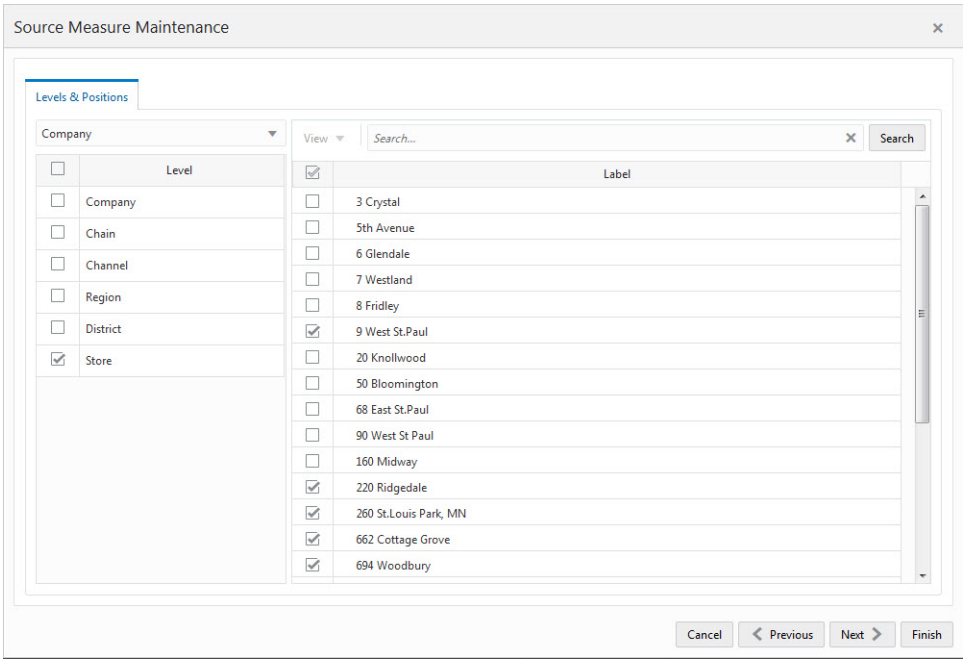
Figure 5–14 Workspace Wizard: Select Products



6. Select the locations you want to work with and click **Next**.

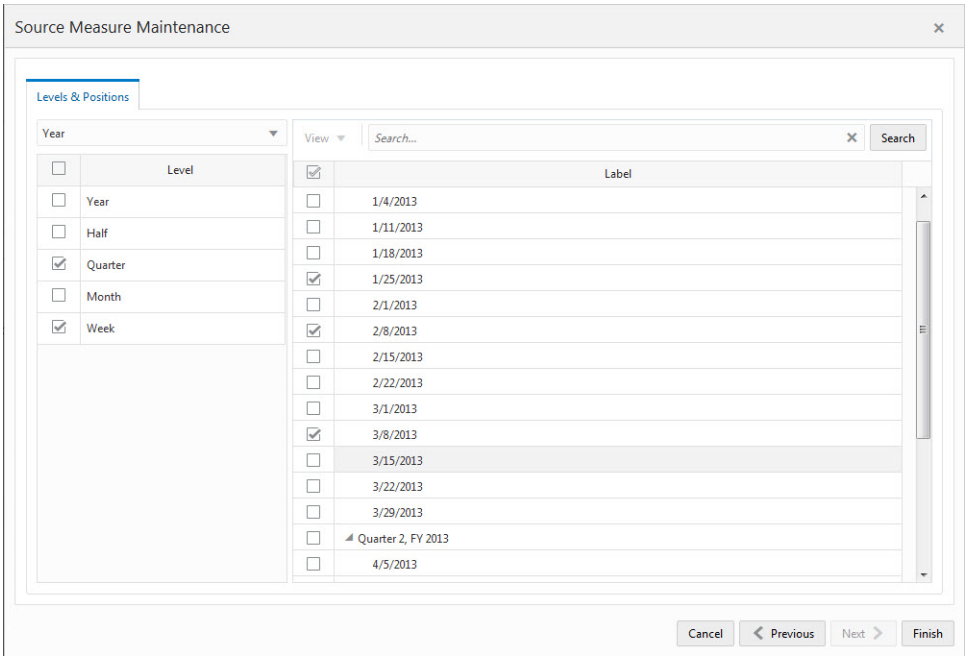
Note: It is important to include all locations that are members of the location dimensions in the forecast levels to be analyzed. For example, if you select to view a forecast level that is defined at item/chain/week, you should include all locations that are members of the particular chain to be analyzed. It is recommended that Position Query functionality or selection from aggregate levels in the location hierarchy is employed if the task supports an AutoTask build.

Figure 5–15 Workspace Wizard: Select Locations



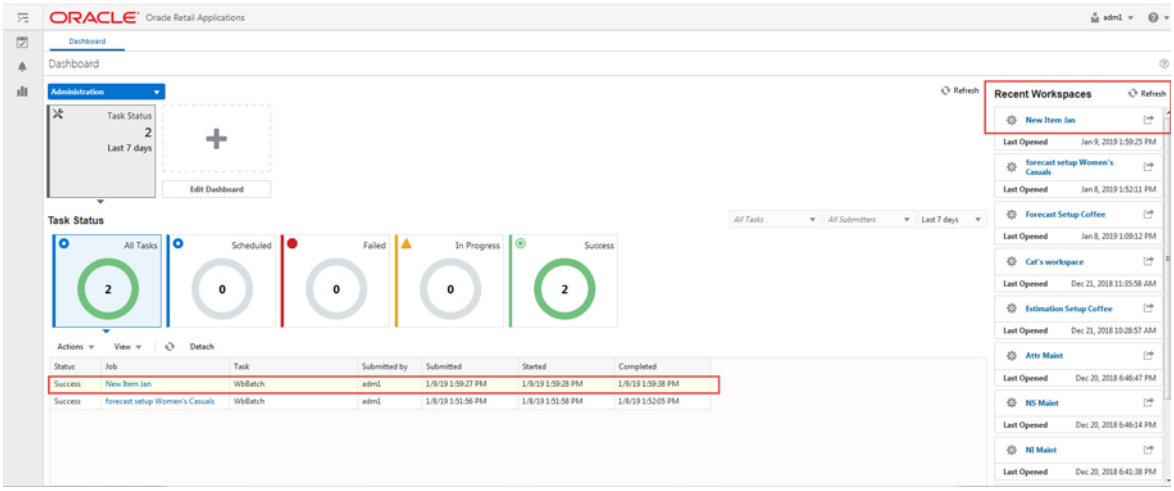
7. Select the weeks of the forecast you wish to review and click **Finish**.

Figure 5–16 Workspace Wizard: Select Available Calendar Positions



8. The wizard notifies you that your workspace is being prepared. Successful workspaces are available from the Dashboard.

Figure 5–17 Successful Workspace Build



The Source Measure Maintenance workspace is built and includes these steps:

- Preprocess Parameters Step
- Review Step

Preprocess Parameters Step

This step has these views:

- Preprocess Admin Promo View
- Preprocess Method Parameters for Promo View
- Preprocess Method Parameters Override for Promo View
- Preprocess Panel for Promo View

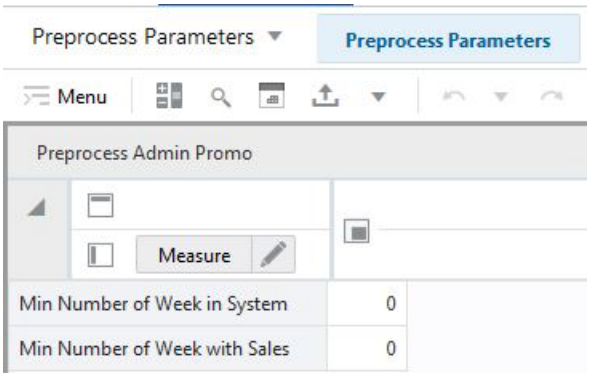
These views make available the preprocessing parameters for four rounds of preprocessing runs, necessary to calculate the data source for baseline forecasting and promotional forecasting.

In RDF, preprocessing is configured to create the data sources for baseline forecasting, as well as, causal forecasting. The creation of each of the sources can go through at most six runs of preprocessing. For example, to generate the Causal Data Source, it is configured for three runs and for the baseline data source, it is configured for four runs.

Preprocess Admin Promo View

This step contains the Preprocess Admin view that allows you to define the scope of the preprocessing run, as well as filter out item/locations where preprocessing does not make sense because of lack of enough historical sales.

Figure 5–18 Preprocess Admin Promo View



Measures: Preprocess Admin Promo View

Min Number of Weeks in System

This parameter defines the number of periods from when an item was introduced in the system. Usually the introduction time is considered to be the date when the item first sold. This check is also introduced to stop making data corrections for items that are very new, and where cleansing would be unreliable.

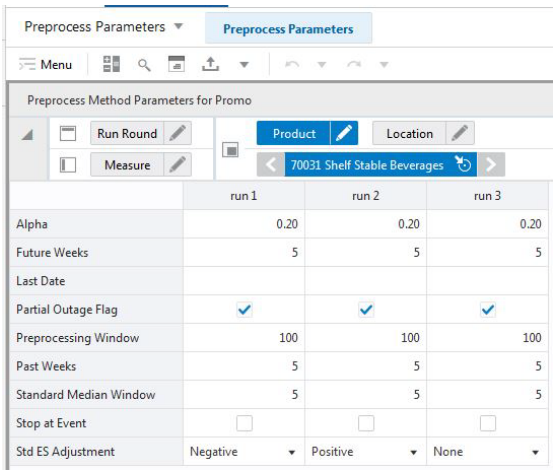
Min Number of Weeks with Sales

This parameter defines the number of weeks with sales that an item/store combination needs to have to qualify for data cleansing. The reasoning behind this check is that for items without enough data, corrections may not be reliable. Once there is enough data, and trends become clearer, corrections can be made.

Preprocess Method Parameters for Promo View

There are actually two views with the same set of measures, where, you can enter values for parameters specific for some of the preprocessing methods available in the special expression to create the data sources for the baseline and causal forecasts. There is a set of parameters for each of the maximum six runs allowed. However, very likely not all six are configured. For example, when generating the causal data source, three runs are configured. The parameters are entered at the class/store intersection

Figure 5–19 Preprocess Method Parameters for PromoView



Measures: Preprocess Method Parameters for Promo View

The Preprocess Method Parameters for Promo view contains the following measures:

Alpha

Exponential smoothing coefficient used to calculate past and future velocities.

Future Weeks

This represents the maximum number of data points to calculate the future velocity, when using the Standard Exponential Smoothing or Lost Sales Standard Exponential Smoothing preprocessing methods.

Last Date

This represents the end date of the preprocessing window; it is typically today's date, but can be any date in the past.

Past Weeks

This represents the maximum number of data points to calculate the past velocity, when using the Standard Exponential Smoothing or Lost Sales Standard Exponential Smoothing preprocessing methods.

Preprocessing Window

Number of historical data points that are preprocessed.

Standard Median Window

Filter window length for the Standard Median preprocessing method.

Partial Outage

A scalar parameter indicating if the period immediately following an out-of-stock period should be adjusted. The default behavior is for the flag to be True.

Stop at Event

This parameter determines which periods are included in the calculation of past/future velocities.

If the flag is set to True, then the algorithm only includes periods before the first event flag or event indicator.

If the flag is False, then all available, non-flagged periods, within the windows defined by Past Weeks and Future Weeks, are used in the calculation of the past and future velocities.

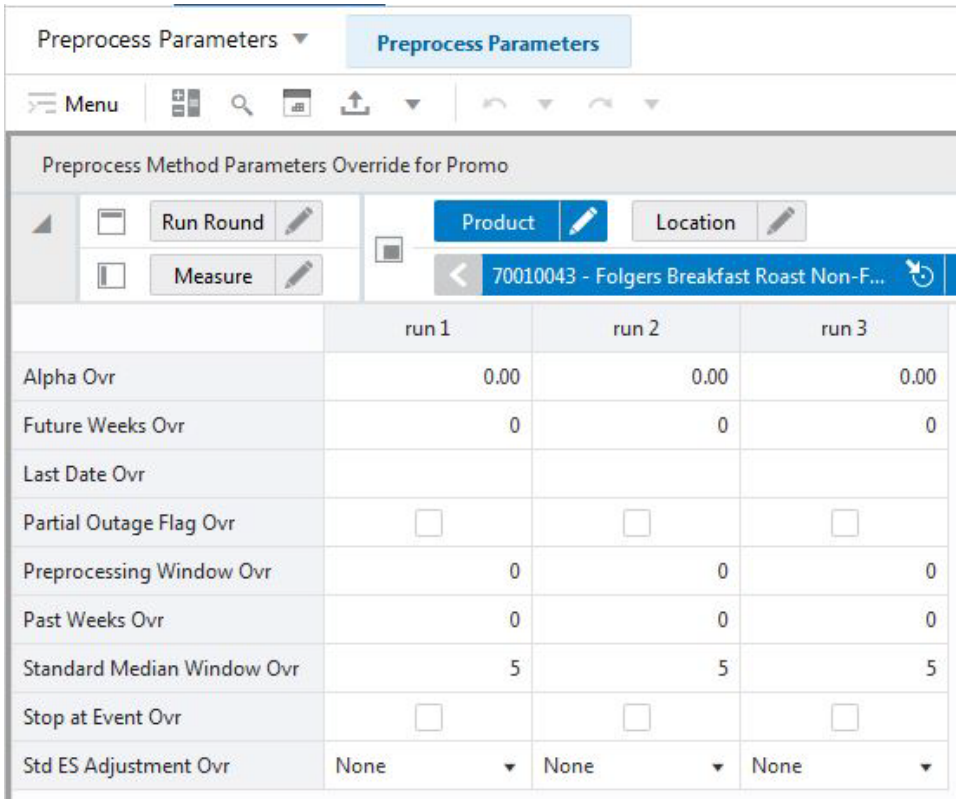
The default setting for the flag is False.

Preprocess Method Parameters Override for Promo View

In this view at the item/store level, you can override values for parameters specific for some of the preprocessing methods available in the special expression. There are two views, corresponding to the preprocessing runs necessary to create the data sources for the baseline and causal forecasts.

After all parameters are set and committed back to the domain, usually a batch job will run the pre-processing steps and prepare the data source s for forecast generation.

Figure 5–20 Preprocess Method Parameters Override for Promo View



Measures:Preprocess Method Parameters Override for Promo View

The Preprocess Method Parameters Override for Promo view contains the following measures:

Alpha Override

Exponential smoothing coefficient used to calculate past and future velocities.

Future Weeks Override

This represents the maximum number of data points to calculate the future velocity, when using the Standard Exponential Smoothing or Lost Sales Standard Exponential Smoothing preprocessing methods.

Last Date Override

This represents the end date of the preprocessing window; it is typically today's date, but can be any date in the past.

Past Weeks Override

This represents the maximum number of data points to calculate the past velocity, when using the Standard Exponential Smoothing or Lost Sales Standard Exponential Smoothing preprocessing methods.

Preprocessing Window Override

Number of historical data points that are preprocessed.

Standard Median Window Override

Filter window length for the Standard Median preprocessing method.

Partial Outage Override

A scalar parameter indicating if the period immediately following an out-of-stock period should be adjusted. The default behavior is for the flag to be True.

Stop at Event Override

This parameter determines which periods are included in the calculation of past/future velocities.

If the flag is set to True, then the algorithm only includes periods before the first event flag or event indicator.

If the flag is False, then all available, non-flagged periods, within the windows defined by Past Weeks and Future Weeks, are used in the calculation of the past and future velocities.

The default setting for the flag is False.

Preprocess Panel for Promo View

Depending on your wizard selection for either baseline or causal, the view shows the preprocessing parameters for each relevant run. For example if baseline is selected, the view displays preprocessing information for the four runs that are configured. If causal is selected, the view shows preprocessing parameters for three runs.

Baseline View

The view displays the measures necessary to create the data source for baseline forecasting. This involves four rounds of preprocessing that run in batch or online.in this order:

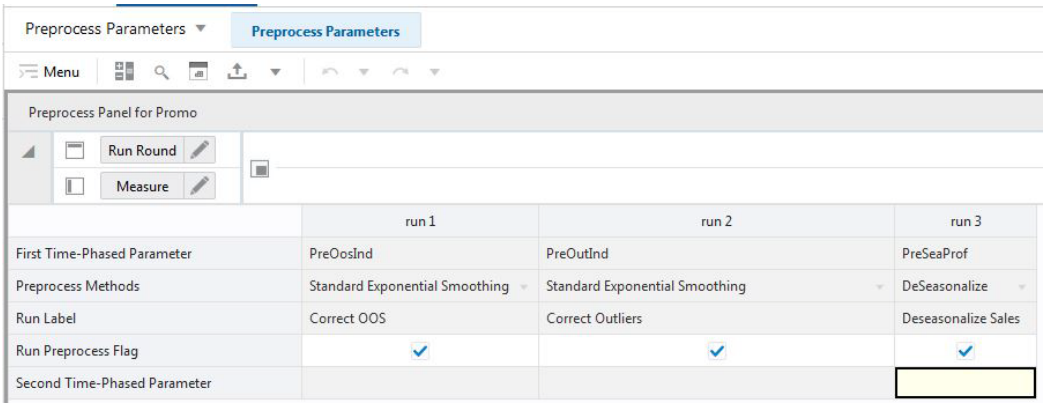
1. Correcting for stockouts
2. Correcting for outliers
3. Depromoting sales
4. Smooth sales

Causal View

The causal view displays the measures necessary to create the data source for causal forecasting. This involves three rounds of preprocessing that are run in batch:

1. Correcting for stockouts
2. Correcting for outliers
3. Deseasonalizing the measure to create the Causal Data Source

Figure 5–21 Preprocess Panel for Promo View



Measures: Preprocess Panel for Promo View

The Preprocess Panel for Promo view contains the following measures:

First Time-Phased Parameter Causal

This measure stores the first time-phased measure that is required for some preprocessing methods. For instance, for the STD ES LS method, this measure would store the measure name of the outage flag. Or for the STD ES method, it could store the name of the outlier flag.

Preprocess Method

Name of the preprocessing method to be used for each run. This method is selected in the Configuration Tools

Output Data Measure

Indicates the measure that stores the result of the last configured preprocessing run. For instance, for the Preprocess Panel for Baseline, the output comes from run 4.

Run Label

A label denoting the purpose of the preprocessing run, for example, Correct Outliers, or Depromote Sales.

Run Preprocess Flag

Boolean measure indicating if this run should be enabled or skipped.

Second Time-Phased Parameter Causal

This measure stores the second time-phased measure that is required for some preprocessing methods. For instance, for the Forecast Sigma method, this measure would store measure name of the confidence intervals. Or for the Override method it could store the measure name of the outage flag.

Review Step

The main purpose of this step is to display time-phased measures that represent input and output to the preprocessing stages, run in batch based on the settings selected in Preprocessing Admin.

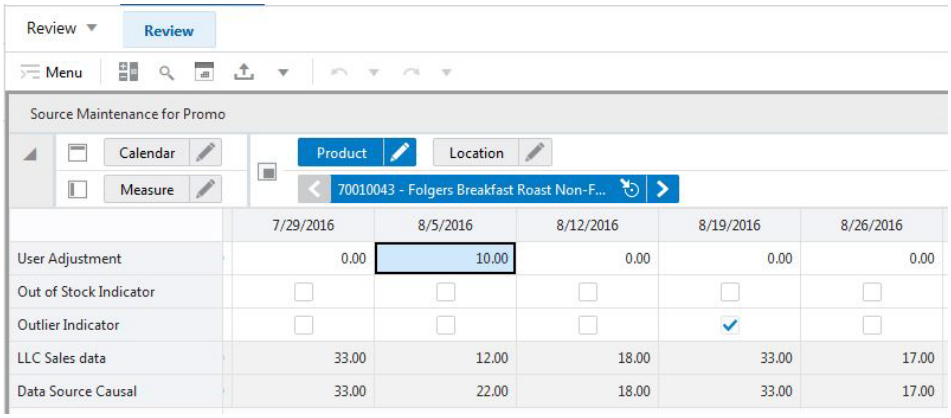
This step has this view:

- Source Measure Maintenance for Promo View

Source Measure Maintenance for Promo View

This view displays measures that represent input and output of the preprocessing runs, in table format.

Figure 5–22 Source Maintenance View



Measures: Source Maintenance View

The Source Maintenance view contains the following measures:

User Adjustment

In this measure, you can enter values that are going to be added to the preprocessing adjustments to create the data sources.

The logic is: data source = weekly sales + preprocessing adjustments + user adjustment

This measure is read/write.

Weekly Sales

This measure stores the raw sales loaded in RDF. This is the input to the first run of preprocessing. This measure is read only.

Data Source

This measure represents the output of the preprocessed raw sales, as well as incorporates the user adjustments according to the formula:

data source = weekly sales + preprocessing adjustments + user adjustments.

Out of Stock Indicator

This measure is either loaded or calculated by the rules in the custom menu. It is used during the pre-processing run that corrects sales for lost sales.

Outliers Indicator

This measure is either loaded or calculated by the rules in the custom menu. It is used during the pre-processing run that corrects the sales for outliers.

Promotion Indicator

This measure is usually calculated as the or of all available Boolean promotional variables. It is used during the preprocessing run that removes promotional sales.

6

Estimation Setup Short Lifecycle Task

This chapter describes the Estimation Setup Short Lifecycle for RDF Cloud Service.

Estimation Setup SLC Workspaces, Steps, and Views

The following table lists the workspaces, steps, and views for the Estimation Setup Short Lifecycle task.

Workspace	Step	Views
General Estimation Setup SLC Workspace	General Estimation Setup SLC Step	SLC Estimation Setup View
	Season Code Step	Season Code Parameters View
	Escalation Path Step	Default Escalation Path View Escalation Path Override View
	Calculation Setup Step	Profile Normalization View
		Filter Thresholds View
	Calculation Parameters Override Step	Pruning Parameters Override View

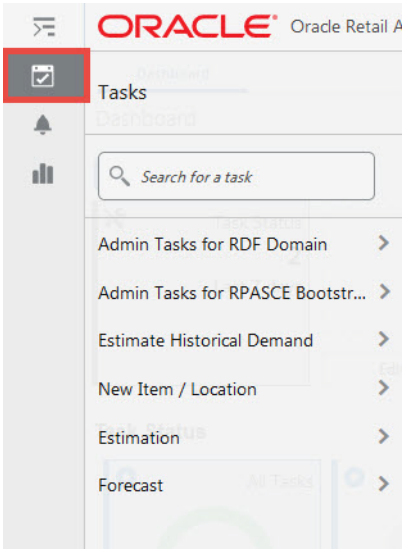
General Estimation Setup SLC Workspace

The General Estimation Setup SLC workspace allows you access to all of the views listed in Estimation Setup SLC Workspaces, Steps, and Views.

To build the General Estimation Setup SLC workspace, perform these steps:

1. From the left sidebar menu, click the Task Module to view the available tasks.

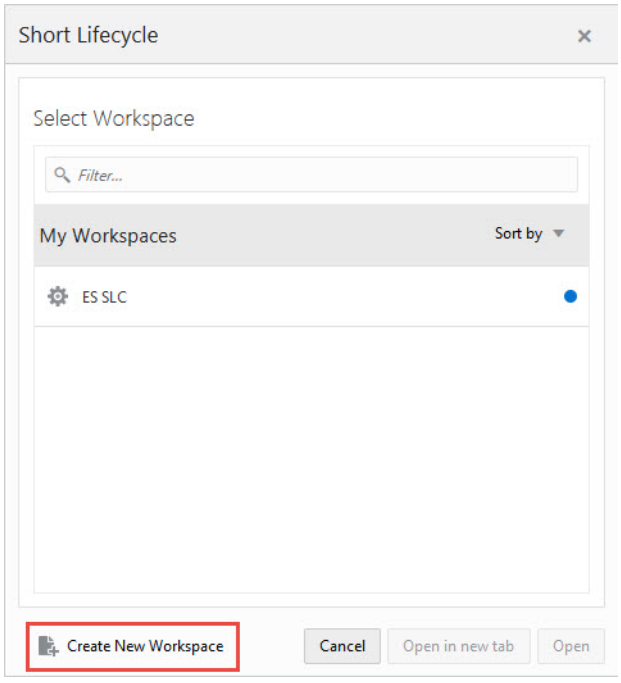
Figure 6–1 Task Module



2. Click the **Estimation** activity and then click **Setup** to access the available workspaces.
3. Click **Short Lifecycle**. The Short Lifecycle wizard opens.

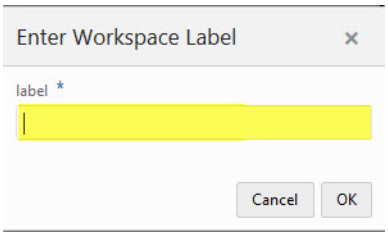
   You can open an existing workspace, but to create a new workspace, click **Create New Workspace**.

Figure 6–2 Short Lifecycle Wizard



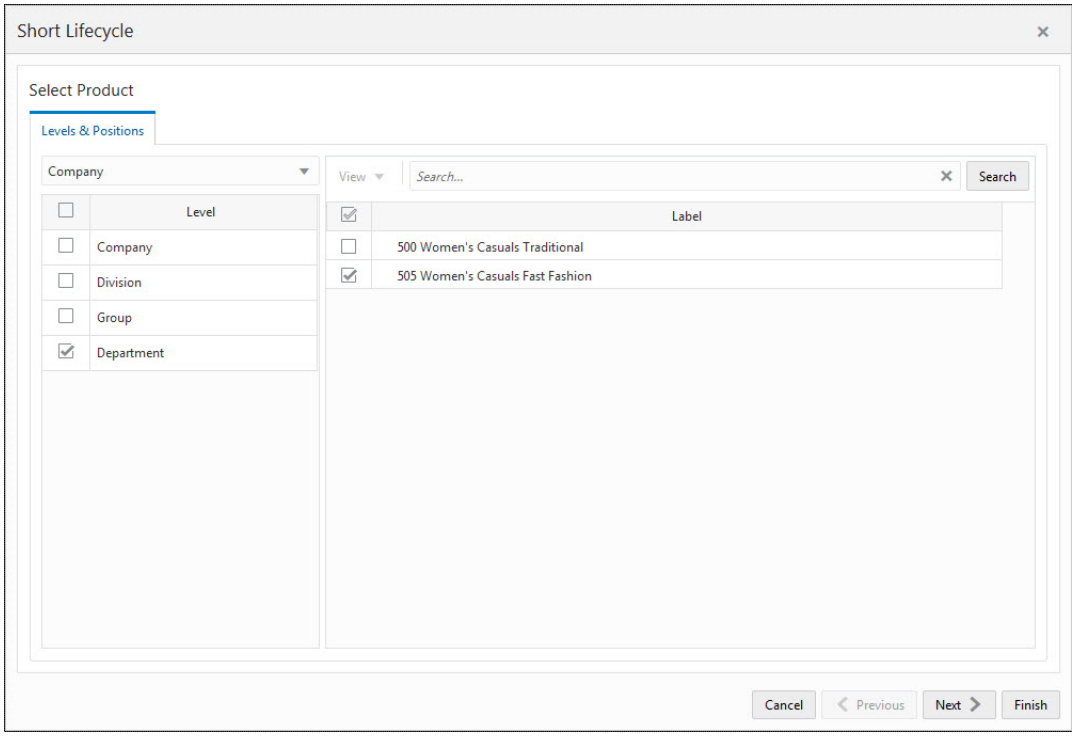
4. Enter a name for your new workspace in the label text box and click **OK**.

Figure 6–3 Enter Workspace Label



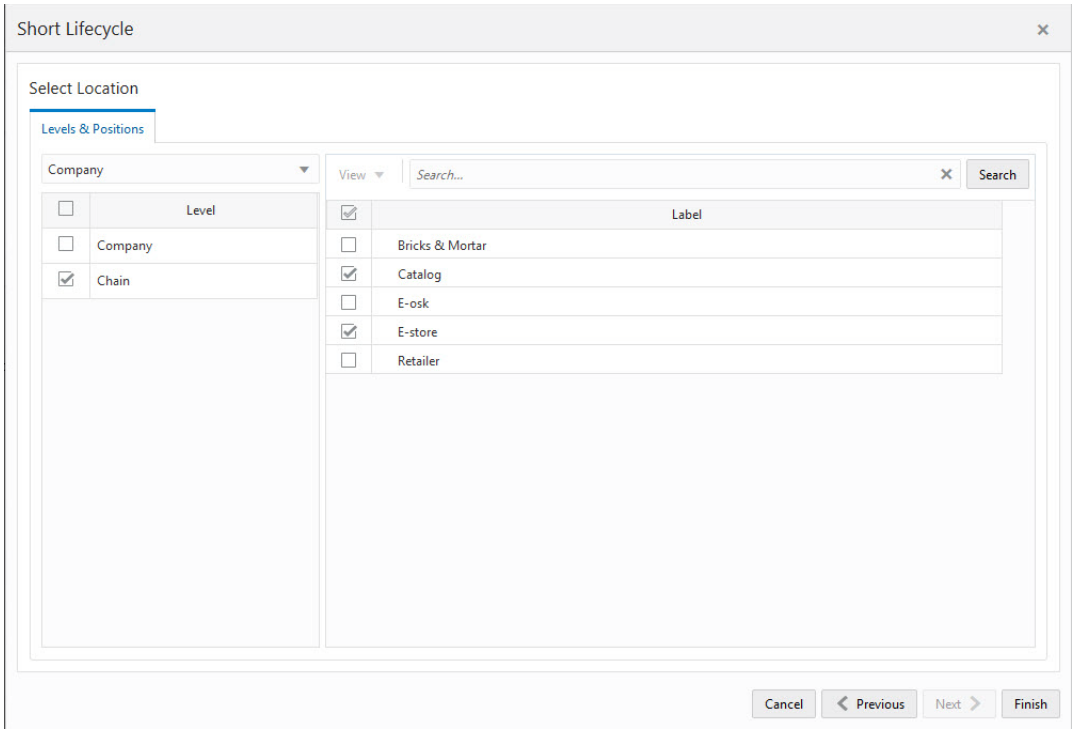
5. The Workspace wizard opens. Select the products you want to work with and click **Next**.

Figure 6–4 Workspace Wizard: Select Products



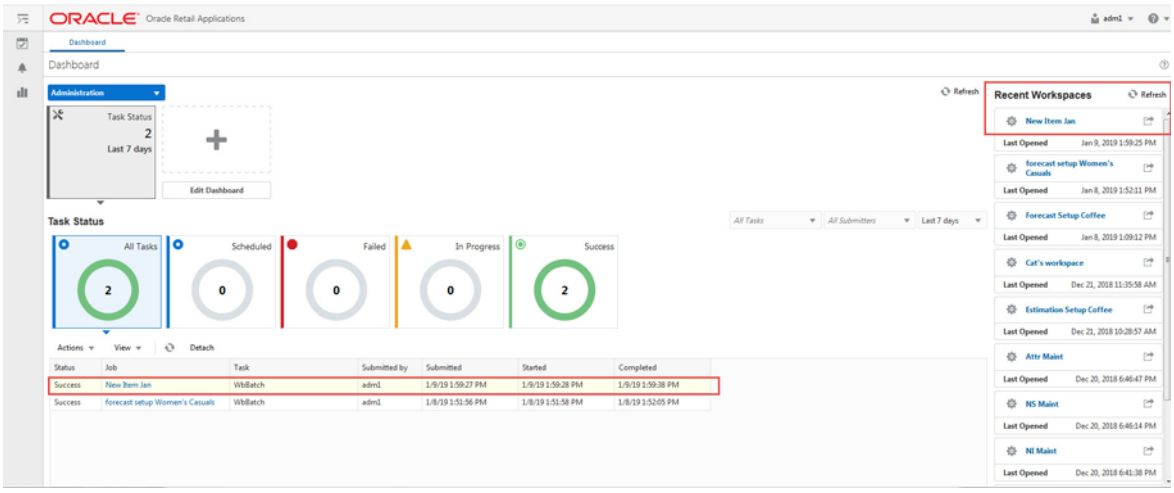
6. Select the locations you want to work with and click **Finish**.

Figure 6–5 Workspace Wizard: Select Locations



7. The wizard notifies you that your workspace is being prepared. Successful workspaces are available from the Dashboard.

Figure 6–6 Successful Workspace Build



General Estimation Setup SLC Step

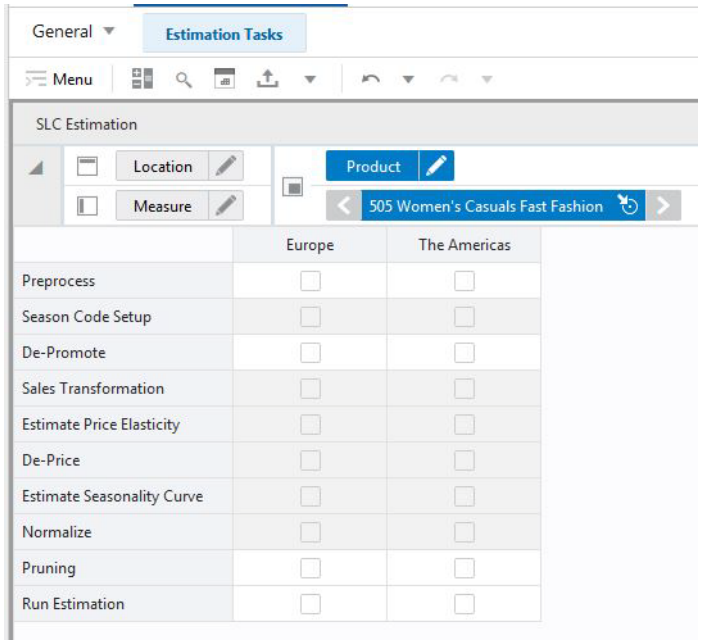
This step contains this view:

- SLC Estimation Setup View

SLC Estimation Setup View

The SLC Estimation Setup view shows the steps running the estimation and allows enabling or disabling some of them.

Figure 6–7 SLC Estimation Setup View



Measures: SLC Estimation View

The SLC Estimation view contains the following measures:

Run Estimation

If this flag is selected, estimation is run for the given merchandise.

Preprocess

If this flag is selected, preprocessing is run for the given merchandise. During this step unreliable data points are filtered out and not considered in further calculations.

De-Price

During this step clearance effects are removed from the demand. De-pricing is mandatory.

De-Promote

If this flag is selected the demand is depromoted. During this step, the effects of temporary price reductions of promotions and holidays are removed from demand.

Normalize

During this step the lifecycle curves are normalized, so the values add up to 52. Normalizing is mandatory.

Estimate Price Elasticity

During this step the impact of clearance prices on demand are quantified. The outputs are price elasticities. Estimating price elasticities is mandatory

Season Code Setup

During this step the user defines how merchandise shall be grouped so its demand is processed together. Setting up season codes is mandatory.

Estimate Seasonality Curve

During this step seasonality curves are calculated at several escalation levels. Estimating seasonality curves is mandatory.

Sales Transformation

During this step the sales are processed such that seasonality and other effects are removed. Sales transformation is mandatory.

History End Date

In this measure the user can specify the most recent period to be used in estimation. For instance if today's date is 1/1/2025, and the user sets the History End Date to be 12/1/2024, the sales from December 2024 are not used during estimation.

Season Code Step

This step contains this view:

- Season Code Parameters View

Season Code Parameters View

The goal of the estimation task is to estimate seasonality curves as well as price and promotion effects. Since short lifecycle merchandise, such as fashion items, do not sell year over year, demand for the items that are selling this year

, is not available for past years. The demand parameters need to be estimated using demand of similar items that sold in previous years.

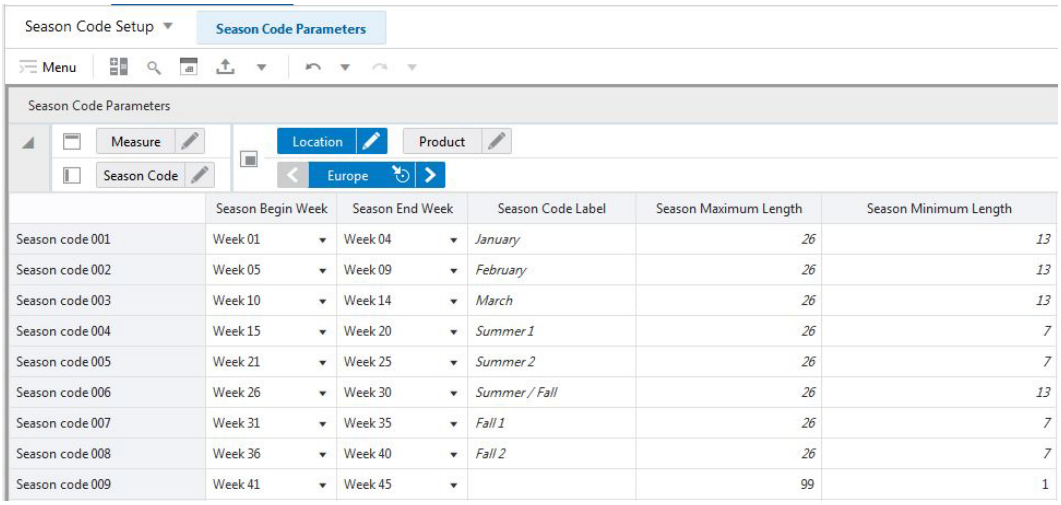
Among the criteria used for deciding what similar items are, include the following:

- When the items have started selling
- How long the items have been selling

For instance, a possible scenario is to group all items that have started selling in March, and have been selling for 13 weeks. Or all items that have started selling in Spring and sold for up to 26 weeks. All items that share these properties are sharing a so called season code

In the Season Code Parameters view, you can specify the basic information for defining season codes.

Figure 6–8 Season Code Parameters View



	Season Begin Week	Season End Week	Season Code Label	Season Maximum Length	Season Minimum Length
Season code 001	Week 01	Week 04	*January*	*26*	*13*
Season code 002	Week 05	Week 09	*February*	*26*	*13*
Season code 003	Week 10	Week 14	*March*	*26*	*13*
Season code 004	Week 15	Week 20	*Summer 1*	*26*	*7*
Season code 005	Week 21	Week 25	*Summer 2*	*26*	*7*
Season code 006	Week 26	Week 30	*Summer / Fall*	*26*	*13*
Season code 007	Week 31	Week 35	*Fall 1*	*26*	*7*
Season code 008	Week 36	Week 40	*Fall 2*	*26*	*7*
Season code 009	Week 41	Week 45		99	1

Measures: Season Code Parameters View

Note: An item/location can only belong to one season code.

The Season Code Parameters view contains the following measures:

Season Begin Week

The Season Begin Week and Season End Week define the period that similar items start selling. For instance, we may say that items starting selling in the second half of March and beginning of April should be considered to belong to the same season code. Note that in addition to the period when items start selling, the season length criteria also needs to be met.

Season End Week

The Season Begin Week and Season End Week define the period that similar items start selling. For instance, we may say that items starting selling in the second half of March and beginning of April should be considered to belong to the same season code. Note that in addition to the period when items start selling, the season length criteria also needs to be met.

