Oracle® Retail Replenishment Optimization

User Guide for the RPAS Fusion Client

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Oracle Retail Replenishment Optimization User Guide for the RPAS Fusion Client, Release 16.0

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Primary Author: Melissa Artley

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Oracle Retail Replenishment Optimization User Guide for the RPAS Fusion Client, Release 16.0

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Preface

The *Oracle Retail Replenishment Optimization User Guide for the RPAS Fusion Client* describes the application's user interface. It provides detailed instructions for performing the various steps in the replenishment optimization process.

Audience

This document is intended for following types of users in Oracle Retail Replenishment Optimization:

- Replenishment Analysts
- Replenishment Managers
- Replenishment Administrators

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Related Documents

For more information, see the following documents in the Oracle Retail Replenishment Optimization Release 16.0 documentation set:

- *Oracle Retail Replenishment Optimization Implementation Guide*
- *Oracle Retail Replenishment Optimization Installation Guide*
- *Oracle Retail Replenishment Optimization Release Notes*
- *Oracle Retail Replenishment Optimization User Guide for the RPAS Classic Client*
- *Oracle Retail Replenishment Optimization User Guide for the RPAS Fusion Client*
- Oracle Retail Predictive Application Server documentation

The following documentation may also be needed when implementing RO:

- *Oracle Retail Predictive Application Server Batch Script Architecture Implementation Guide*

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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

The primary goal of Replenishment Optimization (RO) is to harness the replenishment methods available in the client's replenishment system. To make the best use of the available replenishment capabilities, RO balances inventory investments across items/warehouses to maximize return on investment (ROI). Optimization is performed based on business objectives and allows retailers to make inventory investment decisions that are in line with their financial goals. The recommendations take into account sales volume, volatility, availability of forecast data, seasonality, client business rules and constraints, and financial objectives to determine the optimized values.

RO automatically monitors item/warehouse demand and supply chain variables to determine the optimal inventory for the greatest return. It recommends replenishment settings, either automatically approving the changes or raising alerts; for example, alerting higher impact items. The optimal replenishment settings recommended by RO may be used to update Oracle Retail Advanced Inventory Planning (AIP) replenishment parameters or the retailer's legacy replenishment system.

The automated management of replenishment settings based on item/warehouse selling characteristics ensures accurate replenishment. It allows you to focus on maximizing profit rather than the time-consuming business of managing individual item/warehouse level replenishment.

> **Note:** This guide describes RO on the RPAS Fusion Client. For information about RO on the RPAS Classic Client, see the Oracle Retail Replenishment Optimization User Guide for the RPAS Classic Client.

With RO, you can:

- Make informed decisions on inventory investments with customer service-based business goals in mind.

  You can base your inventory investment decisions on various metrics, such as available budget, desired service levels, and so on.

- Receive optimal replenishment settings for items/warehouses.
  - Inventory investment trade-offs are performed based on item/warehouse level demand profiles and ROI.
  - Robust simulation techniques drive the calculations for product/location return on inventory investment.
  - Once an overall inventory investment decision is made, RO delivers the item/warehouse-specific requirements to help you reach that goal.

- Run optimization dynamically against the latest assortment.

  RO can consider changing assortments and associated item priorities that result from an assortment rationalization process.

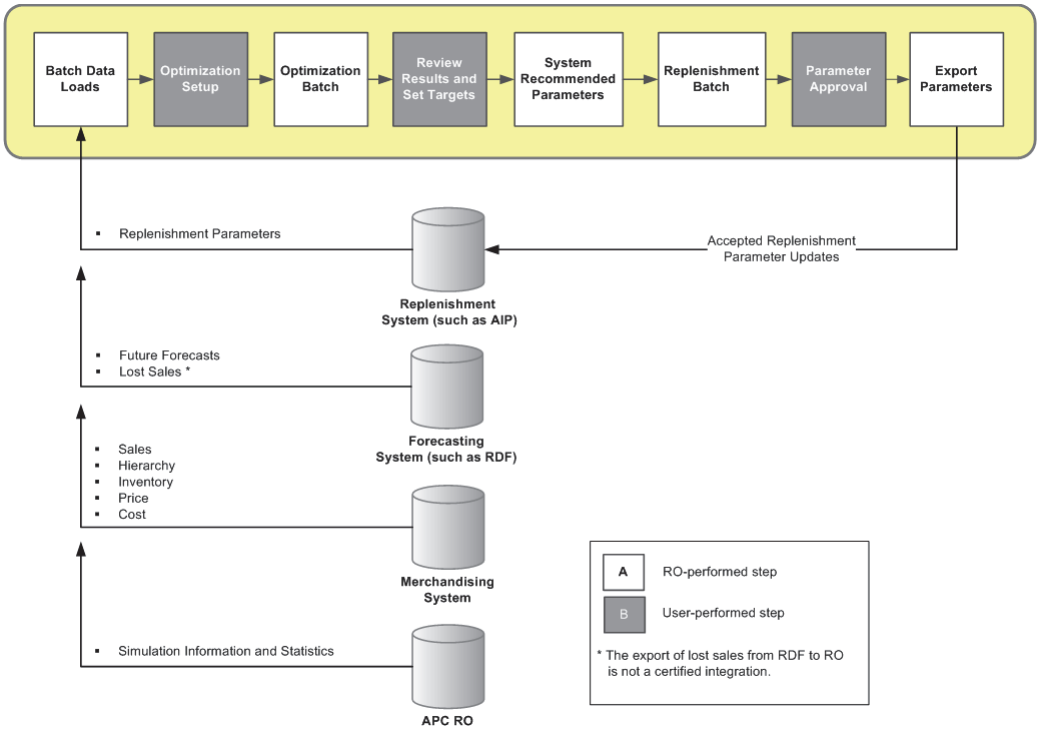
RO Solution Process Overview

The following diagram is a high level view of the RO process flow. Inventory, sales, and replenishment parameters are loaded from the merchandising system and the replenishment system. Forecasts and lost sales information are loaded from the forecasting system. Simulation information and statistics are loaded from Analytic Parameter Calculator Replenishment Optimization (APC RO).

The RO batch process generates the optimal system-recommended replenishment settings. You can perform What-if analysis by changing replenishment settings and determining the impact on projected inventory and service levels. You can restrict this analysis to only altered items/locations. You can then approve the settings by accepting the system recommendations, overriding recommendations with special inputs, or by defaulting to the previously approved or current replenishment settings.

The approved settings are then exported from RO to the replenishment system.

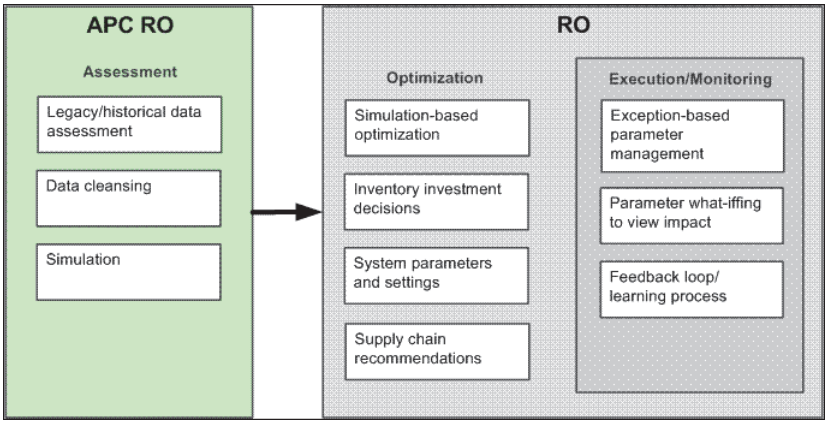
Figure 1–1 RO Solution Process Overview



RO and APC RO

RO receives simulation information and statistics from APC RO and uses these parameters to perform the optimization. This process is described in Figure 1–2.

Figure 1–2 RO and APC RO



- APC RO calculates the necessary parameters that drive the optimization within RO.
  - The parameters relate the ROI information to the statistical characteristics of the items/warehouses.
  - Parameters are based on robust simulation techniques that capture item/warehouse/day-level nuances in demand (such as day-to-day variability and spikes), lead times, pack sizes, review frequencies, warehouse fill rates (for warehouses running multi-tier), and the impact on the return on inventory investment.
- APC RO exports item/warehouse level characteristics as well as statistical characteristics based on ROI metrics.
- RO performs optimization using the parameters from APC RO. The optimization is based on the following:
  - The latest assortment mix
  - Statistical characteristic-based parameters for new or non-simulated items/warehouses
  - User-driven optimization metrics such as maximize gross margin, minimize inventory, and so on

Refer to the APC RO documentation for more information.

Keys to Success in Implementing RO

Implementing RO is a business process modification, requiring a thorough understanding of your existing processes relative to replenishment. To understand how you can use RO to automate and improve these processes, it is important to get technical training on RO. In addition, we recommend that you take advantage of the knowledge base among Oracle Retail business analysts when deciding to implement RO.

To ensure a successful RO implementation in your business, consider these recommendations:

- Clearly define critical replenishment strategies in place at your business today.
- Understand how RO fits into your business process.

- Involve key business users in the RO implementation process. Make sure they get training in RO and its capabilities.
- Establish technical ownership of the RO implementation and maintenance.
- Validate that you have the resources to take ownership for RO maintenance going forward.
- Commit to support the replenishment targets that fit your aggregate business goals. This may require you to adopt strategies that are quite different from how you replenish today.

Oracle Retail's Analytic Services group has developed RO specialist consultants who can help you learn how to use RO and provide you with the process and business consulting services to support anything from initial RO implementation efforts to advanced exception development.

RO Users

The RO users fall into three categories- Replenishment Analysts, Replenishment Managers, and Replenishment Administrators.

- Replenishment Analysts are typically responsible for item/location level replenishment settings. They monitor inventory levels and historic lost sales at item/location levels. These users can approve, reject, or override replenishment recommendations. They can perform What-if analysis to determine impact of each of these settings to make informed decisions. Users can restrict their analysis to only alerted items/locations using the Alert Manager.
- The Replenishment Managers are responsible for inventory, revenue, and service level targets at aggregate levels of the business. These users are responsible for inventory investment decisions, establishing target service levels, and inventory levels. They may also review and monitor actual inventory and services against targets.
- Replenishment Administrators are required to set up RO Replenishment Rule settings that are developed by RO Specialist Consultants. They are not the primary end users of the application.

RO Workbooks

RO contains the following workbooks:

- Optimization Setup Workbook
- Optimization Results Workbook
- Administration Workbook
- Summary Level Analysis Workbook
- Subgroup Analysis Workbook
- Detail Level Analysis Workbook

About RO Workbooks with Base and Optimization Levels

Two important concepts that help define RO workbooks intersections, and influence the replenishment recommendations are the base and optimization levels.

RO Base Level

The RO base level is the intersection at which the replenishment recommendations are made.

For store replenishment settings, the typical intersection is item/store.

That means that the replenishment methods and settings are optimized and recommended for every item store combination.

RO Optimization Level

The RO optimization level is the intersection that defines which item/store combinations are evaluated together when replenishment settings are optimized.

For instance, if the intersection is department/region, the item store combinations inside a certain department and region will be evaluated with respect to some key metrics.

Item store combinations inside that intersection which are found to be similar are grouped together and their demand patterns determine the replenishment settings.

RO's quality of the recommended replenishment settings is heavily dependent on the richness of the demand patterns inside an optimization intersection.

In general, if more item store combinations are available, the demand pool is richer and the recommendations are more robust.

Permissible File Names

When saving a workbook (or saving a copy using the **Save As** command), there are restrictions on the length of the file name and the characters that can be used,

- The file name can be a maximum of 32 characters.
- The filename can contain the following standard characters:
  - a - z
  - A - Z
  - 0 - 9
- The filename can contain the following special characters:
  - .
  - |
  - _
  - -
  - /
  - $
  - &
  - spaces

Any file name not meeting these conditions results in an error message.

2

Optimization Setup Workbook

The Optimization Setup workbook is used to define optimization parameters as well as to specify the mode of the RO batch run. RO batch has two primary modes: full mode and refresh mode. In the full mode, RO performs optimization calculations and generates the Trade-off curves, based on user-defined objective functions. In the refresh mode, RO refreshes the replenishment methods and parameters for product/locations based on approved targets from the previous full mode run. The Optimization Setup workbook contains the following steps:

- Store Optimization Targets & Constraints Step
- Store Subgrouping Setup Step
- Warehouse Optimization Run Setup Step
- Warehouse Subgrouping Setup Step
- Warehouse Constraints Setup Step

About Item Classification in RO

RO follows these rules listed in Table 2–1 when classifying Item/Store combinations:

Table 2–1 Rules for Item/Store Combinations

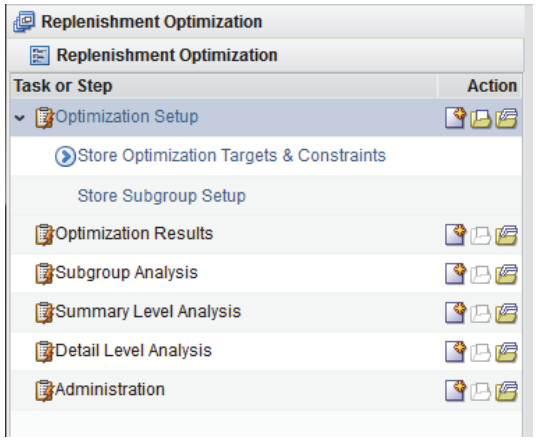
Item/Store Combination	All of These Rules Must be True:	Results:
Item/Store with sparse low sales year round with short Lead Time and Review Time	■ Average sales across last 52 week is less than or equal to a low sales threshold ■ Average sales by popcount across last 52 week is less than or equal to a threshold ■ The lead time + review time is less than or equal to a threshold ■ The cost is more than or equal to a threshold	The Item/Stores are assigned a min/max replenishment scenario with an order point of 1 and order up to level of 1. These Item/Stores are not included in the optimization.
Seasonal Item/Stores that are off-season in the next few replenishment periods	■ The Forecast from *today to n*(leadtime+reviewtime)* is less than or equal to a low forecast threshold ■ The average seasonal indices from *today to n*(leadtime+reviewtime)* is less than or equal to a threshold (such as 0.1). ■ The lead time + review time is less than or equal to a threshold ■ The cost is more than or equal to a threshold	The Item/Stores are assigned a min/max replenishment scenario with an order point of 1 and order up to level of 1. These Item/Stores are not included in the optimization.
New Item/Stores with Like-item assignment and without simulation results but enough sales history	■ Has valid like-item assignment ■ Has no Item/Store level simulation result ■ Sales history duration is less than or equal to a threshold. The sales history duration is decided by item onsale data or the start of sales+ inventory history.	These Item/Stores are not included in the optimization because their sales pattern is not considered stable. These Item/Stores are assigned to an RO subgroup based on their statistics and inherit that subgroup's recommended scenario.
New Item/Stores without Like-item assignment, simulation results and enough sales history	■ Has no or invalid like-item assignment ■ Has no Item/Store level simulation result ■ Sales history duration is less than or equal to a threshold. The sales history duration is decided by item on-sale data or the start of sales+ inventory history.	These Item/Stores are not included in the optimization because their sales pattern is not considered stable. These Item/Stores are assigned to an RO subgroup based on their statistics and inherit that subgroup's recommended scenario.
Item/Stores with enough sales history and no simulation results	■ Has no Item/Store level simulation result ■ Sales history length is larger than a threshold. The sales history length is decided by item onsale data or the start of sales+ inventory history.	These Item/Stores are included in the optimization because their sales pattern is considered stable. These Item/Stores are assigned to an APC group to inherit the APC group's simulation results and use these results in the optimization metric calculation.
Item/Stores with simulation results and significant sales pattern change	■ Has Item/Store level simulation result ■ The average sales have changed significant from simulated demand	These Item/Stores are included in the optimization but since their sales pattern has changed, their simulation result at Item/Store is no longer invalid. These Item/Stores are assigned to an APC group to inherit the APC group's simulation results and use these results in the optimization metric calculation.
Regular Item/Stores	■ Has Item/Store level simulation result ■ The total sales are larger than zero.	Any Item/Store with simulation results and not in any other category is included. They are included in the optimization.

Optimization Setup Wizard

To create an Optimization Setup workbook, perform the following:

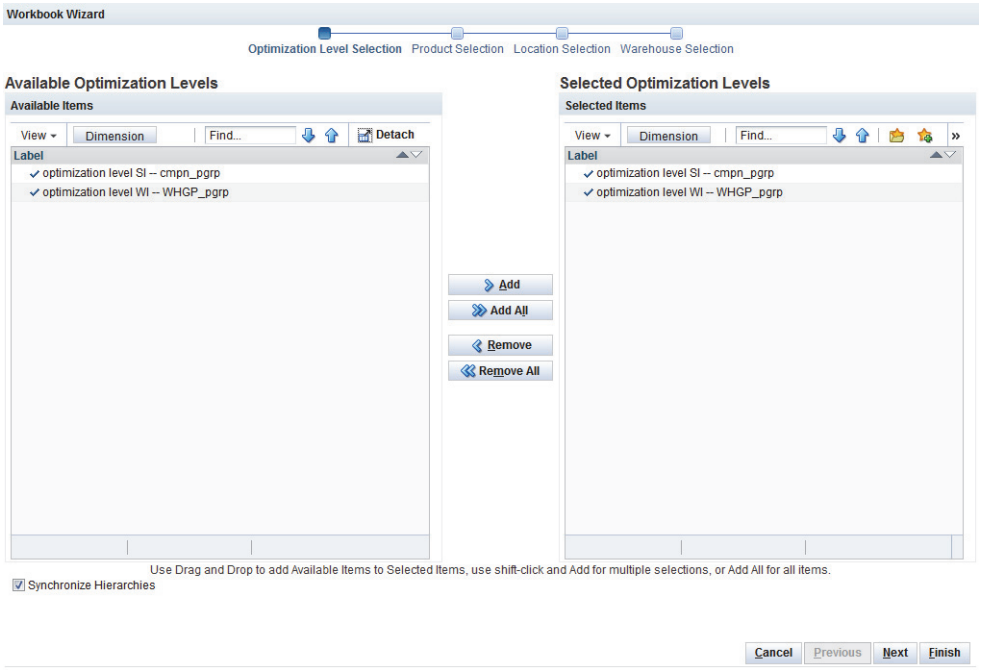
1. Click the Create New Workbook icon in the Optimization Setup task.

Figure 2–1 Creating a New Optimization Setup Workbook



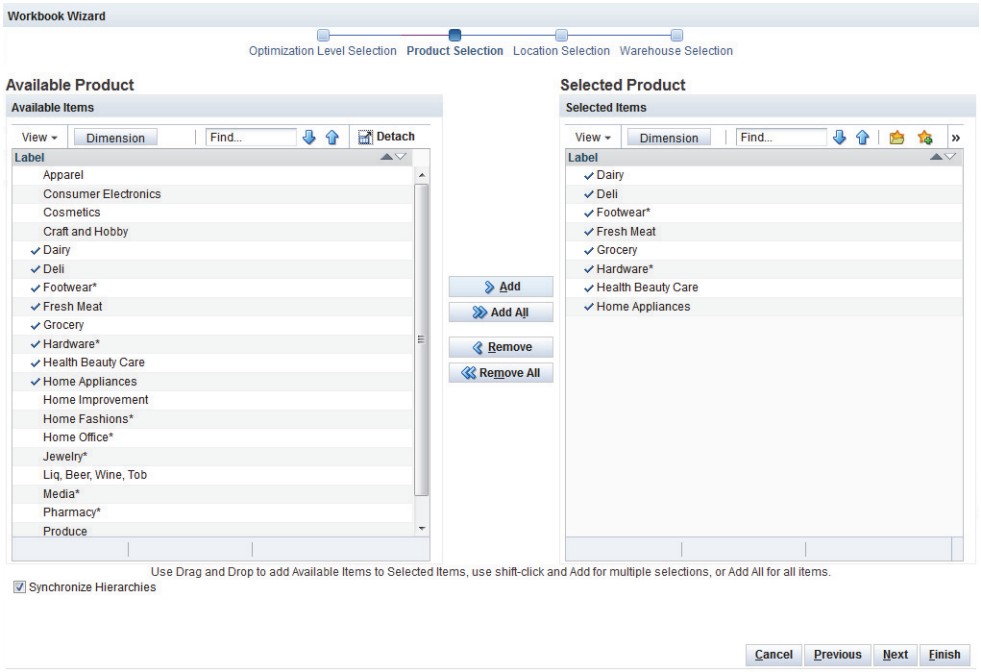
2. The Available Optimization Levels window opens. Select either or both the store level (SL) or the warehouse level (WL) and click **Next**.