Season Code Label

This measure allows you to give a meaningful label to items that are processed together. For instance 'Spring Fast Fashion' or 'Winter Apparel'.

Season Maximum Length

The Season Minimum and Maximum Length measures allow the grouping of items by the length of their shelf life. For instance items that sell between 10 and 15 weeks are candidates to be grouped together in the same season code. Note that for the grouping to actually happen the items also need to start selling around the same time of the year, as defined by the Season Begin and End measures.

Season Minimum Length

The Season Minimum and Maximum Length measures allow the grouping of items by the length of their shelf life. For instance items that sell between 10 and 15 weeks are candidates to be grouped together in the same season code. Note that for the grouping to actually happen the items also need to start selling around the same time of the year, as defined by the Season Begin and End measures.

Escalation Path Step

This step contains these views:

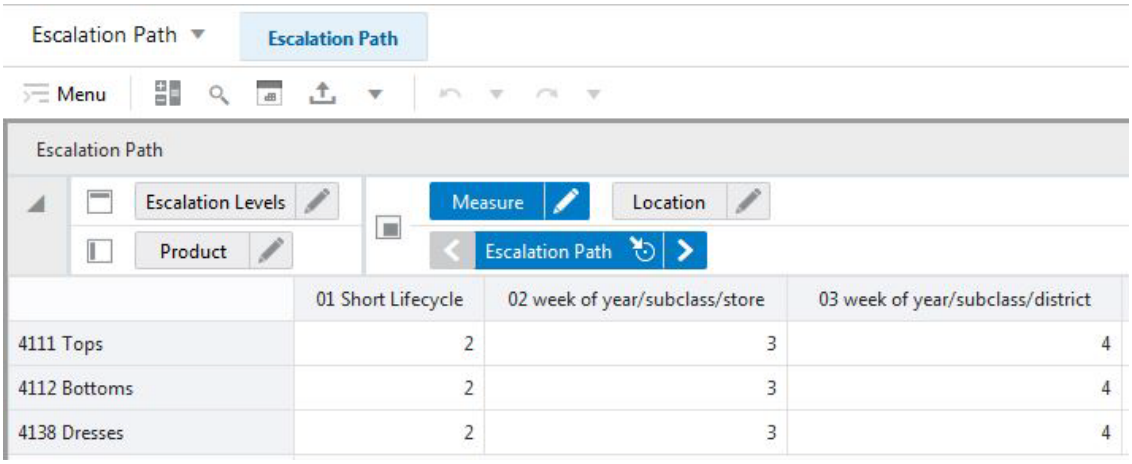
- Default Escalation Path View
- Escalation Path Override View

Default Escalation Path View

The Default Escalation Path view allows you to specify the priority of each escalation level. Escalation levels with low intersections, such as subclass, usually capture more detailed demand patterns, but are less stable because the lower number of data points used for estimation.

Escalation levels with high intersections, such as department, usually capture more generic demand patterns, but are very stable because of the large number of data points used for estimation.

Figure 6–9 Default Escalation Path View



Measures: Default Escalation Path View

The Default Escalation Path view contains the following measures:

Level Intersection

This measure displays the intersections of the escalation levels. This can be helpful for the business user when assigning priorities in the escalation path.

Escalation Path

The user can specify the priority in which the system searches escalation levels for forecast parameters like seasonality curves and/or promotion effects. For instance, suppose there are three escalation levels available. The path may be defined as follows:

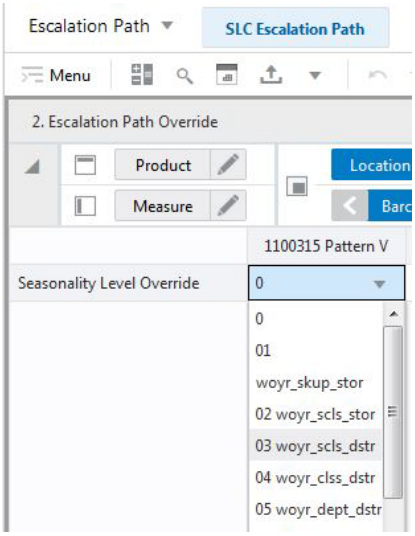
- Escalation Level #1: priority 3
- Escalation Level #2: priority 4
- Escalation Level #3: priority 2

In this case, when generating the forecast, the system will first look to get parameters from Escalation Level #3 (highest priority). If they are available, they are used. If they are not available, because they were deemed unreliable and pruned, the system will go to Escalation Level #1 (second highest priority). Finally, if the search is not successful, the search continues at Escalation Level #2.

Escalation Path Override View

The Escalation Path Override view you can specify the top priority escalation level.

Figure 6–10 Escalation Path Override View



Measures: Escalation Path Override View

The Escalation Path Override view contains the following measures:

Escalation Path Override

In this field the user can override the default escalation path selections. The user can enter the preferred Escalation Level and that will become the top priority.

Calculation Setup Step

This step has this view:

- Estimation Parameters Sub-step

Estimation Parameters Sub-step

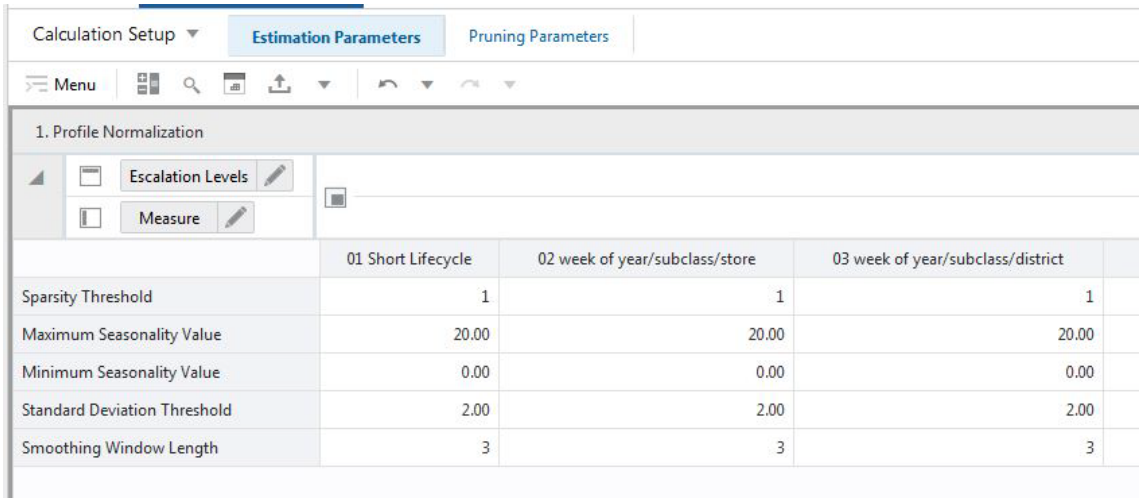
This sub-step contains this view:

- Profile Normalization View

Profile Normalization View

The Profile Normalization view explains the filters or checks that a curve needs to pass.

Figure 6–11 Profile Normalization View



Measures: Profile Normalization View

The Profile Normalization view contains the following measures:

Sparsity Threshold

This measure holds the number of zero value cells allowed such that the curve passes the filter.

Maximum Seasonality Value

This number holds the maximum allowed seasonality value.

Minimum Seasonality Value

This number holds the minimum allowed seasonality value.

Standard Deviation Threshold

This measure holds the maximum allowed standard deviation of the curve.

Smoothing Window Length

Window length for smoothing using the Standard Median filter.

Pruning Parameters Sub-step

This sub-step contains this view:

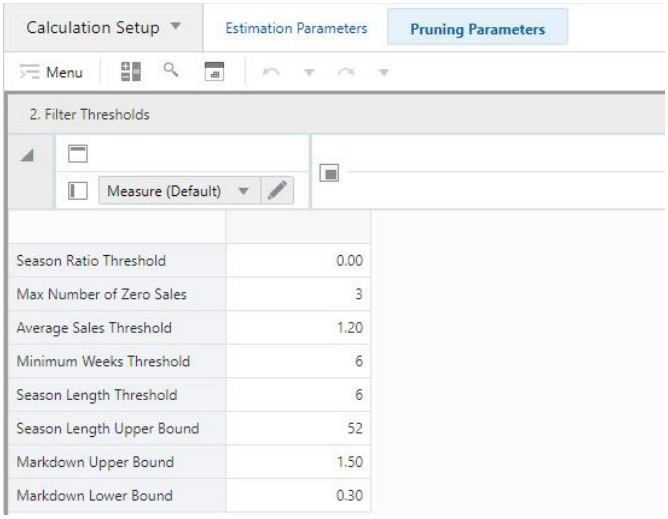
- Filter Thresholds View

Filter Thresholds View

The Filter Thresholds view explains the pruning strategy.

After estimation is performed, the demand parameters are undergoing a rigorous check to make sure they are suitable for forecasting. In this view, you can set the thresholds for various filters.

Figure 6–12 Filter Thresholds View



Measures: Filter Thresholds View

The Filter Thresholds view contains the following measures:

Season Ratio Threshold

This measure defines the length of the season. If the sales are less than the maximum sales times this threshold, the sales are not used in further calculations.

Max Number of Zero Sales

This is maximum allowed number of zero sales cells that a curve can have without being pruned.

Average Sales Threshold

This is the minimum allowed average sales that a curve can have without being pruned.

Minimum Weeks Threshold

This is the minimum allowed number of weeks that a curve must have data for without being pruned.

Season Length Threshold

This measure decides which sales to use in further calculations. If the season length for a product location combination is less than this value, the sales of the product location combination are not used in further calculations.

Season Length Upper Bound

This measure controls the upper bound of the sales length to be used in the Short Lifecycle calculation. Items with sales count greater than the season length upper bound will be pruned out.

The pruned time series based on the Season Length threshold and season length upped bound will be displayed in the SLC Preprocess Summary in the Estimation Review workbook.

Markdown Upper Bound

This measure decides if a marked down period is a legitimate data point or must be discarded. If the sales price for the period divided by the regular price is more than this value, the data point is discarded.

Markdown Lower Bound

This measure decides if a marked down period is a legitimate data point or must be discarded. If the sales price for the period divided by the regular price is less than this value, the data point is discarded.

Calculation Parameters Override Step

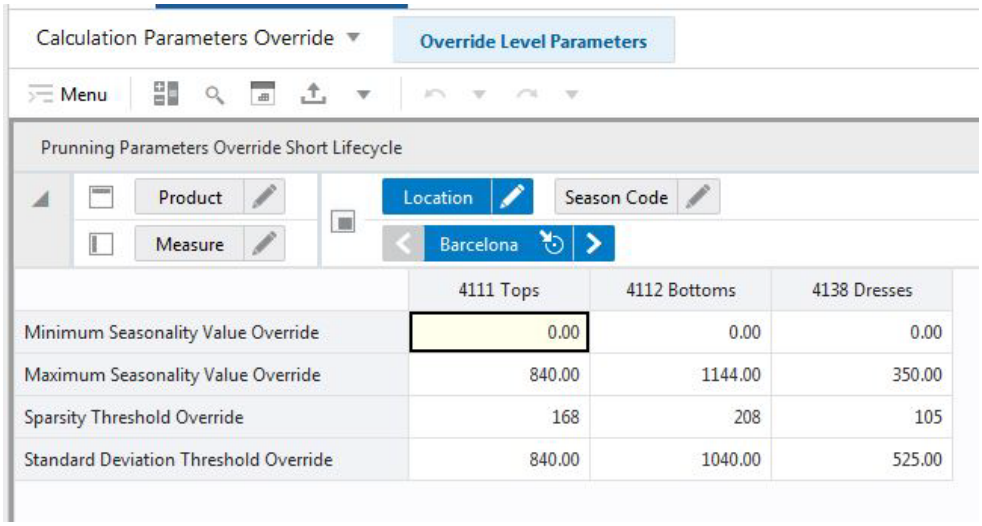
This step contains this view:

- Pruning Parameters Override View

Pruning Parameters Override View

In the Pruning Parameters Override view you can override the thresholds for the pruning thresholds at a more granular level.

Figure 6–13 Pruning Parameters Override View



	4111 Tops	4112 Bottoms	4138 Dresses
Minimum Seasonality Value Override	0.00	0.00	0.00
Maximum Seasonality Value Override	840.00	1144.00	350.00
Sparsity Threshold Override	168	208	105
Standard Deviation Threshold Override	840.00	1040.00	525.00

Measures: Pruning Parameters Override View

The Pruning Parameters Override view contains the following measures:

Minimum Seasonality Value Override

This number holds the minimum allowed seasonality value. If set to zero, it assures that no negative seasonal indices are used.

Maximum Seasonality Value Override

This number holds the maximum allowed seasonality value.

Sparsity Threshold Override

This measure holds the number of zero value cells allowed such that the curve passes the filter.

Standard Deviation Threshold Override

This measure holds the maximum allowed standard deviation of the curve.

Group Assignment Step

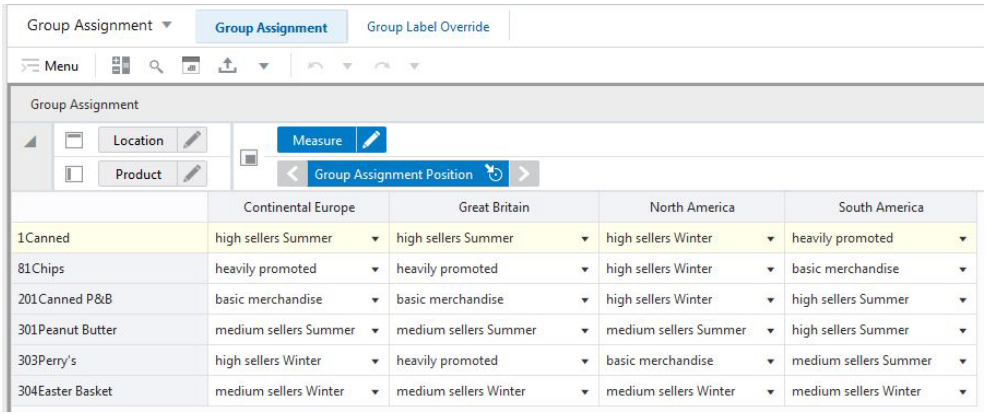
This step contains these views:

- Group Assignment View
- Group Label Override View

Group Assignment View

Typically, escalation and pooling levels are intersections along the product, location and calendar hierarchies, such as subclass/region/week. However, RDF CS also offers the ultimate flexibility where any item at any store can be grouped together. For instance rain gear in the Southeast region, may be grouped together with snow shovels in the Midwest region, something that would not be possible if the levels are tied to the hierarchies. Determining what item/locations is meaningful to be grouped together can be achieved in several ways. First, the analysis can be done outside of RDF CS, and the groups can be imported using Load Measure. A second option is to implement logic in RDF CS thru the extensibility framework. Finally, the Group Assignment view allows you to manually assign time series to such groups.

Figure 6–14 Group Assignment View



Measures: Group Assignment View

The Group Assignment view contains the following measures:

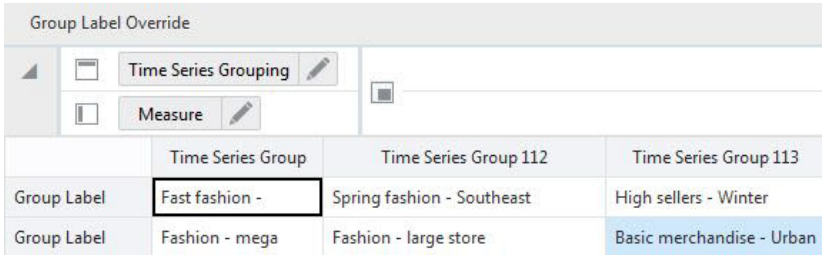
Group Assignment

Use these measures to specify the group that certain product/location combinations belong to. Note that multiple Group Assignment measures are available. Consider a red shirt selling at a large store at the outskirts of a large metro area. This item/store combination can be part of a certain group where the clustering is done by merchandise. It could potentially be grouped together with other basic fashion items. A different clustering can be done by price tier and store format. There it could be grouped together with other medium priced items selling at a large store.

Group Label Override View

Typically, the groups and their labels are handled outside the solution. However, if no proper labels were specified, they can be overwritten in this view.

Figure 6–15 Group Label Override View



Measures: Group Label Override View

The Group Label Override view contains the following measures:

Group Label

These measures allow you to specify labels that describe grouping criteria of item and locations combinations that are assigned to it. There are as many Group Label measures as there are Group Assignment measures.

7

Estimation Setup Long Lifecycle Task

This chapter describes the Estimation Setup Long Lifecycle for RDF Cloud Service.

Estimation Setup LLC Workspaces, Steps, and Views

The following table lists the workspaces, steps, and views for the Estimation Setup Long Lifecycle task.

Workspace	Step	Views
General Estimation Setup LLC Workspace	Seasonality Step	Seasonality Global Parameters View Seasonality Level Parameters View Seasonality Level Parameters Override View
	Pooling Step	Pooling Global Parameters View Pooling Level Parameters View Promotion Model Type View Ridge Regression Parameters View Pooling Level Parameters Override View
	Escalation Path Step	Seasonality Escalation Path View Seasonality Escalation Path Override View Pooling Escalation Path View Pooling Escalation Path Override View
	Pruning Parameters Step	Seasonality Pruning Parameters View Seasonality Pruning Parameters Override View Pooling Pruning Parameters View Minimum Time Series View
	Group Assignment Step	Group Assignment View Group Label Override View

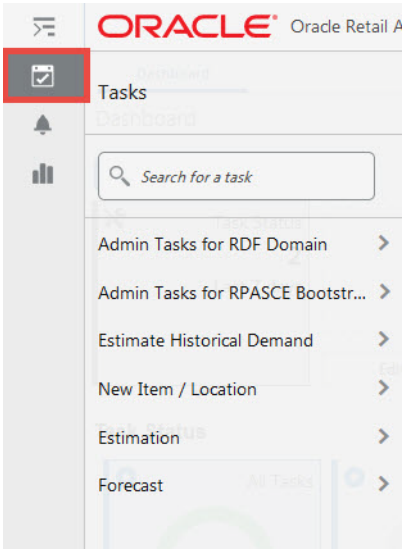
General Estimation Setup LLC Workspace

The General Estimation Setup LLC workspace allows you access to all of the views listed in Estimation Setup LLC Workspaces, Steps, and Views.

To build the General Estimation Setup LLC workspace, perform these steps:

1. From the left sidebar menu, click the Task Module to view the available tasks.

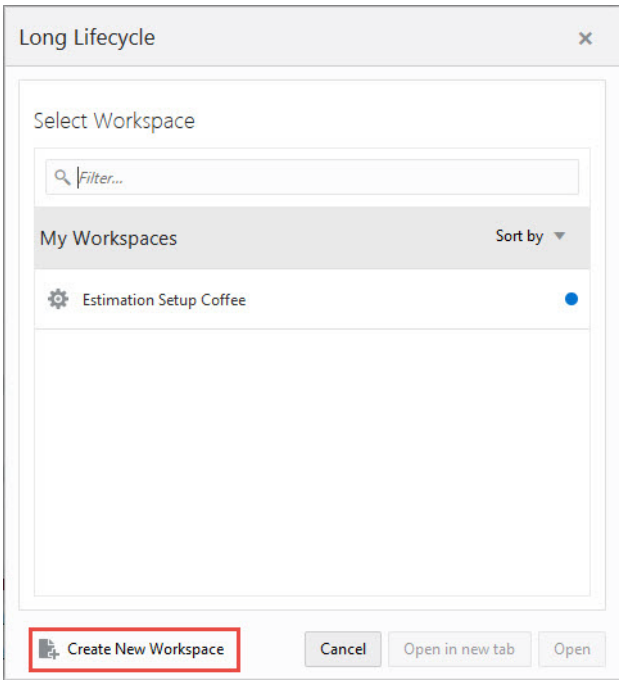
Figure 7–1 Task Module



2. Click the **Estimation** activity and then click **Setup** to access the available workspaces.
3. Click **Long Lifecycle**. The Long Lifecycle wizard opens.

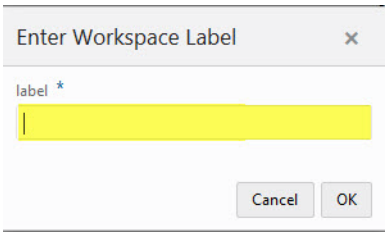
   You can open an existing workspace, but to create a new workspace, click **Create New Workspace**.

Figure 7–2 Long Lifecycle Wizard



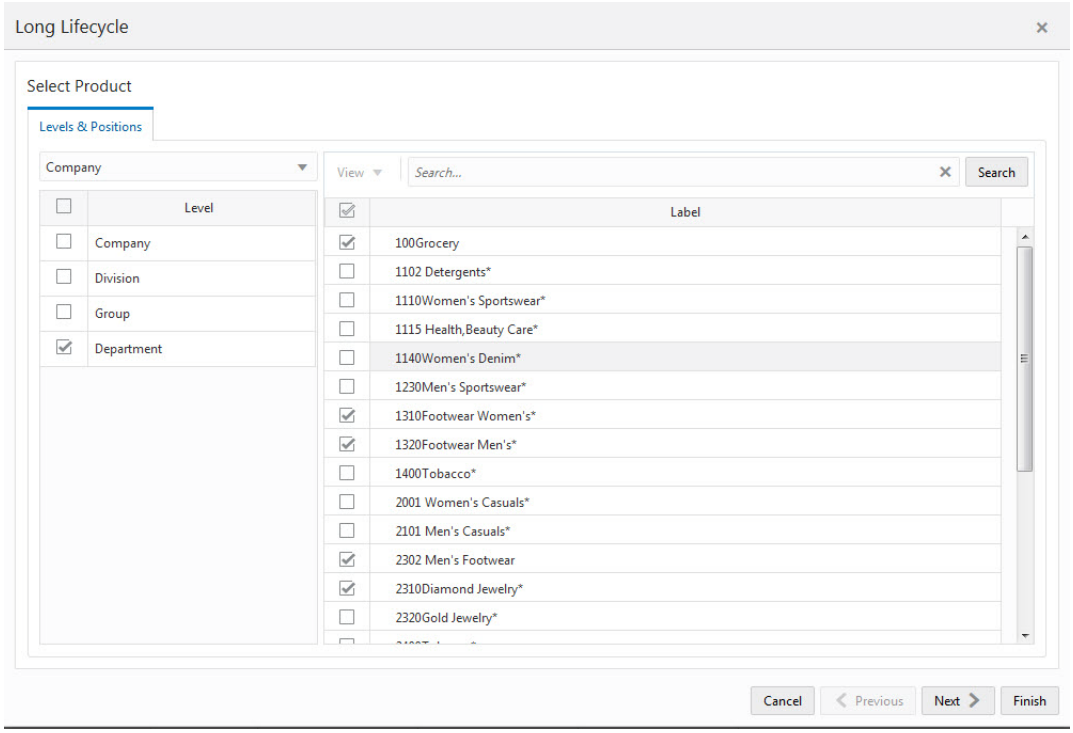
4. Enter a name for your new workspace in the label text box and click **OK**.

Figure 7–3 Enter Workspace Label



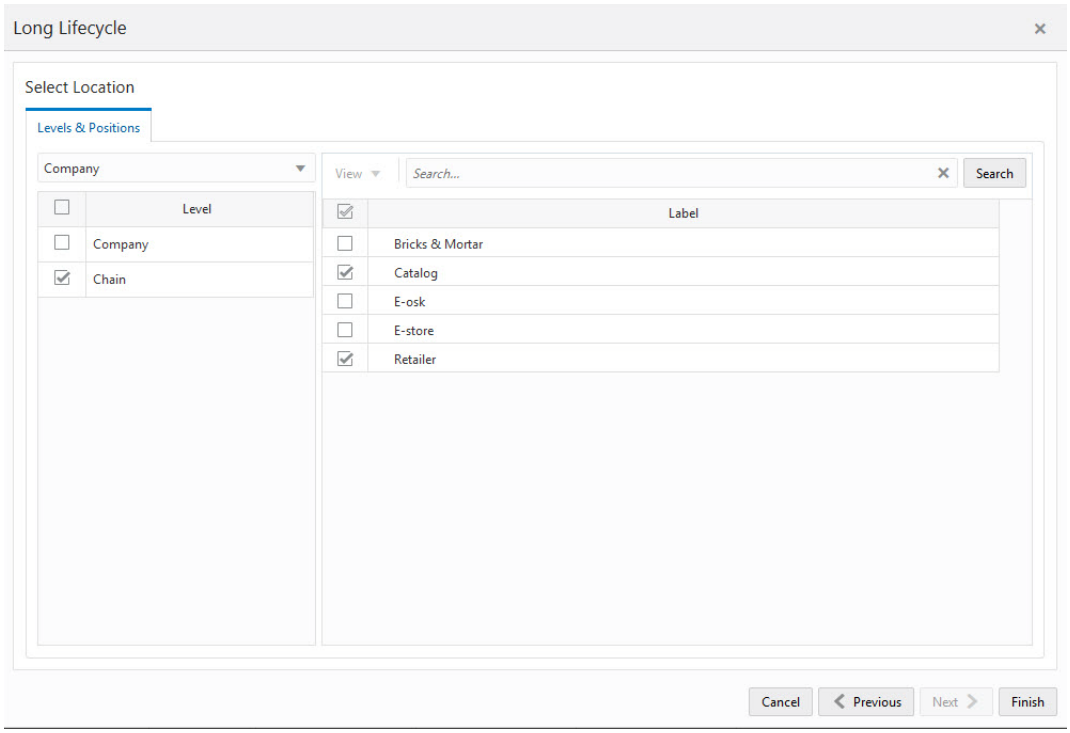
5. The Workspace wizard opens. Select the products you want to work with and click **Next**.

Figure 7–4 Workspace Wizard: Select Products



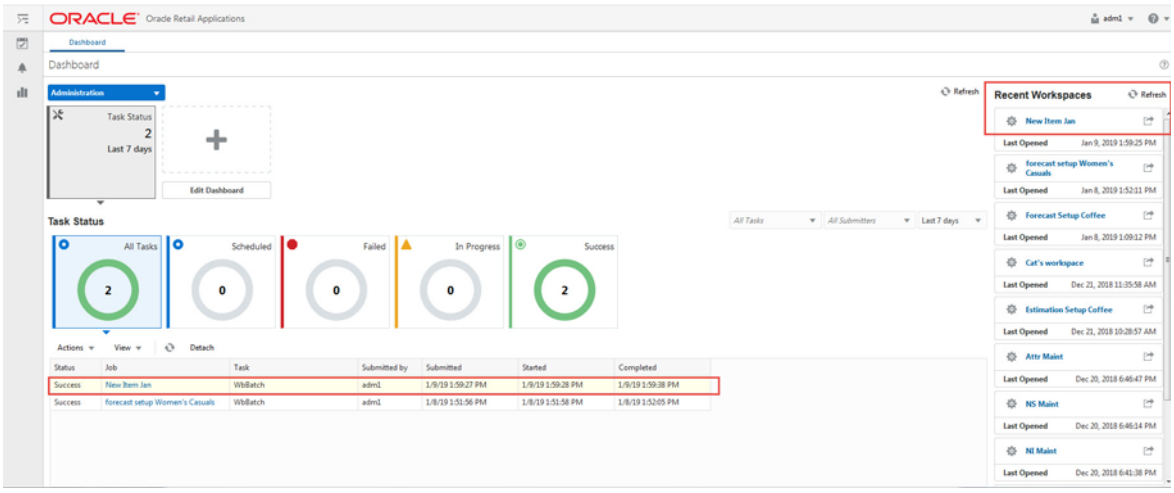
6. Select the locations you want to work with and click **Finish**.

Figure 7–5 Workspace Wizard: Select Locations



7. The wizard notifies you that your workspace is being prepared. Successful workspaces are available from the Dashboard.

Figure 7–6 Successful Workspace Build



Seasonality Step

In this step, you can adjust parameters that determine the strategy around how to create seasonality curves. For example. you can decide which estimation method to use and tweak certain parameters that are relevant to the estimation method.

This activity contains these sub-steps:

- Seasonality Default Parameters Sub-step
- Seasonality Override Parameters Sub-step

Seasonality Default Parameters Sub-step

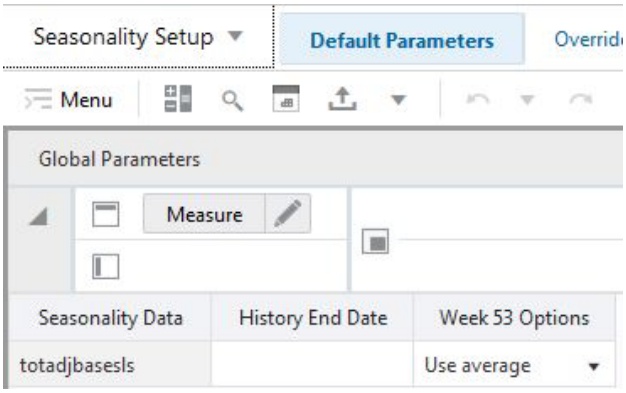
This step contains these views:

- Seasonality Global Parameters View
- Seasonality Level Parameters View

Seasonality Global Parameters View

The measures in the Global Parameters view are level or intersection specific. For example, for a certain intersection; the estimation method can be Auto_Seasonal, while for other levels it can be set to Blend_Seasonal.

Figure 7–7 Global Parameters View



Measures: Global Parameters View

The Global Parameters view contains the following measures:

Seasonality Data Source

This measure displays the name of the data source used to create seasonality curves.

History End Date

In this measure the user can specify the most recent period to be used in estimation. For instance if today's date is 1/1/2025, and the user sets the History End Date to be 12/1/2024, the sales from December 2024 are not used during estimation.

Week 53 Options

This measure indicates how the forecasting value should be calculated if for a week that was flagged extra, or 53rd. This is necessary when an extra week is added within the forecast horizon, because initially no value is calculated for that week.

The options to calculate the value are:

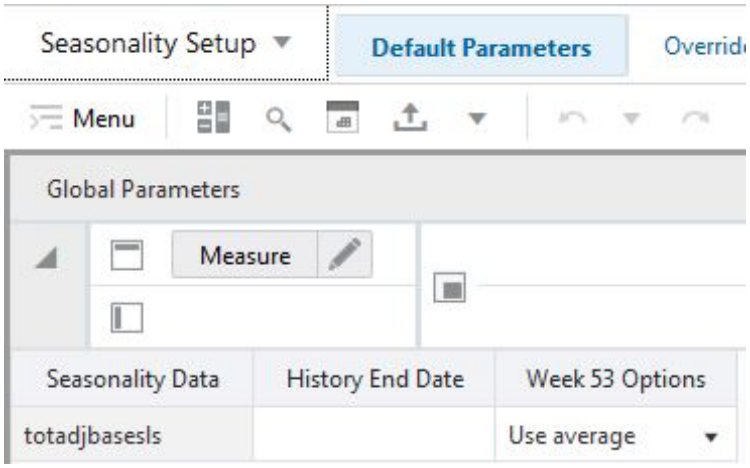
- Use average: the value for the extra week is calculated as the average of the values of the weeks immediately prior and after the flagged week.
- Use before: the value for the extra week is a replication of the value in the previous week

- Use after: the value for the extra week is equal to the value of the following week

Seasonality Level Parameters View

The measures in the Level Parameters view are at a very high intersection and can be overwritten at a more granular level.

Figure 7–8 Level Parameters View



Measures: Level Parameters View

The Level Parameters view contains the following measures:

History Start Date

This field indicates to the system the point in the historical sales data at which to use in the forecast generation process. If no date is indicated, the system defaults to the first date in your calendar. It is also important to note that the system ignores leading zeros that begin at the history start date. For example, if your history start date is January 1, 2017 and an item/location does not have sales history until February 1, 2017, the system considers the starting point in that item/location's history to be the first data point where there is a non-zero sales value.

Estimate Method

Use this measure to specify the method used in the seasonality estimation. The choices are:

- ORACLE_AWINTERS
- REGULAR_AWINTERS
- ORACLE_MWINTERS
- REGULAR_AWINTERS
- AUTO_SEASONAL
- BLEND_SEASONAL

Winters Max Alpha

In the Winters (SeasonalES) model-fitting procedure, alpha (a model parameter capturing the level) is determined by optimizing the fit over the time series. This field displays the maximum value (cap value) of alpha allowed in the model-fitting process.

An alpha cap value closer to one (1) allows more reactive models (alpha = 1, repeats the last data point), whereas alpha cap closer to zero (0) only allows less reactive models. The default is one (1).

Minimum Winters Data Points

The value in this field is the minimum number of periods of historical data necessary for Winters to be considered as a potential forecast method. If not enough years of data are available for a given time series, Winters is not used. The system default is two years of required history, which corresponds two full sales cycles. The value must be set based on the calendar dimension of the level. For example, if the calendar dimension is week, the value is 104.

Seasonal Smooth Index

This parameter is used in the calculation of seasonal index. The current default value used within forecasting is 0.80. Changes to this parameter impacts the value of seasonal index directly and impact the level indirectly. When seasonal smooth index is set to one (1), seasonal index is closer to the seasonal index of last year sales. When seasonal smooth index is set to zero (0), seasonal index is set to the initial seasonal indexes calculated from history.

Winters Max Gamma

In the Winters (SeasonalES) model-fitting procedure, gamma (a model parameter capturing the trend) is determined by optimizing the fit over the time series. This field displays the maximum value (cap value) of gamma allowed in the model-fitting process.

Seasonality Override Parameters Sub-step

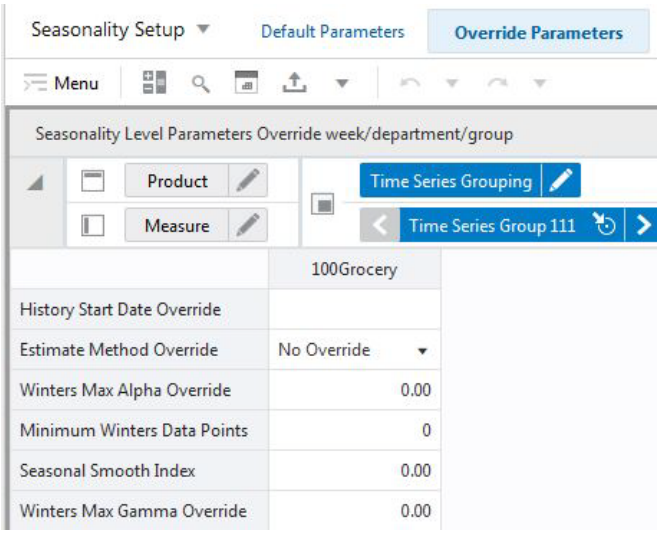
This step contains this view:

- Seasonality Level Parameters Override View

Seasonality Level Parameters Override View

The Seasonality Level Parameters Override view allows you to override the parameters at each position of any level. For instance, if the level is department, the for one department the estimation method may be AUTO_SEASONAL, and for others it may be BLEND_SEASONAL.

Figure 7–9 Seasonality Level Parameters Override View



Measures: Seasonality Level Parameters Override View

The Seasonality Level Parameters Override view contains the following measures:

History Start Date Override

This parameter represents the first point in time from which the Forecasting Engine begins training and modeling (that is, if there are two years of history, but you only want to use one year, you set the start date to a year ago). This parameter overrides the History Start Date to the desired item/location intersection. For example, if you have a large spike in the first three weeks of sales for an item on sale, you can set the Historical Start Date to one week past that period, and those first few weeks are not used when generating the forecast.

It is also important to note that the system ignores leading zeros that begin at the history start date. For example, if your history start date is January 1, 2003, and an item/location does not have sales history until February 1, 2003, the system considers the starting point in that item/location's history to be the first data point where there is a non-zero sales value.

If this parameter is set into the future, there would be no forecast, as the history training window is read as zero.

Estimate Method Override

Use this measure to override the method used in the seasonality estimation. The choices are:

- ORACLE_AWINTERS
- REGULAR_AWINTERS
- ORACLE_MWINTERS
- REGULAR_AWINTERS
- AUTO_SEASONAL
- BLEND_SEASONAL

Winters Max Alpha Override

This is the override of the default Winters Max Alpha value.

Minimum Winters Data Points Override

This is the override of the default Minimum Winters Data Points value.

Seasonal Smooth Index Override

This is the override of the Seasonal Smooth Index value.

Winters Max Gamma Override

This is the override of the Winters Max Gamma value.

Pooling Step

This activity contains these sub-steps:

- Pooling Default Parameters Sub-step
- Ridge Regression Parameters Sub-step
- Pooling Override Parameters Sub-step

Pooling Default Parameters Sub-step

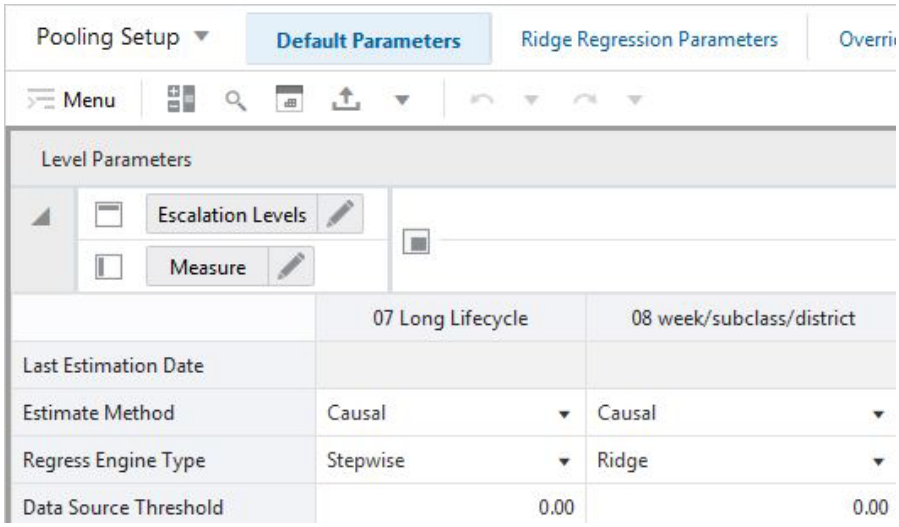
This step contains these views:

- Pooling Global Parameters View
- Pooling Level Parameters View
- Promotion Model Type View

Pooling Global Parameters View

The Global Parameters view allows you to specify the strategy for estimating promotion and price effects. The strategy can be defined at a high, or global level, and can be overwritten at more granular levels

Figure 7–10 Global Parameters View



Measures: Global Parameters View

The Global Parameters view contains the following measures:

Causal Data Source

This measure displays the name of the data source used to calculate promotion effects at the final level.

Pooling Data Source

This measure displays the name of the data source used to calculate promotion effects at the pooling levels. The measure may be different than the causal data source, because at the pooling levels the data source can be normalized, something that is not recommended for the final level.

Blending Ratio

This parameter sets the weights for combining the Final and Pooling Level promotion effects, when calculating the blended effect. The range of the parameter is 0 to 1. A value closer to 1 will yield a blended effect closer to the Pooling Level effect. A value closer to zero yields an effect closer to the Final Level effect. Blending the effects from Pooling and Final Levels is combining the robustness of the effects estimated at the Pooling Levels with the richness of the effects estimated at the Final Level.