Figure 2–2 Available Optimization Levels



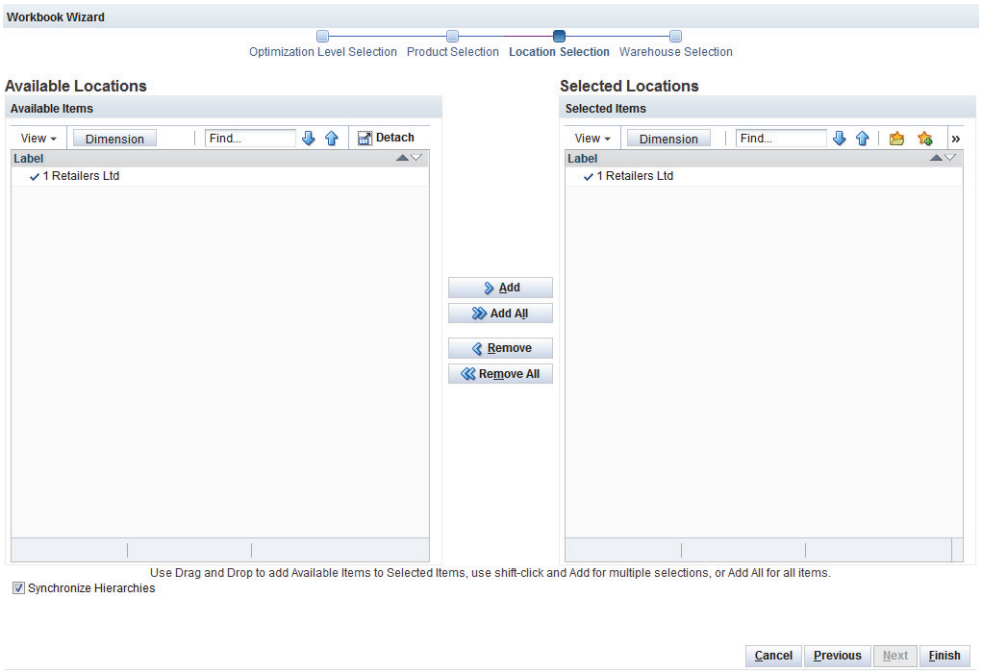
3. The Available Product window opens. Select the groups to be displayed in the workbook and click **Next**.

Figure 2–3 Available Product



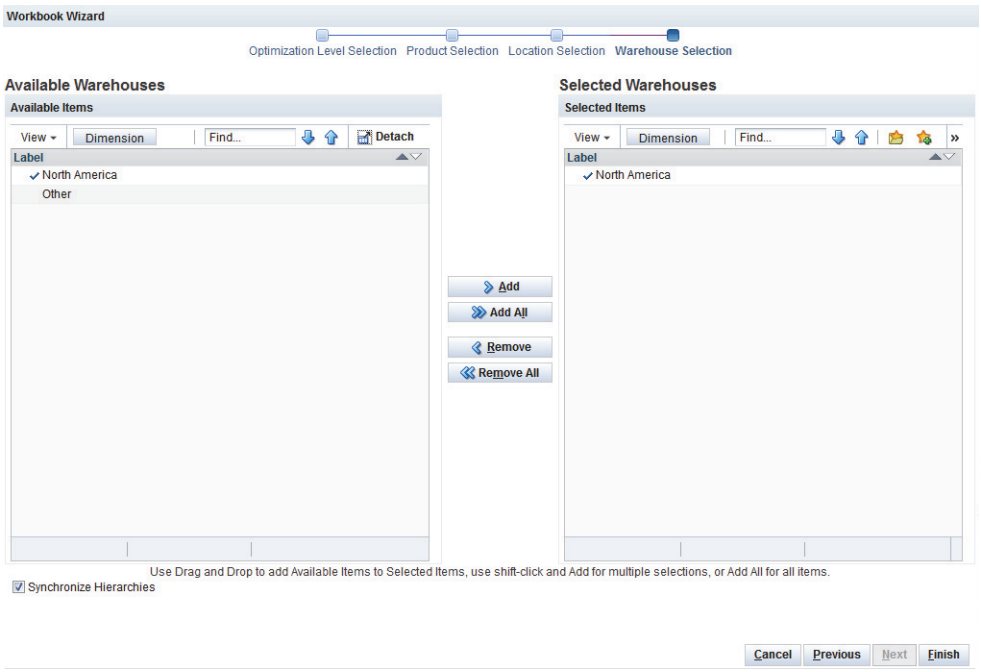
4. The Available Locations window opens. Select the regions to be displayed in the workbook and click **Next**.

Figure 2–4 Available Locations



5. The Available Warehouses window opens if a warehouse level (WL) was selected in Step 2. Select the warehouses to be displayed in the workbook and click **Finish**.

Figure 2–5 Available Warehouses



The Optimization Setup workbook is built.

Store Optimization Targets & Constraints Step

The Store Optimization Targets & Constraints step contains the following views:

- Classification Parameters - Store View
- Optimization Goals - Store View
- Key Adjustment Settings - Store
- Like SKU/Store Assignment
- Max Order Frequency - Store
- Maximum Constraints - Store
- Minimum Constraints - Store

Classification Parameters - Store View

The Classification Parameters - Store view enables you to set the advanced optimization parameters for the store level optimization including setting thresholds that define demand patterns of items. For instance, items can be classified as low sellers versus high sellers, seasonal versus non-seasonal, and so on.

Figure 2–6 Classification Parameters - Store View

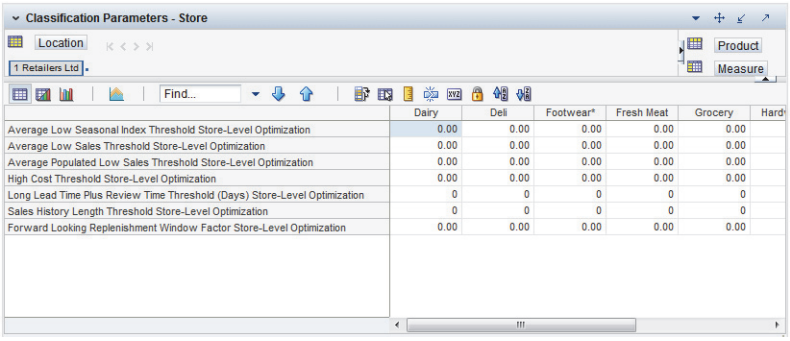


Table 2–2 Classification Parameters - Store View Measures

Measure	Description
Average Low Sales Threshold	If the average forecast over the Forward Looking Replenishment Window Factor times lead plus review time is less than this value, a condition that an item is going out of season is met.
Average Low Seasonal Index Threshold	If the average seasonal index over the Forward Looking Replenishment Window Factor times lead plus review time is less than this value, a condition that an item is going out of season is met.
Average Populated Low Sales Threshold	If average sales by popcount over past year are less than a threshold, a condition for a low selling year-round item is met.
Forward Looking Replenishment Window Factor	The value of this measure times the lead plus review time, defines the window over which the forecasts are summed up and seasonal indices are averaged. The results are compared with the Average Low Sales Threshold and the Average Low Seasonal Index Threshold to decide if an item is going out of season.
High Cost Threshold	If the cost of an item is higher than the value of this threshold, one of the conditions in the decision if the item is a year-round low seller or seasonal item that is off season is met. Note that for an item to be part od one of the two groups additional conditions need to be met.
Long Lead Plus Review Time Threshold (Days)	If the lead plus review time of an item is less than the value of this threshold, one of the conditions in the decision if the item is a year-round low seller or seasonal item that is off season is met. Note that for an item to be part od one of the two groups additional conditions need to be met.
Sales History Length Threshold	If the sales history of an item is less than the value of this threshold, this is an indication of a new item.

Optimization Goals - Store View

The Optimization Goals - Store view enables you to set up optimization parameters like maximizing and minimizing metrics and optimization mode for the store level optimization. Note that RO determines optimal inventory investment across products/locations that maximizes returns. The inventory investment is considered the minimizing metric for optimization. Choices for the Optimization Minimizing Metric are Inventory Units and Inventory Cost. Return on investment is the maximizing metric in the optimization. Choices for the Optimization Maximizing Metric are Sales Units, Sales Revenue, Gross Margin, and Service Level.

For example, you can choose to run optimization with the goal to maximize sales revenue and at the same time keep the inventory cost as low as possible.

Figure 2–7 Optimization Goals - Store View

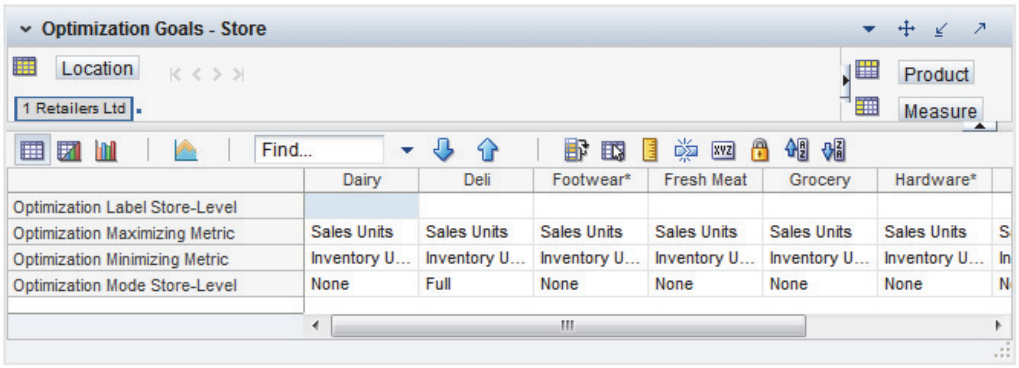


Table 2–3 Optimization Goals - Store View Measures

Measure	Description
Optimization Label Store Level Optimization	User-defined label of the store level optimization. This can be viewed in the Optimization Results task.
Optimization Maximizing Metric Store Level Optimization	Used to specify the maximizing metrics in the store level optimization. This is based on the dgroup/company level. Options are Sales Units, Sales Revenue, Gross Margin, and Service Level.
Optimization Minimizing Metric Store Level Optimization	Used to specify the minimizing metrics in the store level optimization. This is based on the group/company level. Options are Inventory Units and Inventory Cost.
Optimization Mode Store Level Optimization	Used to specify the batch mode: full mode, refresh mode, or None.

Key Adjustment Settings - Store

The Key Adjustment Settings - Store enables you to set the thresholds for classifying item locations or product locations.

Figure 2–8 Key Adjustment Settings - Store

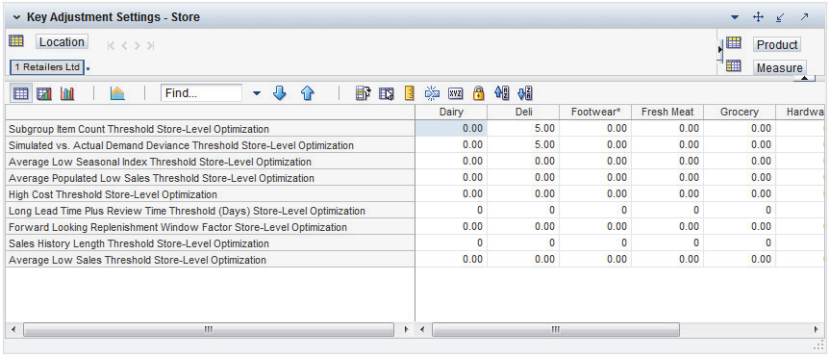


Table 2–4 Key Adjustment Settings - Store Measures

Measure	Description
Average Low Sales Threshold Store-Level Optimization	If the average forecast over the Forward Looking Replenishment Window Factor times lead plus review time is less than this value, a condition that an item is going out of season is met.
Average Low Seasonal Index Threshold Store-Level Optimization	If the average seasonal index over the Forward Looking Replenishment Window Factor times lead plus review time is less than this value, a condition that an item is going out of season is met.
Average Populated Low Sales Threshold Store-Level Optimization	If average sales by popcount over past year are less than a threshold, a condition for a low selling year-round item is met.
Forward Looking Replenishment Window Factor Store-Level Optimization	The value of this measure times the lead plus review time, defines the window over which the forecasts are summed up and seasonal indices are averaged. The results are compared with the Average Low Sales Threshold and the Average Low Seasonal Index Threshold to decide if an item is going out of season.
High Cost Threshold Store-Level Optimization	If the cost of an item is higher than the value of this threshold, one of the conditions in the decision if the item is a year-round low seller or seasonal item that is off season is met. Note that for an item to be part od one of the two groups additional conditions need to be met.
Long Lead Plus Review Time Threshold (Days) Store-Level Optimization	If the lead plus review time of an item is less than the value of this threshold, one of the conditions in the decision if the item is a year-round low seller or seasonal item that is off season is met. Note that for an item to be part od one of the two groups additional conditions need to be met.
Sales History Length Threshold Store-Level Optimization	If the sales history of an item is less than the value of this threshold, this is an indication of a new item.
Simulated vs. Actual Demand Deviance Threshold Store Level Optimization	Used to determine if the demand characteristics of an item/location have deviated significantly from when it was simulated. If this threshold is exceeded, the system uses the statistical grouping level replenishment characteristics rather than the item/location-specific characteristics.
Subgroup Item Count Threshold Store Level Optimization	When the number of items/locations within a subgroup falls below this threshold, the system assumes that the robustness in the item/location-level replenishment characteristics is not enough. In those situations, the system uses the statistical grouping level characteristics for all items/locations in the subgroup in order to avoid overfitting.

Like SKU/Store Assignment

The Like SKU/Store Assignment view enables you to assign a like item or like store to new items or stores

Figure 2–9 Like SKU/Store Assignment

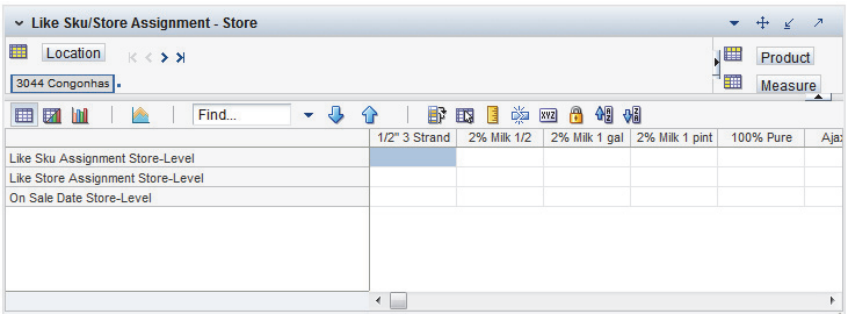


Table 2–5 Like SKU/Store Assignment Measures

Measure	Description
Like SKU Assignment	You can assign a like item to a new item. In addition, the on Sale Date measure needs to be populated for the item to be considered new.
Like Store Assignment	You assign a like store to a new store. In addition, the on Sale Date measure needs to be populated for the item to be considered new.
On Sale Date	This editable measures displays the date when a new item starts selling.

Max Order Frequency - Store

The Max Order Frequency - Store view enables you to specify the maximum order frequency for a group/company/subgroup. For example, you can ensure that the average order frequency (the average number of orders per week) does not exceed a certain threshold for all items/locations.

Figure 2–10 Max Order Frequency - Store

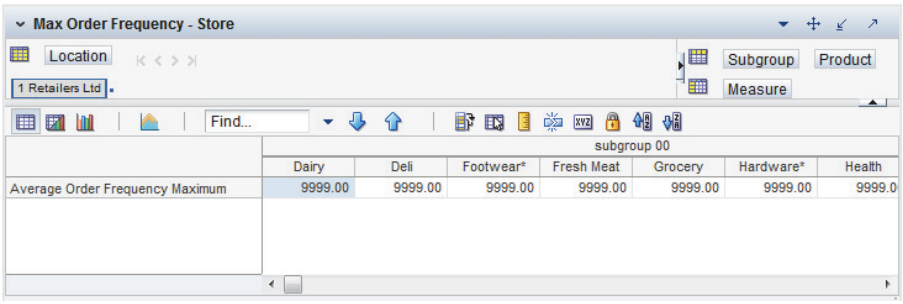


Table 2–6 Max Order Frequency - Store Measures

Measure	Description
Average Order Frequency Maximum	Specify the maximum order frequency value for a group/company/subgroup.

Maximum Constraints - Store

The Maximum Constraints - Store view enables you to specify the maximum order frequency for a group/company/subgroup. For example, you can ensure that the average order frequency (the average number of orders per week) does not exceed a certain threshold for all items/locations.

Figure 2–11 Maximum Constraints - Store

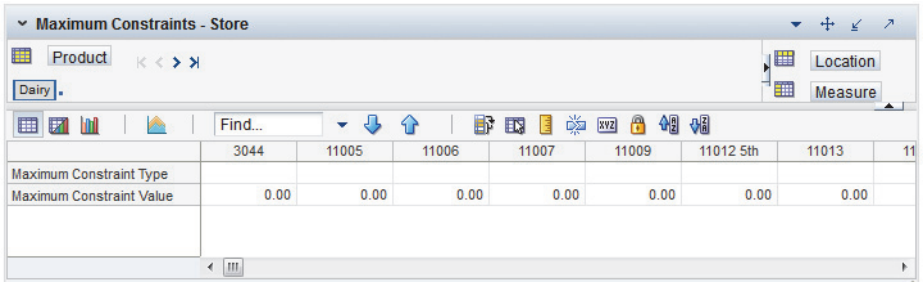


Table 2–7 Maximum Constraints - Store Measures

Measure	Description
Maximum Constraint Type Default	Specify the maximum constraint type for a group/store. Options are Inventory Units, Inventory Cost, Weeks of Supply, and Space.
Maximum Constraint Value Default	Specify the value of the maximum constraint.

Minimum Constraints - Store

The Minimum Constraints - Store view enables you to specify the minimum constraint for an item/company for the store level optimization. Constraints specified in this view are used in the optimization batch run and are reflected in the constrained optimization results in the Optimization Results workbook.

Figure 2–12 Minimum Constraints - Store

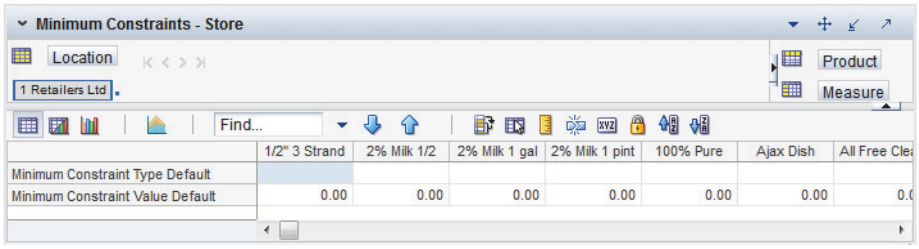


Table 2–8 Minimum Constraints - Store Measures

Measure	Description
Minimum Constraint Type Default	Specify the minimum constraint type for an item/company. Options are Service Level, Sales Units, Sales Revenue, and Gross Revenue.
Minimum Constraint Value Default	Specify the value of the minimum constraint.

Store Subgrouping Setup Step

In the Store Subgrouping Setup step, you can define the subgrouping criteria and specify the subgrouping method to be used when determining the statistically similar items/locations.

RO performs optimization at statistical subgroupings of items/stores rather than at the item/store level to avoid overfitting. Performing optimization at the subgrouping level ensures that the optimization results are robust.

The Store Subgrouping Setup step contains the following views:

- Define Subgrouping Criteria for Store Optimization View

- Subgrouping Labels-Store View
- User Breakpoints Override for Store Optimization View

Define Subgrouping Criteria for Store Optimization View

This view enables you to define subgrouping criteria like the number of groupings, and subgrouping methods. The optimization is performed at the specified store optimization level, such as group/company. The subgrouping criteria is defined for each optimization level.

The number of total subgroupings for the higher level intersection cannot exceed 50. In other words, when entering the values for each of the # of Groups SubGrouping measures, the product of these three numbers cannot exceed 50. The first subgrouping takes priority over the second and third subgroupings, and the second subgrouping takes priority over the third.

If you enter a number in the second or third subgrouping measure that causes the product of the three numbers to exceed 50, an **Out of Range** message is displayed that suggests a range of acceptable values.

If the values for each of the three subgroupings have already been calculated, and then you change the value of the first subgrouping to a number less than 50 that causes the product of the three measures to exceed 50, an out of range message does not appear. However, once you click **Calculate**, the Subgroup Setup Error Flag measure is selected and an error message is displayed in the Subgroup Setup Error Message measure.

The view in Figure 2–13 displays data at the group/company intersection.

Figure 2–13 Define Subgrouping Criteria for Store Optimization View

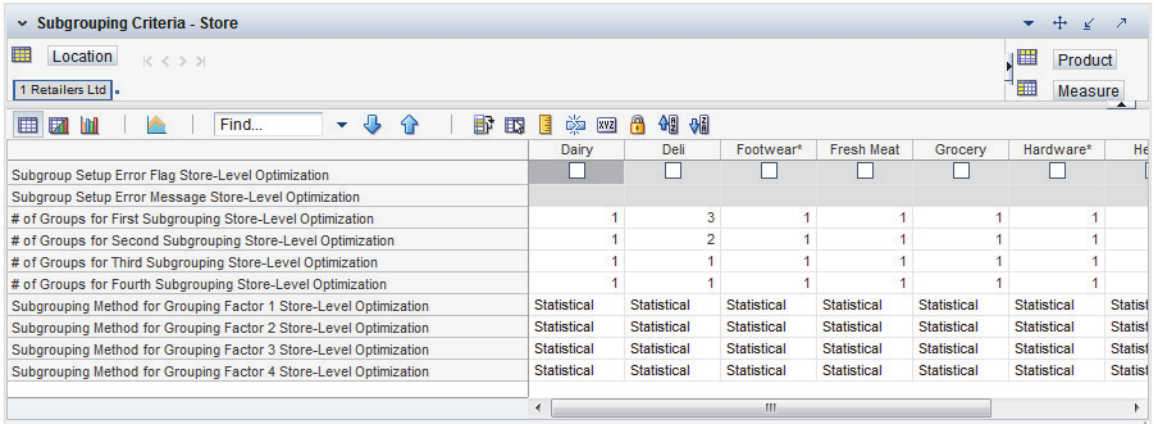


Table 2–9 Define Subgrouping Criteria for Store Optimization View Measures

Measure	Description
# of Groups for First SubGrouping Store Level Optimization	Specify the number of groups for the first group factor. This is an integer measure that is based on the group/company.
# of Groups for Second SubGrouping Store Level Optimization	Specify the number of groups for the second group factor. This is an integer measure that is based on the group/company.
# of Groups for Third SubGrouping Store Level Optimization	Specify the number of groups for the third group factor. This is an integer measure that is based on the group/company.
# of Groups for Fourth SubGrouping Store Level Optimization	Specify the number of groups for the fourth group factor. This is an integer measure that is based on the group/company.

Table 2–9 (Cont.) Define Subgrouping Criteria for Store Optimization View Measures

Measure	Description
Subgroup Setup Error Flag Store Level Optimization	Boolean measure that indicates an error in the subgroup setup. A true value may be triggered by one of the # of Groups for Subgroupings measures being over the limit or by an incorrect setup of one of the SubGrouping Metric measures.
Subgroup Setup Error Message Store Level Optimization	String measure that displays the error message that caused the error flagged in Subgroup Setup Error Flag Store Level Optimization.
SubGrouping Method for Grouping Factor 1 Store Level Optimization	The subgroup method used for Grouping Factor 1. Options are Breakpoints and Statistical. Breakpoints are defined in User Breakpoints Override for Store Optimization View.
SubGrouping Method for Grouping Factor 2 Store Level Optimization	The subgroup method used for Grouping Factor 2. Options are Breakpoints and Statistical.
SubGrouping Method for Grouping Factor 3 Store Level Optimization	The subgroup method used for Grouping Factor 3. Options are Breakpoints and Statistical.
SubGrouping Method for Grouping Factor 4 Store Level Optimization	The subgroup method used for Grouping Factor 4. Options are Breakpoints and Statistical.

Note: The Subgrouping Metric 1, Subgrouping Metric 2, Subgrouping Metric 3, Subgrouping Metric 4, and Grouping Equalizing Metric for Store Level Optimization are available for setup in Configuration Tools. Refer to the *Oracle Retail Replenishment Optimization Implementation Guide* for additional information.

Performing Groupings on Multiple Metrics

The subgrouping is performed in a nested manner: grouping in Grouping Factor 1 first and then further grouping each bucket in Grouping Factor 2, and so on.

The subgrouping is usually performed based on multiple statistical attributes like selling levels, variability, seasonality, and so on. For example, it is typical to group items/locations based on volume first. Then one can further group items/locations within each volume bucket on variability. Also, you can choose to group items/locations based on other features, like seasonality or forecast errors. The configuration of subgrouping metrics is described in the *Oracle Retail Replenishment Optimization Implementation Guide*.

Committing Subgroup Criteria

When you have modified the subgroup, you can commit them to the domain by selecting **Commit** in the **File** menu. Note that only the criteria for subgroupings is committed, not the arrangement of the items/stores within the subgroupings. The items/stores are not sorted into the new subgroupings until the next batch run.

Subgrouping Labels-Store View

This view enables you to create labels for the subgroupings.

Figure 2–14 Subgrouping Labels-Store View

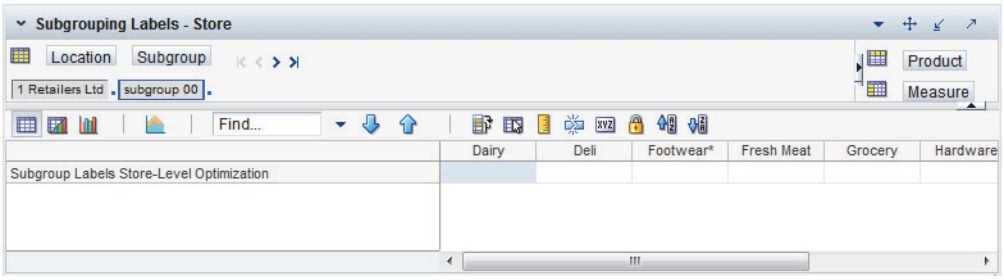


Table 2–10 Subgrouping Labels-Store View Measures

Measure	Description
SubGroup Labels Store Level Optimization	User-defined label for the subgroup. These labels appear in the Optimization Results workbook.

User Breakpoints Override for Store Optimization View

Once the statistical subgrouping has been performed by the system, you have the option to override it by specifying breakpoints for subgroupings.

Note that the subgrouping for breakpoints is performed in a nested manner as it is in the Define Subgrouping Criteria view. The breakpoints are defined for each subgroup by defining the lower and upper bounds for each group factor.

The value set in this view for upper and lower bounds should match the settings in Define Subgrouping Criteria for Store Optimization View. For instance, if in the Define Subgrouping Criteria for Store Optimization View the number of Groups for First Subgrouping, Second Subgrouping, Third Subgrouping are set to 2, 3, 2, respectively, then the group/company level is expected to have 12 subgroups (12=2*3*2). Among these 12 subgroups:

- For **Group Factor 1**, every six subgroups should have the same lower bounds and upper bounds for Group Factor 1, starting from Subgroup 00. This is because the 12 subgroups are divided into two sections equally first, as the red squares show in Figure 2–15. The later six-subgroup section's lower bound should be equal to (recommend) or greater than the previous six sub-group section's upper bound.
- For **Group Factor 2**, every two subgroups should have the same lower bounds and upper bounds for Group Factor 2, starting from subgroup 00. This is because within each subgroup section, the six subgroups are divided into three parts equally, secondly, as the blue squares show in Figure 2–15. The later two subgroup section's lower bound should be equal to (recommend) or greater than the previous two sub-group section's upper bound. This logic applies to all of the subgroups in the same section, which has six subgroups.
- For **Group Factor 3**, each of the subgroups should then be assigned a lower and a upper bounds independently, as the green squares show in Figure 2–15. The later subgroup section's lower bound should be equal to (recommend) or greater than the previous sub-group section's upper bound. This logic applies to all of the subgroups in the same section, which has two subgroups.
- For **Group Factor 4**, each of the subgroups should then be assigned a lower and a upper bounds independently. The later subgroup section's lower bound should be equal to (recommend) or greater than the previous sub-group section's upper bound. This logic applies to all of the subgroups in the same section, which has two subgroups.

It is suggested to run the subgrouping with statistical first. Reviewing the breakpoints in the Optimization Results workbook helps give a baseline on how the lower bounds and upper bounds should look.

Note: When defining the lower and upper bounds for different group factors, you should know the specified subgroup metric so that the values set in this view can be utilized accordingly and correctly. The subgroup metrics are in Configuration Tools. Refer to the *Oracle Retail Replenishment Optimization Implementation Guide* for additional information.

Figure 2–15 User Breakpoints Override for Store Optimization View

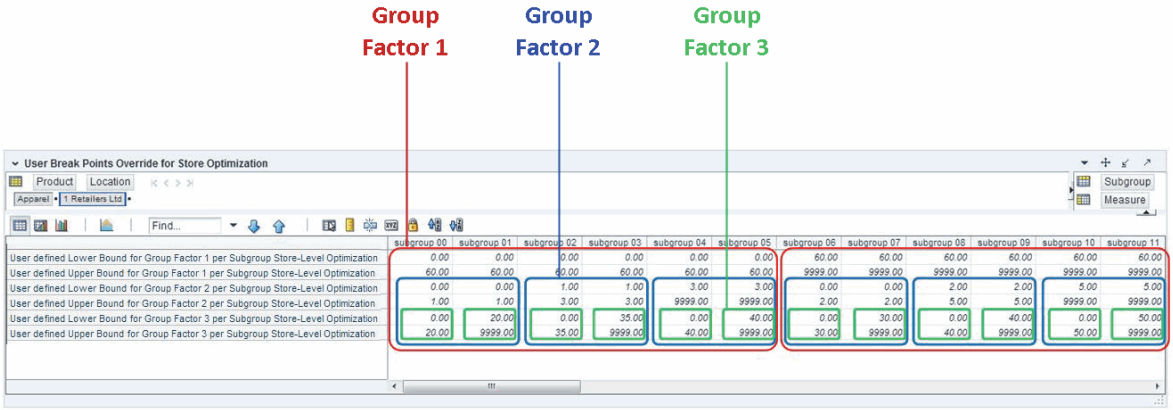


Table 2–11 User Breakpoints Override for Store Optimization View Measures

Measure	Description
User defined Lower Bound for Group Factor 1 per Subgroup Store-Level Optimization	Specify the lower bound for the Group Factor 1 for the group/company. The range set in lower bound is inclusive.
User defined Lower Bound for Group Factor 2 per Subgroup Store-Level Optimization	Specify the lower bound for the Group Factor 2 for the group/company. The range set in lower bound is inclusive.
User defined Lower Bound for Group Factor 3 per Subgroup Store-Level Optimization	Specify the lower bound for the Group Factor 3 for the group/company. The range set in lower bound is inclusive.
User defined Lower Bound for Group Factor 4 per Subgroup Store-Level Optimization	Specify the lower bound for the Group Factor 4 for the group/company. The range set in lower bound is inclusive.
User defined Upper Bound for Group Factor 1 per Subgroup Store-Level Optimization	Specify the upper bound for the Group Factor 1 for the group/company. The range set in upper bound is exclusive.

Table 2–11 (Cont.) User Breakpoints Override for Store Optimization View Measures

Measure	Description
User defined Upper Bound for Group Factor 2 per Subgroup Store-Level Optimization	Specify the upper bound for the Group Factor 2 for the group/company. The range set in upper bound is exclusive.
User defined Upper Bound for Group Factor 3 per Subgroup Store-Level Optimization	Specify the upper bound for the Group Factor 3 for the group/company. The range set in upper bound is exclusive.
User defined Upper Bound for Group Factor 4 per Subgroup Store-Level Optimization	Specify the upper bound for the Group Factor 4 for the group/company. The range set in upper bound is exclusive.

Warehouse Optimization Run Setup Step

The Warehouse Optimization Run Setup step consists of the following views:

- Basic Setup for Warehouse Optimization View
- Advanced Setup for Warehouse Optimization View

Basic Setup for Warehouse Optimization View

The Basic Setup for Warehouse Optimization view enables you to set up optimization parameters like maximizing and minimizing metrics and optimization mode for the warehouse optimization.

Figure 2–16 Basic Setup for Warehouse Optimization View

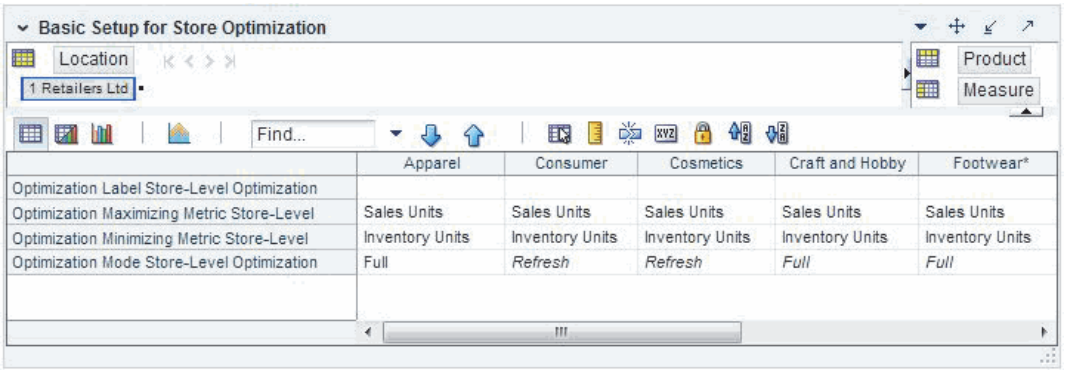


Table 2–12 Basic Setup for Warehouse Optimization View Measures

Measure	Description
Optimization Label Warehouse Level Optimization	User-defined label of the warehouse level optimization. This can be viewed in the Optimization Results workbook.

Table 2–12 (Cont.) Basic Setup for Warehouse Optimization View Measures

Measure	Description
Optimization Maximizing Metric Warehouse Level Optimization	Used to specify the maximizing metrics in the warehouse level optimization. This is based on the group/warehouse group level. Options are Sales Units, Sales Revenue, Gross Margin, and Service Level.
Optimization Minimizing Metric Warehouse Level Optimization	Used to specify the minimizing metrics in the warehouse level optimization. This is based on the group/warehouse group level. Options are Inventory Units and Inventory Cost.
Optimization Mode Warehouse Level Optimization	Used to specify the batch mode: full mode, refresh mode, or None.

Advanced Setup for Warehouse Optimization View

The Advanced Setup for Warehouse view enables you to set the advanced optimization parameters for the warehouse level optimization.

Figure 2–17 Advanced Setup for Warehouse Optimization View

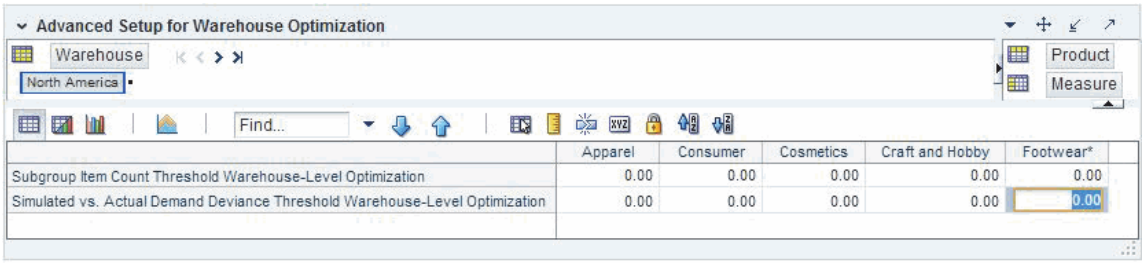


Table 2–13 Advanced Setup for Warehouse Optimization View Measures

Measure	Description
Simulated vs. Actual Demand Deviance Threshold Warehouse Level Optimization	Used to determine if the demand characteristics of an item/warehouse location have deviated significantly from when it was simulated. If this threshold is exceeded, the system uses the statistical grouping level replenishment characteristics rather than the item/warehouse location-specific characteristics.
Subgroup Item Count Threshold Warehouse Level Optimization	When the number of item/warehouse locations within a subgroup fall below this threshold, the system assumes that the robustness in the item/warehouse location-level replenishment characteristics is not enough. In those situations, the system uses the statistical grouping level characteristics for all item/warehouse locations in the subgroup in order to avoid overfitting.

Warehouse Subgrouping Setup Step

In the Warehouse Subgrouping Setup step, you can define the subgrouping criteria and specify the subgrouping method to be used when determining the statistically similar items/locations.

RO performs optimization at statistical subgroupings of items/warehouses rather than at the item/warehouse level to avoid overfitting. Performing optimization at the subgrouping level ensures that the optimization results are robust.

The Warehouse Subgrouping Setup step contains the following views:

- Define Subgrouping Criteria for Warehouse Optimization View
- Subgrouping Labels for Warehouse Optimization View
- User Breakpoints Override for Warehouse Optimization View

Define Subgrouping Criteria for Warehouse Optimization View

The methods and parameters available in the store optimization views are available for the warehouse optimization views as well. This view enables you to define subgrouping criteria like the number of groupings and subgrouping methods. The optimization is performed at the specified store optimization level, such as group/warehouse group. The subgrouping criteria is defined for each optimization level.

The number of total subgroupings for the higher level intersection cannot exceed 50. In other words, when entering the values for each of the # of Groups SubGrouping measures, the product of these three numbers cannot exceed 50. The first subgrouping takes priority over the second and third subgroupings, and the second subgrouping takes priority over the third.

If you enter a number in the second or third subgrouping measure that causes the product of the three numbers to exceed 50, an **Out of Range** message is displayed that suggests a range of acceptable values.

If the values for each of the three subgroupings have already been calculated, and then you change the value of the first subgrouping to a number less than 50 that causes the product of the three measures to exceed 50, an out of range message does not appear. However, after you click **Calculate**, the Subgroup Setup Error Flag measure is selected and an error message is displayed in the Subgroup Setup Error Message measure.

Figure 2–18 is at the group/warehouse group intersection.

Figure 2–18 Define Subgrouping Criteria for Warehouse Optimization View

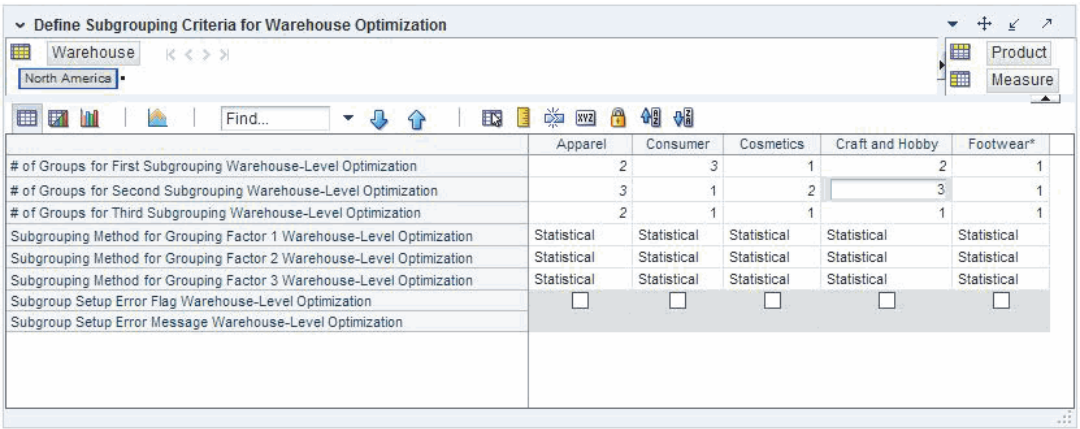


Table 2–14 Define Subgrouping Criteria for Warehouse Optimization View Measures

Measure	Description
SubGrouping Method for Grouping Factor 1 Warehouse Level Optimization	The subgroup method used for Grouping Factor 1. Options are Breakpoints and Statistical.
SubGrouping Method for Grouping Factor 2 Warehouse Level Optimization	The subgroup method used for Grouping Factor 2. Options are Breakpoints and Statistical.
SubGrouping Method for Grouping Factor 3 Warehouse Level Optimization	The subgroup method used for Grouping Factor 3. Options are Breakpoints and Statistical.
SubGrouping Method for Grouping Factor 4 Warehouse Level Optimization	The subgroup method used for Grouping Factor 4. Options are Breakpoints and Statistical.
# of Groups for First SubGrouping Warehouse Level Optimization	Specify the number of group for the first group factor. This is an integer measure that is based on the group/warehouse group.
# of Groups for Second SubGrouping Warehouse Level Optimization	Specify the number of group for the second group factor. This is an integer measure that is based on the group/warehouse group.
# of Groups for Third SubGrouping Warehouse Level Optimization	Specify the number of group for the third group factor. This is an integer measure that is based on the group/warehouse group.
Subgroup Setup Error Flag Warehouse Level Optimization	Boolean measure that indicates an error in the subgroup setup. A true value may be triggered by one of the # of Groups for Subgroupings measures being over the limit or by an incorrect setup of one of the SubGrouping Metric measures.
Subgroup Setup Error Message Warehouse Level Optimization	String measure that displays the error message that caused the error flagged in Subgroup Setup Error Flag Warehouse Level Optimization.