In general, the pooled effects are more conservative than the Final Level effects. If an effect for an item/store is high because the item is very responsive to promotions, expect its corresponding pooling effect to be less. Conversely, if an item's demand is not affected at all by promotions, you can expect the effect estimated at the Pooling Level to be different from zero, if other items, in the same Pooling Level, are responsive to promotions.

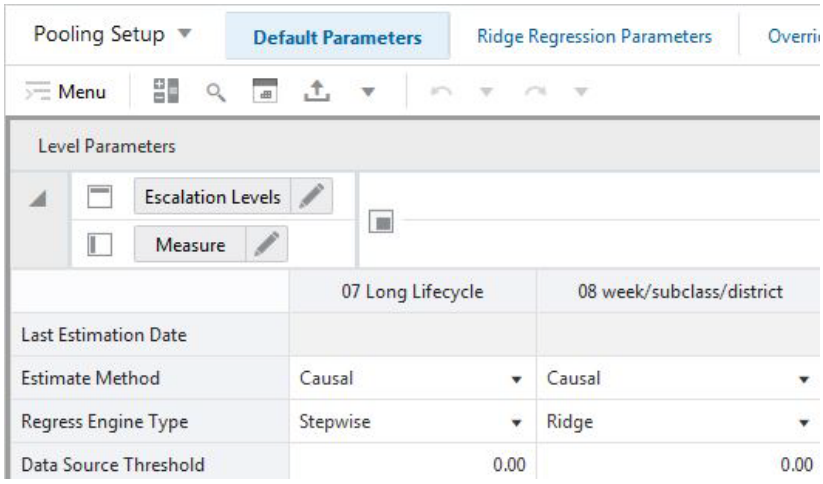
Minimum Beta Zero Threshold

This parameter specifies the minimum value of the intercept calculated during regression. If a number is less that the threshold, the estimates are considered unstable.

Pooling Level Parameters View

The Level Parameters view allows you to specify the promotion and price estimation strategy at the pooling level.

Figure 7–11 Level Parameters View



Measures: Level Parameters View

The Level Parameters view contains the following measures:

Last Estimation Date

This measure displays the date when the effect estimation was run for a certain pooling level. This is useful when deciding if a rerun is necessary. For instance if there are three pooling levels, and two have a Estimate Date of last week, and the third a date from last month. The user may want to enable estimation only for the pooling level with the earlier date. There was not much activity such that a re-estimation is necessary for the other two levels.

Estimate Method

This measure allows you to specify if parameters should be estimated or not. The choices are

- Causal: in which case parameters will be estimated
- No Estimate: no promotion-related parameters will be estimated

A common reason why a user may not want to estimate promotion effects for certain item/locations is because the effects are still up to date, and do not need to be refreshed.

Regress Engine Type

This measure allows you to specify the mode of the regression engine. The options are:

- Stepwise: Step-wise regression is used to estimate promotion and price effects
- Ridge: Ridge regression is used to estimate promotion and price effects.

The Step-wise regression is a good candidate when promotions and price change instances are infrequent, such as at the item/store level. The step-wise first discards the events that it finds insignificant, and estimates effects for the significant ones.

The Ridge regression is a good candidate for the pooling levels where instances of events and price changes are plenty. The method is emphasizing stable events and punishing less significant.

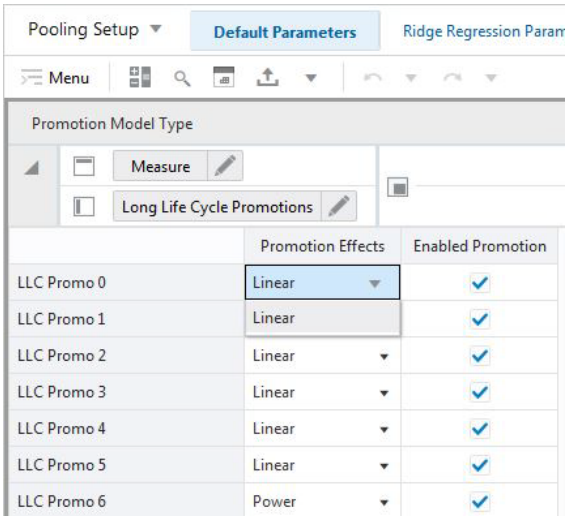
Data Source Threshold

This measure allows you to specify the minimum value of the data source that is used in the calculations. It is recommended that the value is at least 1, so the estimation of events and price effect is robust and correctly reflects the impact on demand.

Promotion Model Type View

The Promotion Model Type view allows you to enable or disable promotions effect estimation and determine the type of promotions.

Figure 7–12 Promotion Model Type View



Measures: Promotion Model Type View

The Promotion Model Type View view contains the following measures:

Promotion Effects Type

This measure allows you to view and select the type of promotion effects. If a promotion, for instance, front cap, is defined as real, the type is displayed as linear. If another event is defined as real, such as price discount, you can decide to estimate it using an exponential model or using the power law.

Enabled Promotion

This measure indicates if an event is enabled or not. If it is enabled, the system will attempt to quantify its effect on demand during the estimation task

Ridge Regression Parameters Sub-step

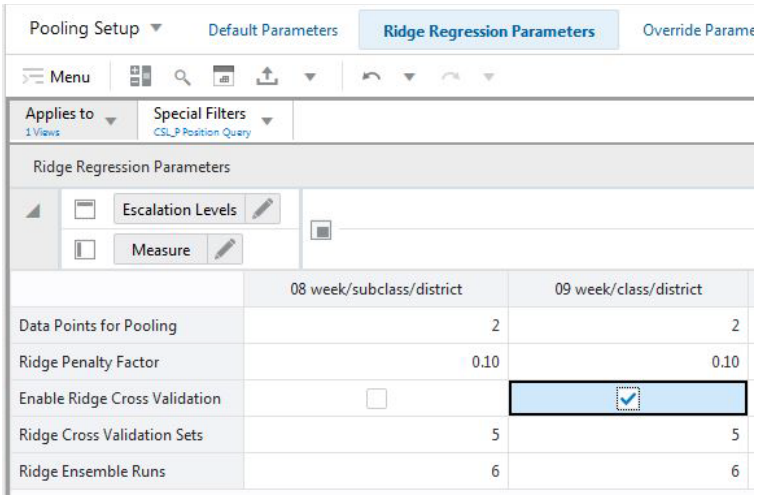
This step contains this view:

- Ridge Regression Parameters View

Ridge Regression Parameters View

The Ridge Regression Parameters view allows you to select settings relevant to ridge regression.

Figure 7–13 Ridge Regression Parameters View



Measures: Ridge Regression Parameters View

The Ridge Regression Parameters view contains the following measures:

- Data Points for Pooling
- Ridge Penalty Factor
- Enable Ridge regression Cross Validation
- Ridge Regression Validation Sets
- Ridge Ensemble Runs

These measures are fully detailed in the My Oracle Support white paper, *Effects Estimation*.

Pooling Override Parameters Sub-step

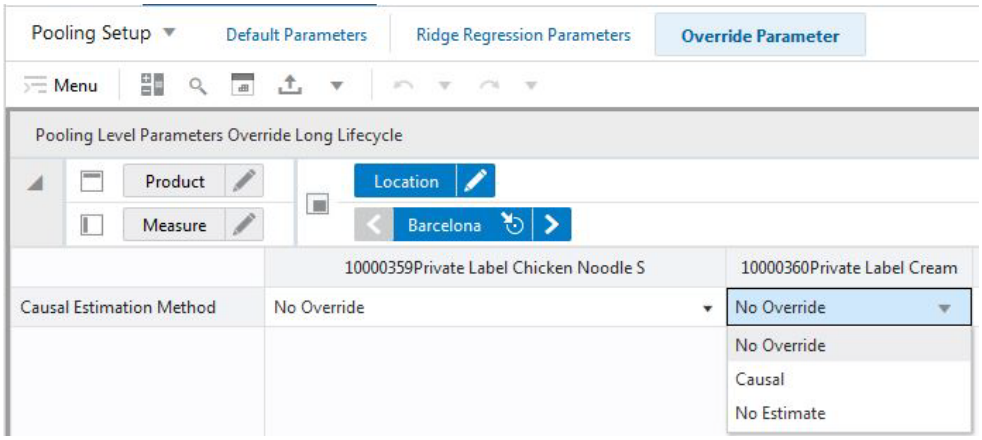
This step contains this view:

- Pooling Level Parameters Override View

Pooling Level Parameters Override View

The Pooling Level Parameters Override view allows you to override the promotion effect estimation strategy at more granular levels.

Figure 7–14 Pooling Level Parameters Override View



Measures: Pooling Level Parameters Override View

The Pooling Level Parameters Override view contains the following measures:

Causal Estimation Method Override

This measure allows you to override the causal estimation method. The options are:

- No override: default setting applies
- Causal: effect estimation is performed
- No estimate: effect estimation is not performed

Escalation Path Step

This activity contains these sub-steps:

- Seasonality Escalation Sub-step
- Pooling Escalation Sub-step

Seasonality Escalation Sub-step

This step contains these views:

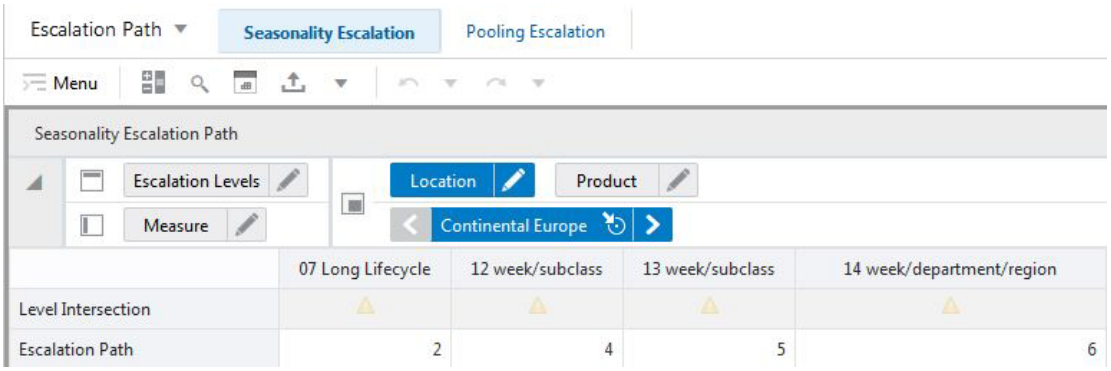
- Seasonality Escalation Path View
- Seasonality Escalation Path Override View

Seasonality Escalation Path View

The Seasonality Escalation Path view allows you to specify the priority of each escalation level. Escalation levels with low intersections, such as subclass, usually capture more detailed seasonality patterns, but are less stable because the lower number of data points used for estimation.

Escalation levels with high intersections, such as department, usually capture more generic seasonality patterns, but are very stable because of the large number of data points used for estimation.

Figure 7–15 Seasonality Escalation Path View



Measures: Seasonality Escalation Path View

The Seasonality Escalation Path view contains the following measures:

Level Intersection

This measure displays the intersections of the escalation levels. This can be helpful for the business user when assigning priorities in the escalation path.

Escalation Path

The user can specify the priority in which the system searches escalation levels for seasonality curves. For instance, suppose there are three escalation levels available. The path may be defined as follows:

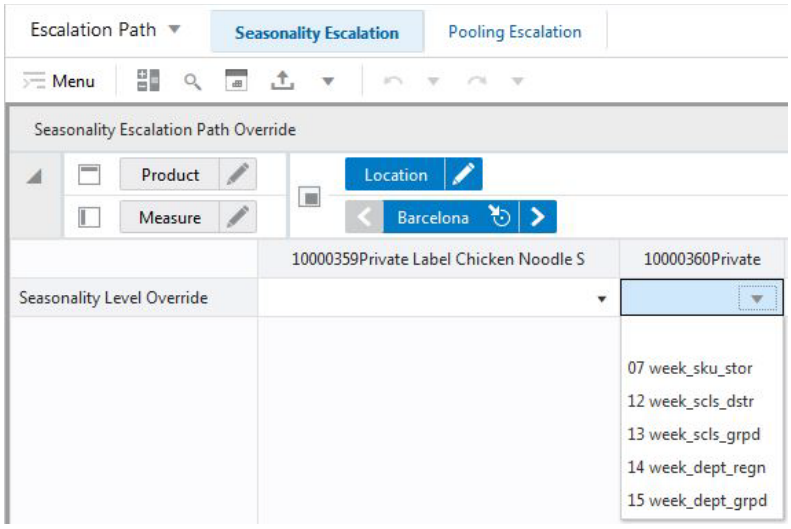
- Escalation Level #1: priority 3
- Escalation Level #2: priority 4
- Escalation Level #3: priority 2

In this case, when generating the forecast, the system will first look to get parameters from Escalation Level #3 (highest priority). If the are available, they are used. If they are not available, because they were deemed unreliable and pruned, the system will go to Escalation Level #1 (second highest priority). Finally, if the search is not successful, the search continues at Escalation Level #2.

Seasonality Escalation Path Override View

The Seasonality Escalation Path Override view allows you to override the escalation path for seasonality estimation.

Figure 7–16 Seasonality Escalation Path Override View



Measures: Seasonality Escalation Path Override View

The Seasonality Escalation Path Override view contains the following measures:

Escalation Path Override

In this field the user can override the default escalation path selections. She can enter the preferred Escalation Level, and that will become the top priority. However, if the forecast parameters for that level were deemed unreliable and pruned, the search will follow the default escalation path.

Pooling Escalation Sub-step

This step contains these views:

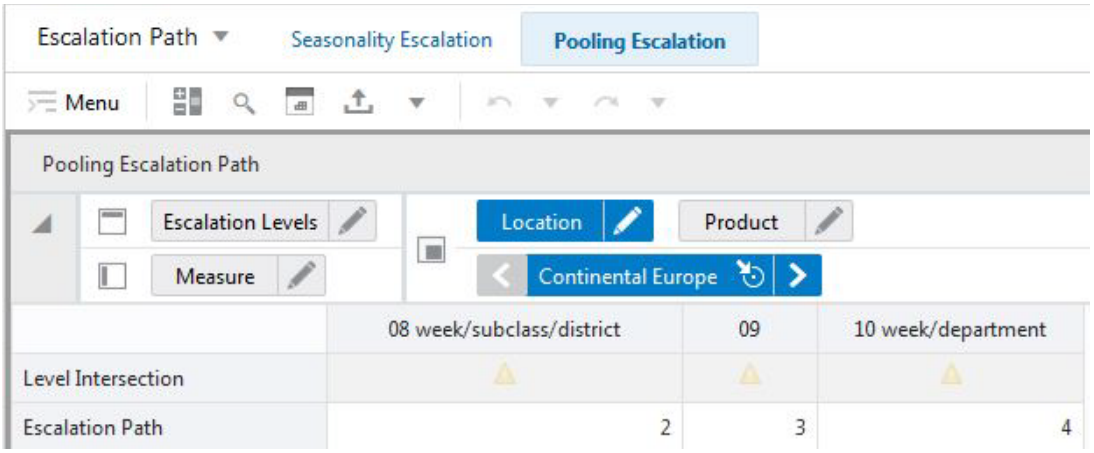
- Pooling Escalation Path View
- Pooling Escalation Path Override View

Pooling Escalation Path View

The Pooling Escalation Path view allows you to specify the priority of each escalation level. Escalation levels with low intersections, such as subclass, usually capture more detailed pooled effects, but are less stable because the lower number of data points used for estimation.

Escalation levels with high intersections, such as department, usually capture more generic pooling effects, but are very stable because of the large number of data points used for estimation.

Figure 7–17 Pooling Escalation Path View



Measures: Pooling Escalation Path View

The Pooling Escalation Path view contains the following measures:

Level Intersection

This measure displays the intersections of the pooling levels. This can be helpful for the business user when assigning priorities in the escalation path.

Escalation Path

The user can specify the priority in which the system searches pooling levels for promotion effects. For instance, suppose there are three escalation levels available. The path may be defined as follows:

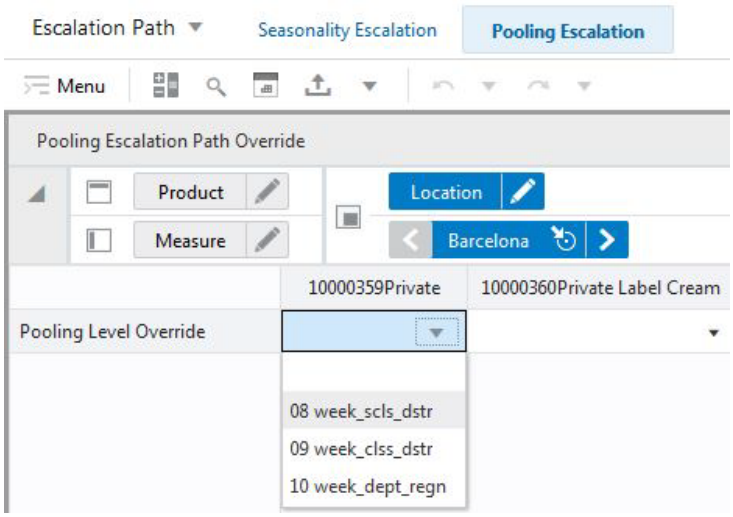
- Pooling Level #1: priority 3
- Pooling Level #2: priority 4
- Pooling Level #3: priority 2

In this case, when generating the forecast, the system will first look to get parameters from Escalation Level #3 (highest priority). If the are available, they are used. If they are not available, because they were deemed unreliable and pruned, the system will go to Escalation Level #1 (second highest priority). Finally, if the search is not successful, the search continues at Escalation Level #2.

Pooling Escalation Path Override View

The Pooling Escalation Path Override view allows you to override the escalation path for pooling estimation.

Figure 7–18 Pooling Escalation Path Override View



Measures: Pooling Escalation Path Override View

The Pooling Escalation Path Override view contains the following measures:

Escalation Path Override

In this field the user can override the default escalation path selections. She can enter the preferred Pooling Level, and that will become the top priority. However, if the forecast parameters for that level were deemed unreliable and pruned, the search will follow the default escalation path.

Pruning Parameters Step

This activity contains these sub-steps:

- Pruning Sub-step
- Override Pruning Sub-step
- Promotion Effect Pruning Sub-step
- Minimum Time Series Sub-step

Pruning Sub-step

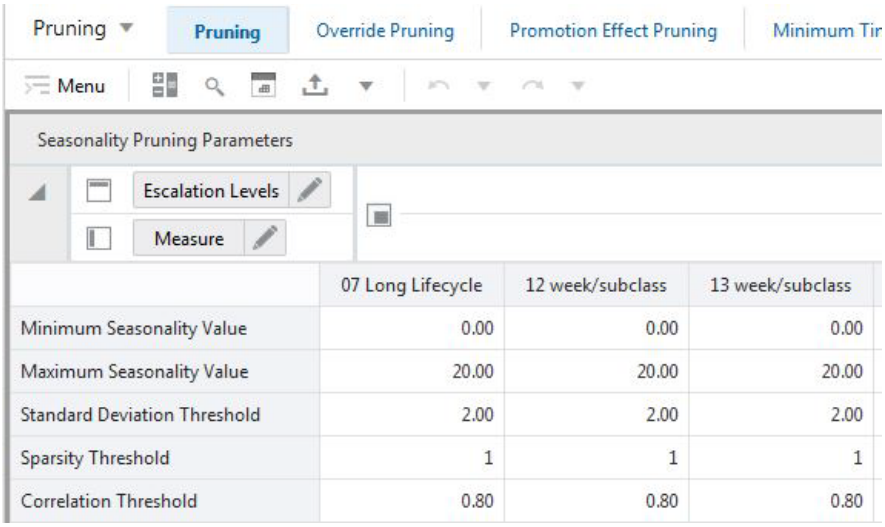
This step contains these views:

- Seasonality Pruning Parameters View
- Seasonality Pruning Parameters Override View

Seasonality Pruning Parameters View

After seasonality estimation is performed, the seasonality curves are undergoing a rigorous check to make sure they are suitable for forecasting. Using the Seasonality Pruning Parameters view, you can set the thresholds for various filters.

Figure 7–19 Seasonality Pruning Parameters View



	07 Long Lifecycle	12 week/subclass	13 week/subclass
Minimum Seasonality Value	0.00	0.00	0.00
Maximum Seasonality Value	20.00	20.00	20.00
Standard Deviation Threshold	2.00	2.00	2.00
Sparsity Threshold	1	1	1
Correlation Threshold	0.80	0.80	0.80

Measures: Seasonality Pruning Parameters View

The Seasonality Pruning Parameters view contains the following measures:

Minimum Seasonality Value

This number holds the minimum allowed seasonality value.

Maximum Seasonality Value

This number holds the maximum allowed seasonality value.

Standard Deviation Threshold

This measure holds the maximum allowed standard deviation of the curve.

Sparsity Threshold

This measure holds the number of zero value cells allowed such that the curve passes the filter.

Correlation Threshold

This measure holds the minimum allowed value of the correlation between the seasonality curve and the data source.

Override Pruning Sub-step

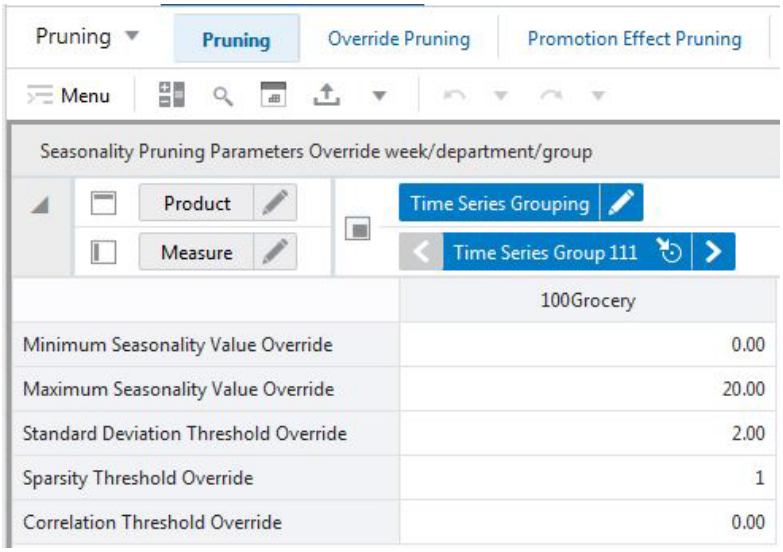
This step contains this view:

- Seasonality Pruning Parameters Override View

Seasonality Pruning Parameters Override View

The Seasonality Pruning Parameters Override view allows you to override the threshold values for the pruning filters.

Figure 7–20 Seasonality Pruning Parameters Override View



Measures: Seasonality Pruning Parameters Override View

The Seasonality Pruning Parameters Override view contains the following measures:

Minimum Seasonality Value Override

Override of the Minimum Seasonality value.

Maximum Seasonality Value Override

Override of the Maximum Seasonality value.

Standard Deviation Threshold Override

Override of the Standard Deviation Threshold value.

Sparsity Threshold Override

Override of the Sparsity Threshold value.

Correlation Threshold Override

Override of the Correlation Threshold value.

Promotion Effect Pruning Sub-step

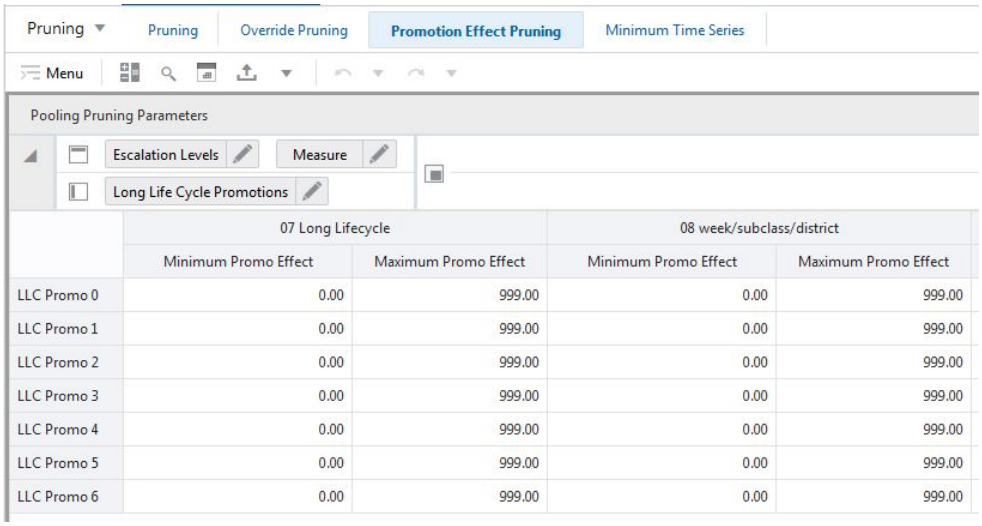
This step contains this view:

- Pooling Pruning Parameters View

Pooling Pruning Parameters View

After pooling estimation is performed, the promotion effects are undergoing a check to make sure they are suitable for forecasting. The Pooling Pruning Parameters allows you to set the thresholds for various filters.

Figure 7–21 Pooling Pruning Parameters View



	07 Long Lifecycle		08 week/subclass/district	
	Minimum Promo Effect	Maximum Promo Effect	Minimum Promo Effect	Maximum Promo Effect
LLC Promo 0	0.00	999.00	0.00	999.00
LLC Promo 1	0.00	999.00	0.00	999.00
LLC Promo 2	0.00	999.00	0.00	999.00
LLC Promo 3	0.00	999.00	0.00	999.00
LLC Promo 4	0.00	999.00	0.00	999.00
LLC Promo 5	0.00	999.00	0.00	999.00
LLC Promo 6	0.00	999.00	0.00	999.00

Measures: Pooling Pruning Parameters View

The Pooling Pruning Parameters view contains the following measures:

Maximum Promo Effect

This measure holds the maximum allowed promo effect.

Minimum Promo Effect

This measure holds the minimum allowed promo effect.

Minimum Time Series Sub-step

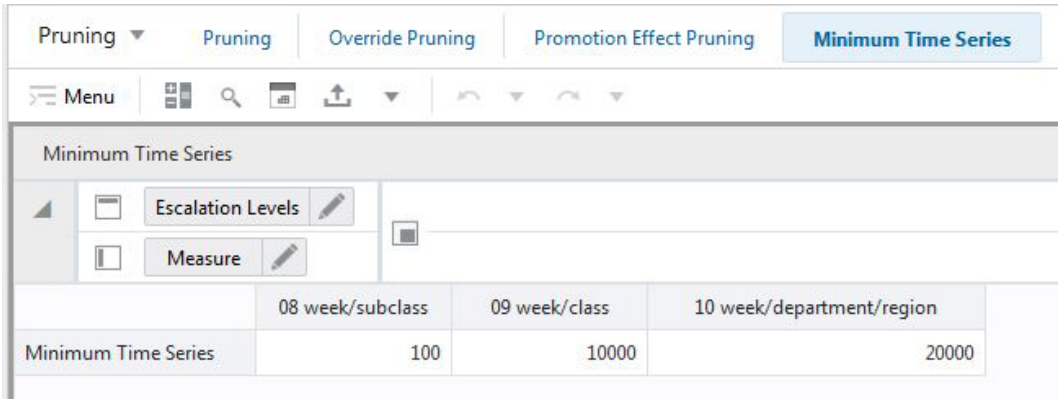
This step contains this view:

- Minimum Time Series View

Minimum Time Series View

The Minimum Time Series view allows you to specify the minimum number of time series necessary to perform robust pooling estimation.

Figure 7–22 Minimum Time Series View



Measures: Minimum Time Series View

The Minimum Time Series view contains the following measures:

Minimum Time Series

This measure allows you to specify the minimum number of times necessary to perform robust pooling estimation.

Group Assignment Step

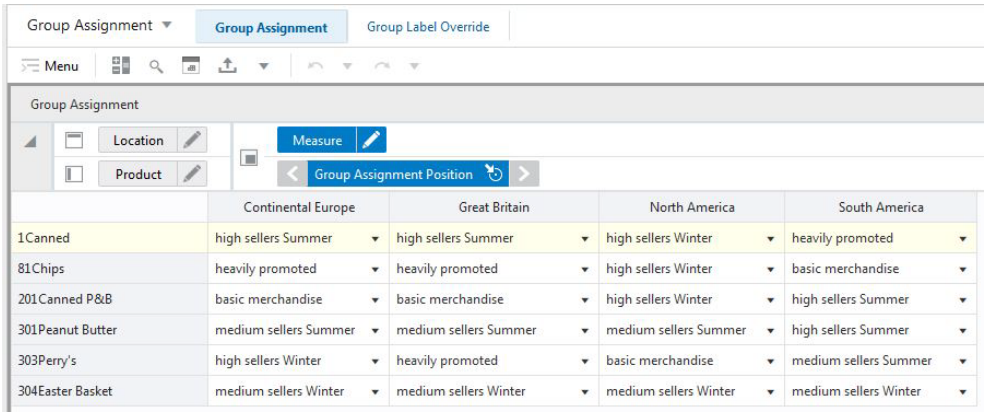
This step contains these views:

- Group Assignment View
- Group Label Override View

Group Assignment View

Typically, escalation and pooling levels are intersections along the product, location and calendar hierarchies, such as subclass/region/week. However, RDF CS also offers the ultimate flexibility where any item at any store can be grouped together. For instance rain gear in the Southeast region, may be grouped together with snow shovels in the Midwest region, something that would not be possible if the levels are tied to the hierarchies. Determining what item/locations is meaningful to be grouped together can be achieved in several ways. First, the analysis can be done outside of RDF CS, and the groups can be imported using Load Measure. A second option is to implement logic in RDF CS thru the extensibility framework. Finally, the Group Assignment view allows you to manually assign time series to such groups.

Figure 7–23 Group Assignment View



Measures: Group Assignment View

The Group Assignment view contains the following measures:

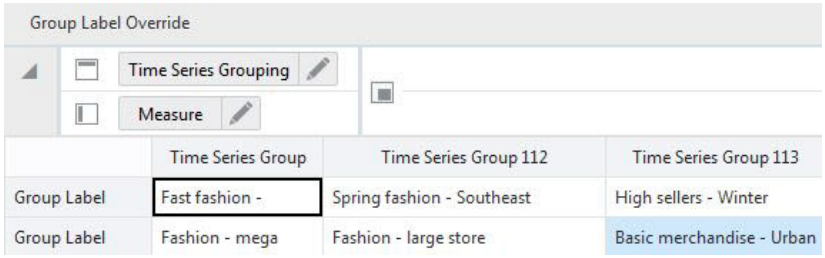
Group Assignment

Use these measures to specify the group that certain product/location combinations belong to. Note that multiple Group Assignment measures are available. Consider a red shirt selling at a large store at the outskirts of a large metro area. This item/store combination can be part of a certain group where the clustering is done by merchandise. It could potentially be grouped together with other basic fashion items. A different clustering can be done by price tier and store format. There it could be grouped together with other medium priced items selling at a large store.

Group Label Override View

Typically, the groups and their labels are handled outside the solution. However, if no proper labels were specified, they can be overwritten in this view.

Figure 7–24 Group Label Override View



Measures: Group Label Override View

The Group Label Override view contains the following measures:

Group Label

These measures allow you to specify labels that describe grouping criteria of item and locations combinations that are assigned to it. There are as many Group Label measures as there are Group Assignment measures.

8

Estimation Review Short Lifecycle Task

This chapter describes the Estimation Review Short Lifecycle for RDF Cloud Service. In this workspace you can review the seasonality curves and price elasticities at various intersections. This is also the place where, if available, the user adjusted, or loaded parameters are displayed.

Estimation Review SLC Workspaces, Steps, and Views

The following table lists the workspaces, steps, and views for the Estimation Review Short Lifecycle task.

Workspace	Step	Views
General Estimation Review SLC Workspace	Overall Step	SLC Preprocess View SLC Estimation Count View
	Price Elasticity Step	SLC Price Elasticity View
	Seasonality Step	SLC Seasonality Curve View

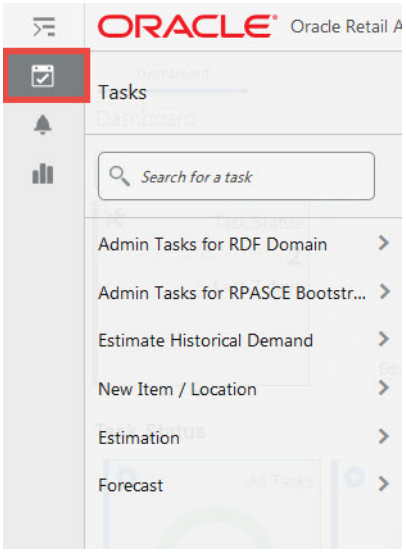
General Estimation Review SLC Workspace

The General Estimation Review SLC workspace allows you access to all of the views listed in Estimation Review SLC Workspaces, Steps, and Views It displays important information about the data that was processed during the estimation step. For the estimation results to be robust it is necessary to remove unreliable data points from the calculations. This step shows the original data points and the number of data points still available after each filter.

To build the General Estimation Review SLC workspace, perform these steps:

1. From the left sidebar menu, click the Task Module to view the available tasks.

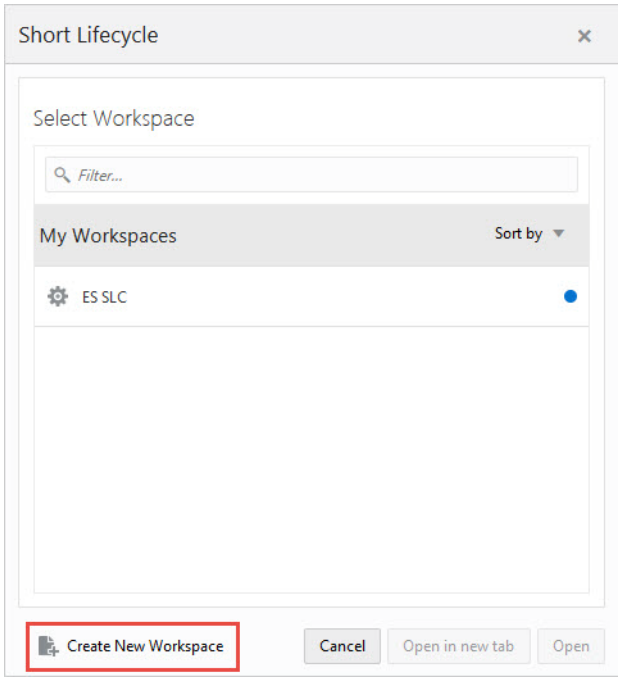
Figure 8–1 Task Module



2. Click the **Estimation** activity and then click **Review** to access the available workspaces.
3. Click **Short Lifecycle**. The Short Lifecycle wizard opens.

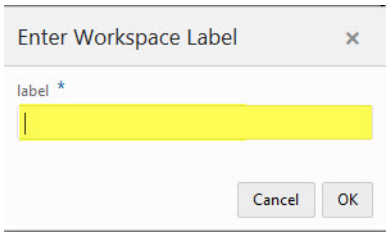
   You can open an existing workspace, but to create a new workspace, click **Create New Workspace**.

Figure 8–2 Short Lifecycle Wizard



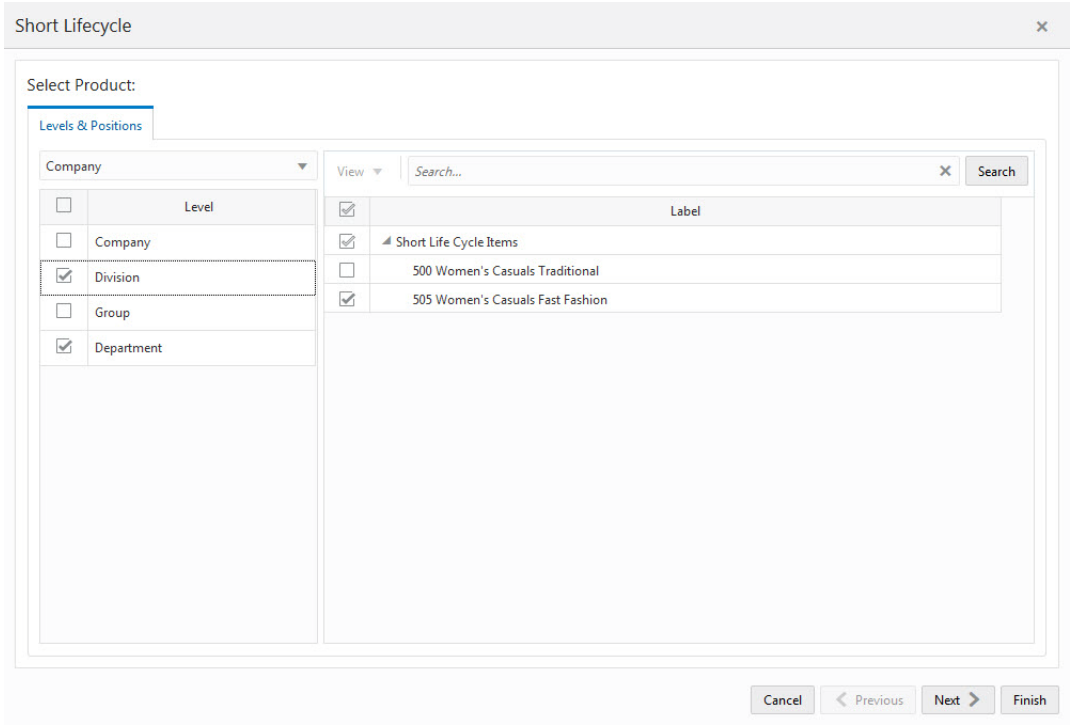
4. Enter a name for your new workspace in the label text box and click **OK**.

Figure 8–3 Enter Workspace Label



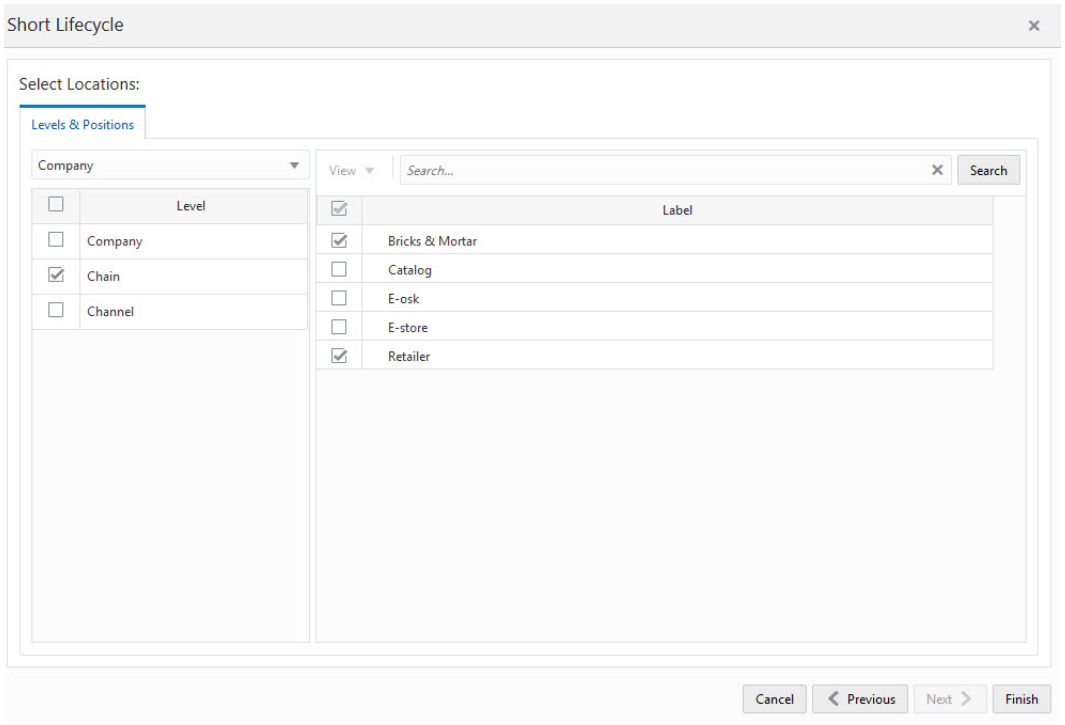
5. The Workspace wizard opens. Select the products you want to work with and click **Next**.