Note: The Subgrouping Metric 1, Subgrouping Metric 2, Subgrouping Metric 3, and Grouping Equalizing Metric for Warehouse Level Optimization are available for setup in Configuration Tools. Refer to the *Oracle Retail Replenishment Optimization Implementation Guide* for additional information.

Performing Groupings on Multiple Metrics

The subgrouping is performed in a nested manner: grouping in Grouping Metric 1 first and then further grouping each bucket in Grouping Factor 2, and so on.

The subgrouping is usually performed based on multiple statistical attributes like selling levels, variability, seasonality, and so on. For example, it is typical to group items/locations based on volume first. Then one can further group items/locations within each volume bucket on variability. Also, you can choose to group items/locations based on other features, like seasonality or forecast error. The configuration of subgrouping metrics is described in the *Oracle Retail Replenishment Optimization Implementation Guide*.

Committing Subgroup Criteria

When you have modified the subgroup, you can commit them to the domain by selecting **Commit** in the **File** menu. Note that only the criteria for subgroupings is committed, not the arrangement of the items/warehouses within the subgroupings. The items/warehouses are not sorted into the new subgroupings until the next batch runs.

Subgrouping Labels for Warehouse Optimization View

This view enables you to create labels for the warehouse subgroupings.

Figure 2–19 Subgrouping Labels for Warehouse Optimization View

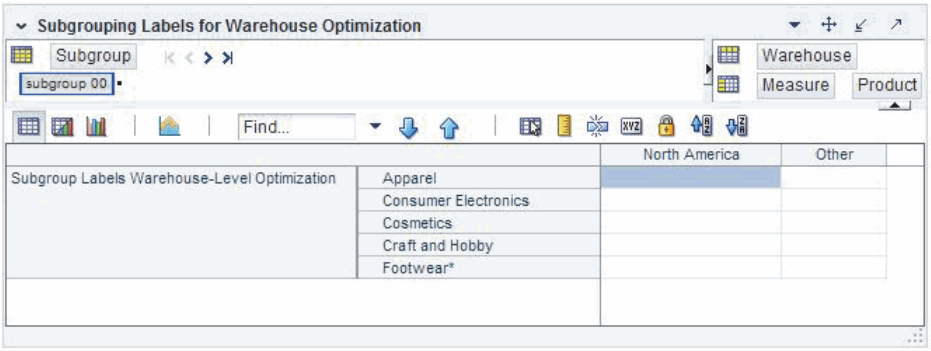


Table 2–15 Subgrouping Labels for Warehouse Optimization View Measures

Measure	Description
SubGroup Labels Warehouse Level Optimization	User-defined label for the subgroup. These labels appear in the Optimization Results workbook.

User Breakpoints Override for Warehouse Optimization View

When the statistical subgrouping has been performed by the system, you have the option to override it by specifying breakpoints for subgroupings.

Note that the subgrouping for breakpoints is performed in a nested manner as it is in the Define Subgrouping Criteria view. The breakpoints are defined for each subgroup by defining the lower and upper bounds for each group factor.

The value set in this view for upper and lower bounds should match the settings in Define Subgrouping Criteria for Warehouse Optimization View. For instance, if in the Define Subgrouping Criteria for Warehouse Optimization View the # of Group for First Subgrouping, Second Subgrouping, Third Subgrouping are set to 2, 3, 2, respectively, then the group/warehouse group level is expected to have 12 subgroups (24=2*3*2). Among these 12 subgroups:

- For **Group Factor 1**, every six subgroups should have the same lower bounds and upper bounds for Group Factor 1, starting from Subgroup 00. This is because the 12subgroups are divided into two sections equally first, as the red squares show in Figure 2–20. The later six-subgroup section's lower bound should be equal to (recommend) or greater than the previous six sub-group section's upper bound.
- For **Group Factor 2**, every two subgroups should have the same lower bounds and upper bounds for Group Factor 2, starting from subgroup 00. This is because within each subgroup section, the 6 subgroups are divided into three parts equally, secondly, as the blue squares show in Figure 2–20. The later two subgroup section's lower bound should be equal to (recommend) or greater than the previous two sub-group section's upper bound. This logic applies to all of the subgroups in the same section, which has six subgroups.
- For **Group Factor 3**, each of the subgroups should then be assigned a lower and a upper bounds independently, as the green squares show in Figure 2–20. The later subgroup section's lower bound should be equal to (recommend) or greater than

the previous sub-group section's upper bound. This logic applies to all of the subgroups in the same section, which has two subgroups.

It is suggested to run the subgrouping with statistical first. Reviewing the breakpoints in the Optimization Results workbook helps give a reference on how the lower bounds and upper bounds should look like.

Note: When defining the lower and upper bounds for different group factor, you should know the specified subgroup metric so that the values set in this view can be utilized accordingly and correctly. The subgroup metrics are in Configuration Tools. Refer to the *Oracle Retail Replenishment Optimization Implementation Guide* for additional information.

Figure 2–20 User Breakpoints Override for Warehouse Optimization View

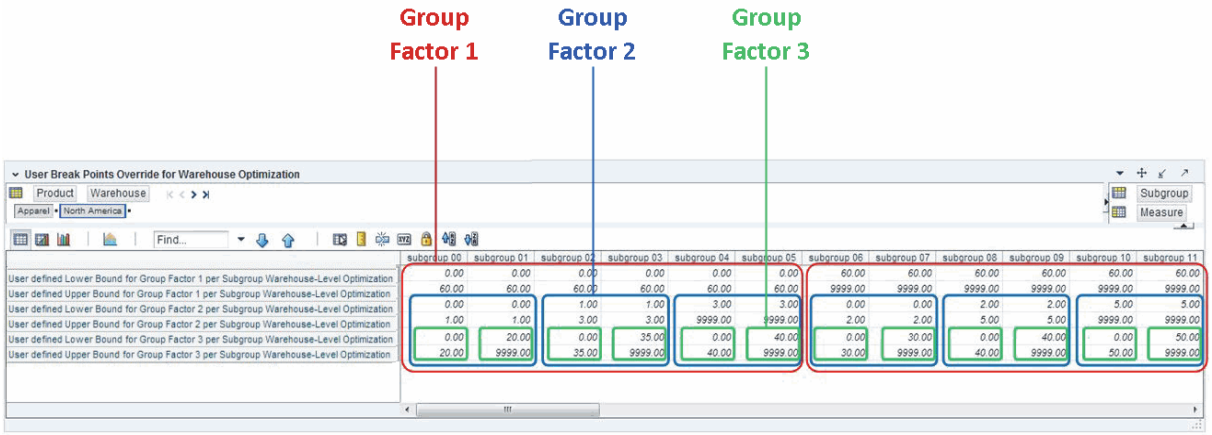


Table 2–16 User Breakpoints Override for Warehouse Optimization View Measures

Measure	Description
User defined Lower Bound for Group Factor 1 per Subgroup Warehouse-Level Optimization	Specify the lower bound for the Group Factor 1 for the group/warehouse group. The range set in lower bound is inclusive.
User defined Lower Bound for Group Factor 2 per Subgroup Warehouse-Level Optimization	Specify the lower bound for the Group Factor 2 for the group/warehouse group. The range set in lower bound is inclusive.
User defined Lower Bound for Group Factor 3 per Subgroup Warehouse-Level Optimization	Specify the lower bound for the Group Factor 3 for the group/warehouse group. The range set in lower bound is inclusive.
User defined Lower Bound for Group Factor 4 per Subgroup Warehouse-Level Optimization	Specify the lower bound for the Group Factor 4 for the group/warehouse group. The range set in lower bound is inclusive.
User defined Upper Bound for Group Factor 1 per Subgroup Warehouse-Level Optimization	Specify the upper bound for the Group Factor 1 for the group/warehouse group. The range set in upper bound is exclusive.

Table 2–16 (Cont.) User Breakpoints Override for Warehouse Optimization View Measures

Measure	Description
User defined Upper Bound for Group Factor 2 per Subgroup Warehouse-Level Optimization	Specify the upper bound for the Group Factor 2 for the group/warehouse group. The range set in upper bound is exclusive.
User defined Upper Bound for Group Factor 3 per Subgroup Warehouse-Level Optimization	Specify the upper bound for the Group Factor 3 for the group/warehouse group. The range set in upper bound is exclusive.
User defined Upper Bound for Group Factor 4 per Subgroup Warehouse-Level Optimization	Specify the upper bound for the Group Factor 4 for the group/warehouse group. The range set in upper bound is exclusive.

Warehouse Constraints Setup Step

The Warehouse Constraints Setup step contains the following views:

- Specify Maximum Constraint for Warehouse Optimization View
- Specify Maximum Order Frequency for Warehouse Optimization View
- Specify Minimum Constraints for Warehouse Optimization View

Specify Maximum Constraint for Warehouse Optimization View

This view enables you to specify the maximum constraint for a group/warehouse for the warehouse level optimization. Constraints specified in this view are used in the optimization batch run and are reflected in the constrained optimization results in the Optimization Results workbook.

Figure 2–21 Specify Maximum Constraint for Warehouse Optimization View

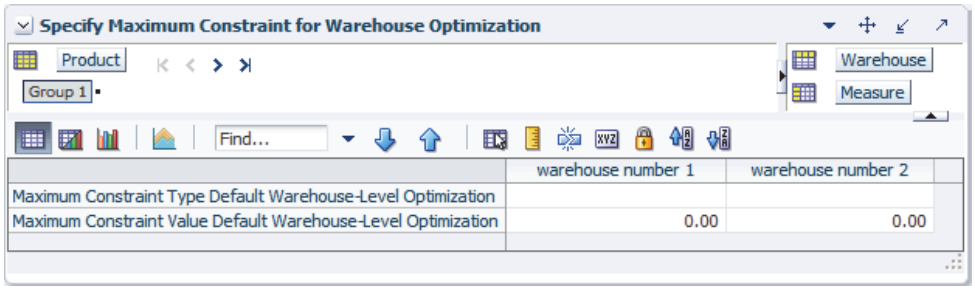


Table 2–17 Specify Maximum Constraint for Warehouse Optimization View Measures

Measure	Description
Maximum Constraint Type Default Warehouse Optimization Level	Specify the maximum constraint type for a group/warehouse. Options are Inventory Units, Inventory Cost, Weeks of Supply, and Space.
Maximum Constraint Value Default Warehouse Optimization Level	Specify the value of the maximum constraint.

Specify Maximum Order Frequency for Warehouse Optimization View

This view enables you to specify the maximum order frequency for a group/warehouse group/subgroup. For example, you can ensure that the average

order frequency (the average number of orders per week) does not exceed a certain threshold for all items/locations.

Figure 2–22 Specify Maximum Order Frequency for Warehouse Optimization

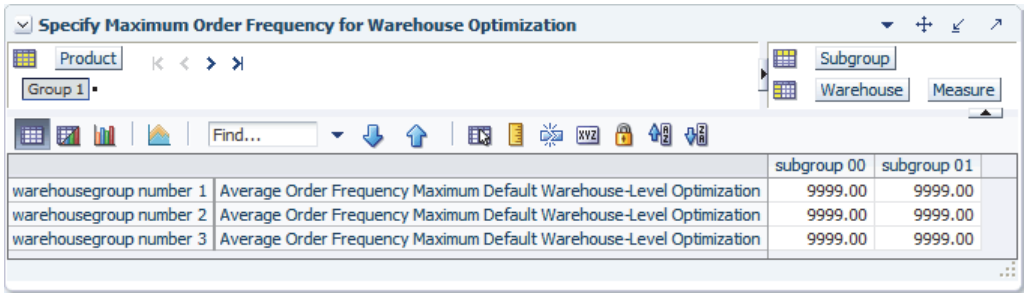


Table 2–18 Specify Maximum Order Frequency for Warehouse Optimization View Measure

Measure	Description
Average Order Frequency Maximum Default Warehouse Optimization Level	Specify the maximum order frequency value for a department/warehouse group/subgroup.

Specify Minimum Constraints for Warehouse Optimization View

This view enables you to specify the minimum constraint for an item/warehouse group for the warehouse level optimization. Constraints specified in this view are used in the optimization batch run and are reflected in the constrained optimization results in the Optimization Results workbook.

Figure 2–23 Specify Minimum Constraints for Warehouse Optimization View

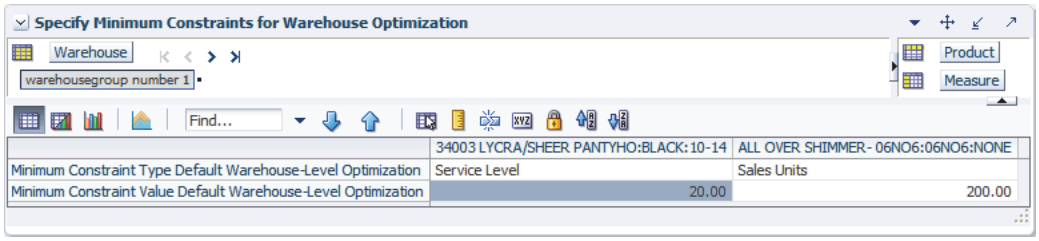


Table 2–19 Specify Minimum Constraints for Warehouse Optimization View Measures

Measure	Description
Minimum Constraint Type Default Warehouse Optimization Level	Specify the minimum constraint type for an item/warehouse group. Options are Service Level, Sales Units, Sales Revenue, and Gross Revenue.
Minimum Constraint Value Default Warehouse Optimization Level	Specify the value of the minimum constraint.

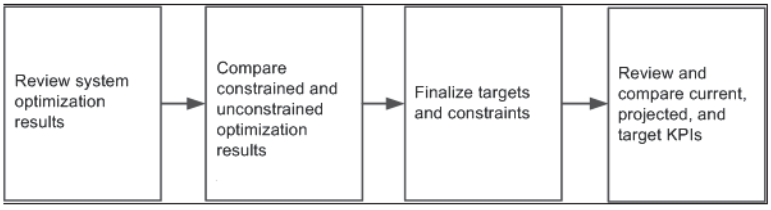
3

Optimization Results Workbook

The Optimization Results workbook enables you to analyze and approve the full mode batch results. You can compare the Inventory/Service Level Trade-off curves generated by both-the unconstrained optimization and constrained optimization in the full batch. You can also dynamically change the constraints and view the resulting changes. When you are satisfied with the optimization result, you can approve the result, which approves and saves the subgrouping breakpoints, recommended scenario for each subgroup, and recommended scenario for each item/store.

The user process flow of the Optimization Results workbook is shown in Figure 3–1.

Figure 3–1 Optimization Results Workbook User Process Flow



The Optimization Results workbook contains the following steps:

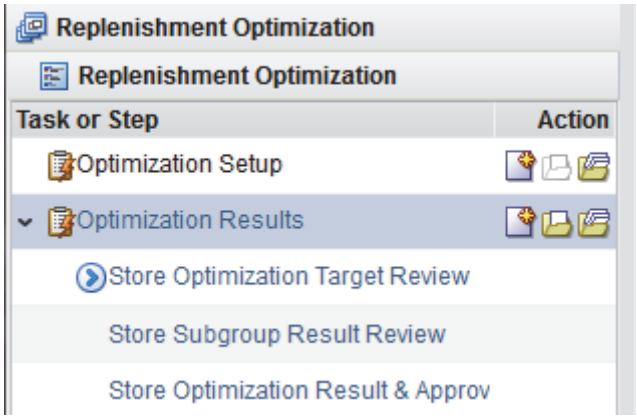
- Store Subgroup Result Review Step
- Store Optimization Result & Approval Step
- Review and Analyze Store Constraints Step
- Warehouse Analyze Subgrouping Step
- Analyze and Approve Warehouse Optimization Results Step
- Review and Analyze Warehouse Constraints Step

Optimization Results Wizard

To create an Optimization Results workbook, perform the following:

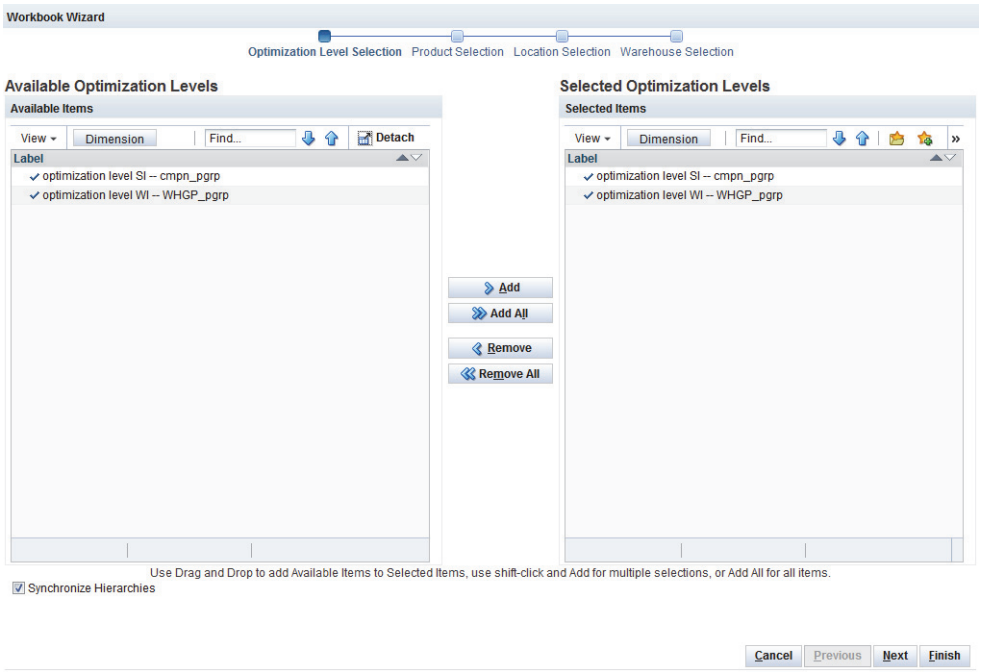
1. Click the Create New Workbook icon in the Optimization Results task.

Figure 3–2 Creating a New Optimization Results Workbook



2. The Available Optimization Level window opens. Select either or both SL (store level) or WL (warehouse level) and click **Next**.

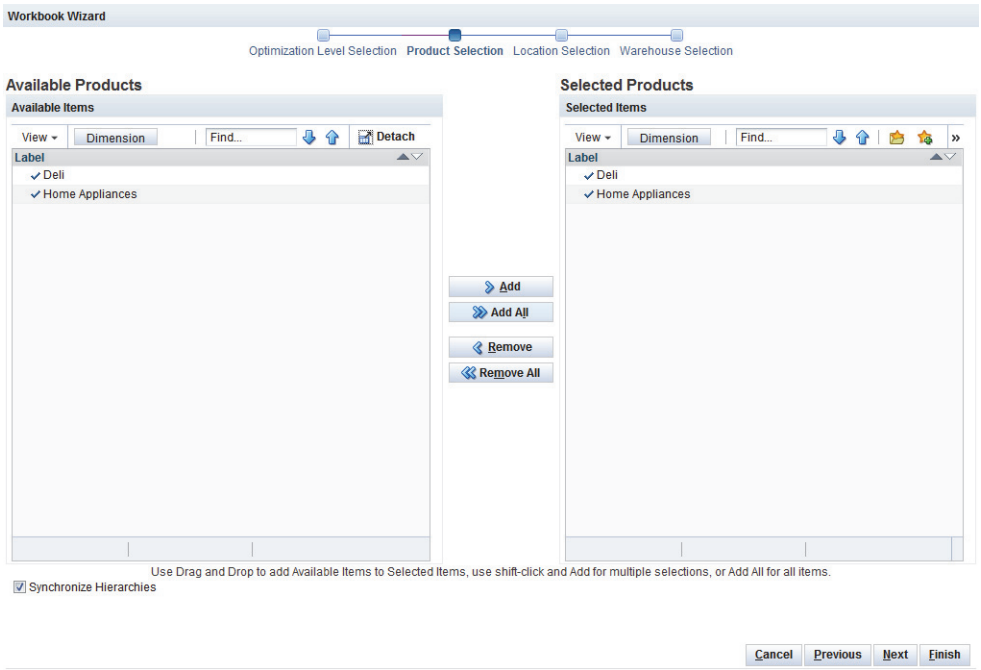
Figure 3–3 Available Optimization Level



3. The Available Products window opens. Select the items to be displayed in the workbook and click **Next**.

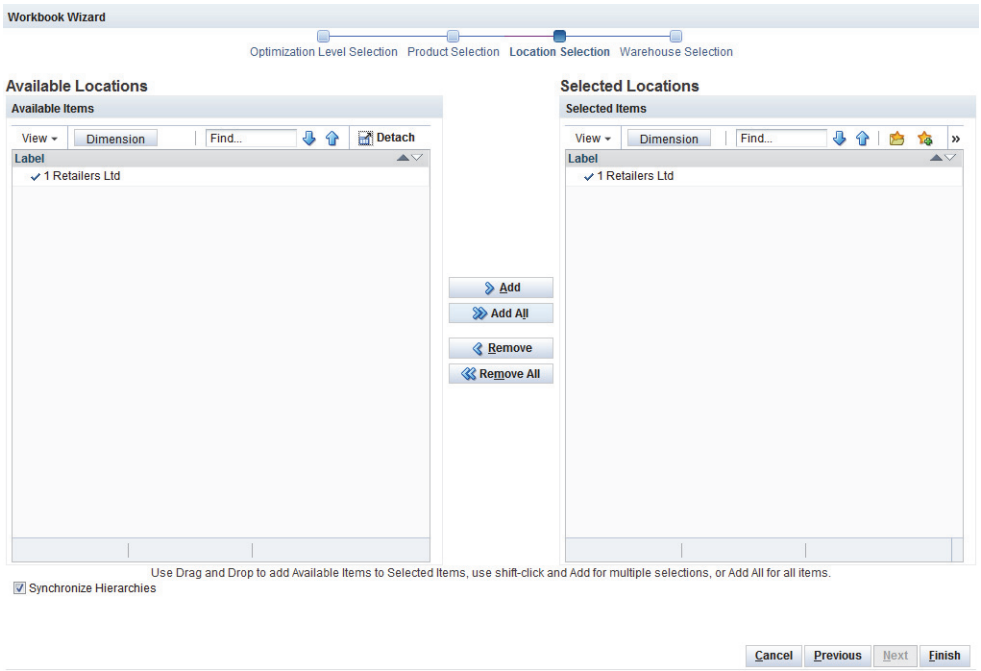
Note: Although this workbook allows navigation to the item level, it performs at the group level. Ensure that Selected Items include at least one group level.

Figure 3–4 Available Products



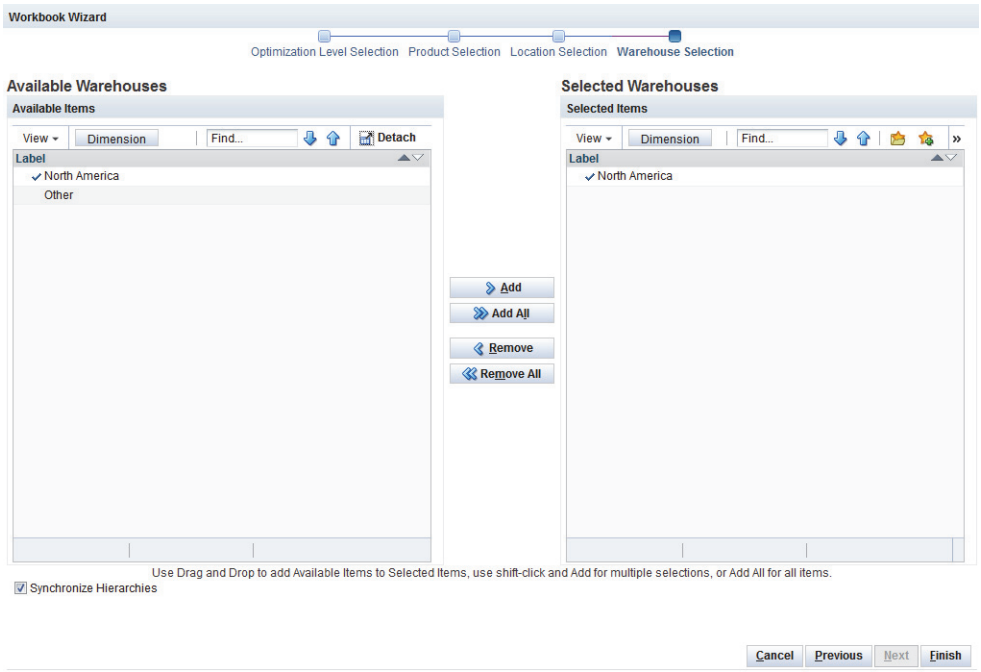
4. The Available Locations window opens. Select the regions to be displayed in the workbook and click **Next**.

Figure 3–5 Available Locations



The Available Warehouses window opens if a warehouse level (WL) was selected in Step 2. Select the warehouses to be displayed in the workbook and click **Finish**.

Figure 3–6 Available Warehouses



The Optimization Results workbook is built.

Store Subgroup Result Review Step

The Store Subgroup Result Review step contains the following views:

- Detail Subgrouping Criteria Review - Store View
- Subgrouping Results Review - Store View
- Subgrouping Criteria Review - Store View
- User Breakpoint Override Review - Store View

Detail Subgrouping Criteria Review - Store View

This view enables you to review the subgrouping information for the item/stores in the group/company that were selected in the wizard. This view is at the item/store intersection and is read-only.

Figure 3–7 Detail Subgrouping Criteria Review - Store View

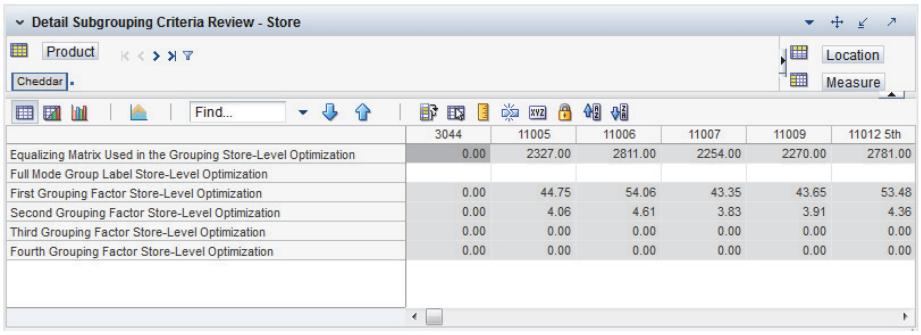


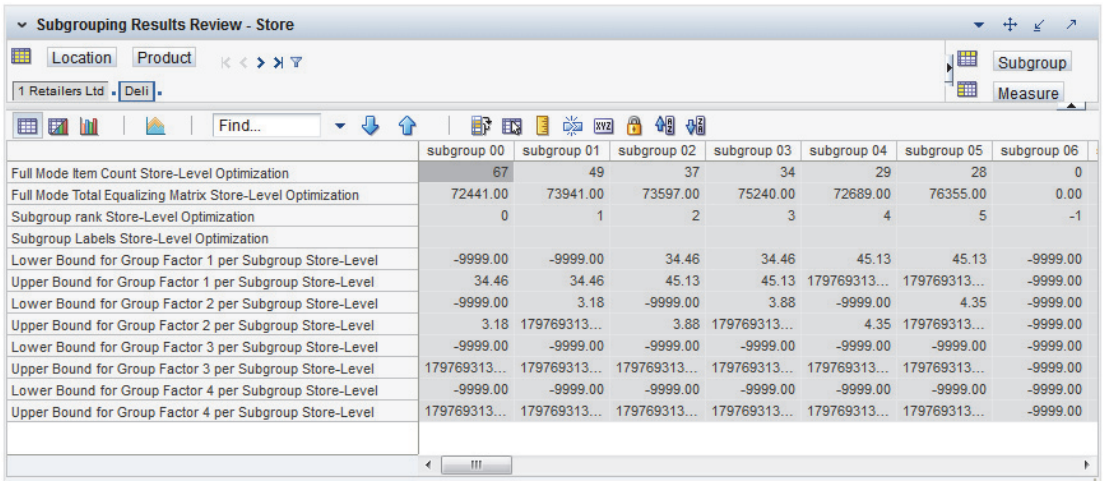
Table 3–1 Detail Subgrouping Criteria Review - Store View Measures

Measure	Description
Equalizing Matrix Used in the Grouping - Store Level Optimization	The value of the equalizing matrix used in subgrouping.
Full Mode Group Label - Store Level Optimization	The Full Mode Group Label-Store Level Optimization subgroup that the item/store belongs to.
First Grouping Factor - Store Level Optimization	The value of grouping factor 1.
Second Grouping Factor - Store Level Optimization	The value of grouping factor 2.
Third Grouping Factor - Store Level Optimization	The value of grouping factor 3.
Fourth Grouping Factor - Store Level Optimization	The value of grouping factor 4.

Subgrouping Results Review - Store View

This view enables you to review the subgrouping results from the full mode batch run. This view is at the group/company/subgroup intersection and is read-only. Only valid subgroups are displayed.

Figure 3–8 Subgrouping Results Review - Store View



	subgroup 00	subgroup 01	subgroup 02	subgroup 03	subgroup 04	subgroup 05	subgroup 06
Full Mode Item Count Store-Level Optimization	67	49	37	34	29	28	0
Full Mode Total Equalizing Matrix Store-Level Optimization	72441.00	73941.00	73597.00	75240.00	72689.00	76355.00	0.00
Subgroup rank Store-Level Optimization	0	1	2	3	4	5	-1
Subgroup Labels Store-Level Optimization							
Lower Bound for Group Factor 1 per Subgroup Store-Level	-9999.00	-9999.00	34.46	34.46	45.13	45.13	-9999.00
Upper Bound for Group Factor 1 per Subgroup Store-Level	34.46	34.46	45.13	45.13	179769313...	179769313...	-9999.00
Lower Bound for Group Factor 2 per Subgroup Store-Level	-9999.00	3.18	-9999.00	3.88	-9999.00	4.35	-9999.00
Upper Bound for Group Factor 2 per Subgroup Store-Level	3.18	179769313...	3.88	179769313...	4.35	179769313...	-9999.00
Lower Bound for Group Factor 3 per Subgroup Store-Level	-9999.00	-9999.00	-9999.00	-9999.00	-9999.00	-9999.00	-9999.00
Upper Bound for Group Factor 3 per Subgroup Store-Level	179769313...	179769313...	179769313...	179769313...	179769313...	179769313...	-9999.00
Lower Bound for Group Factor 4 per Subgroup Store-Level	-9999.00	-9999.00	-9999.00	-9999.00	-9999.00	-9999.00	-9999.00
Upper Bound for Group Factor 4 per Subgroup Store-Level	179769313...	179769313...	179769313...	179769313...	179769313...	179769313...	-9999.00

Table 3–2 Subgrouping Results Review - Store View Measures

Measure	Description
Item Count per Subgroup Store Level Optimization Full Mode Item Count for Store Level Optimization	The number of item/stores for the subgroup.
Lower Bound for Group Factor 1 per Subgroup - Store Level Optimization	The lower bound of the grouping Factor 1 for the subgroup.
Lower Bound for Group Factor 2 per Subgroup - Store Level Optimization	The lower bound of the grouping Factor 2 for the subgroup.
Lower Bound for Group Factor 3 per Subgroup - Store Level Optimization	The lower bound of the grouping Factor 3 for the subgroup.
Lower Bound for Group Factor 4 per Subgroup - Store Level Optimization	The lower bound of the grouping Factor 4 for the subgroup.
SubGroup Labels - Store Level Optimization	User-defined label of the subgroup.

Table 3–2 (Cont.) Subgrouping Results Review - Store View Measures

Measure	Description
Subgroup Rank Store -Level Optimization	Ranks the subgroups for each group/company
Full Mode Total Equalizing Matrix - Store Level Optimization	The total of equalizing matrix for each subgroup.
Upper Bound for Group Factor 1 per Subgroup - Store Level Optimization	The upper bound of the grouping Factor 1 for the subgroup.
Upper Bound for Group Factor 2 per Subgroup Store - Level Optimization	The upper bound of the grouping Factor 2 for the subgroup.
Upper Bound for Group Factor 3 per Subgroup - Store Level Optimization	The upper bound of the grouping Factor 3 for the subgroup.
Upper Bound for Group Factor 4 per Subgroup - Store Level Optimization	The upper bound of the grouping Factor 4 for the subgroup.

Subgrouping Criteria Review - Store View

This view enables you to review the subgroupings needed for a higher level intersection as well as the subgrouping metrics and the grouping equalizing matrix used for the subgroupings. This view is at the group/company intersection and is read-only.

Figure 3–9 Subgrouping Criteria Review - Store View

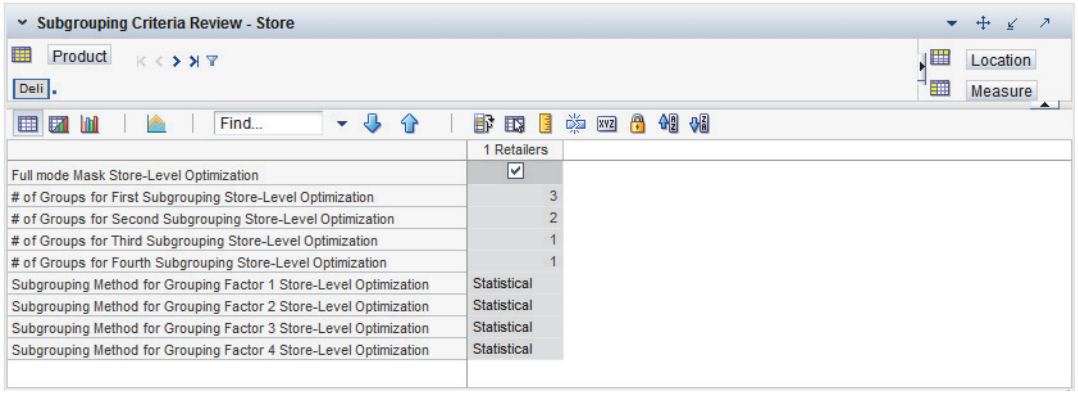


Table 3–3 Subgrouping Criteria Review - Store View Measures

Measure	Description
# of Groups for First SubGrouping Store - Level Optimization	Displays the number of groups for the first group factor. This is an integer measure based on the group/company.
# of Groups for Second SubGrouping Store - Level Optimization	Displays the number of groups for the second group factor. This is an integer measure based on the group/company.
# of Groups for Third SubGrouping Store - Level Optimization	Displays the number of groups for the third group factor. This is an integer measure based on the group/company.
# of Groups for Fourth SubGrouping Store - Level Optimization	Displays the number of groups for the fourth group factor. This is an integer measure based on the group/company.
Full Mode Mask - Store Level Optimization	Displays if the optimization run was refresh or full mode. If selected, the results displayed are generated by a full mode run.

Table 3–3 (Cont.) Subgrouping Criteria Review - Store View Measures

Measure	Description
SubGrouping Method for Grouping Factor 1 - Store Level Optimization	The subgroup method used for Group Factor 1. Options are Breakpoints and Statistical.
SubGrouping Method for Grouping Factor 2 - Store Level Optimization	The subgroup method used for Group Factor 2. Options are Breakpoints and Statistical.
SubGrouping Method for Grouping Factor 3 - Store Level Optimization	The subgroup method used for Group Factor 3. Options are Breakpoints and Statistical.
SubGrouping Method for Grouping Factor 4 - Store Level Optimization	The subgroup method used for Group Factor 4. Options are Breakpoints and Statistical.

User Breakpoint Override Review - Store View

This view enables you to review the breakpoint overrides. This view is at the group/company/subgroup intersection and is read-only.

Figure 3–10 User Breakpoint Override Review - Store View

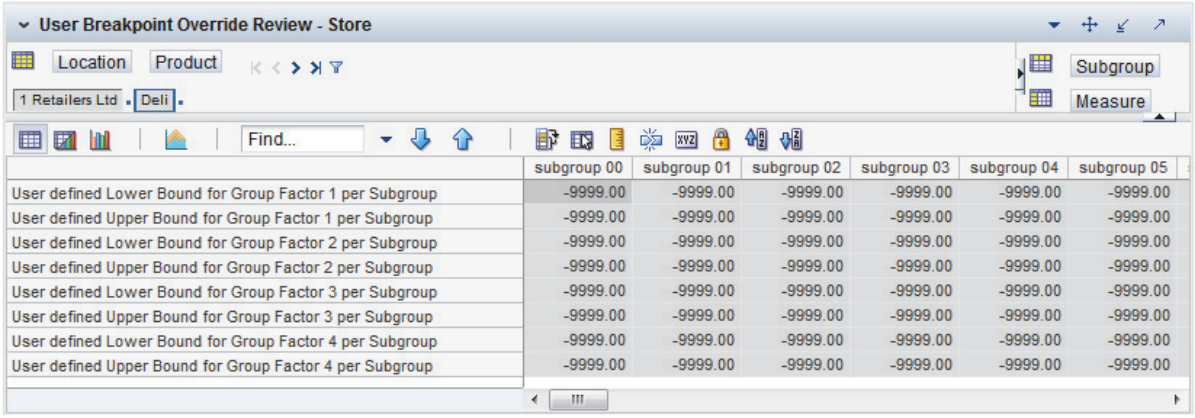


Table 3–4 User Breakpoint Override Review - Store Measures

Measure	Description
User Defined Lower Bound for Group Factor 1 - Store Level Optimization	The Lower Bound for the grouping Factor 1 For the group/company.
User Defined Lower Bound for Group Factor 2 - Store Level Optimization	The Lower Bound for the grouping Factor 2 for the group/company.
User Defined Lower Bound for Group Factor 3 - Store Level Optimization	The Lower Bound for the grouping Factor 3 for the group/company.
User Defined Lower Bound for Group Factor 4 - Store Level Optimization	The Lower Bound for the grouping Factor 4 for the group/company.
User Defined Upper Bound for Group Factor 1 - Store Level Optimization	The upper bound for the grouping Factor 1 for the group/company.
User Defined Upper Bound for Group Factor 2 - Store Level Optimization	The upper bound for the grouping Factor 2 for the group/company.
User Defined Upper Bound for Group Factor 3 - Store Level Optimization	The upper bound for the grouping Factor 3 for the group/company.
User Defined Upper Bound for Group Factor 4 - Store Level Optimization	The upper bound for the grouping Factor 4 for the group/company.

Store Optimization Result & Approval Step

The Store Optimization Result & Approval step enables you to review the results of the optimization batch run, review the impact of specified constraints, and determine the inventory/service level targets.

The worksheets in this step contain the optimized and constrained versions of statistics measures and metrics. The constrained version result is calculated based on your constraints setup in the Optimization Setup workbook. The constraints reflect your retail business requirements such as these examples:

- For key items, keep a minimum of 5000 units of inventory at all time.
- For a store with limited space, carry a maximum of three weeks of supply at all times.

The optimized version result is calculated without considering the constraints, and it represents the best outcome the system can get.

Note: Only the optimized version is populated during workbook build time. To reduce the build time, the constrained measures are only populated if the "Store Generate Constrained Curve" custom menu is run.