Figure 8–4 Workspace Wizard: Select Products



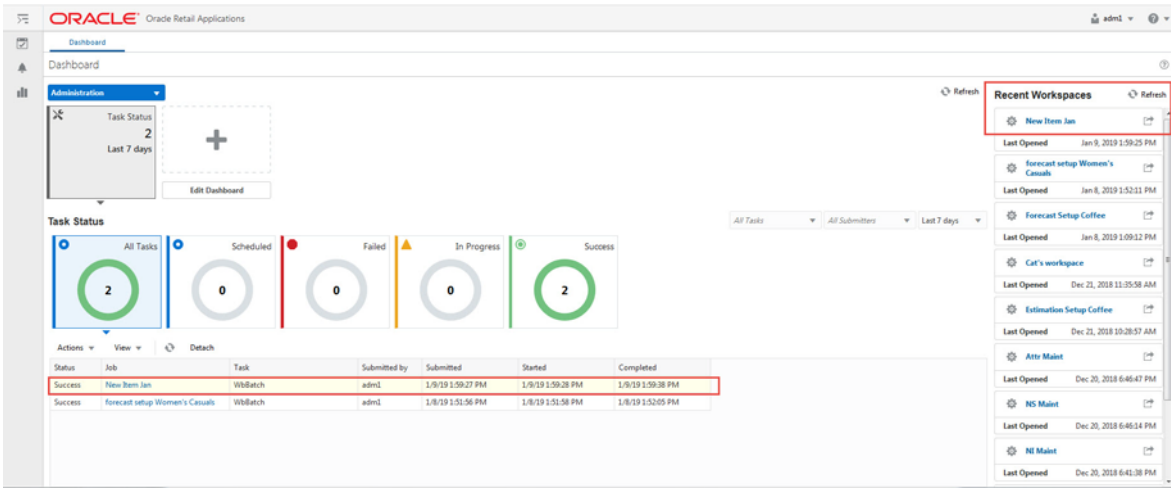
6. Select the locations you want to work with and click **Finish**.

Figure 8–5 Workspace Wizard: Select Locations



7. The wizard notifies you that your workspace is being prepared. Successful workspaces are available from the Dashboard.

Figure 8–6 Successful Workspace Build



Overall Step

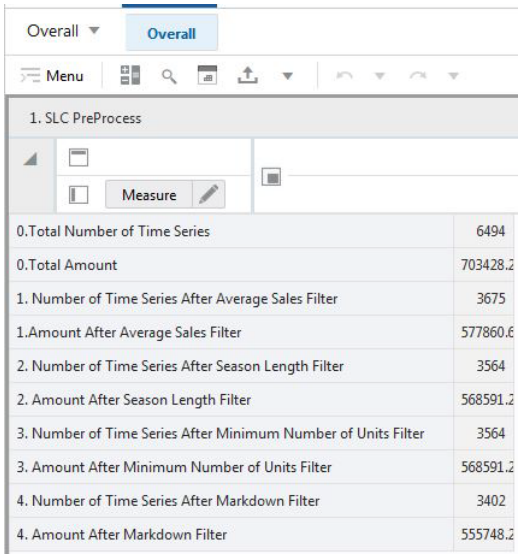
This step contains these views:

- SLC Preprocess View
- SLC Estimation Count View

SLC Preprocess View

The SLC Preprocess view shows a summary of the SLC preprocessing.

Figure 8–7 SLC Preprocess View



Measures: SLC Preprocess View

The SLC Preprocess view contains the following measures:

0. Total Number of Time Series

Total number of product/location combinations with short lifecycle.

0. Total Amount

Total amount generated by product/locations with short lifecycle.

1. Number of Time Series After Average Sales Filter

Number of product/location combinations with short lifecycle that passed the average sales filter.

1. Amount After Average Sales Filter

Amount generated by product/location combinations with short lifecycle that passed the average sales filter

2. Number of Time Series After Season Length Filter

Number of product/location combinations with short lifecycle that passed the season length filter.

2. Amount After Season Length Filter

Amount generated by product/location combinations with short lifecycle that passed the season length filter.

3. Number of Time Series After Number of Units Filter

Number of product/location combinations with short lifecycle that passed the number of units filter.

3. Amount After Number of Units Filter

Amount generated by product/location combinations with short lifecycle that passed the number of units filter.

4. Number of Time Series After Markdown Filter

Number of product/location combinations with short lifecycle that passed the markdown filter.

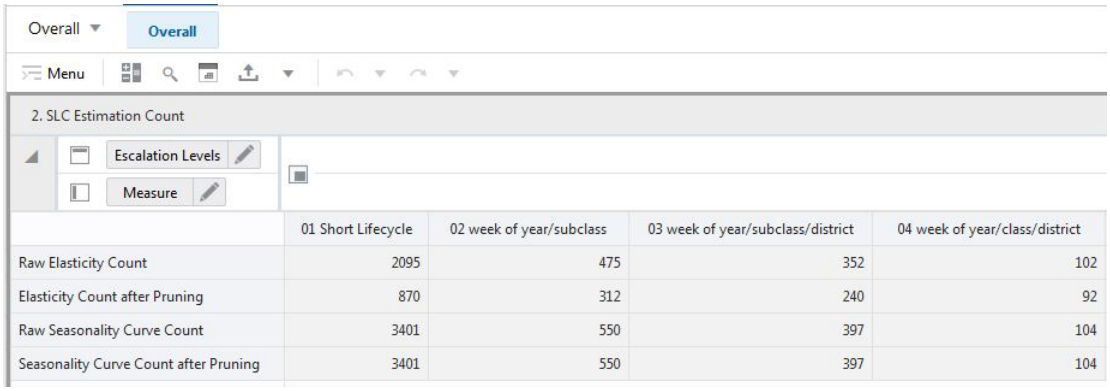
4. Amount After Markdown Filter

Amount generated by product/location combinations with short lifecycle that passed the markdown filter.

SLC Estimation Count View

The SLC Estimation Count view shows a summary of the count of forecast parameters.

Figure 8–8 SLC Estimation Count View



	01 Short Lifecycle	02 week of year/subclass	03 week of year/subclass/district	04 week of year/class/district
Raw Elasticity Count	2095	475	352	102
Elasticity Count after Pruning	870	312	240	92
Raw Seasonality Curve Count	3401	550	397	104
Seasonality Curve Count after Pruning	3401	550	397	104

Measures: SLC Estimation Count View

The SLC Estimation Count view contains the following measures:

Raw Elasticity Count

Total number of price elasticities before pruning.

Elasticity Count after Pruning

Number of price elasticities after pruning.

Raw Seasonality Curve Count

Total number of seasonality curves before pruning.

Seasonality Curve Count after Pruning

Number of seasonality curves after pruning.

Price Elasticity Step

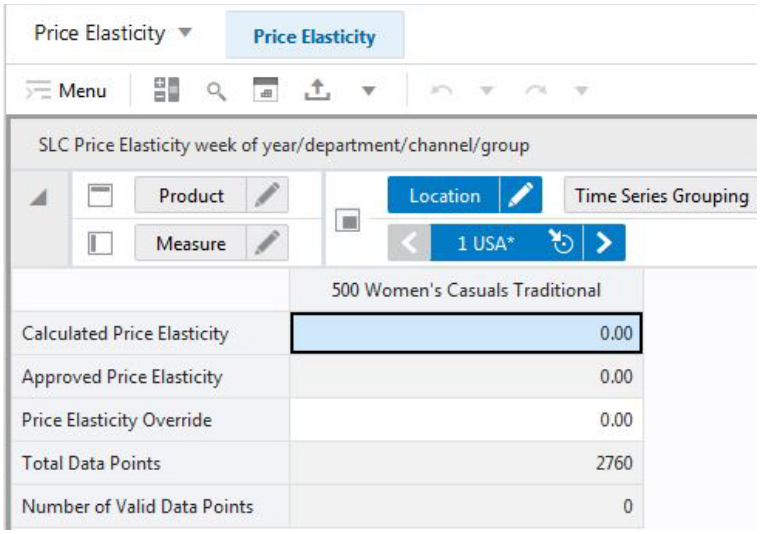
This step contains this view:

- SLC Price Elasticity View

SLC Price Elasticity View

The SLC Price Elasticity view reviews the price elasticities at several escalation levels.

Figure 8–9 SLC Price Elasticity View



Measures: SLC Price Elasticity View

The SLC Price Elasticity view contains the following measures:

Calculated Price Elasticity

This measure shows the value of the price elasticity calculated by the system.

Approved Price Elasticity

This measure shows the value of the approved price elasticity.

Price Elasticity Override

This measure shows the override value of the price elasticity. This can be loaded, or can be manually entered.

Total Data Points

Total number of data points in this escalation level.

Number of Valid Data Points

Number of data points in the escalation level that passed pruning and were used to calculate price elasticities.

Seasonality Step

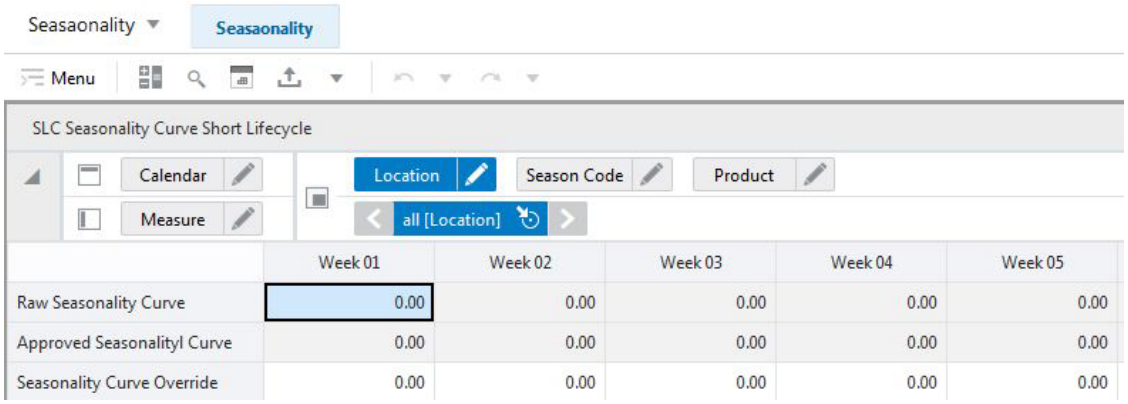
This step contains this view:

- SLC Seasonality Curve View

SLC Seasonality Curve View

The SLC Seasonality view reviews the seasonality curves at several escalation levels.

Figure 8–10 SLC Seasonality Curve View



Measures: SLC Seasonality View

The SLC Seasonality view contains the following measures:

Raw Seasonality Curve

This measure shows the seasonality curves calculated by the system.

Approved Seasonality Curve

This measure shows the approved seasonality curves.

Seasonality Curve Override

This measure shows the override values of the seasonality curve. The override can be loaded or can be manually entered.

Note: If you choose to override a seasonality curve, the values entered by you are normalized to 52, and become the approved curve. The approved curve is not a merge between the seasonality calculated by the system and the override values.

Specifically, if you enter one value in week 42 of the override measure, the approved seasonality curve will be all zeros, except for week 42 where the index is 52.

9

Estimation Review Long Lifecycle Task

This chapter describes the Estimation Review Long Lifecycle for RDF Cloud Service.In this workspace you can review the seasonality curves and promotion at various intersections. This is also the place where, if available, the user adjusted, or loaded parameters are displayed.

Estimation Review LLC Workspaces, Steps, and Views

The following table lists the workspaces, steps, and views for the Estimation Review Long Lifecycle task.

Workspace	Step	Views
General Estimation Review LLC Workspace	Statistics Step	Causal Effects Statistics View Sales Statistics View Seasonality Curve Count View
	Curves Step	Curves View
	Effects Step	Causal Effects Final View Causal Effects Pool View

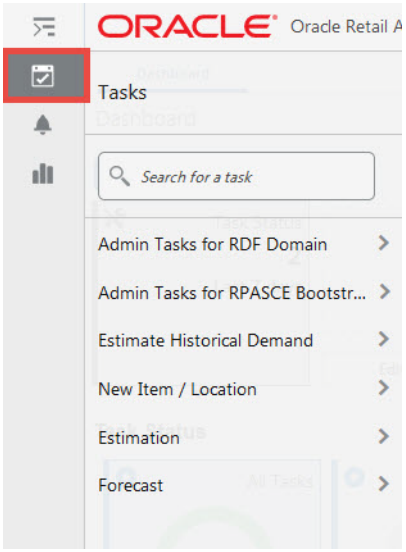
General Estimation Review LLC Workspace

The General Estimation Review LLC workspace allows you access to all of the views listed in Estimation Review LLC Workspaces, Steps, and Views.

To build the General Estimation Review LLC workspace, perform these steps:

1. From the left sidebar menu, click the Task Module to view the available tasks.

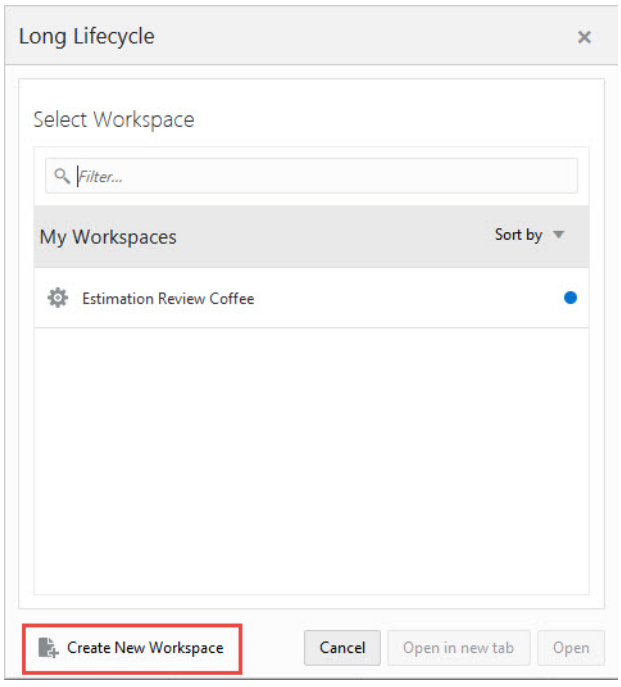
Figure 9–1 Task Module



2. Click the **Estimation** activity and then click **Review** to access the available workspaces.
3. Click **Long Lifecycle**. The Long Lifecycle wizard opens.

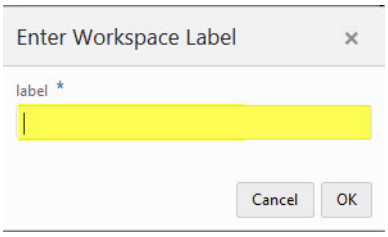
   You can open an existing workspace, but to create a new workspace, click **Create New Workspace**.

Figure 9–2 Long Lifecycle Wizard



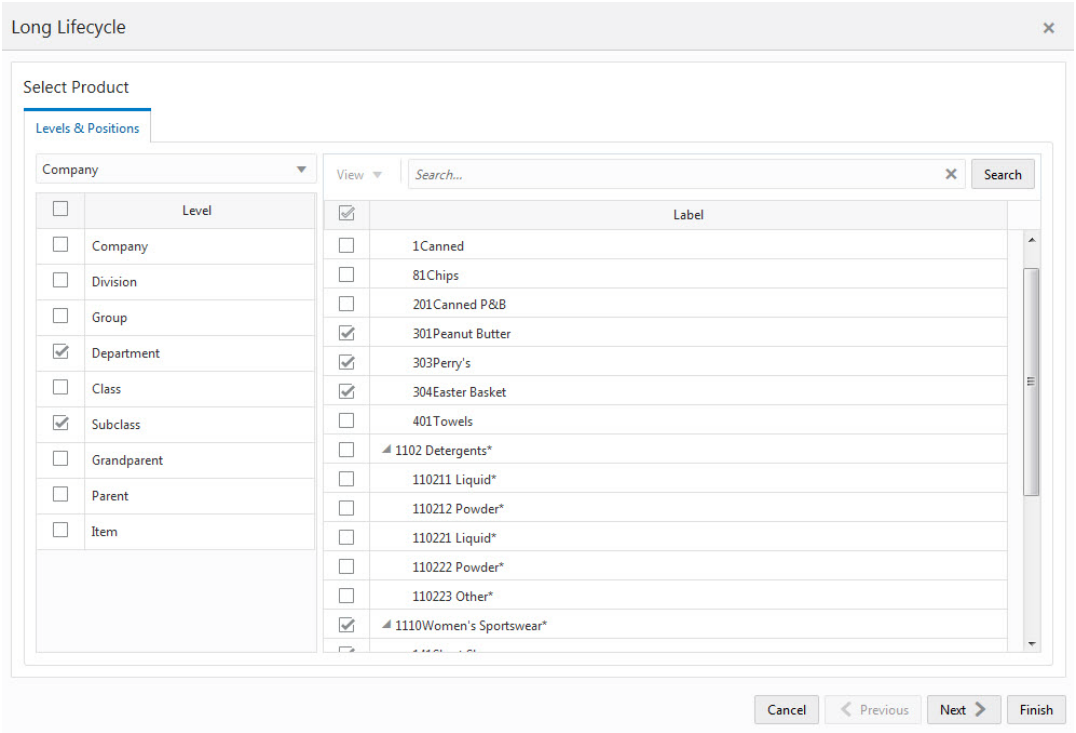
4. Enter a name for your new workspace in the label text box and click **OK**.

Figure 9–3 Enter Workspace Label



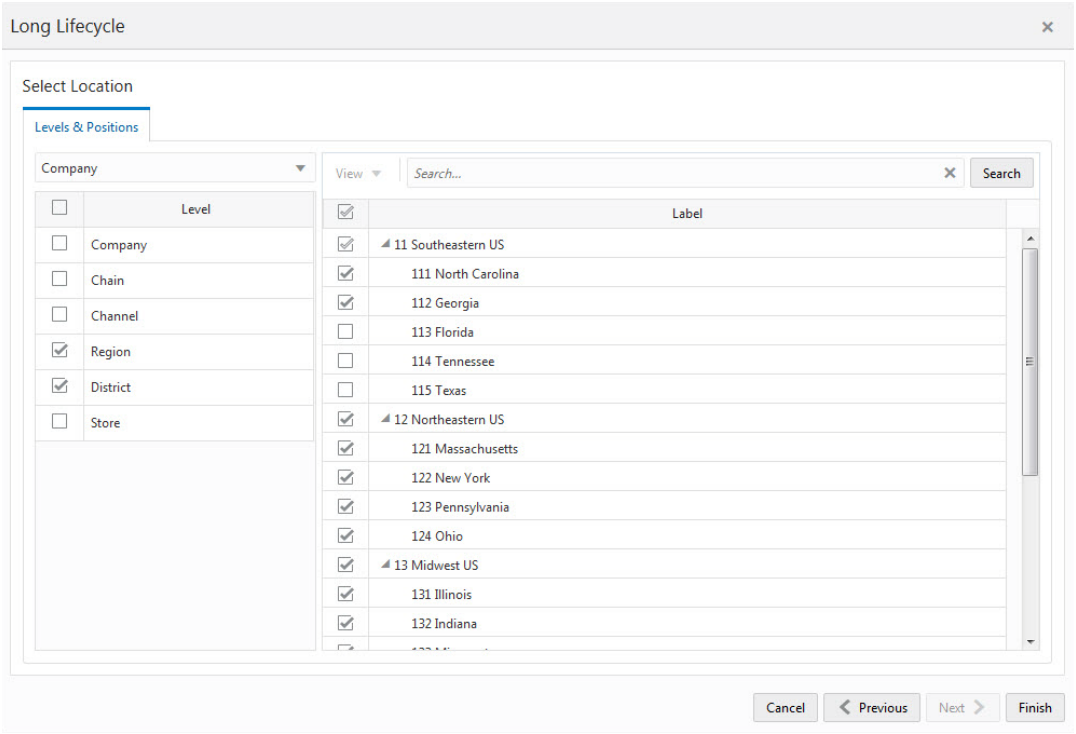
5. The Workspace wizard opens. Select the products you want to work with and click **Next**.

Figure 9–4 Workspace Wizard: Select Products



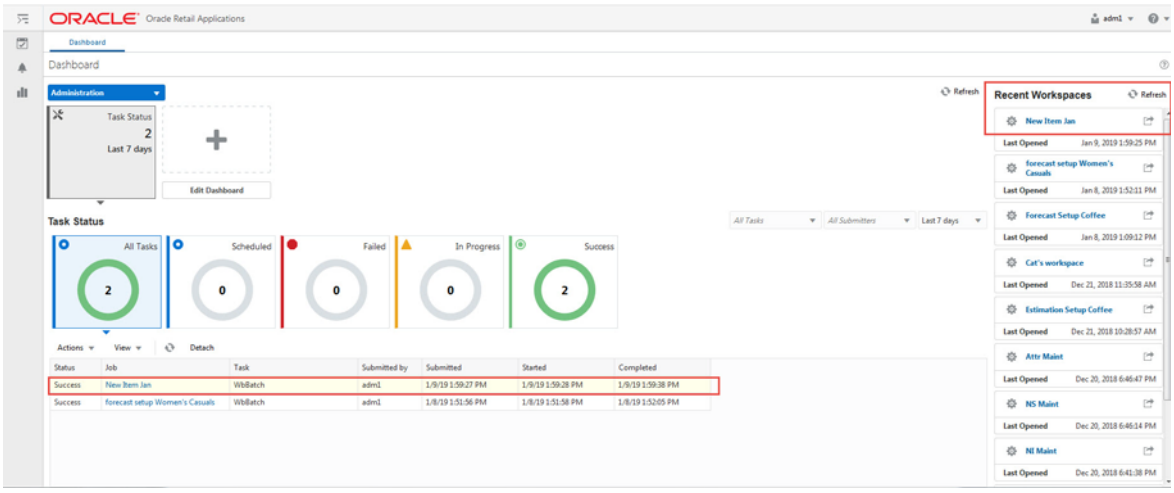
6. Select the locations you want to work with and click **Finish**.

Figure 9–5 Workspace Wizard: Select Locations



7. The wizard notifies you that your workspace is being prepared. Successful workspaces are available from the Dashboard.

Figure 9–6 Successful Workspace Build



Statistics Step

This step contains these views:

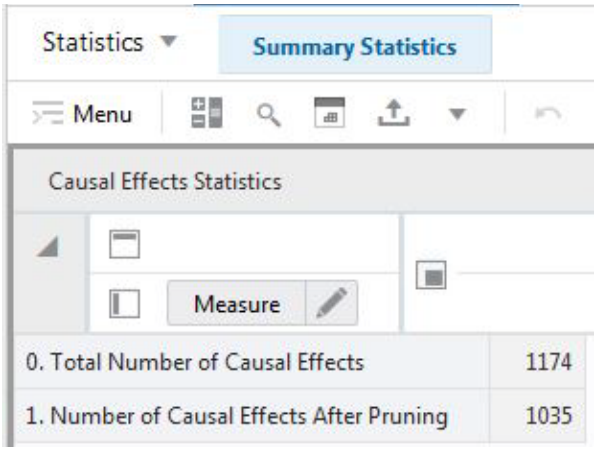
- Causal Effects Statistics View
- Sales Statistics View

- Seasonality Curve Count View

Causal Effects Statistics View

The Causal Effects Statistics view shows a summary of promo effects count.

Figure 9–7 Causal Effects Statistics View



Measures: Causal Effects Statistics View

The Causal Effects Statistics view contains the following measures:

0. Total Number of Causal Effects

This measure shows the total number of calculated promo effects.

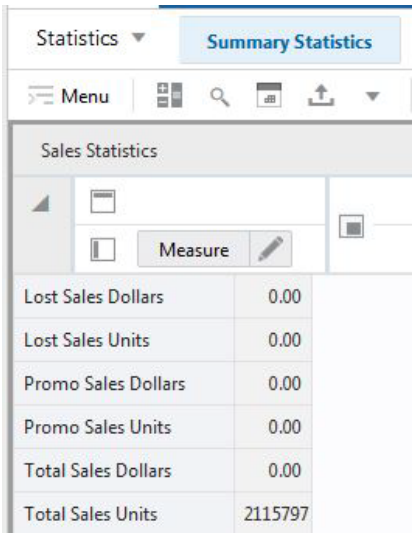
1. Number of Causal Effects After Pruning

This measure shows the number of promo effects that passed pruning.

Sales Statistics View

The Sales Statistics view shows a summary of demand metrics.

Figure 9–8 Sales Statistics View



Measures: Sales Statistics View

The Sales Statistics view contains the following measures:

Lost Sales Dollars

This measure shows the total amount of lost sales.

Lost Sales Units

This measure shows the total lost sales units.

Promo Sales Dollars

This measure shows the total amount of sales driven by promotions or price discounts.

Promo Sales Units

This measure shows the total sales units driven by promotions or price discounts.

Total Sales Dollars

This measure shows the total sales amount.

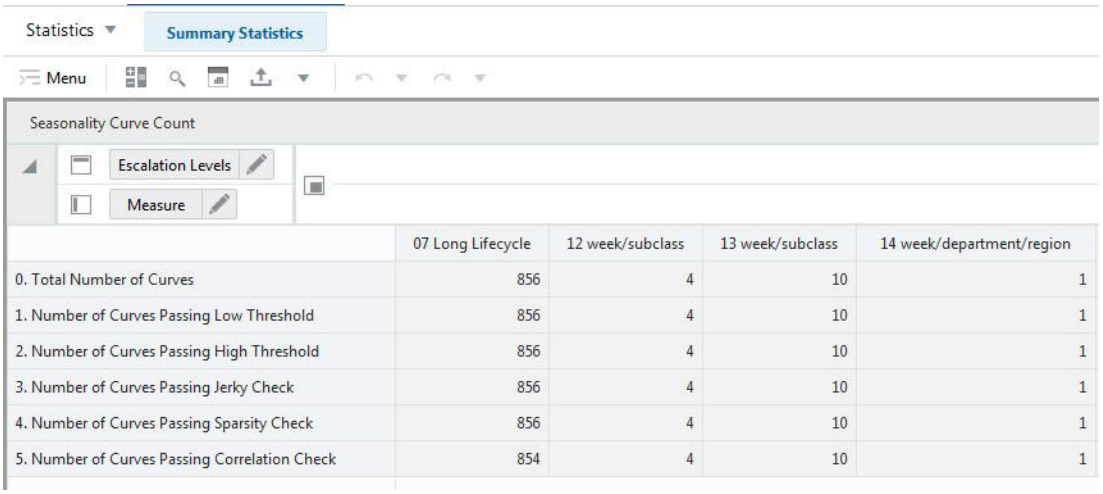
Total Sales Units

This measure shows the total sales units.

Seasonality Curve Count View

The Seasonality Curve Count view shows a summary of seasonality curves count.

Figure 9–9 Seasonality Curve Count View



	07 Long Lifecycle	12 week/subclass	13 week/subclass	14 week/department/region
0. Total Number of Curves	856	4	10	1
1. Number of Curves Passing Low Threshold	856	4	10	1
2. Number of Curves Passing High Threshold	856	4	10	1
3. Number of Curves Passing Jerky Check	856	4	10	1
4. Number of Curves Passing Sparsity Check	856	4	10	1
5. Number of Curves Passing Correlation Check	854	4	10	1

Measures: Seasonality Curve Count View

The Seasonality Curve Count view contains the following measures:

0. Total Number of Curves

This measure shows the total number of calculated seasonality curves.

1. Number of Curves Passing Low Threshold

This measure shows the number of seasonality curves that passed the check for low seasonality indices.

2. Number of Curves Passing High Threshold

This measure shows the number of seasonality curves that passed the check for large seasonality indices.

3. Number of Curves Passing Jerky Check

This measure shows the number of seasonality curves that passed the check for jerky curves.

4. Number of Curves Passing Sparsity Check

This measure shows the number of seasonality curves that passed the check for sparse curves.

5. Number of Curves Passing Correlation Check

This measure shows the number of seasonality curves that correlate well with demand.

Curves Step

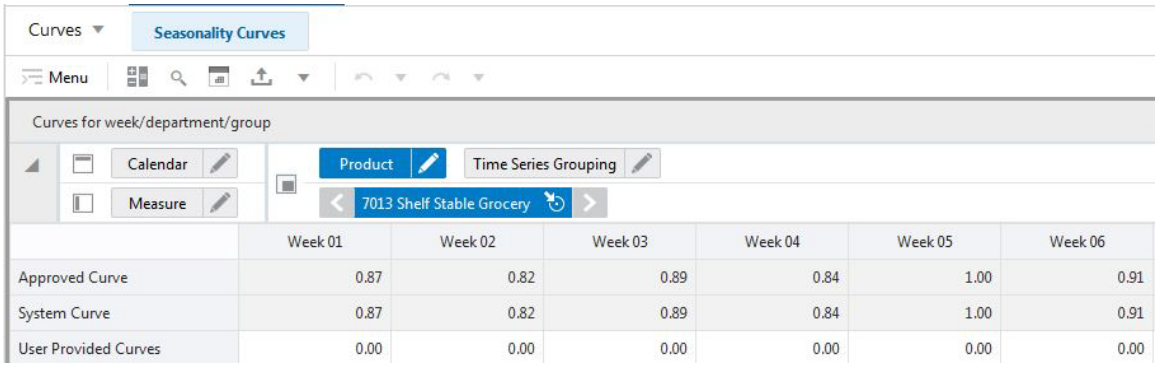
This step contains this view:

- Curves View

Curves View

The Curves view allows you to review the seasonality curves at several escalation levels

Figure 9–10 Curves View



Measures: Curves View

The Curves view contains the following measures:

System Curve

These are the seasonality curves calculated by the system.

Approved Curve

These are the approved seasonality curves.

User Provided Curve

This measure shows the override values of the seasonality curve. The override can be loaded or can be manually entered.

Note: If you choose to override a seasonality curve, the values entered by you are normalized to 52, and become the approved curve. The approved curve is not a merge between the seasonality calculated by the system and the override values.

Specifically, if you enter one value in week 42 of the override measure, the approved seasonality curve will be all zeros, except for week 42 where the index is 52.

Effects Step

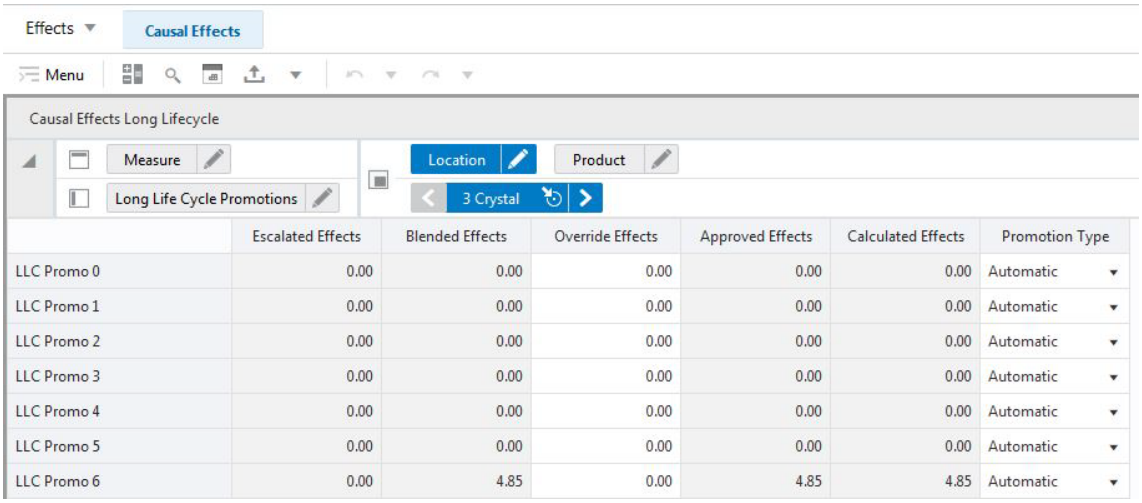
This step contains these views:

- Causal Effects Final View
- Causal Effects Pool View

Causal Effects Final View

The Causal Effects Final view shows the promo effects at the final level.

Figure 9–11 Causal Effects Final View



	Escalated Effects	Blended Effects	Override Effects	Approved Effects	Calculated Effects	Promotion Type
LLC Promo 0	0.00	0.00	0.00	0.00	0.00	Automatic
LLC Promo 1	0.00	0.00	0.00	0.00	0.00	Automatic
LLC Promo 2	0.00	0.00	0.00	0.00	0.00	Automatic
LLC Promo 3	0.00	0.00	0.00	0.00	0.00	Automatic
LLC Promo 4	0.00	0.00	0.00	0.00	0.00	Automatic
LLC Promo 5	0.00	0.00	0.00	0.00	0.00	Automatic
LLC Promo 6	0.00	4.85	0.00	4.85	4.85	Automatic

Measures: Causal Effects Final View

The Causal Effects Final view contains the following measures:

Escalated Effects Final

This measure displays the effects calculated at pooling levels, which were determined during the escalation search.

Blended Effects

This measure displays the combination of the escalated effects and the calculated effects at the final level. Unless there is an override, these values are applied to generate the promotional lift.

Override Effects

This measure allows you to manually override the promo effect. The promotion type needs to be set to Override for the override to take effect.

Approved Effects

The approved effects are a combination between the override and calculated values. The logic is:

If override value exists, use it. Otherwise use the calculated value.

Calculated Effects

This measure displays the effects calculated at the final level

Promotion Type

Causal variable types define how causal variables are treated in the causal model-fitting process (which includes a call to the lower-level regression engine) and the forecast generation process where the model is used to extend the forecast over the forecast horizon.

The options are

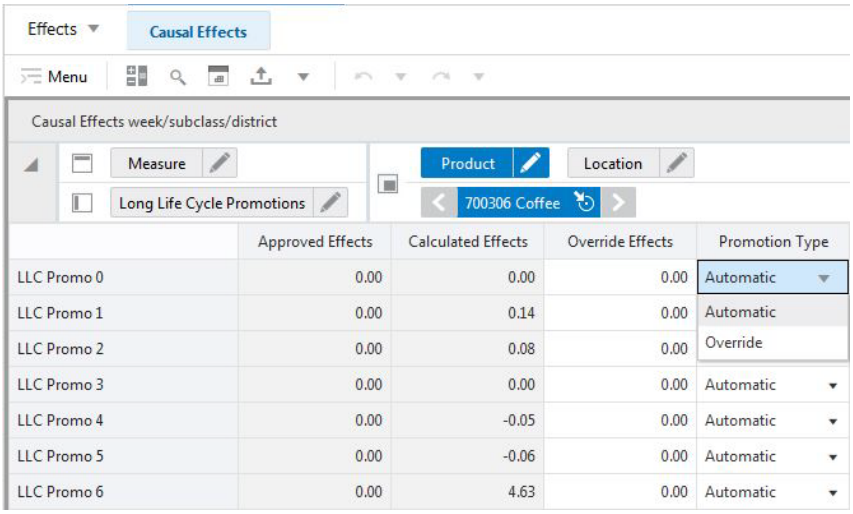
- Automatic: The system provides the effect.

- Override: You can specify what value is used to determine the effect the event has on demand.

Causal Effects Pool View

The Causal Effects Pool view shows the promo effects at the pooling levels.

Figure 9–12 Causal Effects Pool View



Measures: Causal Effects Pool View

The Causal Effects Pool view contains the following measures:

Override Effects

This measure allows the user to manually override the promo effect.

Approved Effects

This measure stores the approved effect at the pooling level. It is merging the calculated and the override values as follows: If there is no override value, use the calculated effects, otherwise use the override.

Calculated Effects

This measure shows the values of the calculated promo effects.

Promotion Type

Causal variable types define how causal variables are treated in the causal model-fitting process (which includes a call to the lower-level regression engine) and the forecast generation process where the model is used to extend the forecast over the forecast horizon.

10

Forecast Setup Short Lifecycle Task

This chapter describes the Forecast Setup Short Lifecycle task for RDF Cloud Service.

Forecast Setup SLC Workspaces, Steps, and Views

The following table lists the workspaces, steps, and views for the Forecast Setup Short Lifecycle task.

Workspace	Step	Views
Forecast Setup SLC Workspace	Forecast Setup SLC Step	Basic Parameters View Advanced Parameters View Detailed Parameters View
	Escalation Path Step	Escalation Path View Escalation Path Override View
	Exception Management Step	In Season View

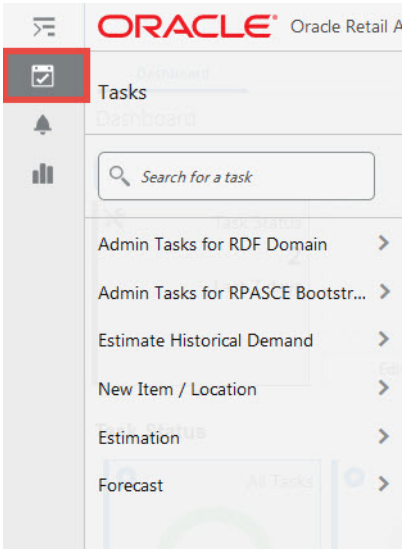
Forecast Setup SLC Workspace

The Forecast Setup SLC workspace allows you access to all of the views listed in Forecast Setup SLC Workspaces, Steps, and Views.

To build the Forecast Setup SLC workspace, perform these steps:

1. From the left sidebar menu, click the Task Module to view the available tasks.

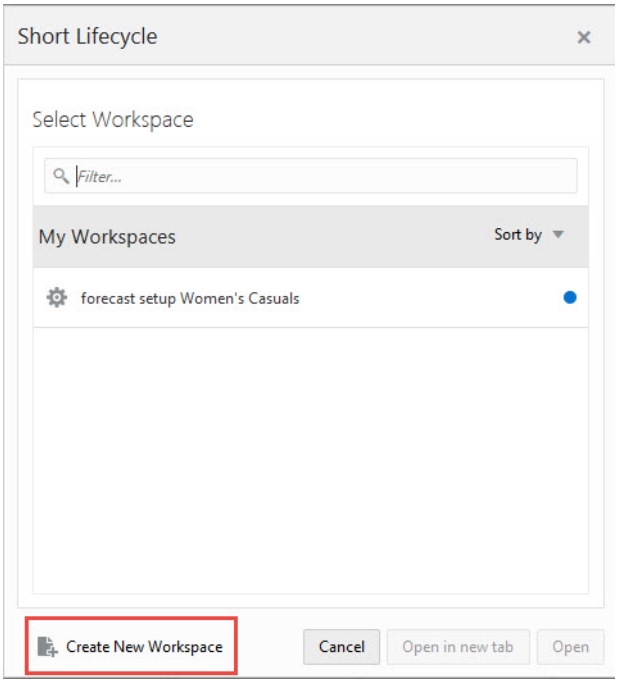
Figure 10–1 Task Module



2. Click the **Forecast** activity and then click **Setup** to access the available workspaces.
3. Click **Short Lifecycle**. The Short Lifecycle wizard opens.

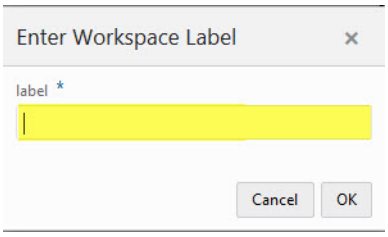
   You can open an existing workspace, but to create a new workspace, click **Create New Workspace**.

Figure 10–2 Short Lifecycle Wizard



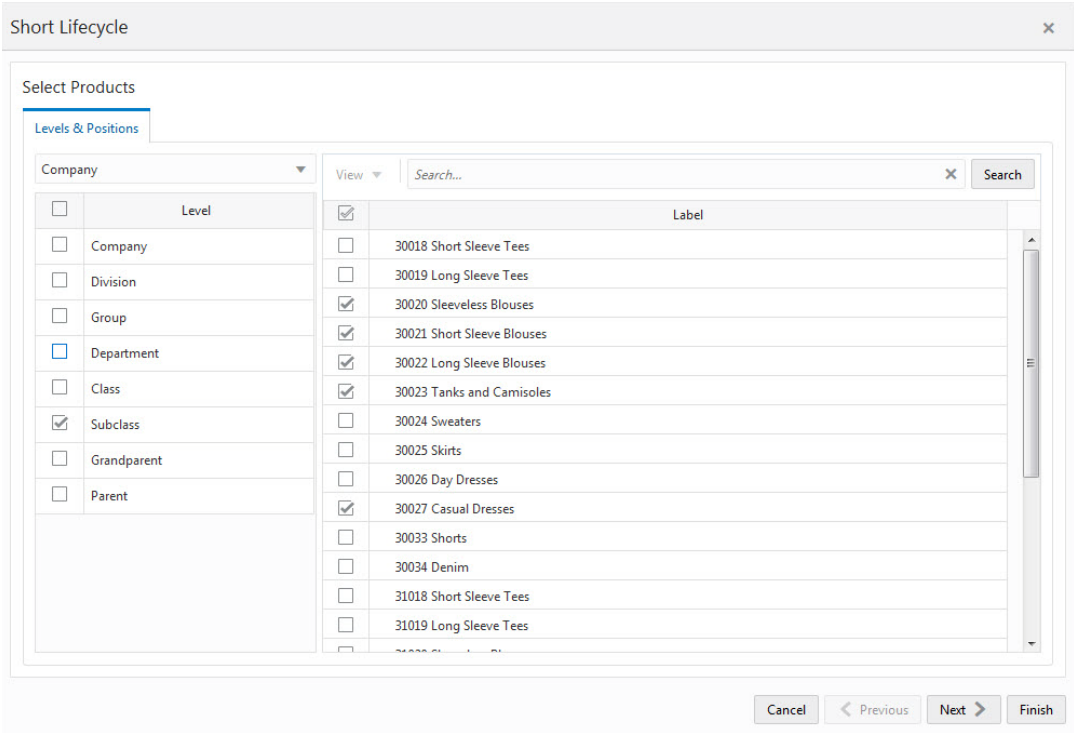
4. Enter a name for your new workspace in the label text box and click **OK**.

Figure 10–3 Enter Workspace Label



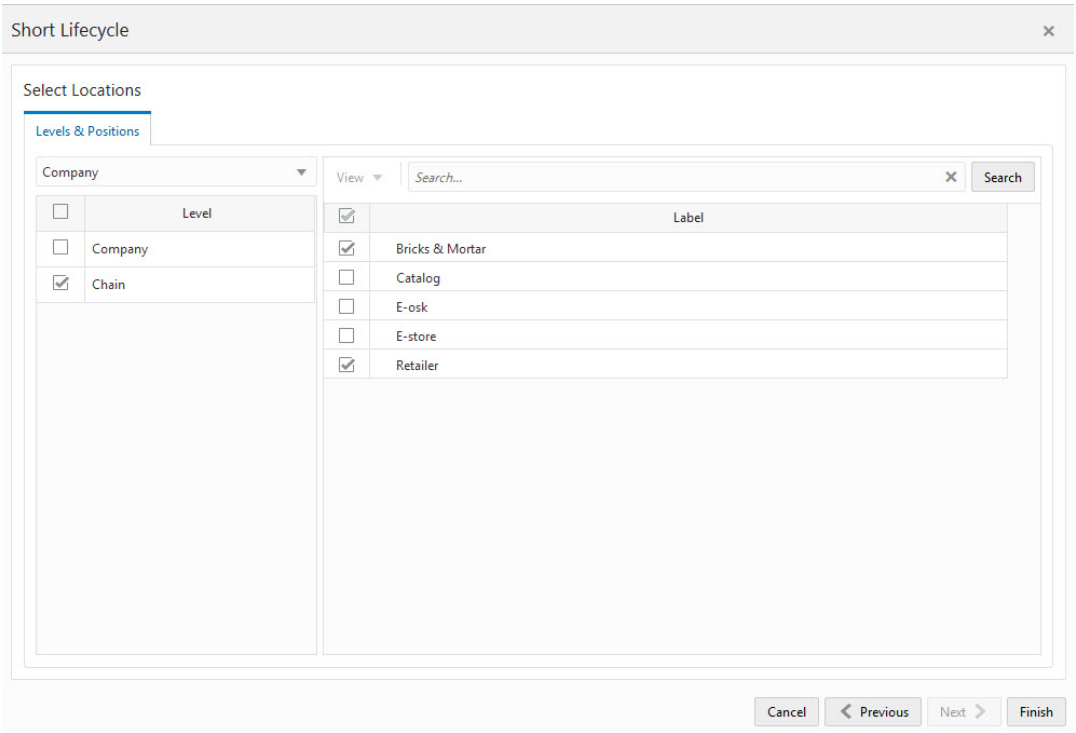
5. The Workspace wizard opens. Select the products you want to work with and click **Next**.

Figure 10–4 Workspace Wizard: Select Products



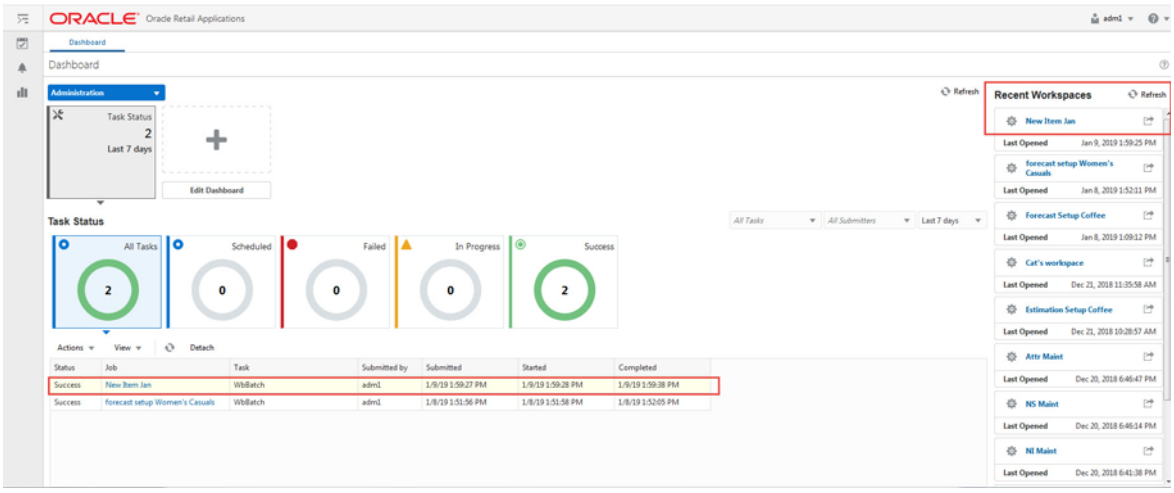
6. Select the locations you want to work with and click **Finish**.

Figure 10–5 Workspace Wizard: Select Locations



7. The wizard notifies you that your workspace is being prepared. Successful workspaces are available from the Dashboard.

Figure 10–6 Successful Workspace Build



This workspace contains these steps:

- Forecast Setup SLC Step
- Escalation Path Step
- Exception Management Step

Forecast Setup SLC Step

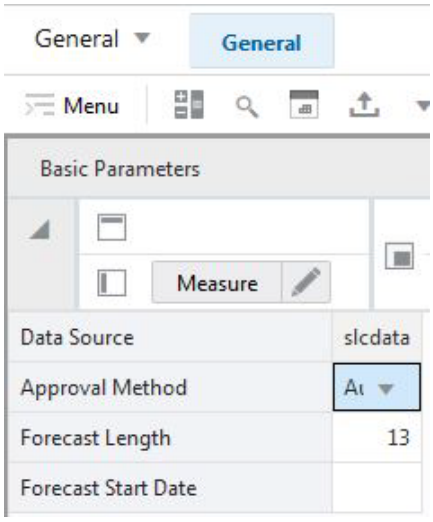
This step contains these views:

- Basic Parameters View
- Advanced Parameters View
- Detailed Parameters View

Basic Parameters View

The Basic Parameters view allows you to view and set high level information. For instance, you can set the approval policy or determine the time frame for which forecast is required.

Figure 10–7 Basic Parameters View



Measures: Basic Parameters View

The Basic Parameters view contains the following measures:

Data Source

This measure displays the name of the data source used to create the forecast.

Approval Method

This field is a list from which you select the default automatic approval policy for forecast items. Valid values are:

- Manual

  The system-generated forecast is not automatically approved. Forecast values must be manually approved by accessing and amending the Forecast Review workspace

- Automatic

  The system-generated quantity is automatically approved as is.

- By Alert

This list of values may also include any Forecast Approval alerts that have been configured for use in the forecast approval process. Alerts are configured during the implementation and can be enabled to be used for Forecast Approval in the Enable Alert for Forecast Approval view. Refer to the Oracle Retail Predictive Application Server Configuration Tools User Guide for more information on the Alert Manager. The Alert Parameters view contains a list and descriptions of available alerts, and for which level (causal/baseline) that they are designed for.

Forecast Length

The Forecast Length is used with the Forecast Start Date to determine forecast horizon. The forecast length is based on the calendar dimension of the final-level. For example, if the forecast length is to be 10 weeks, the setting for a final-level at day is 70 (10 x 7 days).

Forecast Start Date

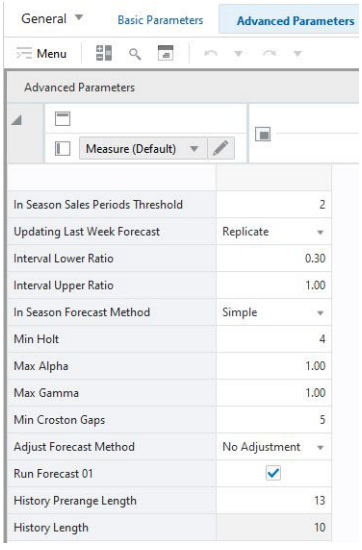
This is the starting date of the forecast. If no value is specified at the time of forecast generation, the system uses the data/time at which the batch is executed as the default value. If a value is specified in this field and it is used to successfully generate the batch forecast, this value is cleared.

Advanced Parameters View

The Advanced Parameters view allows you to set default values for parameters affecting the algorithm and forecasting techniques used to generate base demand.

Base demand is the only forecast component updated during the forecasting step. The other components, such as price effect or seasonality are calculated in the estimation step.

Figure 10–8 Advanced Parameters View



Measures: Advanced Parameters View

The Advanced Parameters view contains the following measures:

Adjust Forecast Method

This measure allows you to choose how to automatically adjust the system generated forecast. The options are:

- No Adjustment: no adjustment is made to the system generated forecast
- Keep Last Change: if any adjustments were done to the forecast in previous runs, they are reflected in the Adjusted Forecast measure.

History Length

This measure determines how many data points prior to RPAS_TODAY are used to generate base demand.

History Prerange Length

This measure lets you control how many calendar positions are showed in the wizard prior to RPAS_TODAY when building the Forecast Review workbook.

The historical positions (before RPAS_TODAY/forecast start date) displayed in the wizard are decided by the number entered here, and the history length used to forecast the level.

If the number displayed here is 10 and the history length is 17, the number of positions before today, are pre-ranged in the wizard to:

```
MAX (History Prerange Length, History Length) = MAX (10, 17) = 17
```

In Season Sales Periods Threshold

This measure displays the number of periods elapsed from the first sale of an item before it is considered in season. Only after this number of periods, the base demand of the item is calculated its own sales.

Updating Last Week Forecast

This field is a list from which you can select the method for updating the Approved Forecast for the last specified number of weeks of the forecast horizon. This option is valid only if the Approval Method Override is set to Manual or Approve by alert, and the alert was rejected. This parameter is used with the Updating Last Week Forecast Number of Weeks parameter. The choices are:

- No change

  When using this method, the last week in the forecast horizon does not have an Approved Forecast value. The number of weeks is determined number of weeks elapsed between the forecast start date and the last approval date.

- Replicate

  When using this method the last weeks in the forecast horizon are forecast using the Approved Forecast for the week corresponding to the last approval date.

- Use Forecast

  When using this method, the System Forecast for the last weeks in the forecast horizon is approved.

Interval Lower Ratio

The value entered in this field multiplied by the forecast represents the lower bound of the confidence interval for a given period in the forecast horizon.

Interval Upper Ratio

The value entered in this filed multiplied by the forecast represents the upper bound of the confidence interval for a given period in the forecast horizon.

In Season Forecast Method

This is a complete list of available forecast methods from which you can select the primary forecast method that is used to generate the forecast. (Reference white paper for methods).

Min Holt

Min Holt is the minimum number of periods of historical data necessary for the system to consider Holt (TrendES) as a potential forecasting method.

Max Alpha

The system default is 13 periods. The value must be set based on the calendar dimension of the level. For example, if the value is to be 13 weeks, the setting for a final-level at day is 91 (13x7days) and a source-level at week is 13.

Max Gamma

In the Holt (TrendES) model-fitting procedure, gamma (a model parameter capturing the trend) is determined by optimizing the fit over the time series. This field displays the maximum value (cap value) of gamma allowed in the model-fitting process. The allowable range is [0, 1]

Min Croston Gaps

The Croston's Min Gaps is the default minimum number of gaps between intermittent sales for the batch forecast to consider Croston's (Simple/IntermittentES) as a potential AutoES forecasting method for a time series. If there are not enough gaps between sales in a given product's sales history, the Croston's model is not considered a valid candidate model. The system default is five minimum gaps between intermittent sales. The value must be set based on the calendar dimension of the level. For example, if the value is to be 5 weeks, the setting for a final-level at day is 35 (5x7days) and a source-level at week is 5.

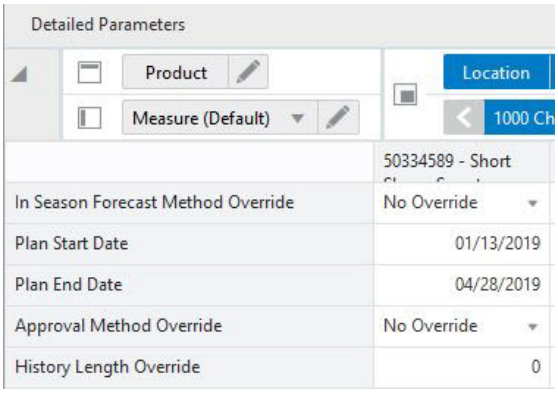
Run Forecast

This field lets you specify if the forecast should be run for this final level. This is useful if multiple final levels are available, and the need is to forecast only a subset of them.

Detailed Parameters View

The Detailed Parameters view allows you to override some default measures, such as forecast method or override the approval policy. It also displays some measures that require a lower intersection than escalation level, like the plan start and end dates.

Figure 10–9 Detailed Parameters View



Measures: Detailed Parameters View

The Detailed Parameters view contains the following measures:

Approval Method Override

Set only at the final-level, the Approval Method Override is a list from which you select the approval policy for individual product/location combinations. The options are:

- No Override

  The default approval policy is used

- Manual

  The system-generated forecast is not automatically approved. Forecast values must be manually approved by accessing and amending the Forecast Review view

- Automatic

  The system-generated quantity is automatically approved as is.

- By Alert

  This list of values may also include any Forecast Approval alerts that have been configured for use in the forecast approval process. Alerts are configured during the implementation and can be enabled to be used for Forecast Approval in the Enable Alert for Forecast Approval view. Refer to the Oracle Retail Predictive Application Server Configuration Tools User Guide for more information on the Alert Manager. The Alert Parameters view contains a list and descriptions of available alerts, and for which level (causal/baseline) that they are designed for.

History Length Override

This measure allows you to override the History Length. It determines how many data points prior to RPAS_TODAY are used to generate base demand.

In Season Forecast Method Override

This is the override of the In Season Forecast Method available in the Advanced Parameters view.

Plan Start Date

This represents the date when the item starts selling.

Plan End Date

This represents the date when the item stops selling.

Escalation Path Step

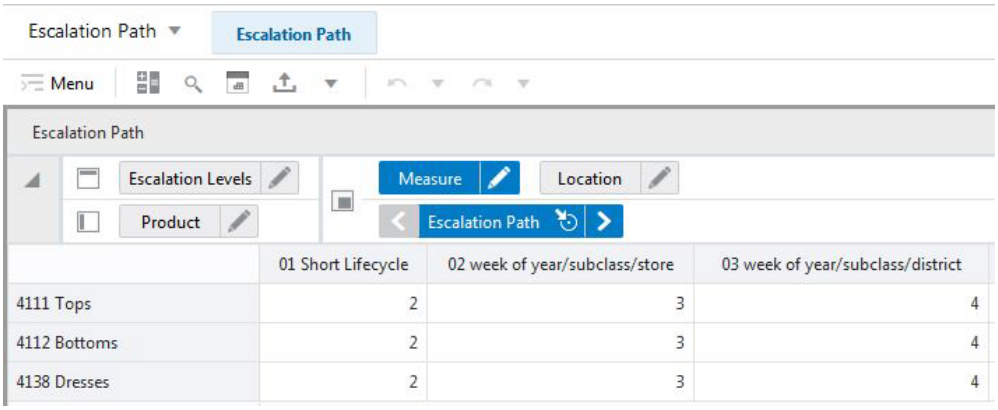
This step contains these views:

- Escalation Path View
- Escalation Path Override View

Escalation Path View

The Escalation Path view showsthe available escalation levels for short lifecycle items, and allows you to set priorities for each level.

Figure 10–10 Escalation Path View



Measures: Escalation Path View

The Escalation Path view contains the following measures:

Escalation Path

The user can specify the priority in which the system searches escalation levels for forecast parameters like seasonality curves and/or promotion effects. For instance, suppose there are three escalation levels available. The path may be defined as follows:

- Escalation Level #1: priority 3
- Escalation Level #2: priority 4
- Escalation Level #3: priority 2

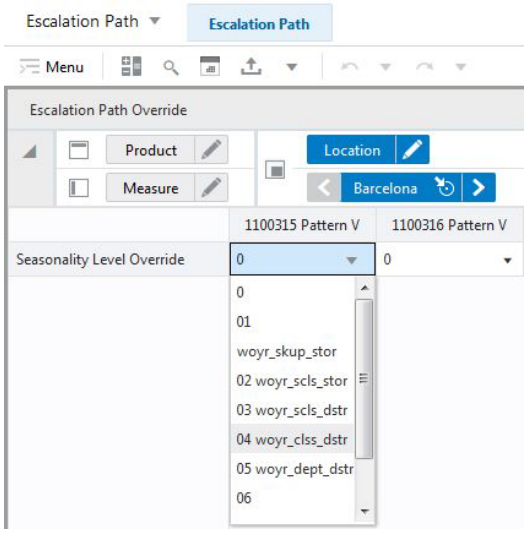
In this case, when generating the forecast, the system will first look to get parameters from Escalation Level #3 (highest priority). If the are available, they are used. If they are not available, because they were deemed unreliable and pruned, the system will go to Escalation Level #1 (second highest priority). Finally, if the search is not successful, the search continues at Escalation Level #2.

Escalation Path Override View

The Escalation Path Override view allows you to choose to bypass the escalation search, by suggesting a level from which the forecast parameters are used.

However, if the forecast parameters for that level were deemed unreliable and pruned, the search will follow the default escalation path.

Figure 10–11 Escalation Path Override View



Measures: Escalation Path Override View

The Escalation Path Override view contains the following measures:

Escalation Path Override

In this field the user can override the default escalation path selections. She can enter the preferred Escalation Level, and that will become the top priority. However, if the forecast parameters for that level were deemed unreliable and pruned, the search will follow the default escalation path.

Exception Management Step

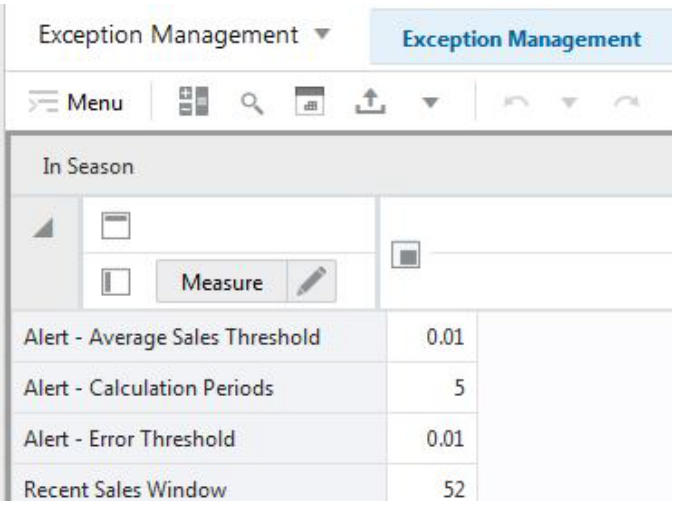
This step contains this view:

- In Season View

In Season View

The In Season view contains metrics used in short lifecycle exceptions calculations

Figure 10–12 In Season View



Measures: In Season View

The In Season view contains the following measures:

Alert – Average Sales Threshold

Threshold used in deciding if average sales are high or low, depending on how they compare against the value.

Alert – Calculation Periods

The number stored in this field defines the number of calculations periods used in generating exceptions.

Alert – Error Threshold

This field stores the value that determines if a forecast error is acceptable, or if it needs to be flagged as exception.

Recent Sales Window

This field determines the time frame over which recent sales are considered in the exception calculations. The time frame is defined starting today and going back the specified number of periods.

11

Forecast Setup Long Lifecycle Task

This chapter describes the Forecast Setup Long Lifecycle task for RDF Cloud Service.

Forecast Setup LLC Workspaces, Steps, and Views

The following table lists the workspaces, steps, and views for the Forecast Setup Long Lifecycle task.

Workspace	Step	Views
Forecast Setup LLC Workspace	Forecast Setup LLC Workspace	Basic Parameters View
		Advanced Parameters View
		Overrides View
	Base Demand Step	Basic Parameters View Bayesian Plan View
	Causal Events Step	Basic Parameters View Aggregation Profile View Spread Profile View
		Advanced Parameters View
		Overrides View
	Escalation Path Step	Seasonality Escalation Path View Seasonality Escalation Path Override View
		Pooling Escalation Path View Pooling Escalation Override Path View
	Exception Management Step	Base Demand View
		Promotions View

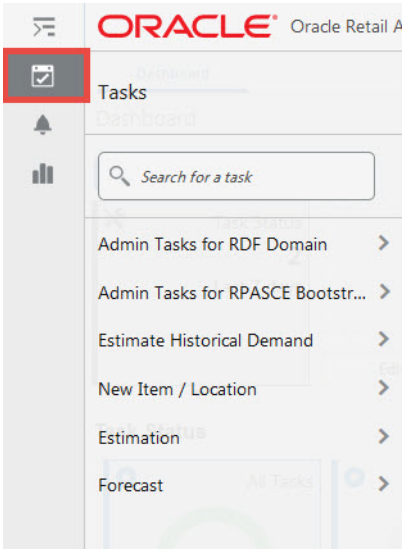
Forecast Setup LLC Workspace

The Forecast Setup LLC workspace allows you access to all of the views listed in Forecast Setup LLC Workspace.

To build the Forecast Setup LLC workspace, perform these steps:

1. From the left sidebar menu, click the Task Module to view the available tasks.

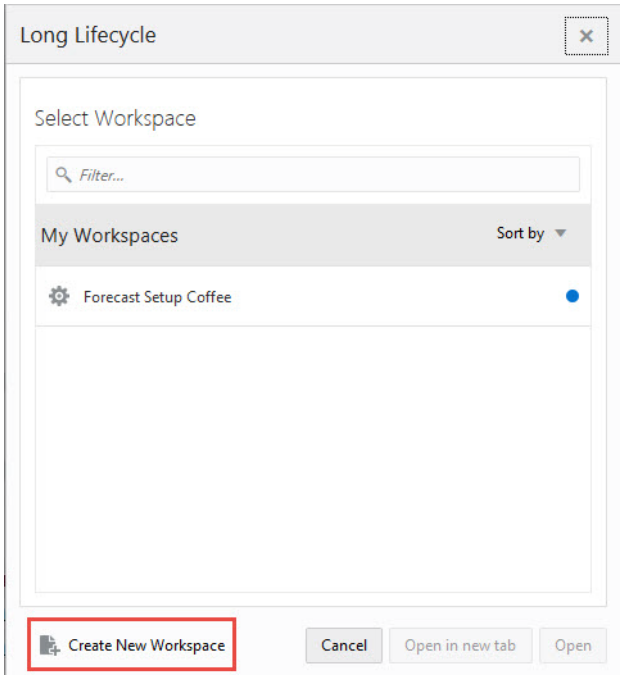
Figure 11–1 Task Module



2. Click the **Forecast** activity and then click **Setup** to access the available workspaces.
3. Click **Long Lifecycle**. The Long Lifecycle wizard opens.

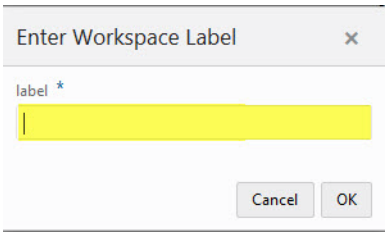
   You can open an existing workspace, but to create a new workspace, click **Create New Workspace**.

Figure 11–2 Long Lifecycle Wizard



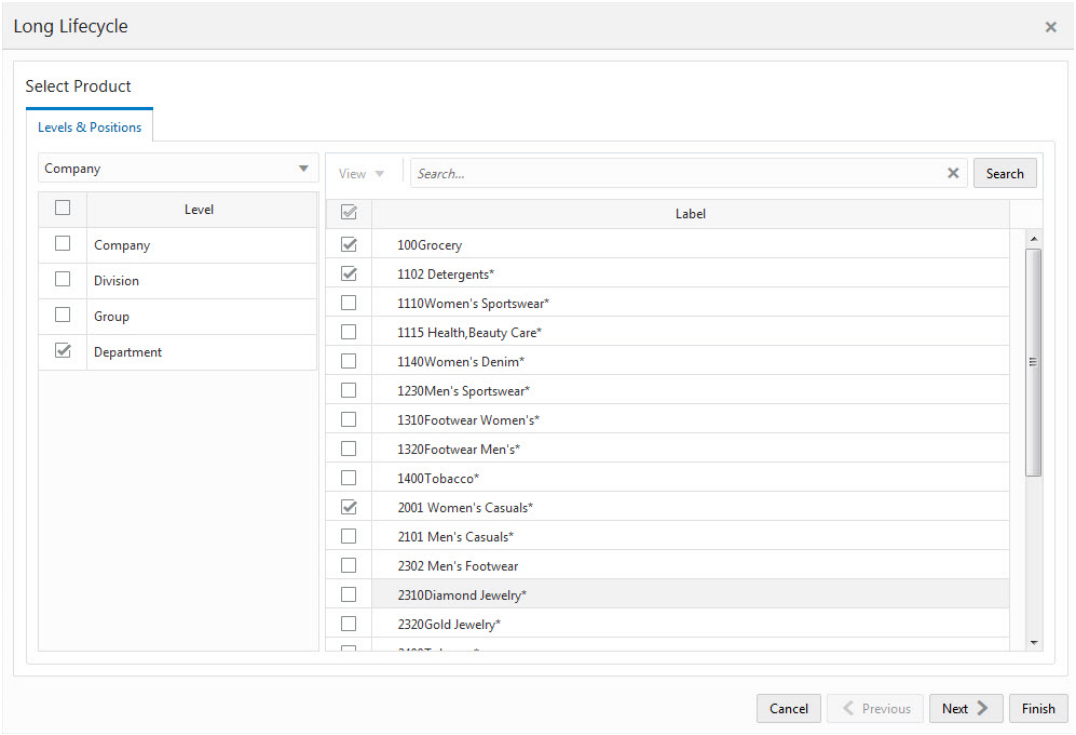
4. Enter a name for your new workspace in the label text box and click **OK**.

Figure 11–3 Enter Workspace Label



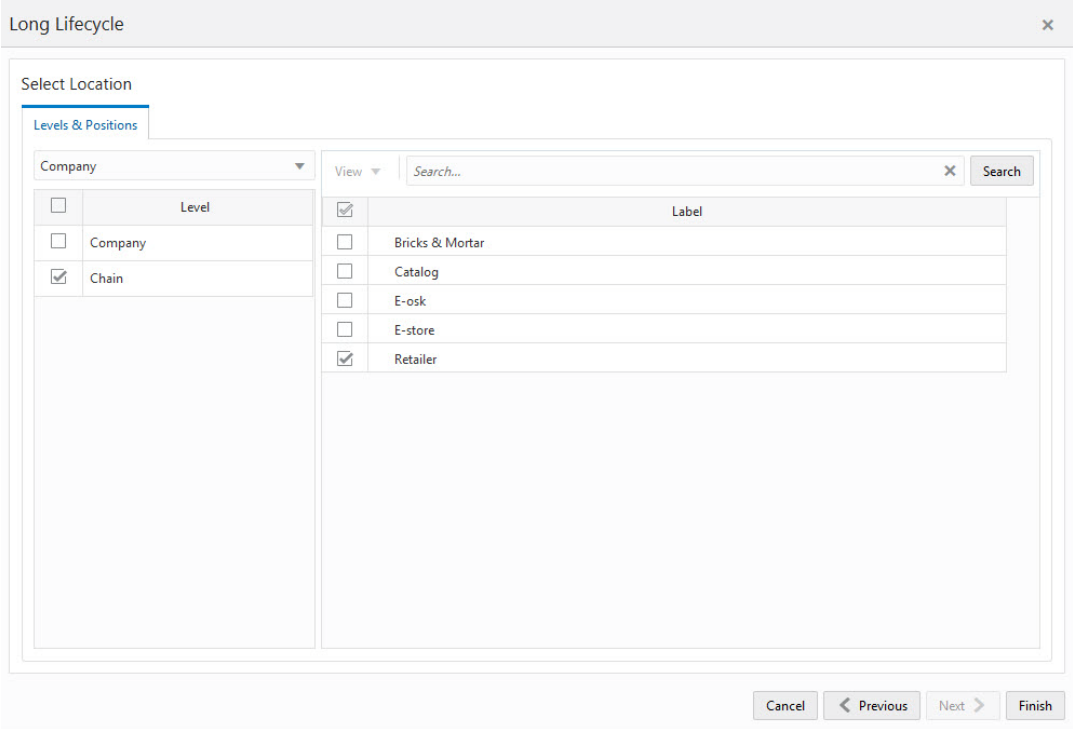
5. The Workspace wizard opens. Select the products you want to work with and click **Next**.

Figure 11–4 Workspace Wizard: Select Products



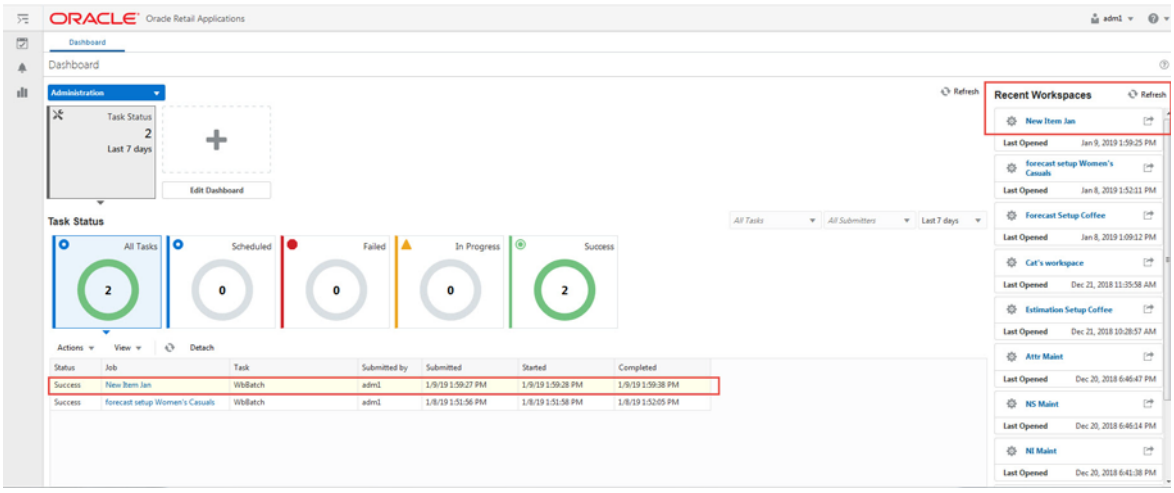
6. Select the locations you want to work with and click **Finish**.

Figure 11–5 Workspace Wizard: Select Locations



7. The wizard notifies you that your workspace is being prepared. Successful workspaces are available from the Dashboard.

Figure 11–6 Successful Workspace Build



The Forecast Setup LLC workspace is built. This workspace contains these steps:

- Basic Parameters View
- Advanced Parameters View
- Overrides View

Forecast Setup LLC Step

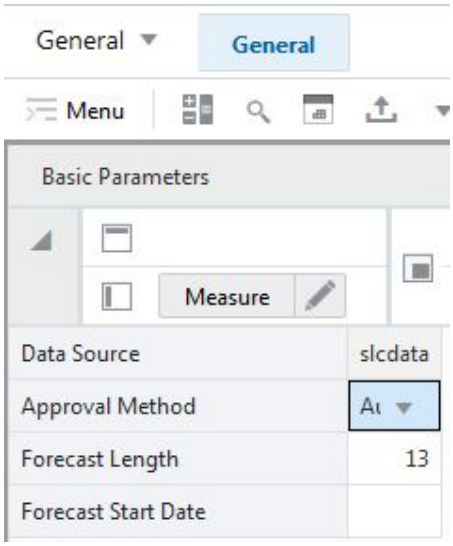
This step contains these views:

- Basic Parameters View
- Advanced Parameters View
- Overrides View

Basic Parameters View

The Basic Parameters view allows you to view and set high level information. For instance, you can set the approval policy or determine the time frame for which forecast is required.

Figure 11–7 Basic Parameters View



Measures: Basic Parameters View

The Basic Parameters view contains the following measures:

Forecast Start Date

This is the starting date of the forecast. If no value is specified at the time of forecast generation, the system uses the data/time at which the batch is executed as the default value. If a value is specified in this field and it is used to successfully generate the batch forecast, this value is cleared.

Forecast Length

The Forecast Length is used with the Forecast Start Date to determine forecast horizon. The forecast length is based on the calendar dimension of the final-level. For example, if the forecast length is to be 10 weeks, the setting for a final-level at day is 70 (10 x 7 days).

Approval Method

This field is a list from which you select the default automatic approval policy for forecast items. Valid values are:

- Manual

  The system-generated forecast is not automatically approved. Forecast values must be manually approved by accessing and amending the Forecast Review view

- Automatic

  The system-generated quantity is automatically approved as is.

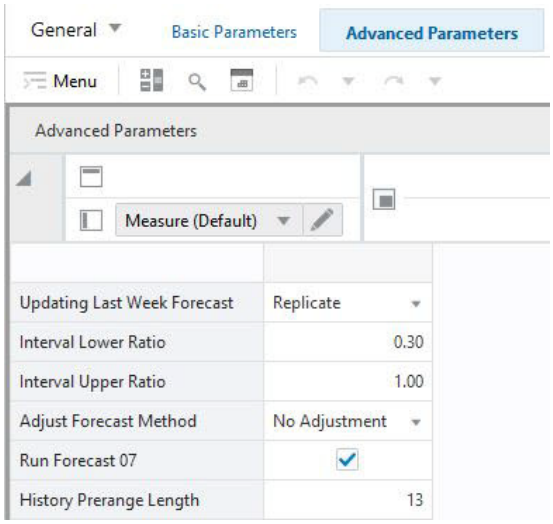
- By Alert

  This list of values may also include any Forecast Approval alerts that have been configured for use in the forecast approval process. Alerts are configured during the implementation and can be enabled to be used for Forecast Approval in the Enable Alert for Forecast Approval view. Refer to the Oracle Retail Predictive Application Server Configuration Tools User Guide for more information on the Alert Manager. The Alert Parameters view contains a list and descriptions of available alerts, and for which level (causal/baseline) that they are designed for.

Advanced Parameters View

The Advanced Parameters view allows you to set default values for parameters that are less frequently accessed, such as History start date or measures affecting cumulative interval calculations.

Figure 11–8 Advanced Parameters View



Measures: Advanced Parameters View

The Advanced Parameters view contains the following measures:

History Prerange Length

This measure lets you control how many calendar positions are showed in the wizard prior to RPAS_TODAY when building the Forecast Review workbook.

The historical positions (before RPAS_TODAY/forecast start date) displayed in the wizard are decided by the number entered here, and the history length used to forecast the level.

If the number displayed here is 10 and the history length is 17, the number of positions before today, are pre-ranged in the wizard to:

```
MAX (History Prerange Length, History Length) = MAX (10, 17) = 17
```

History Start Date

This field indicates to the system the point in the historical sales data at which to use in the forecast generation process. If no date is indicated, the system defaults to the first date in your calendar. It is also important to note that the system ignores leading zeros that begin at the history start date. For example, if your history start date is January 1, 2017 and an item/location does not have sales history until February 1, 2017, the system considers the starting point in that item/location's history to be the first data point where there is a non-zero sales value.

Keep Last Changes

This measure allows you to keep previously adjusted forecast values if there is any existing adjustment.

Updating Last Week Forecast

This field is a list from which you can select the method for updating the Approved Forecast for the last specified number of weeks of the forecast horizon. This option is valid only if the Approval Method Override is set to Manual or Approve by alert, and the alert was rejected. This parameter is used with the Updating Last Week Forecast Number of Weeks parameter. The choices are:

- No change

  When using this method, the last week in the forecast horizon does not have an Approved Forecast value. The number of weeks is determined number of weeks elapsed between the forecast start date and the last approval date.