This step contains the following views:

- Optimization Results - Store View
- Review Targets for Store Optimization View
- Subgroup Optimization Results - Store View
- Compare Targets - Store View
- Target Selection and Approve for Store Optimization View
- Weekly Projected Inventory Review for Store Optimization View

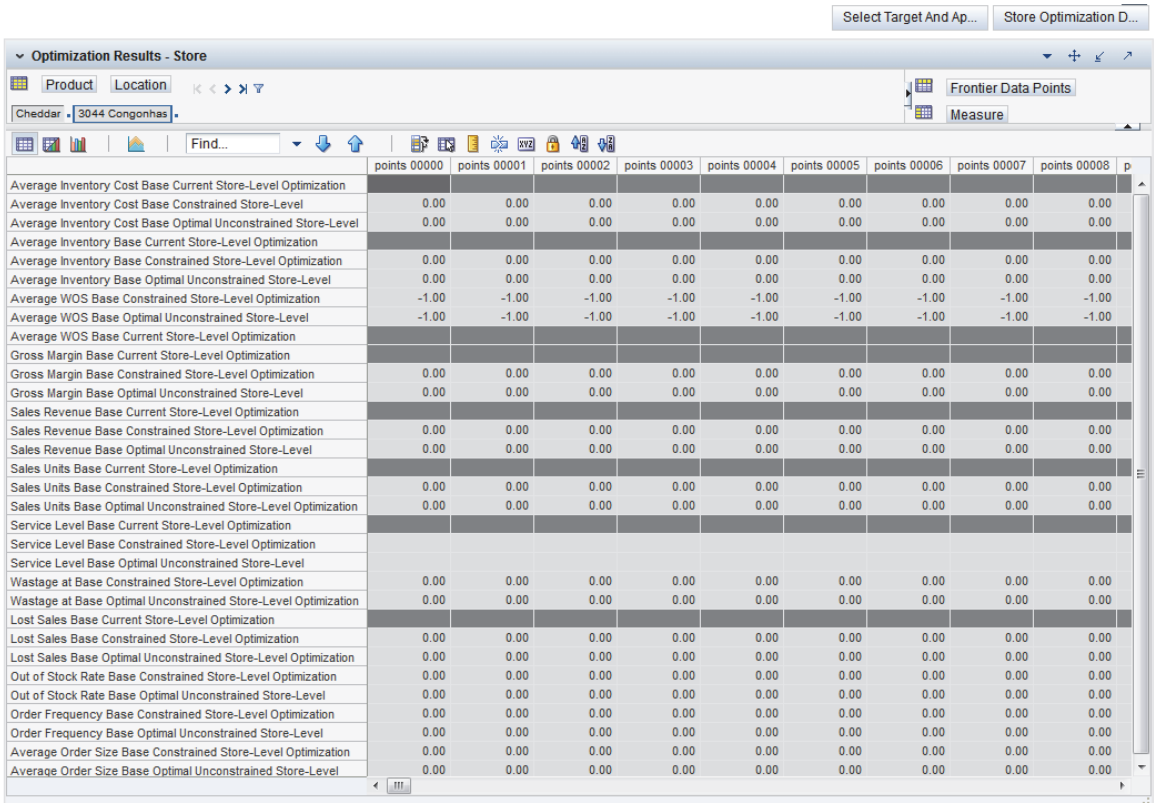
Optimization Results - Store View

RO performs optimization and calculates optimal inventory allocation and associated service levels, projected sales, and lost sales for various increments of inventory. Each incremental inventory investment is referred to as a point on the Inventory/Service Level Trade-off curve.

This view displays inventory, service levels, sales, lost sales, and other key metrics for each point of incremental inventory investment. It is read-only.

RO performs one batch run of unconstrained optimization and another run based on the specified constraints defined in the Optimization Setup workbook. By comparing the two runs, you can understand the costs of the specified constraints.

Figure 3–11 Optimization Results - Store View

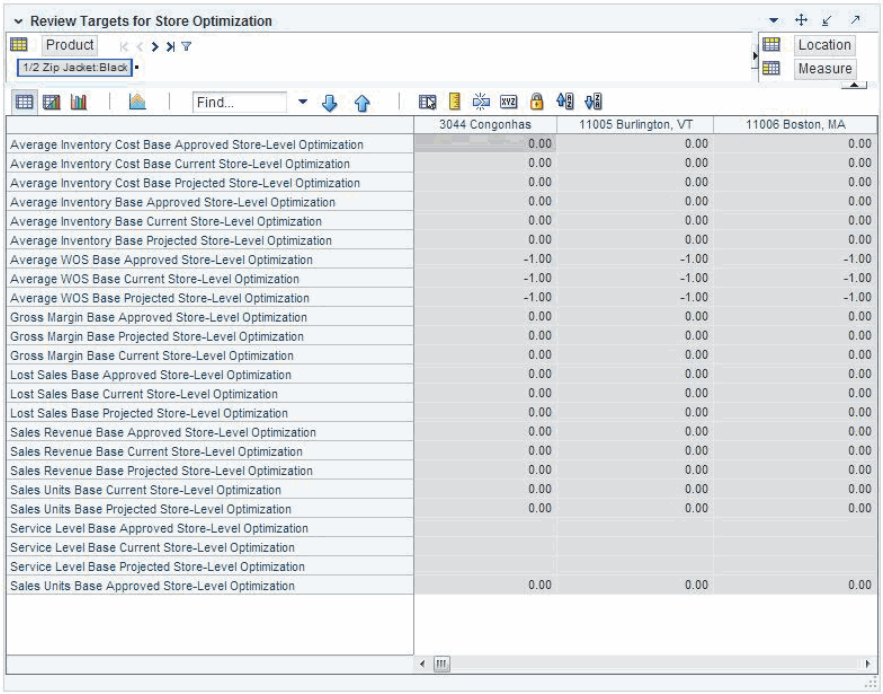


	points 00000	points 00001	points 00002	points 00003	points 00004	points 00005	points 00006	points 00007	points 00008	p
Average Inventory Cost Base Current Store-Level Optimization										
Average Inventory Cost Base Constrained Store-Level	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Average Inventory Cost Base Optimal Unconstrained Store-Level	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Average Inventory Base Current Store-Level Optimization										
Average Inventory Base Constrained Store-Level Optimization	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Average Inventory Base Optimal Unconstrained Store-Level	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Average WOS Base Constrained Store-Level Optimization	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	
Average WOS Base Optimal Unconstrained Store-Level	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	
Average WOS Base Current Store-Level Optimization										
Gross Margin Base Current Store-Level Optimization										
Gross Margin Base Constrained Store-Level Optimization	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Gross Margin Base Optimal Unconstrained Store-Level	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Sales Revenue Base Current Store-Level Optimization										
Sales Revenue Base Constrained Store-Level Optimization	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Sales Revenue Base Optimal Unconstrained Store-Level	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Sales Units Base Current Store-Level Optimization										
Sales Units Base Constrained Store-Level Optimization	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Sales Units Base Optimal Unconstrained Store-Level Optimization	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Service Level Base Current Store-Level Optimization										
Service Level Base Constrained Store-Level Optimization										
Service Level Base Optimal Unconstrained Store-Level										
Wastage at Base Constrained Store-Level Optimization	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Wastage at Base Optimal Unconstrained Store-Level Optimization	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Lost Sales Base Current Store-Level Optimization										
Lost Sales Base Constrained Store-Level Optimization	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Lost Sales Base Optimal Unconstrained Store-Level Optimization	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Out of Stock Rate Base Constrained Store-Level Optimization	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Out of Stock Rate Base Optimal Unconstrained Store-Level	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Order Frequency Base Constrained Store-Level Optimization	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Order Frequency Base Optimal Unconstrained Store-Level	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Average Order Size Base Constrained Store-Level Optimization	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Average Order Size Base Optimal Unconstrained Store-Level	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

Review Targets for Store Optimization View

This view displays the current, targeted, and projected Key Performance Indicators (KPIs) based on the inventory/service level targets that you had defined in the Target Selection and Approve view.

Figure 3–12 Review Targets for Store Optimization View

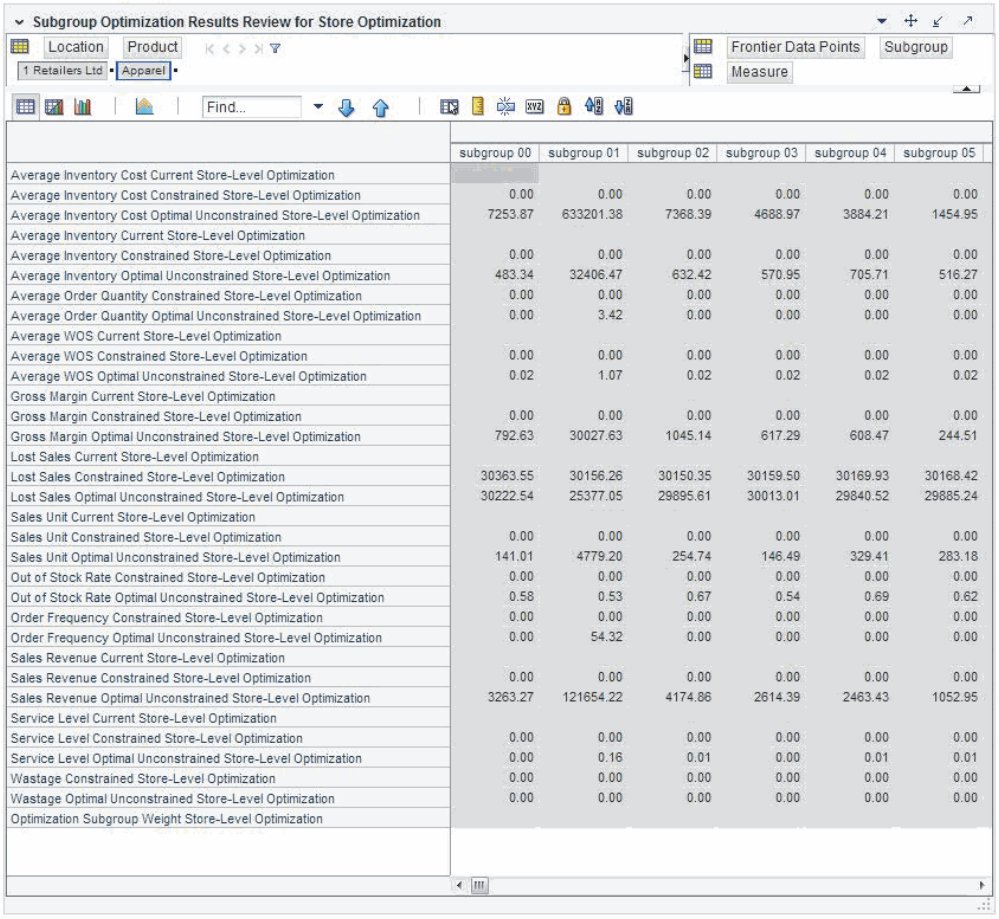


	3044 Congonhas	11005 Burlington, VT	11006 Boston, MA
Average Inventory Cost Base Approved Store-Level Optimization	0.00	0.00	0.00
Average Inventory Cost Base Current Store-Level Optimization	0.00	0.00	0.00
Average Inventory Cost Base Projected Store-Level Optimization	0.00	0.00	0.00
Average Inventory Base Approved Store-Level Optimization	0.00	0.00	0.00
Average Inventory Base Current Store-Level Optimization	0.00	0.00	0.00
Average Inventory Base Projected Store-Level Optimization	0.00	0.00	0.00
Average WOS Base Approved Store-Level Optimization	-1.00	-1.00	-1.00
Average WOS Base Current Store-Level Optimization	-1.00	-1.00	-1.00
Average WOS Base Projected Store-Level Optimization	-1.00	-1.00	-1.00
Gross Margin Base Approved Store-Level Optimization	0.00	0.00	0.00
Gross Margin Base Projected Store-Level Optimization	0.00	0.00	0.00
Gross Margin Base Current Store-Level Optimization	0.00	0.00	0.00
Lost Sales Base Approved Store-Level Optimization	0.00	0.00	0.00
Lost Sales Base Current Store-Level Optimization	0.00	0.00	0.00
Lost Sales Base Projected Store-Level Optimization	0.00	0.00	0.00
Sales Revenue Base Approved Store-Level Optimization	0.00	0.00	0.00
Sales Revenue Base Current Store-Level Optimization	0.00	0.00	0.00
Sales Revenue Base Projected Store-Level Optimization	0.00	0.00	0.00
Sales Units Base Current Store-Level Optimization	0.00	0.00	0.00
Sales Units Base Projected Store-Level Optimization	0.00	0.00	0.00
Service Level Base Approved Store-Level Optimization			
Service Level Base Current Store-Level Optimization			
Service Level Base Projected Store-Level Optimization			
Sales Units Base Approved Store-Level Optimization	0.00	0.00	0.00

Subgroup Optimization Results - Store View

This view displays the points of valid group/company/subgroups on the Inventory/Service Level Trade-off curve. This view is at the group/company/subgroup/frontier points intersection and is read-only.

Figure 3–13 Subgroup Optimization Results - Store View



	subgroup 00	subgroup 01	subgroup 02	subgroup 03	subgroup 04	subgroup 05
Average Inventory Cost Current Store-Level Optimization						
Average Inventory Cost Constrained Store-Level Optimization	0.00	0.00	0.00	0.00	0.00	0.00
Average Inventory Cost Optimal Unconstrained Store-Level Optimization	7253.87	633201.38	7368.39	4688.97	3884.21	1454.95
Average Inventory Current Store-Level Optimization						
Average Inventory Constrained Store-Level Optimization	0.00	0.00	0.00	0.00	0.00	0.00
Average Inventory Optimal Unconstrained Store-Level Optimization	483.34	32406.47	632.42	570.95	705.71	516.27
Average Order Quantity Constrained Store-Level Optimization	0.00	0.00	0.00	0.00	0.00	0.00
Average Order Quantity Optimal Unconstrained Store-Level Optimization	0.00	3.42	0.00	0.00	0.00	0.00
Average WOS Current Store-Level Optimization						
Average WOS Constrained Store-Level Optimization	0.00	0.00	0.00	0.00	0.00	0.00
Average WOS Optimal Unconstrained Store-Level Optimization	0.02	1.07	0.02	0.02	0.02	0.02
Gross Margin Current Store-Level Optimization						
Gross Margin Constrained Store-Level Optimization	0.00	0.00	0.00	0.00	0.00	0.00
Gross Margin Optimal Unconstrained Store-Level Optimization	792.63	30027.63	1045.14	617.29	608.47	244.51
Lost Sales Current Store-Level Optimization						
Lost Sales Constrained Store-Level Optimization	30363.55	30156.26	30150.35	30159.50	30169.93	30168.42
Lost Sales Optimal Unconstrained Store-Level Optimization	30222.54	25377.05	29895.61	30013.01	29840.52	29885.24
Sales Unit Current Store-Level Optimization						
Sales Unit Constrained Store-Level Optimization	0.00	0.00	0.00	0.00	0.00	0.00
Sales Unit Optimal Unconstrained Store-Level Optimization	141.01	4779.20	254.74	146.49	329.41	283.18
Out of Stock Rate Constrained Store-Level Optimization	0.00	0.00	0.00	0.00	0.00	0.00
Out of Stock Rate Optimal Unconstrained Store-Level Optimization	0.58	0.53	0.67	0.54	0.69	0.62
Order Frequency Constrained Store-Level Optimization	0.00	0.00	0.00	0.00	0.00	0.00
Order Frequency Optimal Unconstrained Store-Level Optimization	0.00	54.32	0.00	0.00	0.00	0.00
Sales Revenue Current Store-Level Optimization						
Sales Revenue Constrained Store-Level Optimization	0.00	0.00	0.00	0.00	0.00	0.00
Sales Revenue Optimal Unconstrained Store-Level Optimization	3263.27	121654.22	4174.86	2614.39	2463.43	1052.95
Service Level Current Store-Level Optimization						
Service Level Constrained Store-Level Optimization	0.00	0.00	0.00	0.00	0.00	0.00
Service Level Optimal Unconstrained Store-Level Optimization	0.00	0.16	0.01	0.00	0.01	0.01
Wastage Constrained Store-Level Optimization	0.00	0.00	0.00	0.00	0.00	0.00
Wastage Optimal Unconstrained Store-Level Optimization	0.00	0.00	0.00	0.00	0.00	0.00
Optimization Subgroup Weight Store-Level Optimization						

Compare Targets - Store View

This view enables you to review item/store level replenishment recommendations for the point you selected on the frontier curve. It displays both the optimal, as well as the constrained method and parameters.

When you have selected the points, click **Select Target and Approve** in the top, right corner to approve the targets.

Figure 3–14 Compare Targets - Store View

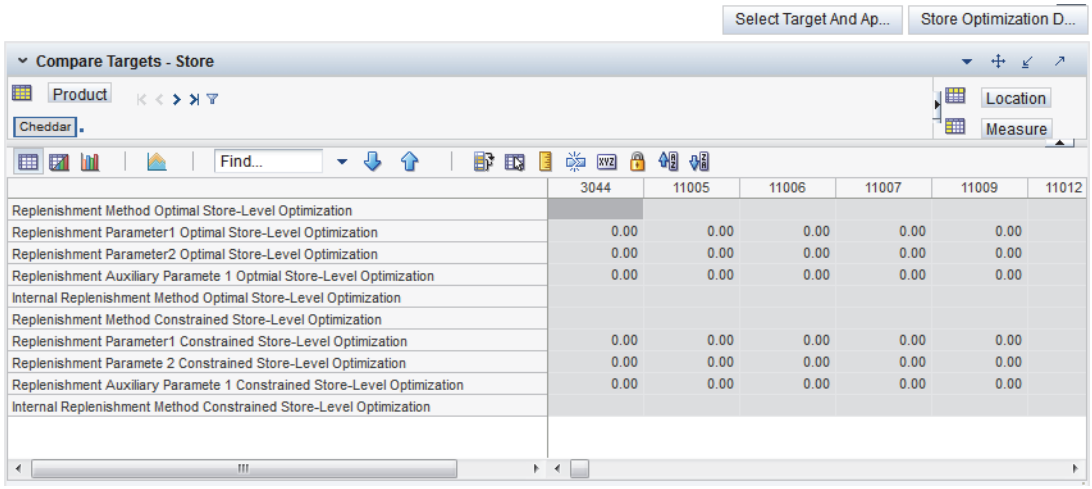


Table 3–5 Compare Targets - Store View Measures

Measure	Description
Internal Replenishment Method Constrained	This measure stores the internally recommended replenishment method when constraints are considered. If the measure displays Forecast Driven Min/Max, the Replenishment Method Optimal will display either Min/Max or Time Supply. Otherwise the two measures display the same replenishment method.
Internal Replenishment Method Optimal	This measure stores the internally recommended replenishment method when no constraints are considered. If the measure displays Forecast Driven Min/Max, the Replenishment Method Optimal will display either Min/Max or Time Supply. Otherwise the two measures display the same replenishment method.
Replenishment Auxiliary Parameter 1 Constrained	This measures stores the auxiliary replenishment parameter for the replenishment method stored in the Replenishment Method Constrained measure.
Replenishment Auxiliary Parameter 1 Optimal	This measure stores the auxiliary replenishment parameter for the replenishment method stored in the Replenishment Method Optimal measure.
Replenishment Method Constrained	This measure stores the recommended replenishment method with constraints applied.
Replenishment Method Optimal	This measure stores the recommended replenishment method without constraints applied.
Replenishment Parameter 1 Constrained	This measure stores the first replenishment parameter for the replenishment method stored in the Replenishment Method Constrained measure.
Replenishment Parameter 1 Optimal	This measure stores the first replenishment parameter for the replenishment method stored in the Replenishment Method Optimal measure.
Replenishment Parameter 2 Constrained	This measure stores the second replenishment parameter for the replenishment method stored in the Replenishment Method Constrained measure.
Replenishment Parameter 2 Optimal	This measure stores the second replenishment parameter for the replenishment method stored in the Replenishment Method Optimal measure.

Target Selection and Approve for Store Optimization View

This view enables you to specify the target inventory and service levels for the optimization level (group/company). You also have the option to apply unconstrained, or constrained optimization results for approval. Note that only one point or target can be selected for an optimization level.

When you have selected the points, click **Select Target and Approve** in the top, right corner to approve the targets.