- Replicate

  When using this method the last weeks in the forecast horizon are forecast using the Approved Forecast for the week corresponding to the last approval date.

- Use Forecast

  When using this method, the System Forecast for the last weeks in the forecast horizon is approved.

Interval Lower Ratio

The value entered in this field multiplied by the forecast represents the lower bound of the confidence interval for a given period in the forecast horizon.

Interval Upper Ratio

The value entered in this filed multiplied by the forecast represents the upper bound of the confidence interval for a given period in the forecast horizon.

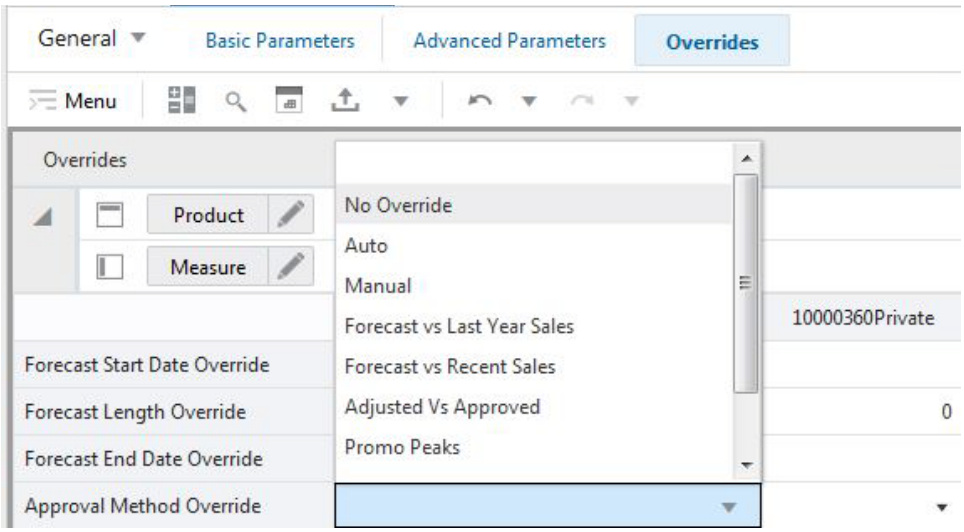
Run Forecast

This field let's you specify if the forecast should be run for this final level. This is useful if multiple final levels are available, and the need is to forecast only a subset of them.

Overrides View

The Overrides view allows you to override some default measures that determine the time frame for the forecast, such as forecast start and end dates. It also allows overriding the approval policy.allows you to override some default measures that determine the time frame for the forecast, such as forecast start and end dates. It also allows overriding the approval policy.

Figure 11–9 Overrides View



Measures: Overrides View

The Overrides view contains the following measures:

Forecast Start Date Override

This parameter represents the date to start forecasting at a particular intersection. If this date is set to the past, it is ignored in favor of today. If it is in the future, the forecast will be zero until the date is reached.

Forecast Length Override

This parameter decides how many periods ahead RDF should forecast for a certain item/store. It is the override of the default Forecast Length value. Such a feature is desired, because not all merchandise require the same forecast horizon. For instance, the majority of items require a seven week long forecast to be used in replenishment. So the default value is set to seven weeks. However, a few items which need longer term planning and have long lead times, may need a forecast that is 52 weeks long. For those the length can be overwritten with the appropriate value.

Forecast End Date Override

This parameter represents the last point in time for which the Forecasting Engine forecasts for an item/location combination. Should this parameter be set to a date less than the Forecast Start Date plus the Forecast Length, the engine forecasts zero (0) past this date. If Forecast End Date is more than Forecasting Start Date plus Forecasting Length, no forecast is generated outside Forecasting Start Date plus Forecasting Length window. In other words, both Forecast Start Date and Forecasting End Date are relevant for time periods within the forecast horizon set at the global level. No value is in this measure if the system default is to be used.

Approval Method Override

This field is a list from which you select the default automatic approval policy for forecast items. Valid values are:

- Manual

  The system-generated forecast is not automatically approved. Forecast values must be manually approved by accessing and amending the Forecast Review view

- Automatic

  The system-generated quantity is automatically approved as is.

- By Alert

  This list of values may also include any Forecast Approval alerts that have been configured for use in the forecast approval process. Alerts are configured during the implementation and can be enabled to be used for Forecast Approval in the Enable Alert for Forecast Approval view. Refer to the Oracle Retail Predictive Application Server Configuration Tools User Guide for more information on the Alert Manager. The Alert Parameters view contains a list and descriptions of available alerts, and for which level (causal/baseline) that they are designed for.

Base Demand Step

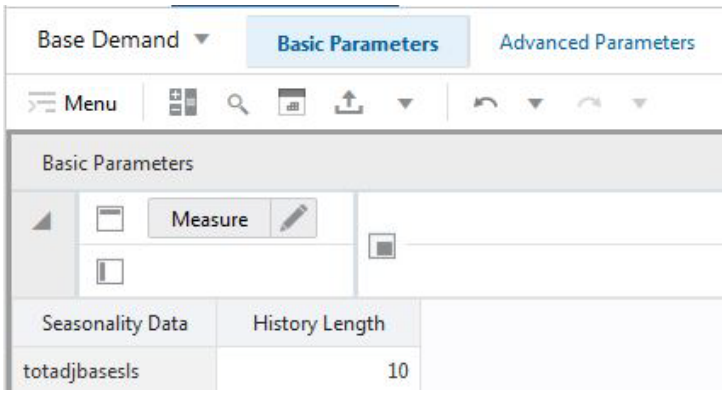
This step contains these views:

- Basic Parameters View
- Bayesian Plan View

Basic Parameters View

The Basic Parameters view allows you to view and set high level information for calculating base demand.

Figure 11–10 Basic Parameters View



Measures: Basic Parameters View

The Basic Parameters view contains the following measures:

Seasonality Data Source

This measure displays the name of the data source used to create seasonality curves.

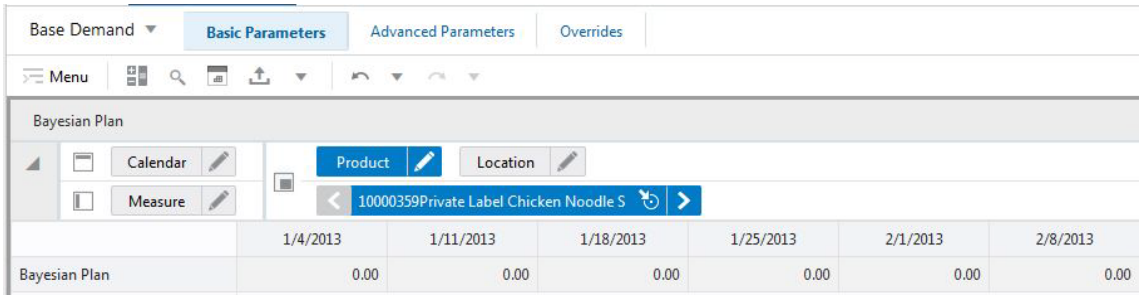
History Length

The value entered in this field determines how many data points looking back from today are used to generate base demand.

Bayesian Plan View

The Bayesian Plan view allows you to view and also manually change a Bayesian plan measure.

Figure 11–11 Bayesian Plan View



Measures: Bayesian Plan View

The Bayesian Plan view contains the following measures:

Bayesian Plan

This measure displays the Bayesian plan at the final forecast level. The measure is either interfaced into RDF Cloud Service, or you can key in values and commit to the database.

Casual Forecast Setup Step

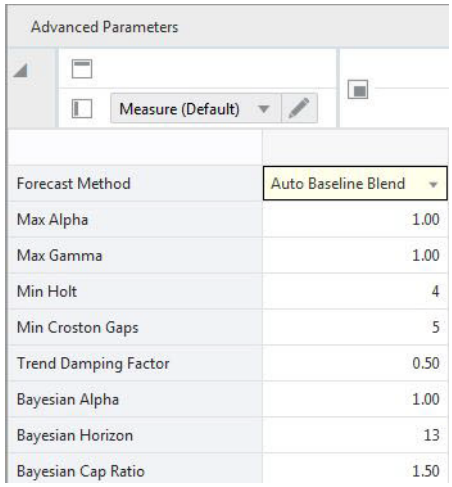
This step contains these views:

- Base Demand - Advanced Parameters View
- Base Demand - Overrides View

Base Demand - Advanced Parameters View

The Base Demand - Advanced Parameters view allows you to view a Base Demand - Advanced Parameters measure.

Figure 11–12 Base Demand - Advanced Parameters View



Measures: Base Demand - Advanced Parameters View

The Base Demand - Advanced Parameters view contains the following measures:

Forecast Method

This measure is a complete list of available forecast methods available to generate base demand. A summary of methods is provided in White paper.

Max Alpha

In the Simple or Holt (TrendES) model-fitting procedure, alpha (a model parameter capturing the level) is determined by optimizing the fit over the time series. This field displays the maximum value (cap value) of alpha allowed in the model-fitting process.

An alpha cap value closer to one (1) allows, but does not guarantee, more reactive models (alpha = 1, repeats the last data point). An alpha cap closer to zero (0) only allows less reactive models. The default is one (1).

The value for the optimized alpha parameter will be in the range 0.001 to Max Alpha.

Max Gamma

In the Winters (SeasonalES) and Holt (TrendES) model-fitting procedures, gamma (a model parameter capturing the trend) is determined by optimizing the fit over the time series.

Min Holt

This measure displays displays the maximum value (cap value) of gamma allowed in the model-fitting process. The value for the optimized gamma parameter will be in the range 0.001 to Max Gamma

Min Croston Gaps

The Crostons Min Gaps is the default minimum number of transitions from non-zero sales to zero sales. Thus, if Croston's Min Gap is set to five, then the method may fit if you have five or more transitions from non-zero sales to zero sales.

If there are not enough gaps between sales in a given product's sales history, the Croston's model is not considered a valid candidate model.

The system default is five minimum gaps between intermittent sales. The value must be set based on the calendar dimension of the level. For example, if the value is to be 5 weeks, the setting for a final-level at day is 35 (5x7days) and a source-level at week is 5.

Trend Damping Factor

This measure determines how reactive the forecast is to trending data. A value close to zero (0) is a high damping, while a value if one (1) implies no damping. The default is 0.5.

Bayesian Alpha

When using the Bayesian forecasting method, historic data is combined with a known sales plan in creating the forecast. As POS data comes in, a Bayesian forecast is adjusted so that the plan's magnitude is a weighted average between the original plan's scale and the scale reflected by known history

This measure displays the value of alpha (the weighted combination parameter). An alpha value closer to one (or infinity) weights the sales plan more in creating the forecast, whereas alpha closer to zero (0) weights the known history more. The default is one (1).

Bayesian Horizon

This measure determines for how many periods in the forecast horizon Bayesian formula is applied. For the rest of the forecast horizon the forecast is equal to the plan.

Let's assume the Bayesian Horizon is set to 3, and the forecast horizon is 10 periods. Then the first 3 periods of the forecast horizon the forecast is the combination of the plan and recent sales, as defined by the Bayesian formula. For the remaining 7 periods, the forecast equals the plan. If the Bayesian Horizon is set to 0 or a negative number, the Bayesian formula is used for the entire forecast horizon.

Bayesian Cap Ratio

This measure is used to cap the resulting Bayesian forecast if it deviates significantly from the sale plan. The Bayesian Cap ratio is used as follows:

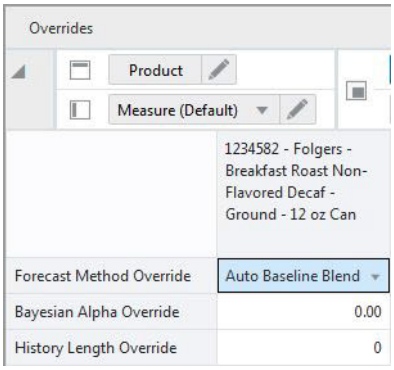
Example 11–1 Bayesian Cap Ratio

```
If forecast I > Bayesian Cap ratio * Max value of Past Sales AND
forecast I > Bayesian Cap ratio * Max value of Past Plan AND
forecast I > Bayesian Cap ratio * Plan I
then
forecast I = Plan I
```

Base Demand - Overrides View

The Base Demand - Overrides view allows you to view a Base Demand - Overrides measure.

Figure 11–13 Base Demand - Overrides View



Measures: Base Demand - Overrides View

The Base Demand - Overrides view contains the following measures:

Forecast Method Override

Set at the final the Forecast Method Override is a list from which you can select a different forecast method to generate base demand.

No Override appears in this field if the system default is to be used.

Bayesian Alpha Override

This is the override of the Bayesian Alpha parameter that is specified in the Advanced Parameters sub-step.

An alpha value closer to one (or infinity) weights the sales plan more in creating the forecast, whereas alpha closer to zero (0) weights the known history more. The default is one (1).

History Length Override

This is the override of the History Length parameters that is specified in the Basic Parameter sub-step.

The value entered in this field determines how many data points looking back from today are used to generate base demand.

Causal Events Step

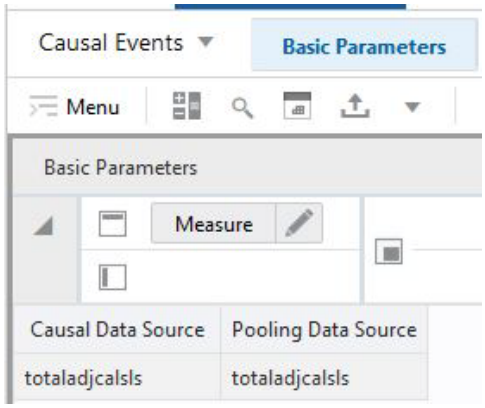
The Causal Events workspace contains these views:

- Basic Parameters View
- Aggregation Profile View
- Spread Profile View
- Advanced Parameters View
- Overrides View

Basic Parameters View

The Basic Parameters view displays the data sources used to calculate causal effects at the final and pooling levels.

Figure 11–14 Basic Parameters View



Measures: Basic Parameters View

The Basic Parameters view contains the following measures:

Causal Data Source

This measure displays the name of the data source used to calculate promotion effects at the final level.

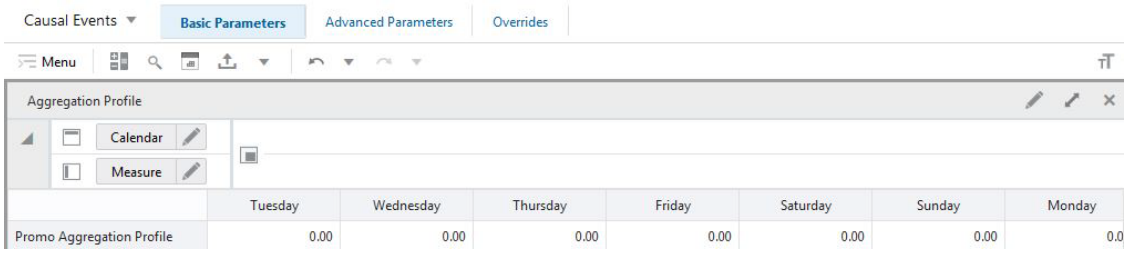
Pooling Data Source

This measure displays the name of the data source used to calculate promotion effects at the pooling levels. The measure may be different than the causal data source, because at the pooling levels the data source can be normalized, something that is not recommended for the final level.

Aggregation Profile View

The Aggregation Profile view allows you to view and edit a day of week profile. The profile can be used to aggregate events from the day to the week level.

Figure 11–15 Aggregation Profile View



Measures: Aggregation Profile View

The Aggregation Profile view contains the following measures:

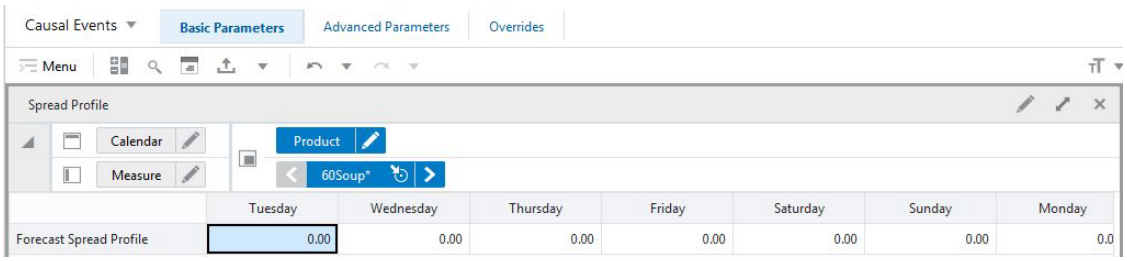
Promo Aggregation Profile

Used only for Daily Promotions, the Promo Aggregation Profile is the measure name of the profile used to aggregate promotions defined at day up to the week. The value entered in this field is the measure name of profile. Note that the only aggregation of promotion variables being performed here is along the Calendar hierarchy. RDF Cloud Service does not support aggregation of promotion variables along other hierarchies such as product and location hierarchies.

Spread Profile View

The Spread Profile view allows you to view and edit a day of week profile. The profile can be used to spread week level forecast to day.

Figure 11–16 Spread Profile View



Measures: Spread Profile View

The Spread Profile view contains the following measures:

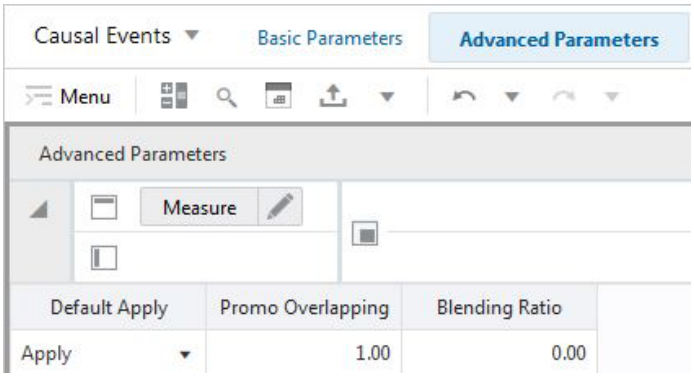
Forecast Spread Profile

Used only for Daily Causal Forecasting, the Forecast Spread Profile is the profile used to spread the baseline forecast from week to day level.

Advanced Parameters View

The Advanced Parameters view gives access to causal-related information that is accessed less frequently.

Figure 11–17 Advanced Parameters View



Measures: Advanced Parameters View

The Advanced Parameters view contains the following measures:

Default Apply Causal

In this measure the user specifies if promotion effects are applied on top of the baseline or not. The choices are:

- Apply

  Promotion effects are applied

- Do Not Apply

  Promotion effects are not applied

Promo Overlapping Factor

This adjustment factor specifies at a high level how the individually calculated promotions interact with each other when they are overlapping in the forecast horizon. This parameter serves as a global setting, but can be overridden at lower levels. The default value is 1.

A value greater than 1 means the promotion effects will be compressed when applied in the model, instead of linearly summing up to get the total promotion effect. The larger the value is, the larger the compression effect will be, meaning the smaller the total effect will be.

A value between 0 and 1 means the promotion effects will be amplified when applied in the model, instead of linearly summing up to get the total promotion effect. The smaller the value is, the larger the amplification effect will be, meaning the larger the total effect will be.

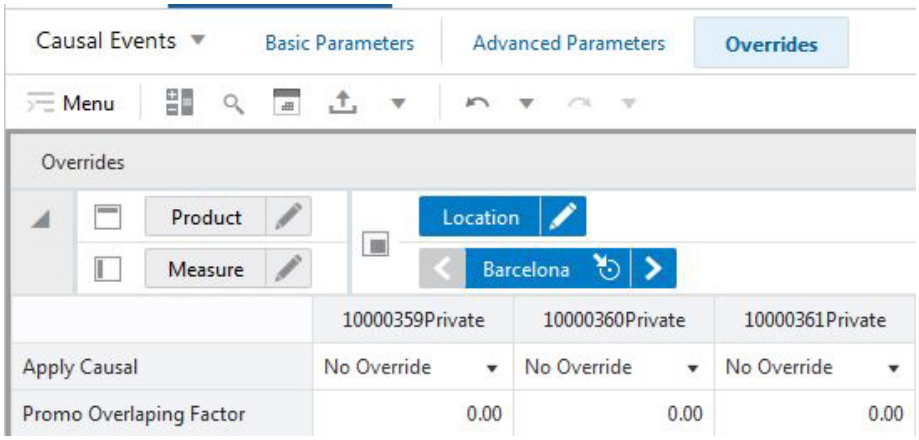
Blending Ratio

This parameter sets the weights for combining the Final and Pooling Level promotion effects, when calculating the blended effect. The range of the parameter is 0 to 1. A value closer to 1 will yield a blended effect closer to the Pooling Level effect. A value closer to zero yields an effect closer to the Final Level effect.

Overrides View

The Overrides view allows you to override at a more granular level some default measures related to promotions and promotion effects.

Figure 11–18 Overrides View



Measures: Overrides View

The Overrides view contains the following measures:

Data Source

This measure displays the name of the data source used to create the forecast.

Apply Causal

In this measure the user can override the default behavior around applying promotion effects on top of the baseline or not. The choices are:

- No Override

  Default behavior is applied

- Apply

  Promotion effects are applied

- Do not Apply

  Promotion effects are not applied

Promo Overlapping Factor

This adjustment factor specifies at the product/location level how the individually calculated promotions interact with each other when they are overlapping in the forecast horizon. The default value is 0, meaning no override.

A value greater than 1 means the promotion effects will be compressed when applied in the model, instead of linearly summing up to get the total promotion effect. The larger the value is, the larger the compression effect will be, meaning the smaller the total effect will be.

A value between 0 and 1 means the promotion effects will be amplified when applied in the model, instead of linearly summing up to get the total promotion effect. The smaller the value is, the larger the amplification effect will be, meaning the larger the total effect will be.

Escalation Path Step

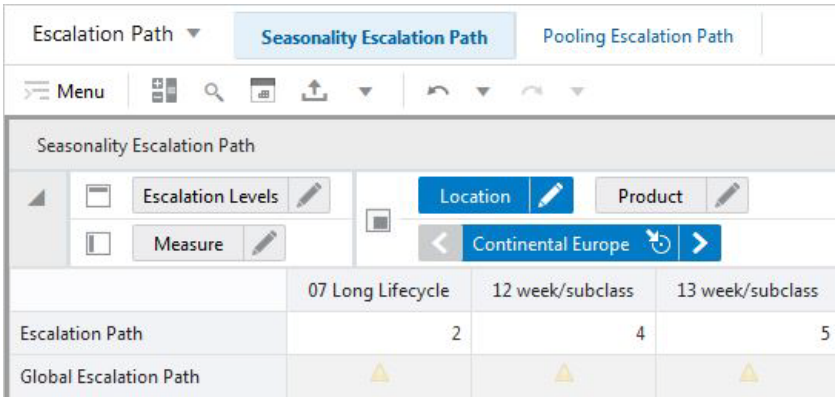
This step contains these views:

- Seasonality Escalation Path View
- Seasonality Escalation Path Override View
- Pooling Escalation Path View
- Pooling Escalation Override Path View

Seasonality Escalation Path View

The Seasonality Escalation Path view shows the available escalation levels for long lifecycle items, and allows you to set priorities for each level.

Figure 11–19 Seasonality Escalation Path View



Measures: Seasonality Escalation Path View

The Seasonality Escalation Path view contains the following measures:

Seasonality Escalation Path

The user can specify the priority in which the system searches escalation levels for forecast parameters like seasonality curves and/or promotion effects. For instance, suppose there are three escalation levels available. The path may be defined as follows:

- Escalation Level #1: priority 3
- Escalation Level #2: priority 4
- Escalation Level #3: priority 2

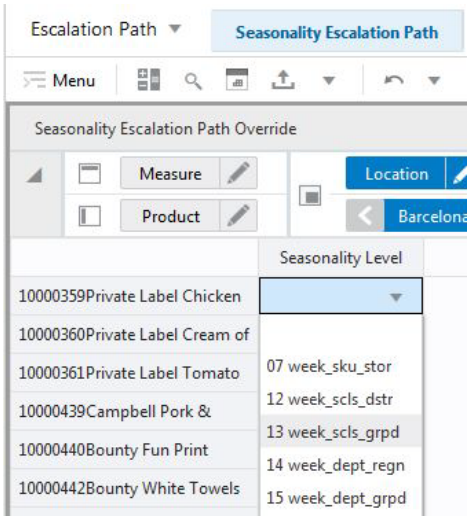
In this case, when generating the forecast, the system will first look to get parameters from Escalation Level #3 (highest priority). If the are available, they are used. If they are not available, because they were deemed unreliable and pruned, the system will go to Escalation Level #1 (second highest priority). Finally, if the search is not successful, the search continues at Escalation Level #2.

Seasonality Escalation Path Override View

The Seasonality Escalation Path Override view allows you to choose to bypass the escalation search, by suggesting a level from which the seasonality is used.

However, if the forecast parameters for that level were deemed unreliable and pruned, the search will follow the default escalation path.

Figure 11–20 Seasonality Escalation Path Override View



Measures: Seasonality Escalation Path Override View

The Seasonality Escalation Path Override view contains the following measures:

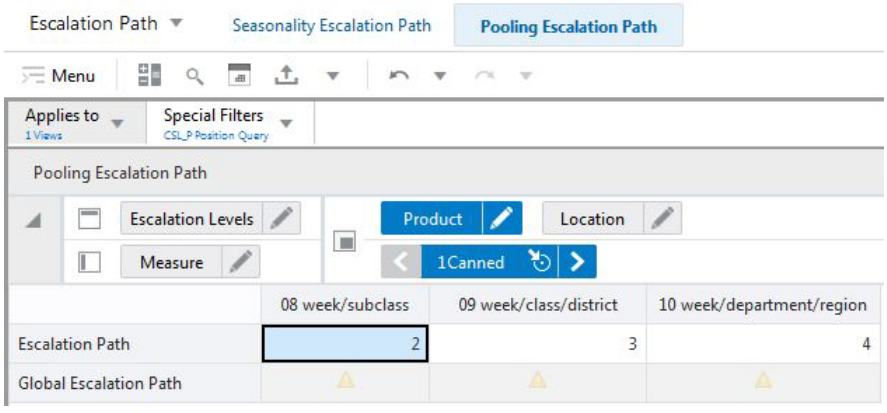
Seasonality Escalation Path Override

In this field the user can override the default escalation path selections. The user can enter the preferred Escalation Level, and that will become the top priority. However, if the forecast parameters for that level were deemed unreliable and pruned, the search will follow the default escalation path.

Pooling Escalation Path View

The Pooling Escalation Path view shows the available pooling levels for long lifecycle items, and allows you to set priorities for each level.

Figure 11–21 Pooling Escalation Path View



Measures: Pooling Escalation Path View

The Pooling Escalation Path view contains the following measures:

Pooling Escalation Path

The user can specify the priority in which the system searches escalation levels for forecast parameters like seasonality curves and/or promotion effects. For instance, suppose there are three escalation levels available. The path may be defined as follows:

- Escalation Level #1: priority 3
- Escalation Level #2: priority 4
- Escalation Level #3: priority 2

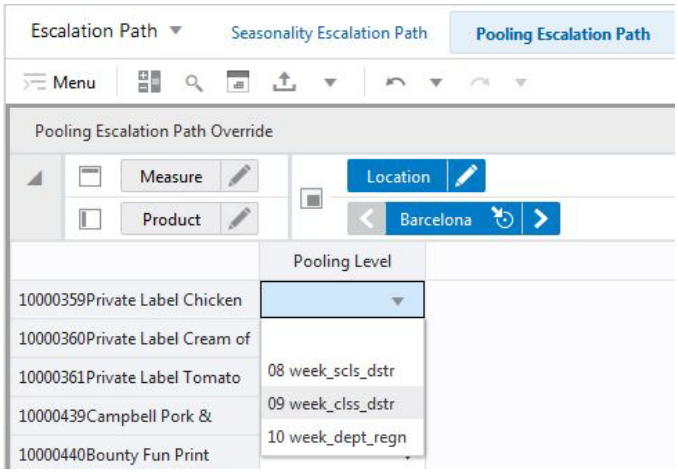
In this case, when generating the forecast, the system will first look to get parameters from Escalation Level #3 (highest priority). If the are available, they are used. If they are not available, because they were deemed unreliable and pruned, the system will go to Escalation Level #1 (second highest priority). Finally, if the search is not successful, the search continues at Escalation Level #2.

Pooling Escalation Override Path View

The Pooling Escalation Override Path view allows you to choose to bypass the escalation search, by suggesting a level from which the promotion effects are used.

However, if the forecast parameters for that level were deemed unreliable and pruned, the search will follow the default escalation path.

Figure 11–22 Pooling Escalation Override Path View



Measures: Pooling Escalation Override Path View

The Pooling Escalation Override Path view contains the following measures:

Pooling Escalation Override Path

In this field the user can override the default escalation path selections. She can enter the preferred Escalation Level, and that will become the top priority. However, if the forecast parameters for that level were deemed unreliable and pruned, the search will follow the default escalation path.

Exception Management Step

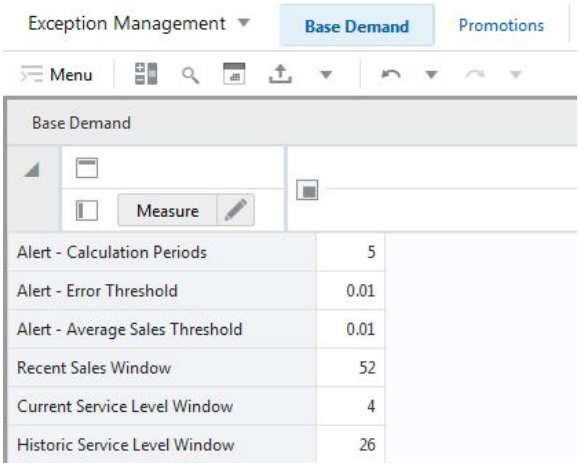
The Exception Management workspace contains these steps:

- Base Demand View
- Promotions View

Base Demand View

The Base Demand view allows you to view and edit threshold for exceptions relevant to baseline demand.

Figure 11–23 Base Demand View



Measures: Base Demand View

The Base Demand view contains the following measures:

Alert – Calculation Periods

The number stored in this field defines the number of calculations periods used in generating exceptions.

Alert – Error Threshold

This field stores the value that determines if a forecast error is acceptable, or if it needs to be flagged as exception.

Alert – Average Sales Threshold

Threshold used in deciding if average sales are high or low, depending on how they compare against the value.

Recent Sales Window

This field determines the time frame over which recent sales are considered in the exception calculations.

Current Service Level Window

This field stores the number of periods, going back from today, used to calculate the service level. This is meant to be for the current level, so the value should be something reflecting the current state. For instance the current service level could be calculated for the past week, so four or five periods.

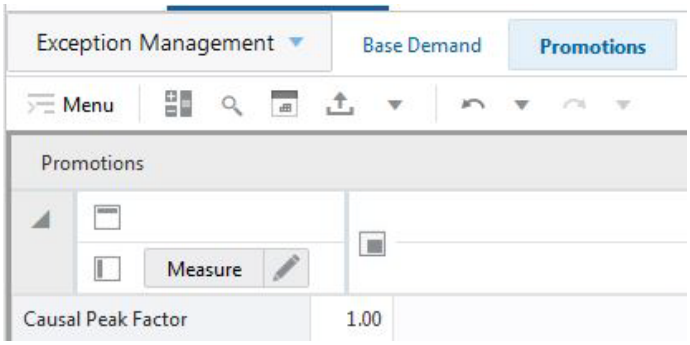
Historic Service Level Window

This field stores the number of periods, going back from today, used to calculate the service level. This is meant to be for the historic level, so the value should be something reflecting a longer past period. For instance the current service level could be calculated for the past year or half year, so twenty six or fifty two periods.

Promotions View

The Promotions view allows you to view and edit threshold for exceptions relevant to promotional demand.

Figure 11–24 Promotions View



Measures: Promotions View

The Promotions view contains the following measures:

Causal Peak Factor

This measure is relevant for promotional forecasting. The current forecast values are divided by the maximum historical demand. If the result is larger than the value of this measure, the forecast may be too large and an exception is triggered.

12

Forecast Review Short Lifecycle Task

This chapter describes the Forecast Review Short Lifecycle for RDF Cloud Service.

Forecast Review SLC Workspaces, Steps, and Views

The following table lists the workspaces, steps, and views for the Forecast Review SLC task.

Workspace	Step	Views
Forecast Review SLC Workspace	Approve Step	Approve Information View Forecast Results View What-If Parameters View Causal Effects View
	Promo Calendars Step	Promotion Calendar View

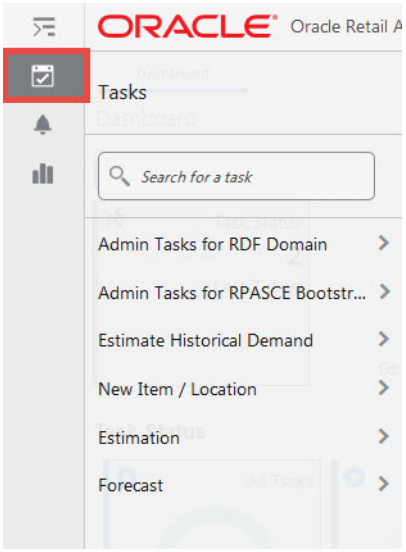
Forecast Review SLC Workspace

The Forecast Review SLC workspace allows you access to all of the views listed in Forecast Review SLC Workspaces, Steps, and Views.

To build the Forecast Review SLC workspace, perform these steps:

1. From the left sidebar menu, click the Task Module to view the available tasks.

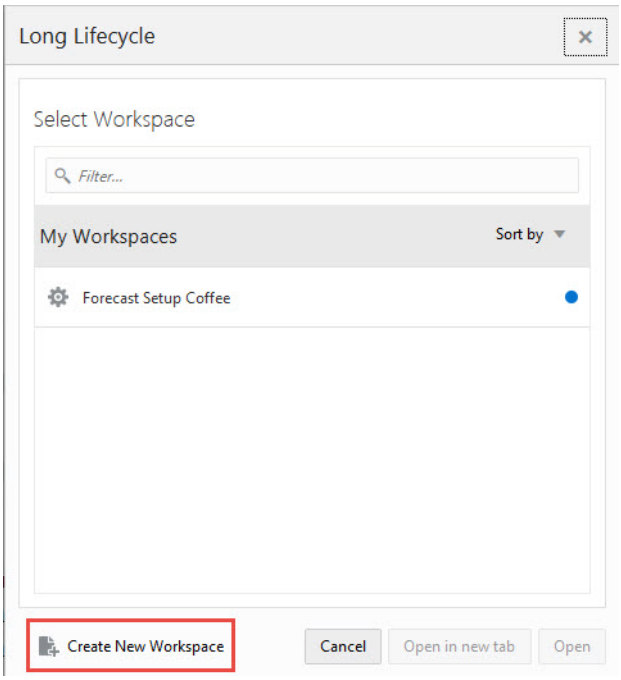
Figure 12–1 Task Module



2. Click the **Forecast** activity and then click **Review** to access the available workspaces.
3. Click **Long Lifecycle**. The Long Lifecycle wizard opens.

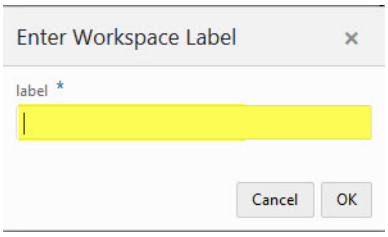
   You can open an existing workspace, but to create a new workspace, click **Create New Workspace**.

Figure 12–2 Long Lifecycle Wizard



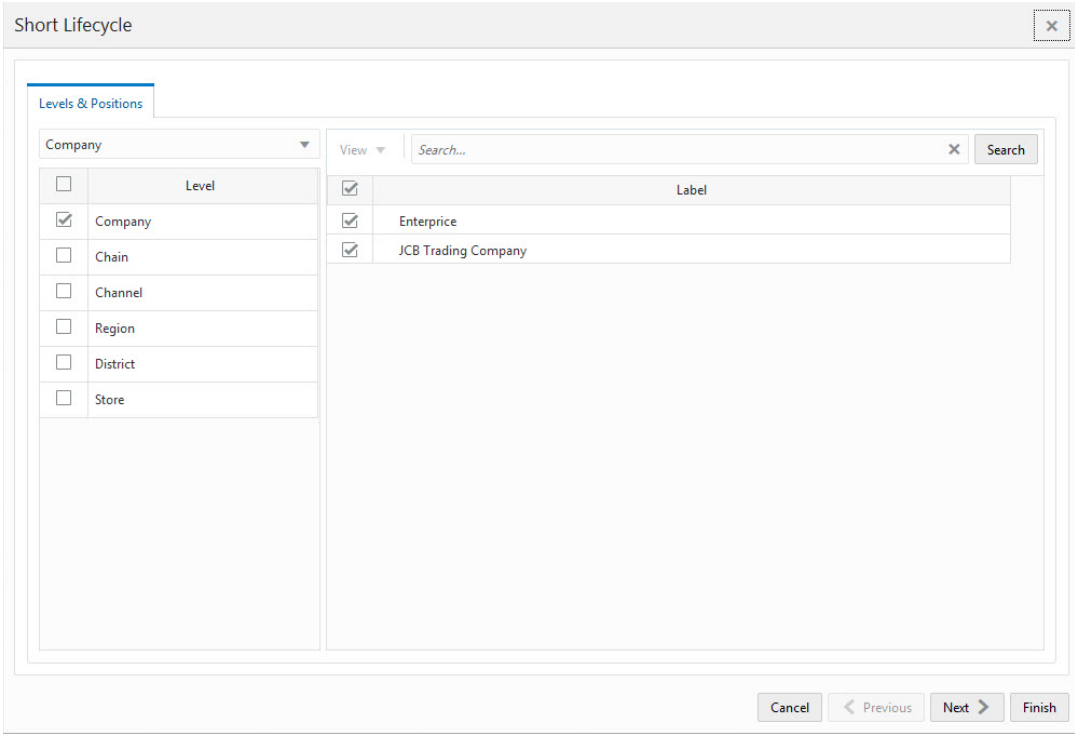
4. Enter a name for your new workspace in the label text box and click **OK**.

Figure 12–3 Enter Workspace Label



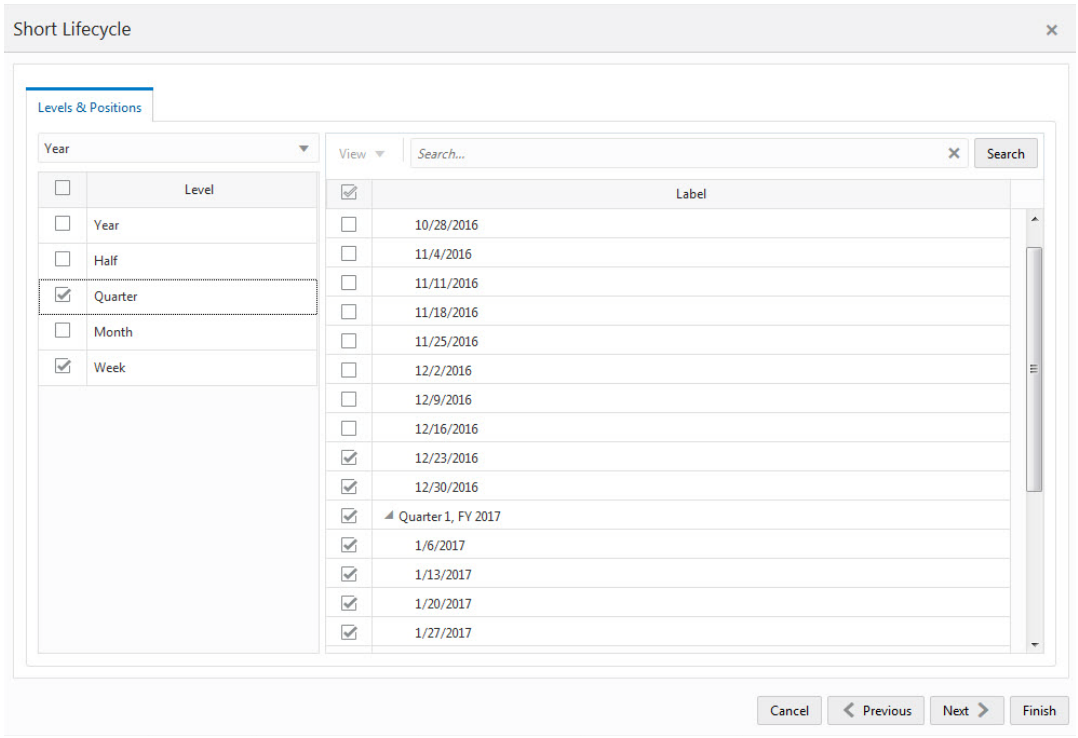
5. The Workspace wizard opens. Select the levels & positions you want to work with and click **Next**.

Figure 12–4 Workspace Wizard: Select Levels & Positions



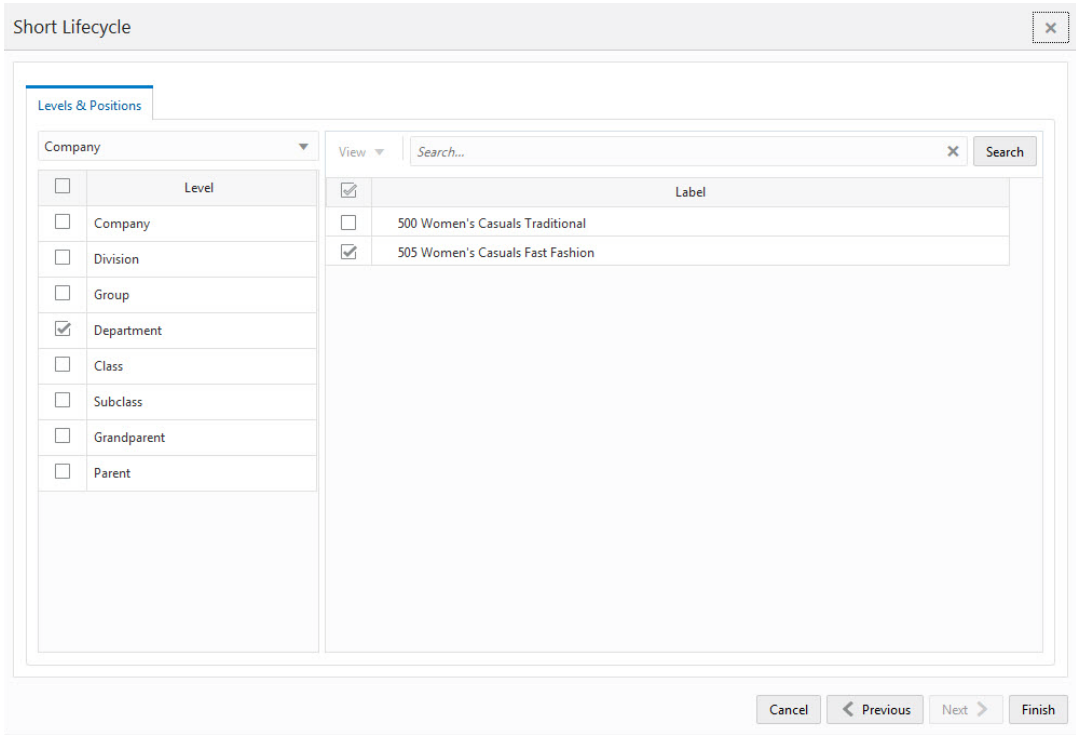
6. Select the products you want to work with and click **Next**.

Figure 12–5 Workspace Wizard: Select Available Calendar Positions



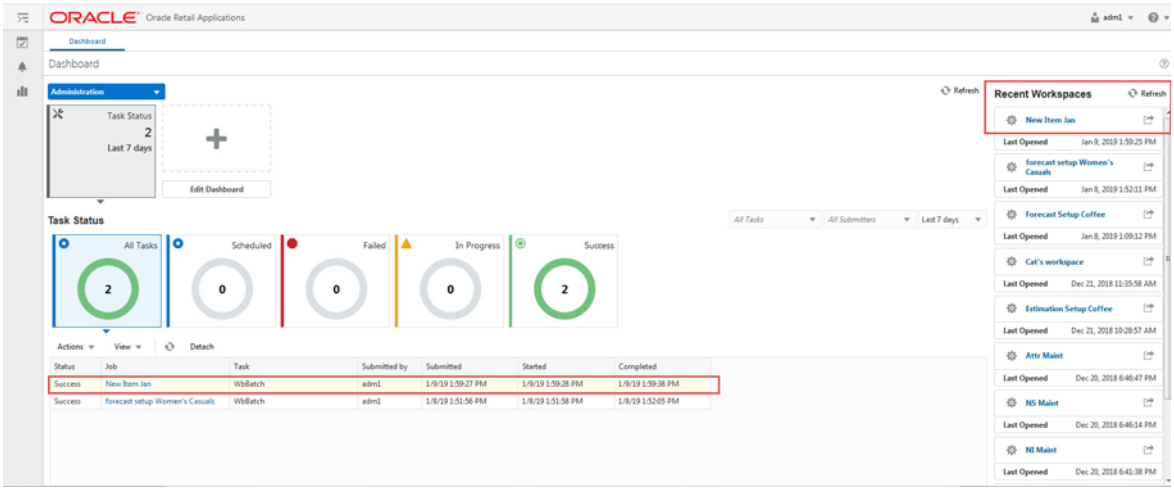
7. Select the level you want to work with and click **Finish**.

Figure 12–6 Workspace Wizard: Select Level



8. The wizard notifies you that your workspace is being prepared. Successful workspaces are available from the Dashboard.

Figure 12–7 Successful Workspace Build



The Forecast Review SLC workspace is built. This workspace contains these steps:

- Approve Step
- Promo Calendars Step

Approve Step

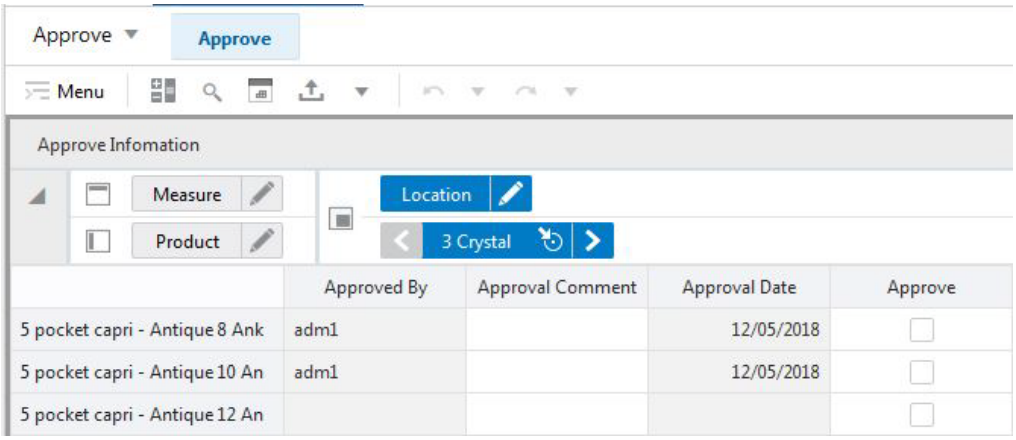
This step contains these views:

- Approve Information View
- Forecast Results View
- What-If Parameters View
- Causal Effects View

Approve Information View

The Approve Information view shows information around the approval process, like which user approved the forecast, when the forecast was approved and potential notes.

Figure 12–8 Approve Information View



Measures: Approve Information View

The Approve Information view contains the following measures:

Approve By

Approved By is a read-only field that displays the name of the user to approve forecasts for an item/location. This field may be populated with Sys if the system was set to automatically approve forecasts during the batch forecast process.

Approval Comment

Approval Comment is a field in which notes may be entered regarding the forecast values or any pertinent information for specified product/location combinations.

Approval Date

Approval Date is a read-only field that displays the date that the forecast quantity is approved either automatically during the batch forecast process or when changes are made to the Adjusted Forecast. This information is necessary for RDF Cloud Service to carry out any subsequent processes, such as replenishment procedures.

Approve

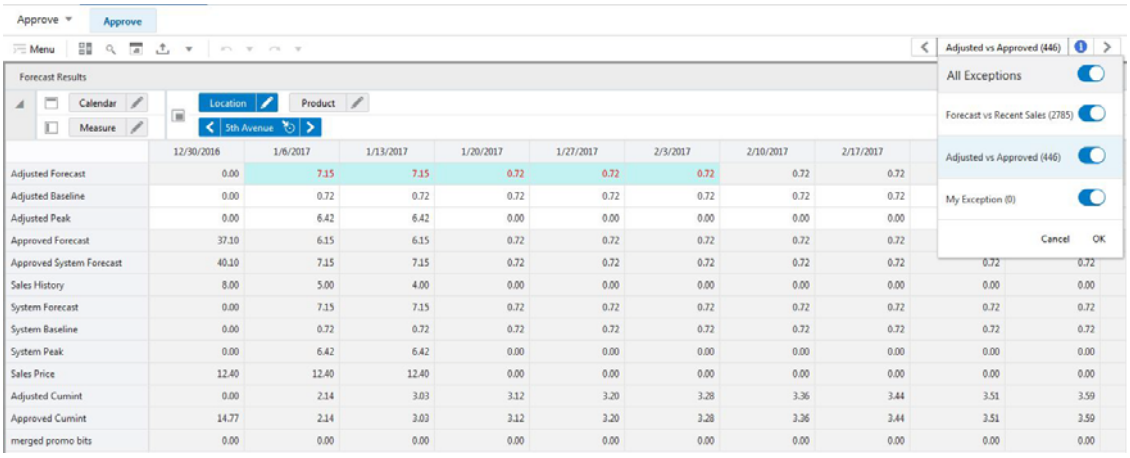
This field may be checked if you want to accept the System Forecast quantity for a time series that has yet to be approved. The flag is also activated when a change is made to the Adjusted Forecast and Calculate occurs. When this flag is activated, the time series for an item/location are approved and both the Approval Date and Approved By fields are updated.

Forecast Results View

The Forecast Results view shows all information related to forecast generation. It shows the forecast with its components, baseline and promotional peaks. It also shows sales of last year, and cumulative interval information.

The navigation of this worksheet is very conveniently driven by real time, or workbook alerts.

Figure 12–9 Forecast Results View



Measures: Forecast Results View

The Forecast Results view contains the following measures:

Adjusted Forecast

This is a read-only measures that equals the adjusted baseline plus the adjusted peaks.

Adjusted Baseline

The value in this field initially defaults to the System Baseline if the forecast is automatically approved by the system or through a Forecast Approval Alert. Otherwise, the value in the Adjusted Baseline is different than the System Baseline if:

- Adjusted Baseline has been updated by you.
- Keep Last Changes is selected.
- Update Last Weeks Forecast is set to Replicate.
- Changes to the Adjusted Baseline are automatically approved. The Approval view updates with the date of the adjustment and the name of the user who made the adjustment.

Adjusted Peak

The value in this field initially defaults to the System Peak if the forecast is automatically approved by the system or through a Forecast Approval Alert. Otherwise, the value in the Adjusted Peak is different than the System Peak if:

- Adjusted Peak has been updated by you.
- Keep Last Changes is selected.
- Update Last Weeks Forecast is set to Replicate.
- Changes to the Adjusted Peak are automatically approved. The Approval view updates with the date of the adjustment and the name of the user who made the adjustment.

Approved Forecast

The Approved Forecast is the forecast quantity that was approved at the time of the task build. The values contained in this measure are read-only. If changes are made to

the Adjusted Forecast, then click Calculate to show the new value in the Approved Forecast.

Approved System Forecast

The Approved System Forecast is populated with the last System Forecast approved for a time series:

1. Approval Method set to Automatic Approval
2. Approval Method set to a Forecast Approval Alert and the alert is not triggered
3. Update Last Weeks Forecast is set to Use Forecast

Sales History

Sales History (a read-only measure) is the demand data used to generate the forecast. This allows you to compare Actuals to forecast values. When the task is created, the Data Source measure is copied into Sales History.

Sales Price

This is the price for which a product was sold at a given location for a given time period.

System Forecast

This is a read-only measures that equals the system baseline plus the system peaks.

System Baseline

The System Baseline displays the system generated baseline forecast. The values contained in this field are read-only. The system baseline incorporates level, trend, seasonality, but no causal-related information.

System Peak

The System Peak displays the causal-related peaks. The values contained in this field are read-only.

Adjusted Cumint

Cumulative Intervals are used in safety stock calculation within allocation and replenishment systems. Its value is similar to a running total of a percentage of the actual forecast and is read-only.

Approved Cumint

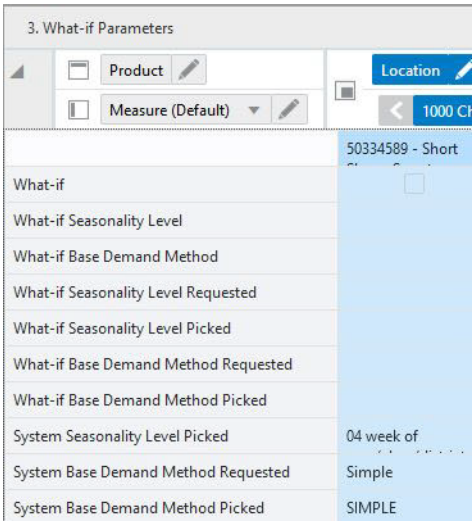
Cumulative Intervals are used in safety stock calculation within allocation and replenishment systems. Its value is similar to a running total of a percentage of the actual forecast and is read-only.

What-If Parameters View

The What-If Parameters view allows you to adjust forecast parameters and immediately view the effects on the forecast in the Forecast Results view,

Parameters that can be adjusted will affect base demand as well as seasonality.

Figure 12–10 What-If Parameters View



Measures: What-If Parameters View

The What-If Parameters view contains the following measures:

What-if

This Boolean measures specifies if the user can perform What-if. If it is unchecked, no What-if is triggered. To perform What-if you need to select at least one of the following measures:

- What-if Seasonality Level
- What-if Base Demand Method

If the What-if flag is on, you can run it by clicking on the What-if custom menu

What-if Seasonality Level

This measure lets you specify a certain escalation level from which the seasonality curve will be used during What-if.

What-if Base Demand Method

This measure lets you override the forecast method for the base demand to be used during What-if. The choices are all the methods available for base demand in the forecast setup task.

What-if Seasonality Level Requested

This measure displays the requested seasonality level. This can be different from the What-if Seasonality Level Picked, because the requested level may be pruned. In this case escalation is performed to pick the next intersection.

What-if Seasonality Level Picked

This measure displays the picked seasonality level. This can be different from the What-if Seasonality Level Requested, because the requested level may be pruned. In this case escalation is performed to pick the next intersection.

What-if Base Demand Method Requested

This measure displays the requested base demand method. This can be different from the What-if Base Demand Method Picked. For instance, if the requested method is Auto Baseline Pick Best, the method picked will show the actual winner of the Auto Baseline competition.

What-if Base Demand Method Picked

This measure displays the picked base demand method. This can be different from the What-if Base Demand Method Requested. For instance, if the requested method is Auto Baseline Pick Best, the method picked will show the actual winner of the Auto Baseline competition, like Holt.

System Seasonality Level Picked

This measure displays the escalation level used in generating the system forecast.

System Base Demand Method Requested

This measure displays the requested base demand method to generate the system forecast. This can be different from the System Base Demand Method Picked. For instance, if the requested method is Auto Baseline Pick Best, the method picked will show the actual winner of the Auto Baseline competition.

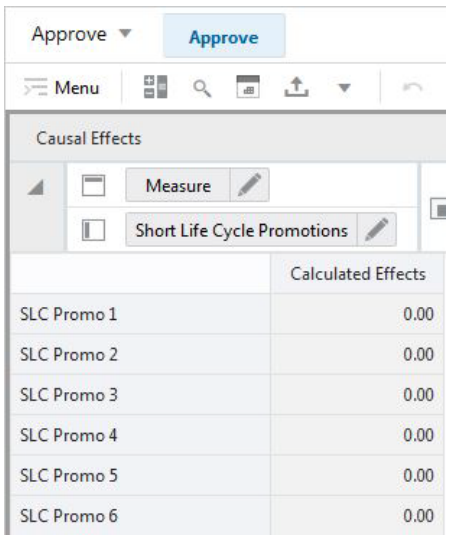
System Base Demand Method Picked

This measure displays the picked base demand method when generating the system forecast. This can be different from the System Base Demand Method Requested. For instance, if the requested method is Auto Baseline Pick Best, the method picked will show the actual winner of the Auto Baseline competition, like Holt.

Causal Effects View

The Causal Effects view displays the effects generated by the system for the short lifecycle items.

Figure 12–11 Causal Effects View



Measures: Causal Effects View

The Causal Effects view contains the following measures:

Calculated Effects

The Calculated Effect is a read-only measure indicating the lift effect generated by the system.

Promo Calendars Step

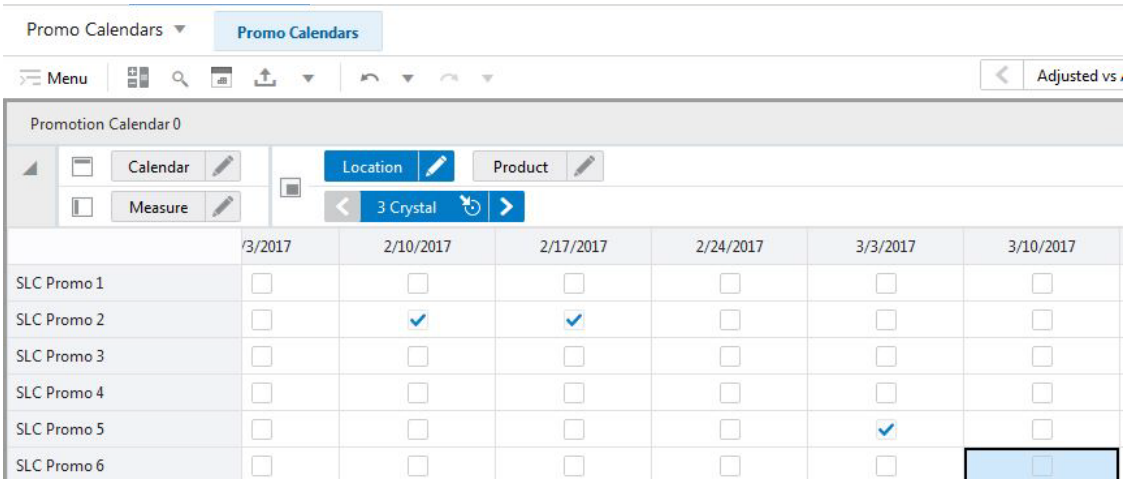
This step contains this view:

- Promotion Calendar View

Promotion Calendar View

The Promotion Calendar view allows you to view the time periods when the merchandise is promoted. You can also modify the calendar by enabling and disabling certain periods, and the results are reflected in the Forecast Results view.

Figure 12–12 Promotion Calendar View



Measures: Promotion Calendar View

The Promotion Calendar view contains the following measures:

SLP1

Measure that displays if an event is active for a certain period at a given location and product.

SLP2

Measure that displays if an event is active for a certain period at a given location and product.

13

Forecast Review Long Lifecycle Task

This chapter describes the Forecast Review Long Lifecycle for RDF Cloud Service.

Forecast Review SLC Workspaces, Steps, and Views

The following table lists the workspaces, steps, and views for the Forecast Review task.

Workspace	Step	Views
Forecast Review LLC Workspace	Approve Step	Approve Information View Forecast Results View What-If Parameters View Causal What-If View Daily Forecast Results View
	Causal Parameters Step	Causal What-if Effects View Promotion Calendar View

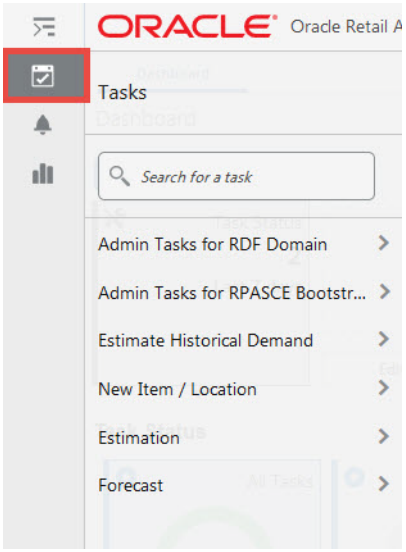
Forecast Review LLC Workspace

The Forecast Review LLC workspace allows you access to all of the views listed in Forecast Review SLC Workspaces, Steps, and Views.

To build the Forecast Review LLC workspace, perform these steps:

1. From the left sidebar menu, click the Task Module to view the available tasks.

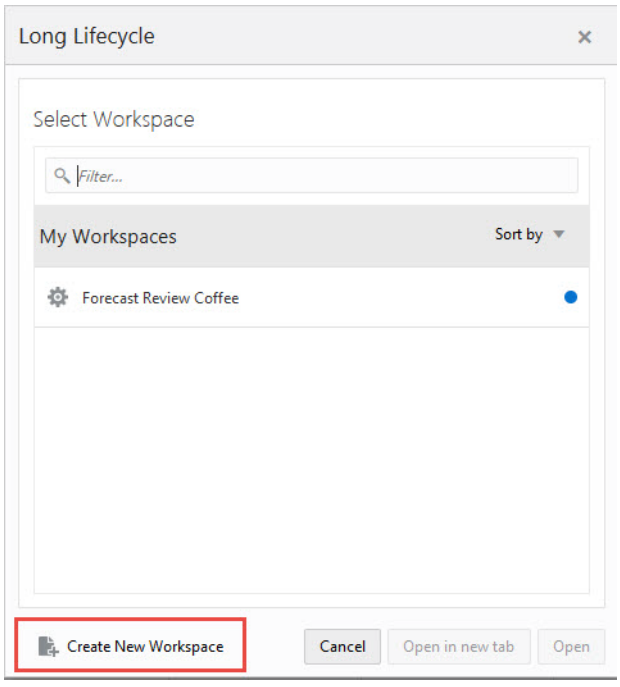
Figure 13–1 Task Module



2. Click the **Forecast** activity and then click **Review** to access the available workspaces.
3. Click **Long Lifecycle**. The Long Lifecycle wizard opens.

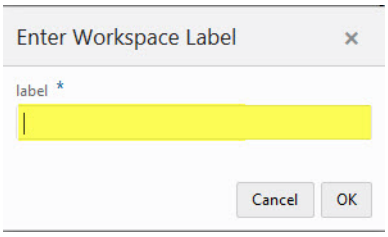
   You can open an existing workspace, but to create a new workspace, click **Create New Workspace**.

Figure 13–2 Long Lifecycle Wizard



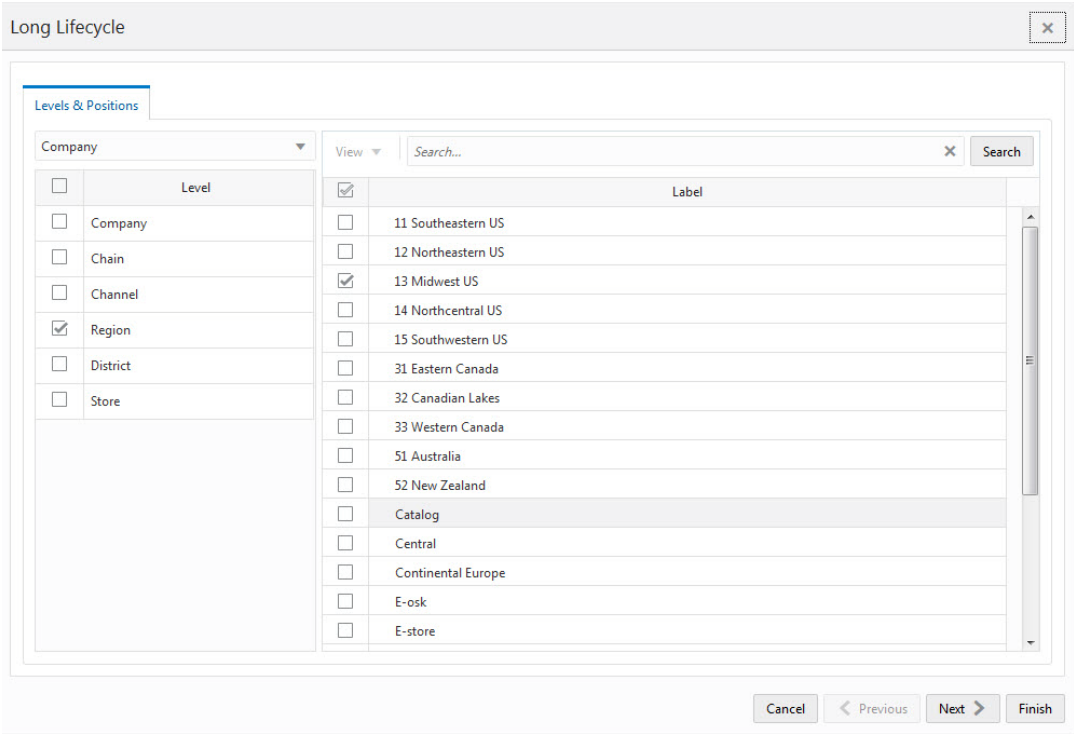
4. Enter a name for your new workspace in the label text box and click **OK**.

Figure 13–3 Enter Workspace Label



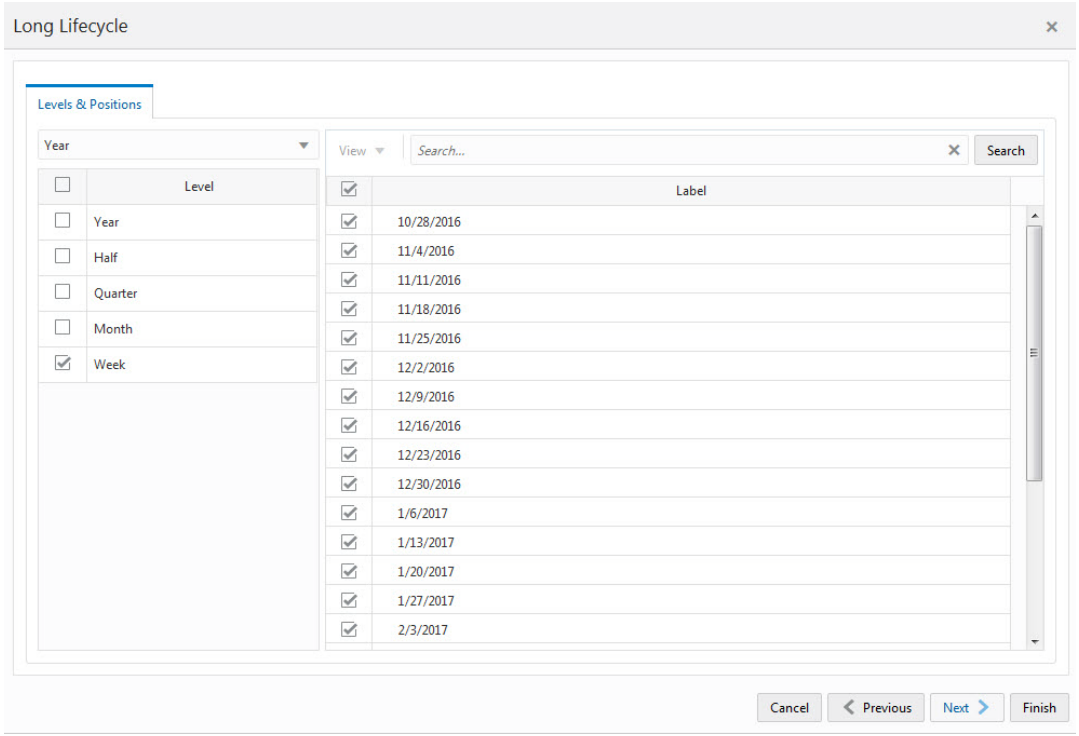
5. The Workspace wizard opens. Select the locations you want to work with and click **Next**.

Figure 13–4 Workspace Wizard: Select Locations



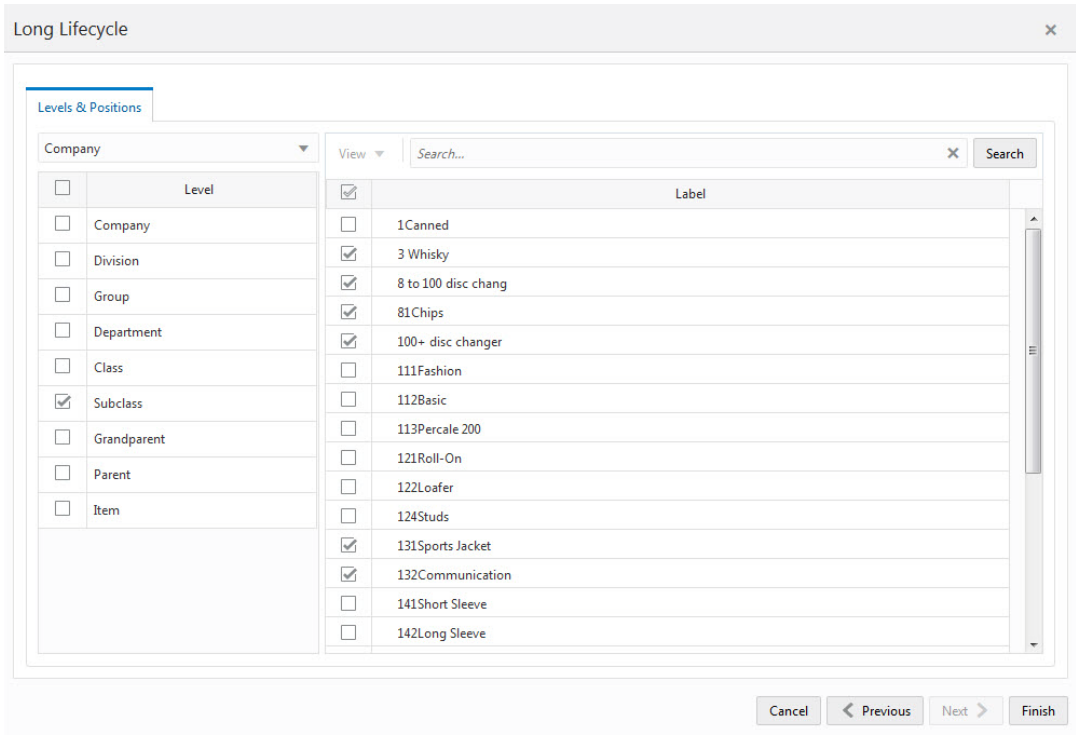
6. Select the products you want to work with and click **Next**.

Figure 13–5 Workspace Wizard: Select Available Calendar Positions



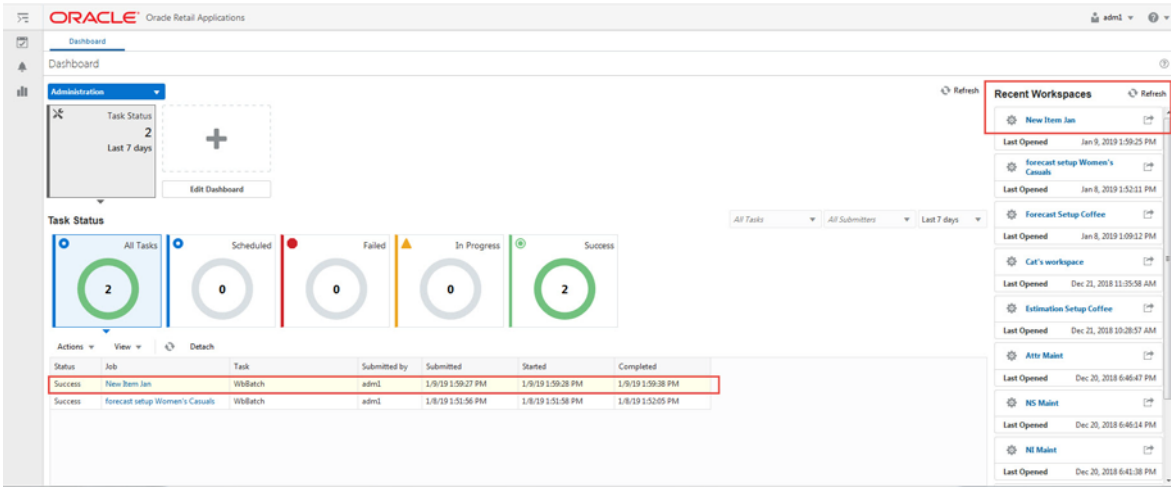
7. Select the products you want to work with and click **Finish**.

Figure 13–6 Workspace Wizard: Select Products



8. The wizard notifies you that your workspace is being prepared. Successful workspaces are available from the Dashboard.

Figure 13–7 Successful Workspace Build



Approve Step

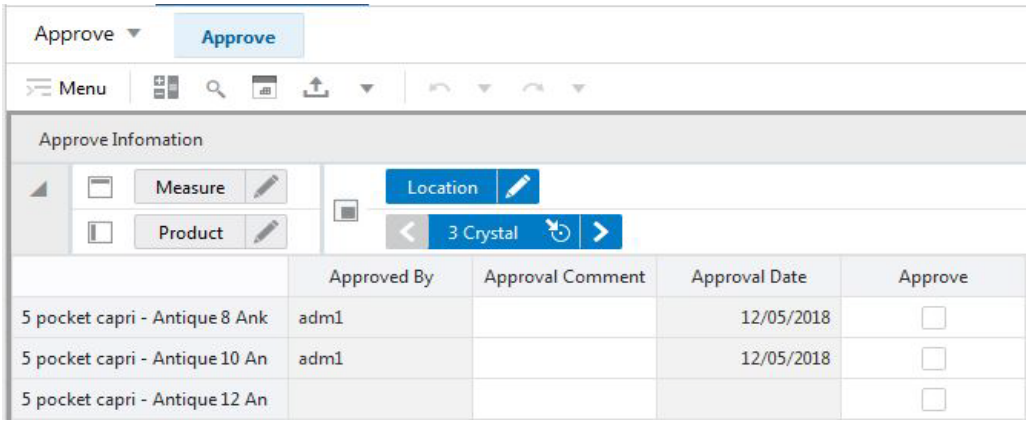
This step contains these views:

- Approve Information View
- Forecast Results View
- What-If Parameters View
- Causal What-If View
- Daily Forecast Results View

Approve Information View

The Approve Information view shows information around the approval process, like which user approved the forecast, when it was approved and potential notes.

Figure 13–8 Approve Information View



Measures: Approve Information View

The Approve Information view contains the following measures:

Approve By

Approved By is a read-only field that displays the name of the user to approve forecasts for an item/location. This field may be populated with Sys if the system was set to automatically approve forecasts during the batch forecast process.

Approval Comment

Approval Comment is a field in which notes may be entered regarding the forecast values or any pertinent information for specified product/location combinations.

Approval Date

Approval Date is a read-only field that displays the date that the forecast quantity is approved either automatically during the batch forecast process or when changes are made to the Adjusted Forecast. This information is necessary for RDF Cloud Service to carry out any subsequent processes, such as replenishment procedures.

Approve

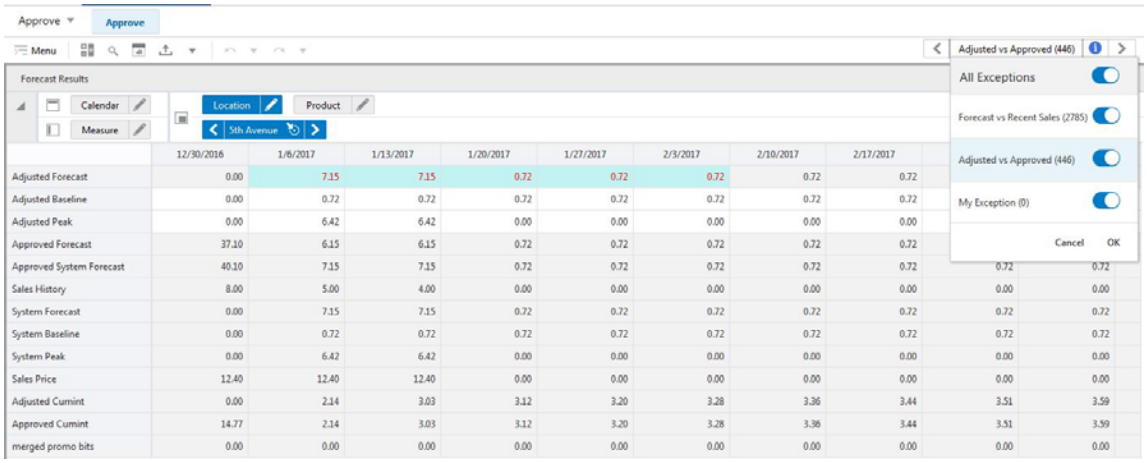
This field may be checked if you want to accept the System Forecast quantity for a time series that has yet to be approved. The flag is also activated when a change is made to the Adjusted Forecast and Calculate occurs. When this flag is activated, the time series for an item/location are approved and both the Approval Date and Approved By fields are updated.

Forecast Results View

The Forecast Results view shows all information related to forecast generation. It shows the forecast with its components, baseline and promotional peaks. It also shows sales of last year, and cumulative interval information.

The navigation of this worksheet is very conveniently driven by real time or workbook alerts.

Figure 13–9 Forecast Results View



Measures: Forecast Results View

The Forecast Results view contains the following measures:

Adjusted Forecast

This is a read-only measures that equals the adjusted baseline plus the adjusted peaks.

Adjusted Baseline

The value in this field initially defaults to the System Baseline if the forecast is automatically approved by the system or through a Forecast Approval Alert. Otherwise, the value in the Adjusted Baseline is different than the System Baseline if:

- Adjusted Baseline has been updated by you.
- Keep Last Changes is selected.
- Update Last Weeks Forecast is set to Replicate.
- Changes to the Adjusted Baseline are automatically approved. The Approval view updates with the date of the adjustment and the name of the user who made the adjustment.
- Demand transference is selected as the adjustment method in forecast setup and significant demand transference effects are available.

Adjusted Peak

The value in this field initially defaults to the System Peak if the forecast is automatically approved by the system or through a Forecast Approval Alert. Otherwise, the value in the Adjusted Peak is different than the System Peak if:

- Adjusted Peak has been updated by you.
- Keep Last Changes is selected.
- Update Last Weeks Forecast is set to Replicate.
- Changes to the Adjusted Peak are automatically approved. The Approval view updates with the date of the adjustment and the name of the user who made the adjustment.