Figure 3–15 Target Selection and Approve for Store Optimization View

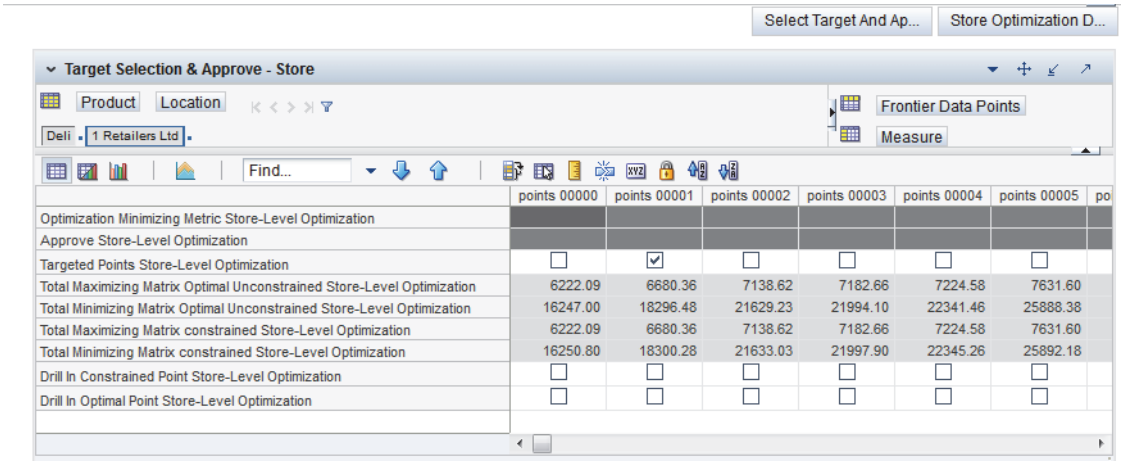


Table 3–6 Target Selection and Approve for Store Optimization View Measures

Measure	Description
Approve Store Level Optimization	Enables you to specify the version of the optimization result to approve for the group/company. Options are None, Approve Optimal, and Approve Constrained. Note that the approval is done per group company, and thus to view the approval options, you must collapse the Frontier Data Points level to 'all [Frontier Data Points]'.
Drill In Constrained Point	If one frontier point is selected, and the Store Optimization Drill In custom menu is run, the user can review constrained item/store level replenishment methods and parameters in the Compare Targets - Store view.
Drill In Optimal Point	If one frontier point is selected, and the Store Optimization Drill In custom menu is run, the user can review unconstrained item/store level replenishment methods and parameters in the Compare Targets - Store view.
Optimization Minimizing Metric	Displays the Minimizing Metric selected in the optimization setup task / store optimization targets & constraints step / Optimization Goals view.
Targeted Points Store Level Optimization	Enables you to specify which point along the curve to pick as a target. Only one point can be selected for a group company.
Total Maximizing Matrix Constrained	This measure displays the value of the maximizing metric after running the optimization with constraints.

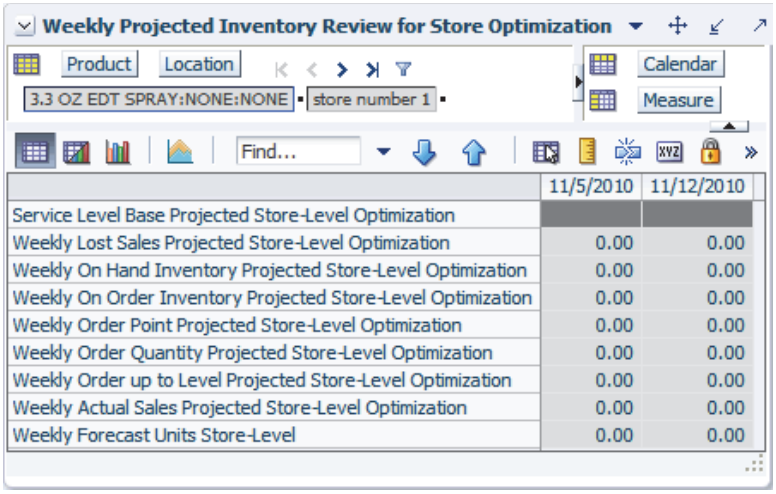
Table 3–6 (Cont.) Target Selection and Approve for Store Optimization View Measures

Measure	Description
Total Maximizing Matrix Optimal Unconstrained	This measure displays the value of the maximizing metric after running the unconstrained optimization.
Total Minimizing Matrix Constrained	This measure displays the value of the minimizing metric after running the optimization with constraints.
Total Minimizing Matrix Optimal Unconstrained	This measure displays the value of the minimizing metric after running the unconstrained optimization.

Weekly Projected Inventory Review for Store Optimization View

This view displays the weekly projected inventory at the item/store/week level. It is a read-only view.

Figure 3–16 Weekly Projected Inventory Review for Store Optimization View



Review and Analyze Store Constraints Step

The Review and Analyze Constraints workbook contains the following views:

- Maximum Constraint Review - Store View
- Optimization Goal Review - Store View
- Max Order Frequency Review - Store View
- Minimum Constraint Review - Store View

Maximum Constraint Review - Store View

This view enables you to review the maximum constraint type and value used in the optimization.

Figure 3–17 Maximum Constraint Review - Store View

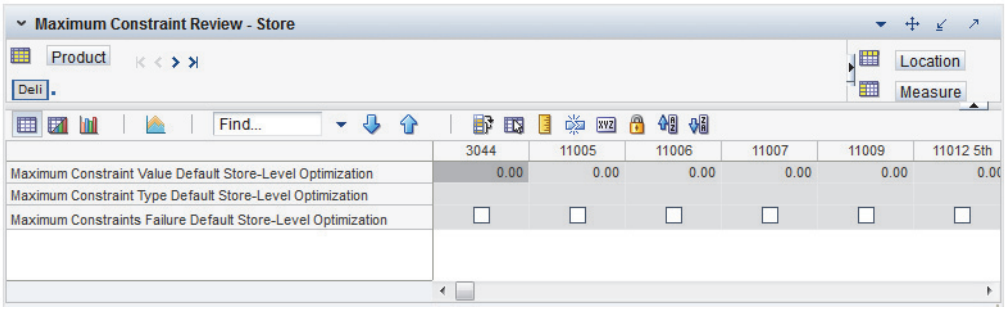


Table 3–7 Maximum Constraint Review - Store View Measures

Measure	Description
Maximum Constraint Type Default Store Level Optimization	The default maximum constraint type for a group/store used in the optimization batch. It can be Inventory Units, Inventory Cost, Weeks of Supply, or Space. This measure is read-only.
Maximum Constraint Value Default Store Level Optimization	The default maximum constraint value for a group/store used in the optimization batch. This measure is read-only.
Maximum Constraints Failure Default Store Level Optimization	Displays if the default constraint was met or not. If selected, the constraint was not met.

Optimization Goal Review - Store View

This view enables you to review the maximizing and minimizing matrix for the regular optimization run.

Figure 3–18 Optimization Goal Review - Store View

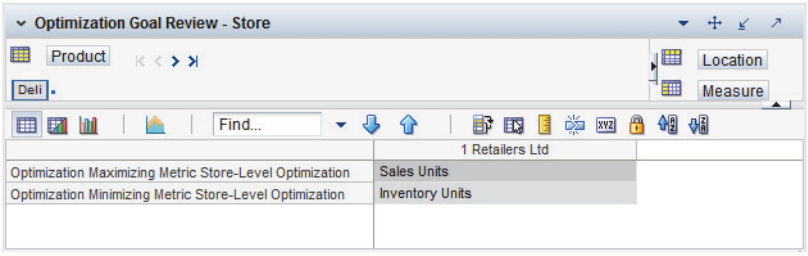


Table 3–8 Optimization Goal Review - Store View Measures

Measure	Description
Optimization Minimizing Metric Store Level Optimization	Displays the minimizing metric used in the optimization run.
Optimization Maximizing Metric Store Level Optimization	Displays the maximizing metric used in the optimization run.

Max Order Frequency Review - Store View

This view enables you to review the maximum order frequency used in the optimization.

Figure 3–19 Max Order Frequency Review - StoreView

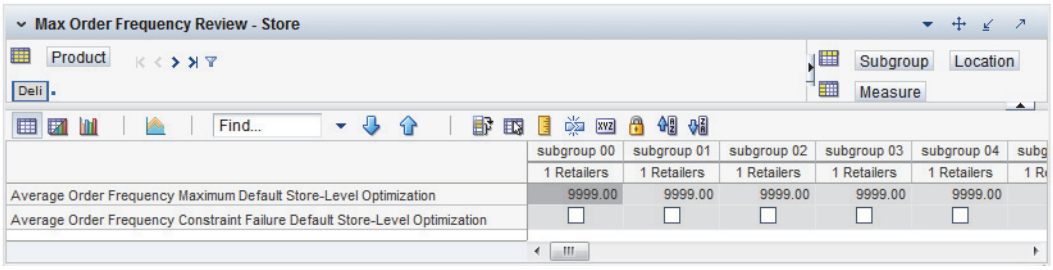


Table 3–9 Max Order Frequency Review - Store View Measures

Measure	Description
Average Order Frequency Maximum Default Store Level Optimization	The default maximum order frequency value for a subgroup used in the optimization batch. This is a read-only measure.
Maximum Constraints Failure Default Store Level Optimization	Displays if the constraint was met or not. If selected, the constraint was not met.

Minimum Constraint Review - Store View

This view enables you to review the minimum constraint type and value used in the optimization.

Figure 3–20 Minimum Constraint Review - Store View

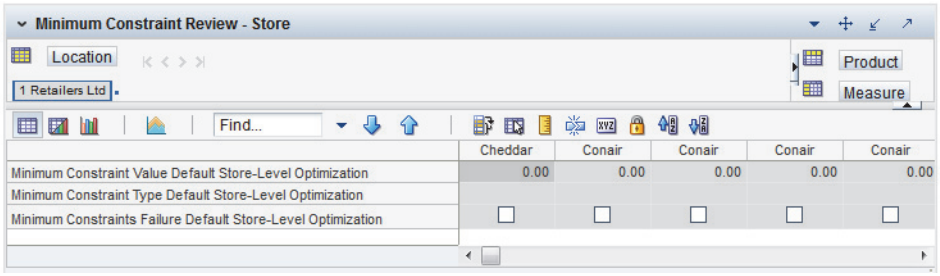


Table 3–10 Minimum Constraint Review - Store View Measures

Measure	Description
Minimum Constraint Type Default Store Level Optimization	The default minimum constraint type for an item/company used in the optimization batch. It can be Sales Units, Sales Revenue, Sales Margin, or Service Level. This measure is read-only.
Minimum Constraint Value Default Store Level Optimization	The default minimum constraint value for an item/company used in the optimization batch. This measure is read-only.
Minimum Constraints Failure Default Store Level Optimization	Displays if the constraint was met or not. If selected, the constraint was not met.

Warehouse Analyze Subgrouping Step

The Analyze Subgrouping step contains the following views:

- Detail Subgrouping Criteria Review - Warehouse View
- Subgrouping Results Review - Warehouse View
- Subgrouping Criteria Review - Warehouse View

- User Breakpoint Override Review - Warehouse View

Detail Subgrouping Criteria Review - Warehouse View

This view enables you to review the subgrouping information for the item/warehouses in the group/warehouse groups that were selected in the wizard. This view is at the item/warehouse intersection and is read-only.

Figure 3–21 Detail Subgrouping Criteria Review - Warehouse View

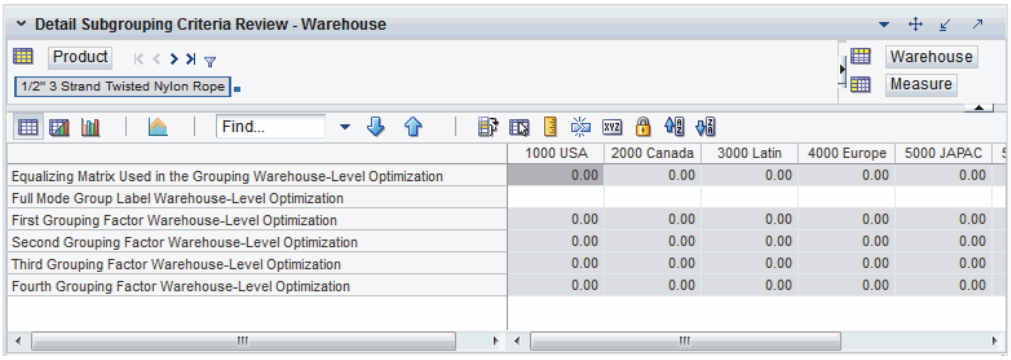


Table 3–11 Detail Subgrouping Criteria Review - Warehouse Measures

Measure	Description
Equalizing Matrix Used in the Grouping - Warehouse Level Optimization	The value of the equalizing matrix used in subgrouping.
Full Mode Group Label - Warehouse Level Optimization	The subgroup that the item/warehouse belongs to.
First Grouping Factor - Warehouse Level Optimization	The value of grouping factor 1.
Second Grouping Factor - Warehouse Level Optimization	The value of grouping factor 2.
Third Grouping Factor - Warehouse Level Optimization	The value of grouping factor 3.
Fourth Grouping Factor - Warehouse Level Optimization	The value of grouping factor 4.

Subgrouping Results Review - Warehouse View

This view enables you to review the subgrouping results from the full mode batch run. This view is at the group/warehouse group/subgroup intersection and is read-only. Only valid subgroups are displayed.

Figure 3–22 Subgrouping Results Review - Warehouse View

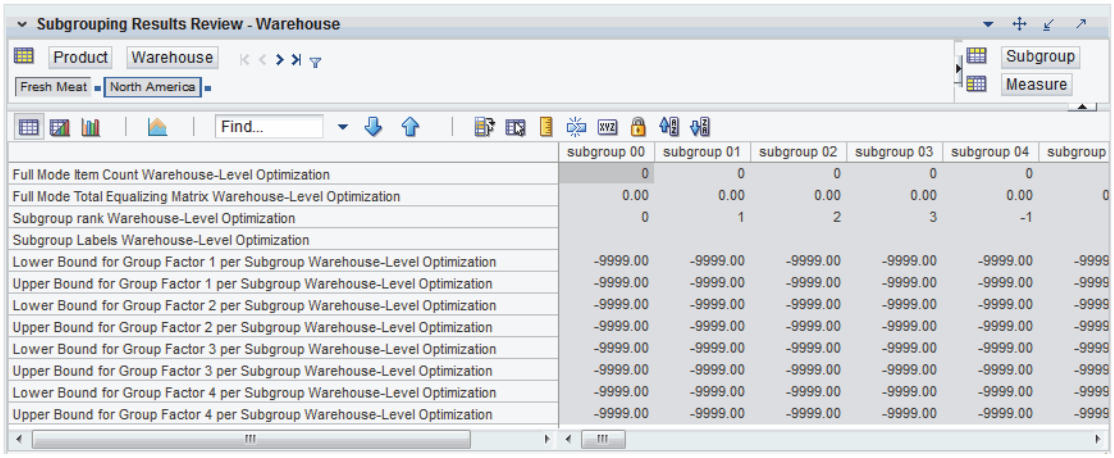


Table 3–12 Subgrouping Results Review - Warehouse View Measures

Measure	Description
Full Mode Item Count - Warehouse Level Optimization	The number of items/warehouses for the subgroup.
Lower Bound for Group Factor 1 per Subgroup - Warehouse Level Optimization	The lower bound of the grouping Factor 1 for the subgroup.
Lower Bound for Group Factor 2 per Subgroup - Warehouse Level Optimization	The lower bound of the grouping Factor 2 for the subgroup.
Lower Bound for Group Factor 3 per Subgroup - Warehouse Level Optimization	The lower bound of the grouping Factor 3 for the subgroup.
Lower Bound for Group Factor 4 per Subgroup - Warehouse Level Optimization	The lower bound of the grouping Factor 4 for the subgroup.
SubGroup Labels - Warehouse Level Optimization	User-defined label of the subgroup.
Subgroup Rank - Warehouse Level Optimization	Ranking of the subgroups for each group/warehouse group.
Full Mode Total Equalizing Matrix - Warehouse Level Optimization	The total of equalizing matrix for each subgroup.
Upper Bound for Group Factor 1 per Subgroup - Warehouse Level Optimization	The upper bound of the grouping Factor 1 for the subgroup.
Upper Bound for Group Factor 2 per Subgroup - Warehouse Level Optimization	The upper bound of the grouping Factor 2 for the subgroup.
Upper Bound for Group Factor 3 per Subgroup - Warehouse Level Optimization	The upper bound of the grouping Factor 3 for the subgroup.
Upper Bound for Group Factor 4 per Subgroup - Warehouse Level Optimization	The upper bound of the grouping Factor 4 for the subgroup.

Subgrouping Criteria Review - Warehouse View

This view enables you to review the subgroupings needed for a higher level intersection as well as the subgrouping metrics and the grouping equalizing matrix used for the subgroupings. This view is at the group/warehouse group intersection and is read-only.

Figure 3–23 Subgrouping Criteria Review - Warehouse View

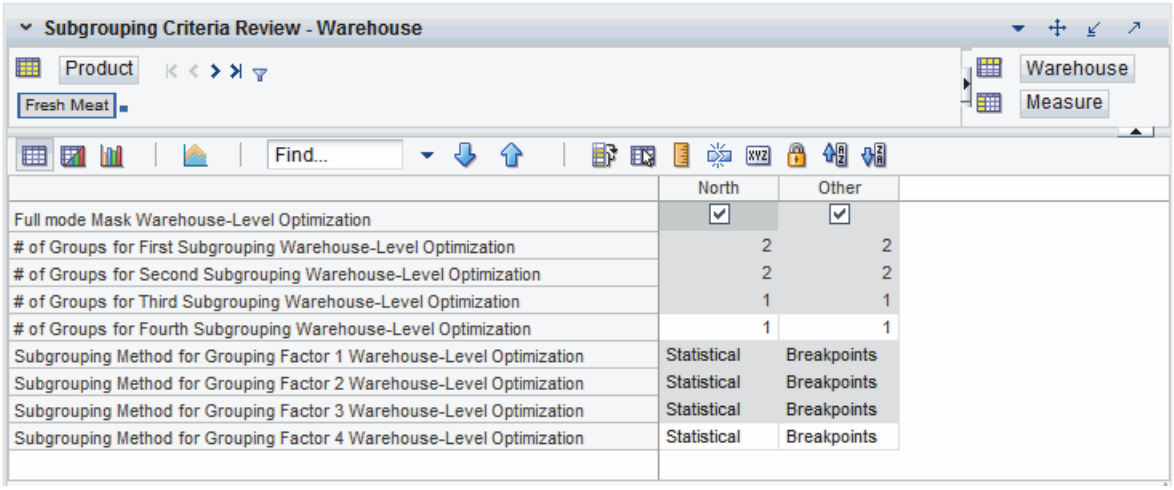


Table 3–13 Subgrouping Criteria Review - Warehouse View Measures

Measure	Description
# of Groups for First SubGrouping - Warehouse Level Optimization	Specify the number of group for the first group factor. This is an integer measure that is based on the group/warehouse group.
# of Groups for Second SubGrouping - Warehouse Level Optimization	Specify the number of group for the second group factor. This is an integer measure that is based on the group/warehouse group.
# of Groups for Third SubGrouping - Warehouse Level Optimization	Specify the number of group for the third group factor. This is an integer measure that is based on the group/warehouse group.
Full Mode Mask - Warehouse Level Optimization	Displays if the optimization run was refresh or full mode. If selected, the results displayed are generated by a full mode run.
SubGrouping Method for Grouping Factor 1 - Warehouse Level Optimization	The subgroup method used for Group Factor 1. Options are Breakpoints and Statistical.
SubGrouping Method for Grouping Factor 2 - Warehouse Level Optimization	The subgroup method used for Group Factor 2. Options are Breakpoints and Statistical.
SubGrouping Method for Grouping Factor 3 - Warehouse Level Optimization	The subgroup method used for Group Factor 3. Options are Breakpoints and Statistical.
SubGrouping Method for Grouping Factor 4 - Warehouse Level Optimization	The subgroup method used for Group Factor 4. Options are Breakpoints and Statistical.

User Breakpoint Override Review - Warehouse View

This view enables you to review the breakpoint overrides. This view is at the group/warehouse group intersection and is read-only.