Approved Forecast

The Approved Forecast is the forecast quantity that was approved at the time of the task build. The values contained in this measure are read-only. If changes are made to the Adjusted Forecast, then click Calculate to show the new value in the Approved Forecast.

Approved System Forecast

The Approved System Forecast is populated with the last System Forecast approved for a time series:

1. Approval Method set to Automatic Approval
2. Approval Method set to a Forecast Approval Alert and the alert is not triggered
3. Update Last Weeks Forecast is set to Use Forecast

Sales History

Sales History (a read-only measure) is the demand data used to generate the forecast. This allows you to compare Actuals to forecast values. When the task is created, the Data Source measure is copied into Sales History.

Sales Price

This is the price for which a product was sold at a given location for a given time period.

System Forecast

This is a read-only measures that equals the system baseline plus the system peaks.

System Baseline

The System Baseline displays the system generated baseline forecast. The values contained in this field are read-only. The system baseline incorporates level, trend, seasonality, but no causal-related information.

System Peak

The System Peak displays the causal-related peaks. The values contained in this field are read-only.

Adjusted Cum int

Cumulative Intervals are used in safety stock calculation within allocation and replenishment systems. Its value is similar to a running total of a percentage of the actual forecast and is read-only.

Approved Cum int

Cumulative Intervals are used in safety stock calculation within allocation and replenishment systems. Its value is similar to a running total of a percentage of the actual forecast and is read-only.

Merged Promo Indicator

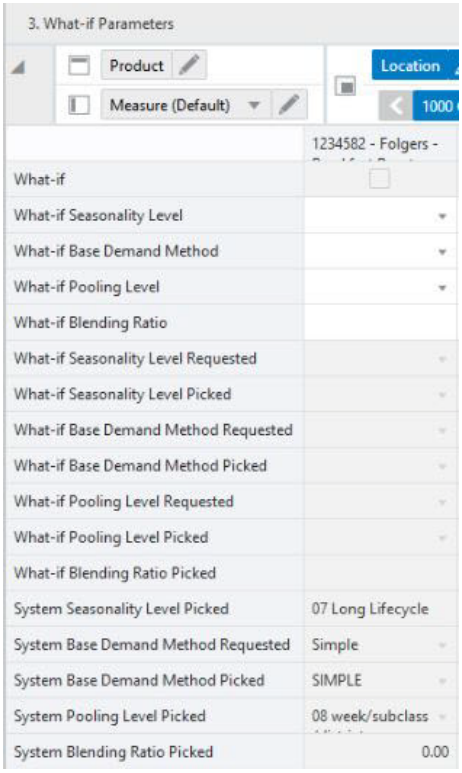
This measure indicates if any event is active for the given period. An event can be any promotion or a non-zero discount.

What-If Parameters View

The What-If Parameters view allows you to adjust forecast parameters and immediately view the effects on the forecast in the Forecast Results view,

Parameters that can be adjusted will affect base demand as well as seasonality and promotional peaks.

Figure 13–10 What-If Parameters View



Measures: What-If Parameters View

The What-If Parameters view contains the following measures:

What-if

This Boolean measures specifies if the user can perform what-if. If it is unchecked, no what-if is triggered. To perform what-if you need to select at least one of the following measures:

- What-if Seasonality Level
- What-if Base Demand Method
- What-if Pooling Level
- What-if Blending Ratio

If the What-if flag is on, you can run it by clicking on the What-if custom menu.

What-if Seasonality Level

This measure lets you specify a certain escalation level from which the seasonality curve will be used during What-if.

What-if Base Demand Method

This measure lets you override the forecast method for the base demand to be used during What-if. The choices are all the methods available for base demand in the forecast setup task.When this measure is empty, it means that the base demand method specified during What-if cannot be fit or the item is not sold at this particular store.

What-if Pooling Level

This measure lets you specify a certain pooling level from which the causal effects will be used during what-if.

What-if Blending Ratio

This measure lets you specify a certain blending ratio to be used during what-if.

What-if Seasonality Level Requested

This measure displays the requested seasonality level. This can be different from the What-if Seasonality Level Picked, because the requested level may be pruned. In this case escalation is performed to pick the next intersection.

What-if Seasonality Level Picked

This measure displays the picked seasonality level. This can be different from the What-if Seasonality Level Requested, because the requested level may be pruned. In this case escalation is performed to pick the next intersection.

What-if Base Demand Method Requested

This measure displays the requested base demand method. This can be different from the What-if Base Demand Method Picked. For instance, if the requested method is Auto Baseline Pick Best, the method picked will show the actual winner of the Auto Baseline competition.

What-if Base Demand Method Picked

This measure displays the picked base demand method. This can be different from the What-if Base Demand Method Requested. For instance, if the requested method is Auto Baseline Pick Best, the method picked will show the actual winner of the Auto Baseline competition, like Holt.

What-if Pooling Level Requested

This measure displays the requested pooling level. This can be different from the What-if Pooling Level Picked, because the requested level may be pruned. In this case escalation is performed to pick the next intersection.

What-if Seasonality Level Picked

This measure displays the picked pooling level. This can be different from the What-if PoolingLevel Requested, because the requested level may be pruned. In this case escalation is performed to pick the next intersection.

What-if Blending Ratio Picked

This measure displays the blending ratio used in what-if according to What-if Blending Ratio.

System Seasonality Level

This measure displays the escalation level used in generating the system forecast.

System Base Demand Method Requested

This measure displays the requested base demand method to generate the system forecast. This can be different from the System Base Demand Method Picked. For instance, if the requested method is Auto Baseline Pick Best, the method picked will show the actual winner of the Auto Baseline competition.

System Base Demand Method Picked

This measure displays the picked base demand method when generating the system forecast. This can be different from the System Base Demand Method Requested. For instance, if the requested method is Auto Baseline Pick Best, the method picked will show the actual winner of the Auto Baseline competition, like Holt.

System Pooling Level Picked

This measure displays the pooling level used in generating the system forecast.

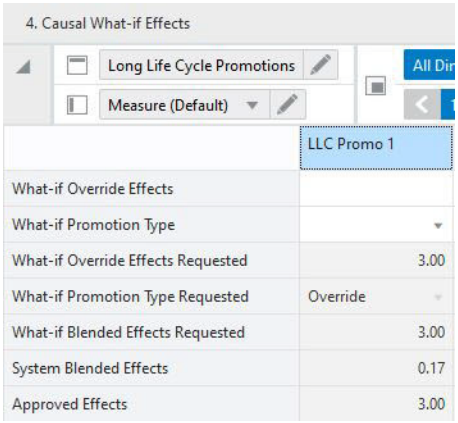
System Blending Ratio Picked

This measure displays the blending ratio used in generating the system forecast.

Causal What-If View

The Causal What-If view shows all necessary information to determine the promotional strategy for long lifecycle items. All flavors of effects as well as the promo types are available.

Figure 13–11 Causal What-If View



Measures: Causal What-If View

The Causal What-If view contains the following measures:

What-if Override Effects

The user-specified lift effect. This user-entered effect is active if used in conjunction with the Override All and Override Future Only Promotion Effect Types. Otherwise, it equals 1.00.

What-if Promotion Type

Causal variable types define how causal variables are treated in the causal model-fitting process (which includes a call to the lower-level regression engine) and

the forecast generation process where the model is used to extend the forecast over the forecast horizon. The options are Automatic and Override:

- Automatic

  The inclusion of the Promo Effect is decided by regression. If the Promo Effect is found to be significant on the training set, it is included in the model. Otherwise, it is rejected. Automatic is the system default Promotion Effect Type.

- Override

  If override is selected, the calculated effects are ignored and the override values are used. Do not forget to select an appropriate effect value in the Override Effects measure.

What-if Override Effects Requested

If effects were overridden in the What-if Override Effects, and What-if custom menu was run, the result is displayed in this measure.

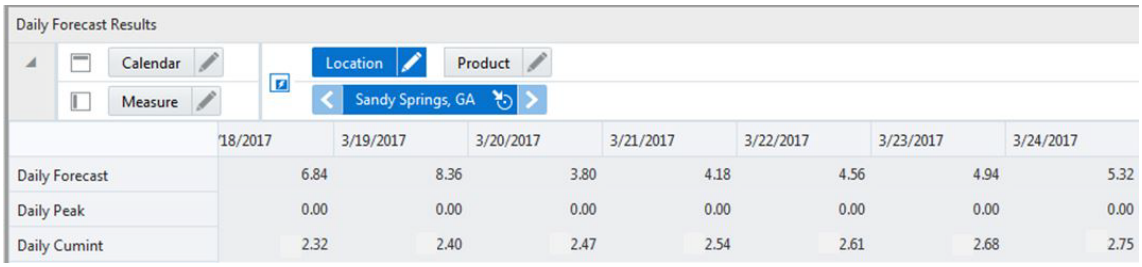
What-if Promotion Type Requested

If the type of a promotion was specified in the What-if Promotion type, and the What-if custom menu was run, the result is displayed in this measure.

Daily Forecast Results View

The Daily Forecast Results view displays the day version of the forecast and its components. All adjustments are done at the week level and spread to day where they are read-only.

Figure 13–12 Daily Forecast Results View



Measures: Daily Forecast Results View

The Daily Forecast Results view contains the following measures:

Daily Forecast

This measure the daily version of the approved weekly forecast.

Daily Peak

This measure the daily version of the approved weekly peaks.

Daily Cumint

This measure the daily version of the approved weekly cumulative intervals.

Causal Parameters Step

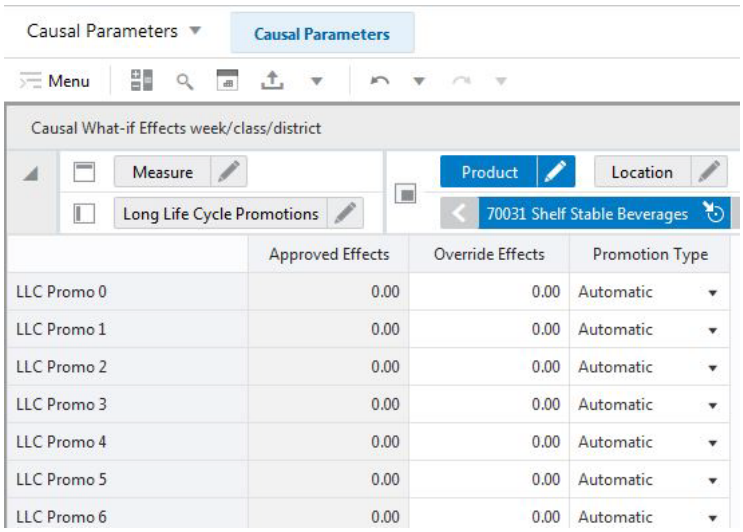
This step contains these views:

- Causal What-if Effects View
- Promotion Calendar View

Causal What-if Effects View

In the Causal What-If Effects view, you can select the promo effect type. Depending on the type selected, a override value needs to be specified as well.

Figure 13–13 Causal What-if Effects View



Measures: Causal What-if Effects View

The Causal What-if Effects view contains the following measures:

Approved Effects

This measure displays the effects that are applied to create the forecast. Initially they are what is calculated by the system. If the user overrides the effects, the What-if values are copied in the approved version of the effects as well.

Override Effects

The user-specified lift effect. This user-entered effect is active if used in conjunction with the Override All and Override Future Only Promotion Effect Types. Otherwise, it equals 1.00.

Promotion Type

Causal variable types define how causal variables are treated in the causal model-fitting process (which includes a call to the lower-level regression engine) and the forecast generation process where the model is used to extend the forecast over the forecast horizon. The options are Automatic and Override:

- Automatic:

The inclusion of the Promo Effect is decided by regression. If the Promo Effect is found to be significant on the training set, it is included in the model. Otherwise, it is rejected. Automatic is the system default Promotion Effect Type.

- Override:

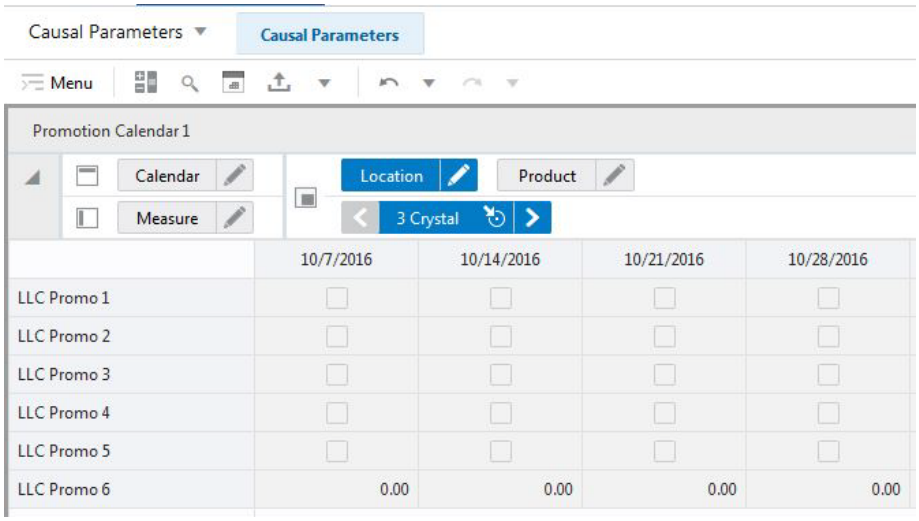
  If override is selected, the calculated effects are ignored and the override values are used. Do not forget to select an appropriate effect value in the Override Effects measure.

Promotion Calendar View

The Promotion Calendar view allows you to review and enable or disable promotions for item/locations for desired periods.

Note: Multiple Promotion Calendar views are possible. Namely, there is one view for every distinct promotion intersection. Promotions with identical intersections are displayed in the same view.

Figure 13–14 Promotion Calendar View



Measures: Promotion Calendar View

The Promotion Calendar view contains the following measures:

Promo 1

Measure that displays if an event is active for a certain period at a given location and product.

Promo 2

Measure that displays if an event is active for a certain period at a given location and product.

A

Appendix: Forecast Exceptions & Alerts

This appendix provides the complete list of alerts defined for the GA version of RDF CS. While some alerts are only valid for short lifecycle or long lifecycle merchandise only, others are used for all type of merchandise.

The exception management framework available in RPAS CE works on different levels. First there is the dashboard component. The exception profiles allow the user to view the hit count for every exception, and enable the in-context launch of the Forecast Review workspace.

Once in the workspace, the user can use the workspace alerts to navigate to the item/location/weeks that have been flagged. Every dashboard exception has a workspace alert counterpart. The calculation expressions are not identical, because the dashboard exceptions are at the production/location intersection, while the workspace alerts also have the time dimension.

Finally, every defined exception can be used in the approval logic. The forecast approval method is one of the following options:

- Manual

  The system-generated forecast is not automatically approved. Forecast values must be manually approved by accessing and possibly amending values in the Forecast Review workspace.

- Automatic

  The system-generated forecast is automatically approved as is.

- By exception

  This list contains the exceptions that were configured for use in the forecast approval process. They should match the dashboard exceptions and workspace alerts.

Dashboard and the Workspace Alerts Process

The way the dashboard and the workspace alerts can be used together, is detailed in the following steps. For example purposes, we will use the Forecast versus Recent Sales alert, for both dashboard and workspace.

1. First the user selects the Forecast versus Recent Sales as the choice for the Approval method.
2. Then the batch is run. After the forecast is generated, it is compared to the recent sales. For item/stores for which the two values are different with respect to attached thresholds, the exception is triggered, and the time series is not approved.

3. The user reviews the exception dashboard, and decides which items and locations she wants to review. From the dashboard she launches in the Forecast Review which is ranged down to the item and locations filtered in the dashboard.
4. Once in the workspace, the user can use the workspace alert to navigate to flagged time periods. She makes changes or approves the forecast directly, and commits.
5. The dashboard needs to be refreshed, and the hit count for the exception, in this case Forecast versus Recent Sales, will go down according to the adjust and approve actions of the user

Forecast versus Recent Sales

This exception is defined for both short and long lifecycle merchandise.

Usually it is not expected that demand values differ very much period to period. This also implies that the forecast magnitude generally is in line with the magnitude of the most recent sales. There are cases when this is not the case. For instance when an item enters a season, the forecast is probably higher than the sales in periods leading to the season. Or when an item is towards the end of the season, the forecast will be lower than sales in peak periods. For these cases, the user can be alerted to review the forecast, rather than auto approving it.

The following is the alert expression:

$$\sum_{today-alert\ window\ length-1}^{today-1} baseline\ demand(t) > 0$$

&&

$$\frac{\sum_{today}^{today+alert\ window\ length} adjusted\ baseline(t)}{alert\ window\ length} > threshold1$$

&&

$$\left| \frac{\sum_{today}^{today+alert\ window\ length} adjusted\ baseline(t)}{\sum_{today-alert\ window\ length-1}^{today-1} baseline\ demand(t)} - 1 \right| > threshold2$$

Where *length*, *threshold1*, and *threshold2* are adjustable parameters.

Note how the calculations are not performed for the entire forecast horizon, but rather by the number of periods determined by the length parameter. The reason is that the forecast horizon can sometimes be very long; for example, 52 weeks, and average demand over such a long time period cannot be used as in-season versus out of season rate of sales.

Adjusted versus Approved

This exception is defined for both short and long lifecycle merchandise.

RDF is typically set up to generate forecast weekly. Every week, new sales data is loaded, the forecast is regenerated. While the latest data points are expected to make the forecast more accurate, it is not expected that the difference in forecasts generated in two consecutive weeks to vary too much. If the forecasts differ, the user is alerted to review the forecasts.

The following is the alert expression:

$$\left| \frac{\sum_{today}^{today+forecast\ length-1} system\ forecast(t)}{\sum_{today}^{today+forecast\ length-1} lappf(t)} - 1 \right| > threshold1$$

$$\&\&$$

$$\frac{\sum_{today}^{today+forecast\ length-1} system\ forecast(t)}{forecast\ length - 1} > threshold2$$

Where *threshold1* and *threshold2* are adjustable parameters.

Note how summation of forecasts is not performed over the entire forecast length. It is stopped one period prior the forecast horizon ends, because this is the last populated period of the last approved forecast.

Forecast versus Last Year Sales

This exception is defined for long lifecycle merchandise.

The most reliable forecasts are generated from data that has a repeatable pattern year over year. However, this is not always the case. A change in business strategy, merchandise reclassifications, new items can all lead to changing selling patterns over time.

To detect possible changes in selling patterns, the following alert will compare the last year's sales volume with the forecasted sales volume. If they are different by an adjustable percent, the alert is triggered.

The following is the alert expression:

$$\frac{\sum_{today}^{today+alert\ window\ length} adjusted\ baseline(t)}{alert\ window\ length} > threshold1$$

$$||$$

$$\frac{\sum_{today}^{today+alert\ window\ length} baseline\ demand\ LY(t)}{alert\ window\ length} > threshold1$$

$$\&\&$$

$$\left| \frac{\sum_{today}^{today+alert\ window\ length} adjusted\ baseline(t)}{\sum_{today}^{today+alert\ window\ length} baseline\ demand\ LY(t)} - 1 \right| > threshold2$$

Where *threshold1* and *threshold2* are adjustable parameters.

First we check if the forecast is close to the sales LY. If it is, no alert is triggered. If it is not, we check the rate of sales of the item. If the item is selling consistently, we trigger an alert. If the sales and forecast are different, but the rate of sales of the item is not significant - defined by threshold2, no alert is triggered. This way we avoid prompting the user to review forecasts for low selling items.

Promo Peaks

This exception is defined for long lifecycle merchandise.

The purpose of this alert is to check how large the forecast peaks are compared to historical demand. The peaks can come from various effects like promotions, price discount, demand transference due to assortment changes, and so on. The most common, though, are due to price changes and promotions.

The following is the alert expression:

$$Adjusted\ Peak > Max\ Sales\ History * Causal\ Peak\ Factor$$

Where the *Causal Peak Factor* is an adjustable parameter.

The business case this addresses is to alert you when the peaks in the forecast region are larger than any observed sales in the past. There may be valid justification for this, for instance, several events are active in the same time period, thus creating a huge spike in demand. You can review the alert and take action.

Transition Items Count

This exception is defined for short lifecycle merchandise.

This exception is only available for the dashboard, and is meant to give the user a heads-up of the number of items that will start selling in the near future.

The following is the alert expression:

$$Forecast\ Startdate < Today + Calculation\ Periods$$

Where the *Calculation Periods* is an adjustable parameter.

B

Appendix: Forecast Errors in the Forecast Scorecard Dashboard

This appendix provides background and formulas for the error metrics used in the Forecast Scorecard dashboard. The errors are always calculated at the lowest level - typically item/store/week, and then averaged at the intersection of the dashboard tiles. For GA this intersection is subclass/district, but it can be configured at implementation time. The evaluation of the forecast is done over a window starting today and looking back a configurable number of periods. All errors are calculated for the system-generated forecast as well as the user adjusted forecast.

The following are the error metrics:

- Mean Absolute Percent Error
- Root Mean Squared Error
- Mean Absolute Error
- Forecast Bias
- Percent Adjusted

Mean Absolute Percent Error

The percentage error of a forecast observation is the difference between the actual POS value and the forecast value, divided by the actual POS value. The result of this calculation expresses the forecast error as a percentage of the actual value. The Mean Absolute Percentage Error statistic measures forecast accuracy by taking the average of the sum of the absolute values of the percentage error calculations across all observations. This method is useful when comparing the accuracy of forecasts for different volume products (it normalizes error by volume).

$$MAPE = \frac{100\%}{n} \sum_{t=1}^{n} \left| \frac{demand(t) - forecast(t)}{demand(t)} \right|$$

Root Mean Squared Error

This is the square root of the Mean Squared Error. The Root Mean Squared Error is one of the most commonly used measures of forecast accuracy because of its similarity to the basic statistical concept of a standard deviation. It evaluates the magnitude of

errors in a forecast on a period-by-period basis, and it is best used to compare alternative forecasting models for a given series.

$$RMSE = \sqrt{\frac{\sum_{t=1}^{n}(demand(t) - forecast(t))^2}{n}}$$

Mean Absolute Error

The absolute error of a forecast observation is the absolute value of the difference between the forecast value and the actual POS value. The Mean Absolute Error statistic is a measure of the average absolute error. This is calculated by summing the absolute errors for all observations and then dividing by the number of observations to obtain the average. Mean Absolute Error gives you a better indication of how the forecast performed period by period because the absolute value function ensures that negative errors in one period are not canceled out by positive errors in another. Mean Absolute Error is most useful for comparing two forecast methods for the same series.

$$MAE = \frac{\sum_{t=1}^{n}|demand(t) - forecast(t)|}{n}$$

Forecast Bias

Forecast BIAS is described as a tendency to either:

- over-forecast (meaning, more often than not, the forecast is more than the actual)
- under-forecast (meaning, more often than not, the forecast is less than the actual).

A desired property of a forecast is that it is not biased.

$$BIAS = \frac{100\%}{n}\sum_{t=1}^{n}\frac{demand(t) - forecast(t)}{demand(t)}$$

Percent Adjusted

This number represents the count of adjusted forecast values divided by the total count of forecast values. A high percentage indicates that the users heavily adjust the forecasts.

C

Appendix: Preprocessing Methods

Preprocessing is a filtering module that automatically adjusts historical data to correct data points that do not represent general demand pattern. Essentially, it smooths out spikes and dips in historical sales data, replacing stock-out data and data from short term events, such as promotions and temporary price changes, with data points that more accurately represent typical sales for that period. By adjusting the historical sales, Preprocessing can provide smarter data to the RDF Causal Engine, thus creating a smarter baseline forecast.

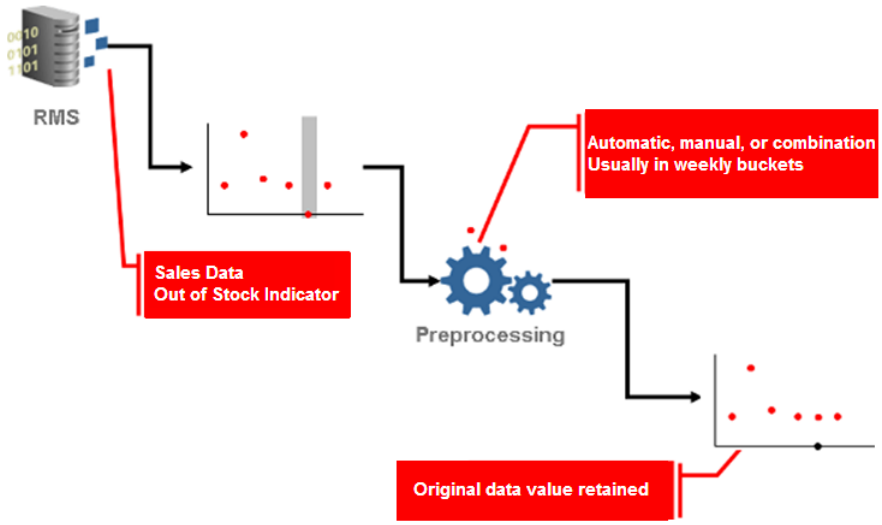
> **Note:** There are no workspaces associated with Preprocessing - it is available as a configuration option.

Common Preprocessing corrections are:

- Out of stock - Interfaced from RMS, weekly or daily
- Outliers - Indicator not required, depends on method
- Short term events - Promotions, temporary price changes

For example, Figure C–1 illustrates how Preprocessing adjusts for stock-outs.

Figure C–1 Preprocessing for Stock-outs



In Figure C–1, RMS sends historical sales data to RDF CS. In that sales data, RMS has flagged out-of-stock instances with indicators (the gray portion of the first data set).

Preprocessing takes note of that out-of-stock indicator and adjusts the sales for that time period to reflect a more typical sales quantity that better reflects unconstrained demand. Note in Figure C–1 that Preprocessing has removed the dip in sales in the second data set and has replaced it with a new data point.

Preprocessing Methods

Note: In order to run any preprocessing method, there needs to be at least three periods with non-zero data in the preprocessing window. If there are less than three periods with non-zero data, then the time series is skipped.

Preprocessing uses several methods to massage historical data. The following sections detail these methods:

- Standard Median
- Retail Median
- Standard Exponential Smoothing
- Override
- Increment
- Forecast Sigma
- Forecast Sigma Event
- DePrice
- Clear
- No Filtering

Standard Median

Standard Median calculates baselines on long time ranges.

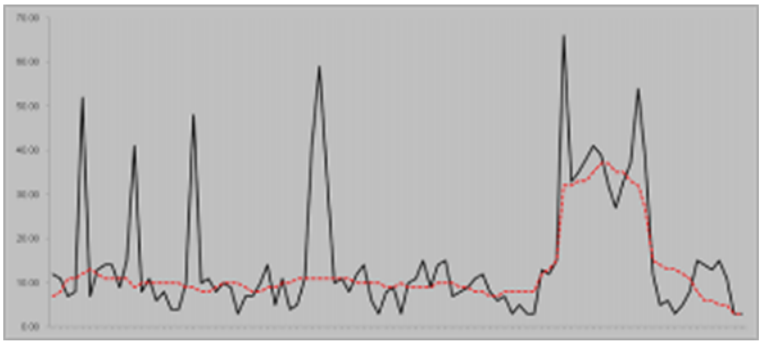
Input: None

Optional parameter: Window length

Figure C–2 Standard Median Formula

$$LSOVER(t) = median\ value\ over\left(t - \frac{window}{2},\ t + \frac{window}{2}\right)$$

Figure C–3 Standard Median Example



When data points for the full window are not available, Preprocessing pads the beginning and end of the time series with the first and the last data points, respectively, so that there are values for the full window.

Retail Median

Retail Median calculates baselines on long time ranges and improves side effects by making five standard median filter passes.

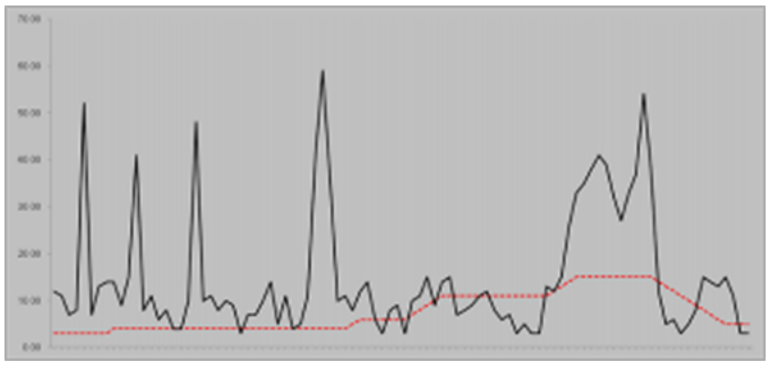
Input: none

Optional parameter: window length

Figure C–4 Retail Median Formula

$$Median1 = StdMedian(Src)$$
$$Median2 = StdMedian(Median1)$$
$$Diff1(t) = Median2(t) - Median2(t\text{-}1)$$
$$Median_Diff1 = StdMedian(Diff1)$$
$$Smooth1(t) = Smooth1(t\text{-}1) + Median_Diff1(t)$$
$$Diff2(t) = Smooth1(t) - Smooth1(t\text{-}1)$$
$$Avg_Diff2 = StdMedian(Diff2)$$
$$Smooth2(t) = Smooth2(t\text{-}1) + Avg_Diff2(t)$$

Figure C–5 Retail Median Example



Standard Exponential Smoothing

Standard Exponential Smoothing removes spikes (such as promotional promo, temporary price changes, and so on), as well as filling the gaps (out of stock, unusual events such as a fire or hurricane).

Input: An Event Indicator that indicates which periods should be preprocessed.

Optional Parameters:

The following table details the optional parameters for Standard Exponential Smoothing.

Optional Parameters	Description
ES (Exponential Smoothing)	The alpha parameter that determines the weight put on observations of periods included in the calculations.
Number of future periods (nfut)	The number of periods after an outage periods that are considered in the calculation of the future velocity. Note that if during these periods an event flag or a event indicator is on, the particular period is excluded from the calculation.
Number of past periods (npast)	The number of periods before an outage periods that are considered in the calculation of the past velocity. Note: When calculating the past velocity and the first period in the preprocessing window is flagged, then the past velocity is calculated using earlier periods outside the preprocessing window. Note that if during these periods an event flag or a event indicator is on, the particular period is excluded from the calculation.
Event flag	This parameter indicates if a period should be excluded from the calculation of past/future velocities.
Stop at event flag	This parameter determines which periods are included in the calculation of past/future velocities. If the flag is set to True, then the algorithm only includes periods before the first event flag or event indicator. If the flag is False, then all available, non-flagged periods, within the windows defined by nfut and npast, are used in the calculation of the past and future velocities. The default setting for the flag is False.
Mode	This parameter decides which adjustments are allowed for a particular run. The options are: ■ Positive: only positive adjustments are allowed. This would be the case where the demand would be bumped up during an out-of-stock period. ■ Negative: only negative adjustments are allowed. This would be the case where the promo-driven demand would be subtracted, to generate baseline demand. ■ Both: both positive and negative adjustments are allowed.

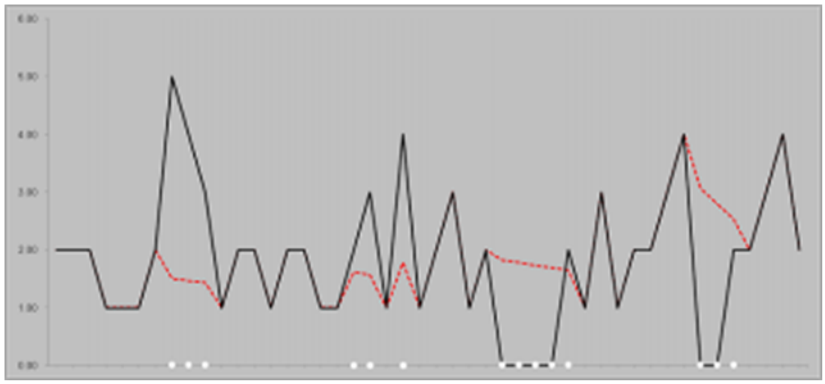
Figure C–6 Standard Exponential Smoothing Formula

$$past\ velocity = \frac{\sum_{i=1}^{np}(1-\alpha)^{i-1} * src(t_f - i)}{\sum_{i=1}^{np}(1-\alpha)^{i-1}}$$

$$future\ velocity = \frac{\sum_{i=1}^{nf}(1-\alpha)^{i-1} * src(t_l + i)}{\sum_{i=1}^{nf}(1-\alpha)^{i-1}}$$

$$LSOVER(t) = past\ velocity + \frac{future\ velocity - past\ velocity}{t_l - t_f + 2} * (t - t_f + 1),\ where\ \ t \in [t_f, t_l]$$

Figure C–7 Standard Exponential Smoothing Example



When event flags exist within the future and past velocity windows, rather than consider the entire window, Preprocessing only considers unflagged data points after the last event flag in the history window to compute the past velocity. It does a similar process for the future window by using the unflagged data points prior to the first event flag in the future window to compute the future velocity. Consecutive events are smoothed using the same velocities. A data point becomes flagged, and hence not part of the future/past velocity calculation, if either the event indicator or the optional event flag are on.

If future velocities cannot be calculated, then the past velocities, if they exist, are used as future and past velocities, and vice versa. When neither of the velocities can be calculated, there is no adjustment.

If the velocity window contains all zero values, then the calculated velocity is zero. A velocity of zero is a legitimate value if it occurs within the selling window. A velocity of zero is not acceptable if it is calculated based on values outside of the selling window.

Override

Override fills gaps in data when a reference measure exists.

Input: reference measure (R(t)) to copy data from

Optional parameter: outage/mask (M(i)), adjustment ratio (a)

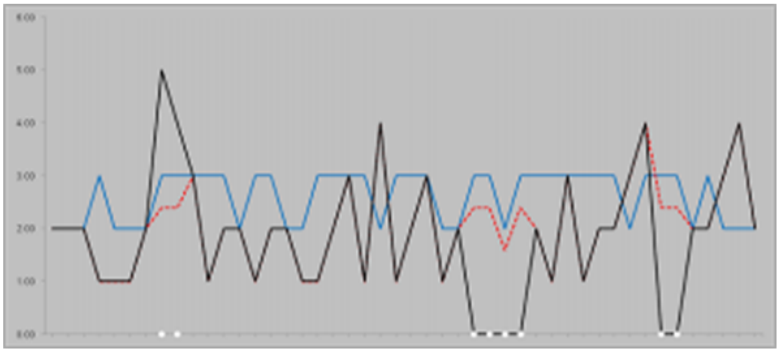
Formula: Overrides *LSOVER* with the Src adjusted by the adjustment ratio according to the mask:

Figure C–8 Override Formula

$$LSOVER(t) = a*R(t) \quad \text{if } M(i) \text{ is true}$$

$$LSOVER(t) = Src(t) \quad \text{if } M(i) \text{ is false}$$

Figure C–9 Override Example



Increment

Increment updates gaps or outliers in data when a reference measure exists.

Input: reference measure (R(t)) to copy data from

Optional parameter: outage/mask (M(i)), adjustment ratio (a)

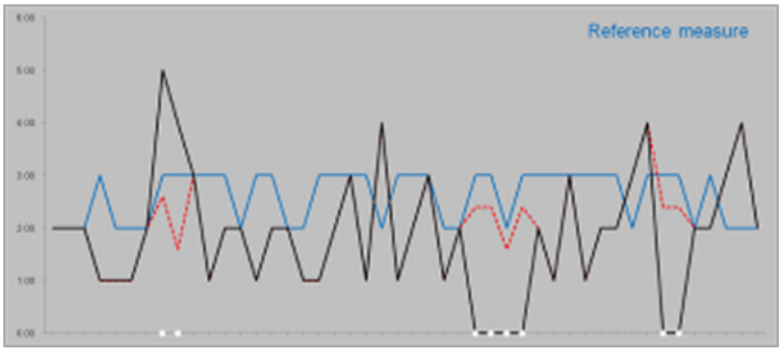
Increments the Src with the reference adjusted by the adjustment ratio according to the mask:

Figure C–10 Increment Formula

$$LSOVER(t) = SRC(t) + a*R(t) \quad \text{if } M(i) \text{ is true}$$

$$LSOVER(t) = Src(t) \quad \text{if } M(i) \text{ is false}$$

Figure C–11 Increment Example



Forecast Sigma

Forecast Sigma removes spikes in recent data when no indicators are available.

Inputs: forecast and confidence intervals

Optional parameters:

- number of stddev for upper bound
- number of stddev for lower bound
- forecast lower bound
- minimum history required for filtering

Formula: If the difference in the sales and forecast is larger than a threshold, the override value is brought within some bounds of the forecast.

Forecast Sigma Event

Like Forecast Sigma, Forecast Sigma Event removes spikes in recent data when no indicators are available but also takes outage as input.

Inputs: outage, forecast, confidence intervals

Optional parameters:

- number of stddev for upper bound
- number of stddev for lower bound
- forecast lower bound
- minimum history required for filtering

Formula:

If outage is on:

LSOVER = forecast

Otherwise, if the difference in the sales and forecast is larger than a threshold, the override value is brought within some bounds of the forecast.

DePrice

DePrice removes the pricing effects.

Inputs: price, maximum price

Optional parameters: none

Formula:

*Smoothed = original * (price/maxprice) ^2*

Clear

This Preprocessing method clears the Preprocessing adjustments from previous runs and also clears the lsover measure.

LSOVER(t) = 0

LS(t) = 0

No Filtering

This Preprocessing method does not filter the source data.The preprocessing adjustments are cleared and lsover is set to the source data.

LS(t) = 0

LSOVER(t) = SRC(t)

Preprocessing for Stock-outs

When using Preprocessing to correct for stock-outs, the system expects out-of-stock indicators from a merchandising system like RMS. The system can be set up for automatic adjustment of sales history to correct for stock-outs as well as for manual user overrides under exception cases.

When set to automatically adjust sales history to correct stock-outs, Preprocessing takes into account trending and seasonality and adjusts the sales that were flagged by the out-of-stock indicator to reflect a more typical sales quantity.

Preprocessing for Outliers

When using Preprocessing to correct for outliers, the system expects outlier indicators. These are typically loaded.

Preprocessing for Promotional Forecasting

Preprocessing adjusts promotional data in a similar way that it does stock-outs. Typically, historical data shows a higher rate of sales during promotional periods. Were these spikes in sales to be left in historical sales data and loaded in the RDF Causal Engine, the baseline forecast created from this data would reflect similar spikes in future sales.

D

Troubleshooting

This appendix provides details that you can use to identify and resolve problems.

Accessing Multiple RPASCE Applications

A user may need to access multiple RPASCE applications, such as MFP, A&IP, and RDF, at the same time. In this case it is necessary to launch each application URL in a separate browser window, in the following way.

Launch one application in a browser window, then launch every other application in an incognito window (Chrome) or in a private window (Firefox). Launching multiple applications using regular browser windows of the same type (for example, Chrome/Firefox) can lead to unexpected UI errors, such as logging out of one application causing a logout across all applications.