Figure 3–24 User Breakpoint Override Review - Warehouse View

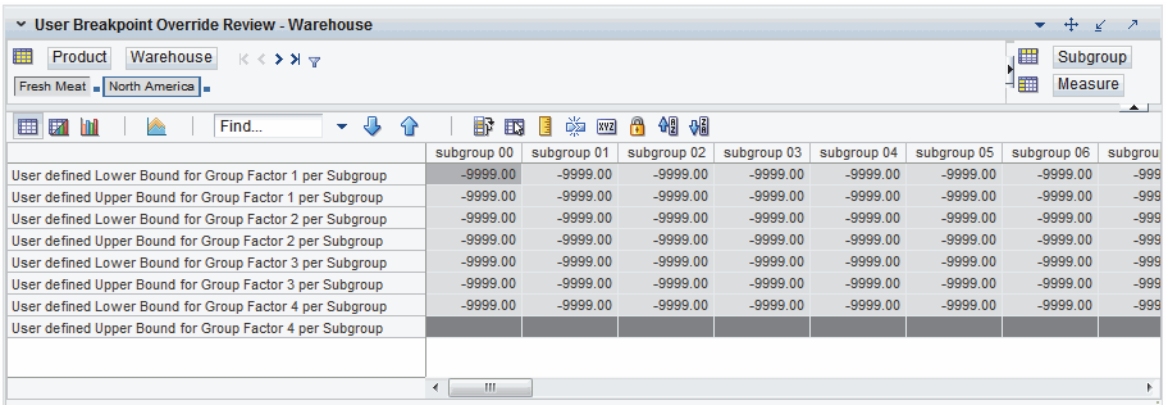


Table 3–14 User Breakpoint Override Review - Warehouse Measures

Measure	Description
User Defined Lower Bound for Group Factor 1 - Warehouse Level Optimization	The lower bound for the grouping factor 1 for the group/warehouse group.
User Defined Lower Bound for Group Factor 2 - Warehouse Level Optimization	The lower bound for the grouping factor 2 for the group/warehouse group.
User Defined Lower Bound for Group Factor 3 - Warehouse Level Optimization	The lower bound for the grouping factor 3 for the group/warehouse group.
User Defined Lower Bound for Group Factor 4 - Warehouse Level Optimization	The lower bound for the grouping factor 4 for the group/warehouse group.
User Defined Upper Bound for Group Factor 1 - Warehouse Level Optimization	The upper bound for the grouping factor 1 for the department/warehouse group.
User Defined Upper Bound for Group Factor 2 - Warehouse Level Optimization	The upper bound for the grouping factor 2 for the department/warehouse group.
User Defined Upper Bound for Group Factor 3 - Warehouse Level Optimization	The upper bound for the grouping factor 3 for the department/warehouse group.
User Defined Upper Bound for Group Factor 4 - Warehouse Level Optimization	The upper bound for the grouping factor 4 for the department/warehouse group.

Analyze and Approve Warehouse Optimization Results Step

The Analyze and Approve Optimization Results step enables you to review the results of the optimization batch run, review the impact of specified constraints, and determine the inventory/service level targets.

The worksheets in this step contain the optimized and constrained versions of statistics measures and metrics. The constrained version result is calculated based on your constraints setup in the Optimization Setup workbook. The constraints reflect your retail business requirements such as these examples:

- For key items, keep a minimum of 500,000 units of inventory at all time.
- For a warehouse with limited space, carry a maximum of six weeks of supply at all times.

The optimized version result is calculated without considering the constraints, and it represents the best outcome the system can get.

Note: Only the optimized version is populated during workbook build time. To reduce the build time, the constrained measures are only populated if the "Warehouse Generate Constrained Curve" custom menu is run.

The step contains the following views:

- Optimization Results Review for Warehouse Optimization View
- Review Targets for Warehouse Optimization View
- Subgroup Optimization Results Review for Warehouse Optimization View
- Target Selection and Approve for Warehouse Optimization View
- Weekly Projected Inventory Review for Warehouse Optimization View

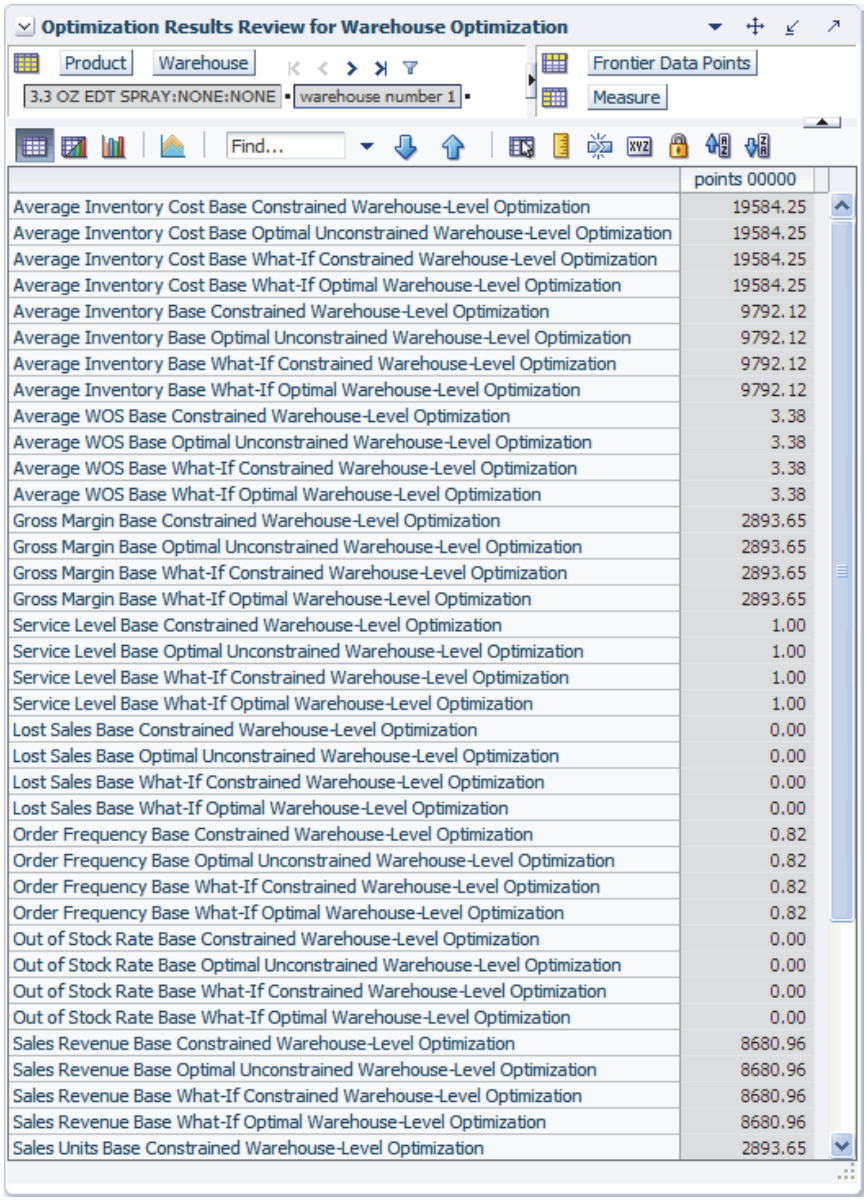
Optimization Results Review for Warehouse Optimization View

RO performs optimization and calculates optimal inventory allocation and associated service levels, projected sales, and lost sales for various increments of inventory. Each incremental inventory investment is referred to as a point on the Inventory/Service Level Trade-off curve.

This view displays inventory, service levels, sales, lost sales, and other key metrics for each point of incremental inventory investment.

RO performs one batch run of unconstrained optimization and another run based on the specified constraints defined in the Optimization Setup workbook. By comparing the two runs, you can understand the costs of the specified constraints. You can also specify What-if constraints from the Review and Analyze Constraints workbook and interactively view the results from the optimization, based on the What-if constraints. This view is read-only.

Figure 3–25 Optimization Results Review for Warehouse Optimization View

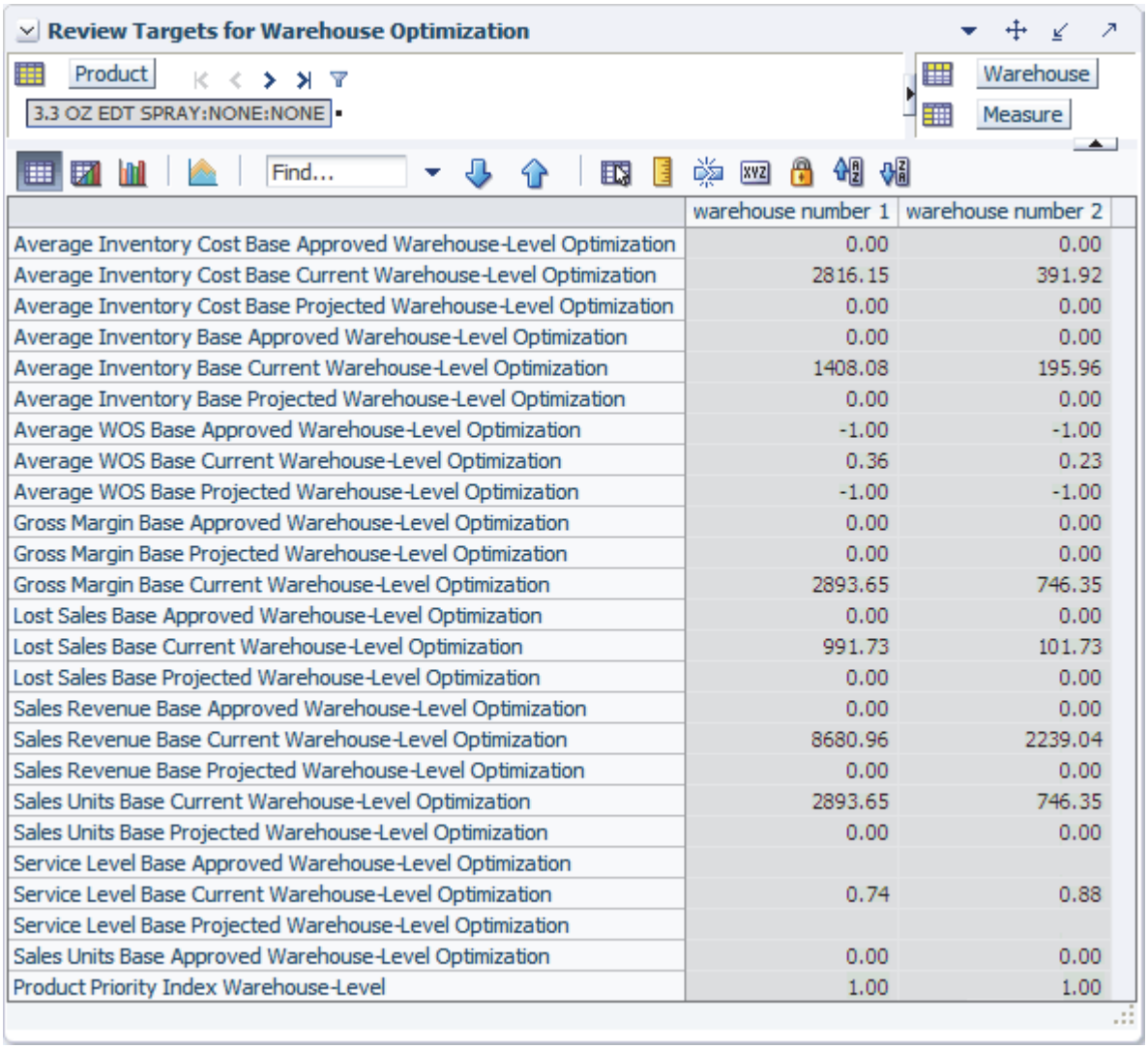


	points 00000
Average Inventory Cost Base Constrained Warehouse-Level Optimization	19584.25
Average Inventory Cost Base Optimal Unconstrained Warehouse-Level Optimization	19584.25
Average Inventory Cost Base What-If Constrained Warehouse-Level Optimization	19584.25
Average Inventory Cost Base What-If Optimal Warehouse-Level Optimization	19584.25
Average Inventory Base Constrained Warehouse-Level Optimization	9792.12
Average Inventory Base Optimal Unconstrained Warehouse-Level Optimization	9792.12
Average Inventory Base What-If Constrained Warehouse-Level Optimization	9792.12
Average Inventory Base What-If Optimal Warehouse-Level Optimization	9792.12
Average WOS Base Constrained Warehouse-Level Optimization	3.38
Average WOS Base Optimal Unconstrained Warehouse-Level Optimization	3.38
Average WOS Base What-If Constrained Warehouse-Level Optimization	3.38
Average WOS Base What-If Optimal Warehouse-Level Optimization	3.38
Gross Margin Base Constrained Warehouse-Level Optimization	2893.65
Gross Margin Base Optimal Unconstrained Warehouse-Level Optimization	2893.65
Gross Margin Base What-If Constrained Warehouse-Level Optimization	2893.65
Gross Margin Base What-If Optimal Warehouse-Level Optimization	2893.65
Service Level Base Constrained Warehouse-Level Optimization	1.00
Service Level Base Optimal Unconstrained Warehouse-Level Optimization	1.00
Service Level Base What-If Constrained Warehouse-Level Optimization	1.00
Service Level Base What-If Optimal Warehouse-Level Optimization	1.00
Lost Sales Base Constrained Warehouse-Level Optimization	0.00
Lost Sales Base Optimal Unconstrained Warehouse-Level Optimization	0.00
Lost Sales Base What-If Constrained Warehouse-Level Optimization	0.00
Lost Sales Base What-If Optimal Warehouse-Level Optimization	0.00
Order Frequency Base Constrained Warehouse-Level Optimization	0.82
Order Frequency Base Optimal Unconstrained Warehouse-Level Optimization	0.82
Order Frequency Base What-If Constrained Warehouse-Level Optimization	0.82
Order Frequency Base What-If Optimal Warehouse-Level Optimization	0.82
Out of Stock Rate Base Constrained Warehouse-Level Optimization	0.00
Out of Stock Rate Base Optimal Unconstrained Warehouse-Level Optimization	0.00
Out of Stock Rate Base What-If Constrained Warehouse-Level Optimization	0.00
Out of Stock Rate Base What-If Optimal Warehouse-Level Optimization	0.00
Sales Revenue Base Constrained Warehouse-Level Optimization	8680.96
Sales Revenue Base Optimal Unconstrained Warehouse-Level Optimization	8680.96
Sales Revenue Base What-If Constrained Warehouse-Level Optimization	8680.96
Sales Revenue Base What-If Optimal Warehouse-Level Optimization	8680.96
Sales Units Base Constrained Warehouse-Level Optimization	2893.65

Review Targets for Warehouse Optimization View

This view displays the current, targeted, and projected KPIs based on the inventory/service level targets you defined in the Target Selection and Approve view.

Figure 3–26 Review Targets for Warehouse Optimization View

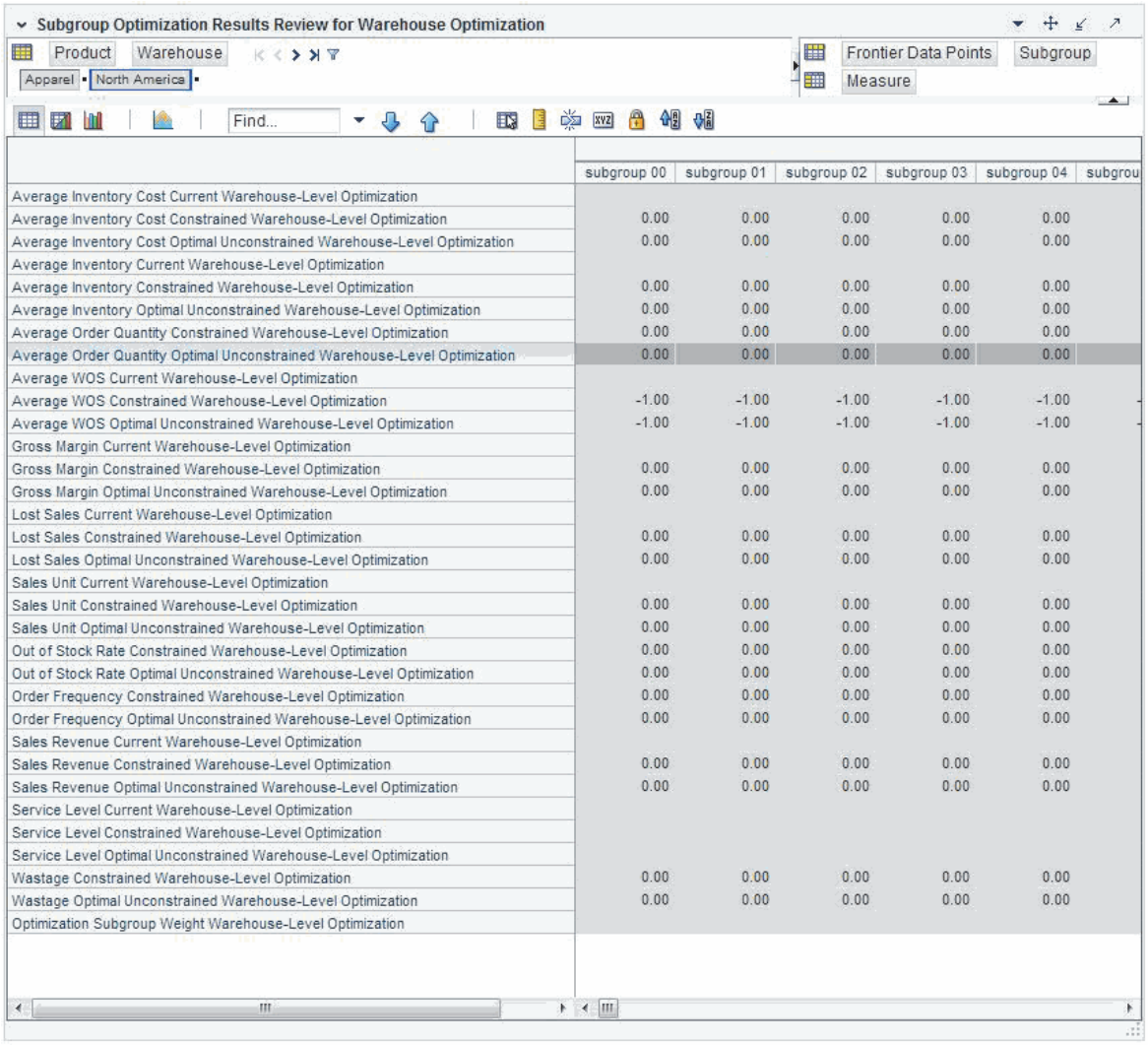


	warehouse number 1	warehouse number 2
Average Inventory Cost Base Approved Warehouse-Level Optimization	0.00	0.00
Average Inventory Cost Base Current Warehouse-Level Optimization	2816.15	391.92
Average Inventory Cost Base Projected Warehouse-Level Optimization	0.00	0.00
Average Inventory Base Approved Warehouse-Level Optimization	0.00	0.00
Average Inventory Base Current Warehouse-Level Optimization	1408.08	195.96
Average Inventory Base Projected Warehouse-Level Optimization	0.00	0.00
Average WOS Base Approved Warehouse-Level Optimization	-1.00	-1.00
Average WOS Base Current Warehouse-Level Optimization	0.36	0.23
Average WOS Base Projected Warehouse-Level Optimization	-1.00	-1.00
Gross Margin Base Approved Warehouse-Level Optimization	0.00	0.00
Gross Margin Base Projected Warehouse-Level Optimization	0.00	0.00
Gross Margin Base Current Warehouse-Level Optimization	2893.65	746.35
Lost Sales Base Approved Warehouse-Level Optimization	0.00	0.00
Lost Sales Base Current Warehouse-Level Optimization	991.73	101.73
Lost Sales Base Projected Warehouse-Level Optimization	0.00	0.00
Sales Revenue Base Approved Warehouse-Level Optimization	0.00	0.00
Sales Revenue Base Current Warehouse-Level Optimization	8680.96	2239.04
Sales Revenue Base Projected Warehouse-Level Optimization	0.00	0.00
Sales Units Base Current Warehouse-Level Optimization	2893.65	746.35
Sales Units Base Projected Warehouse-Level Optimization	0.00	0.00
Service Level Base Approved Warehouse-Level Optimization		
Service Level Base Current Warehouse-Level Optimization	0.74	0.88
Service Level Base Projected Warehouse-Level Optimization		
Sales Units Base Approved Warehouse-Level Optimization	0.00	0.00
Product Priority Index Warehouse-Level	1.00	1.00

Subgroup Optimization Results Review for Warehouse Optimization View

This view displays the points of valid group/warehouse group/subgroup on the Inventory/Service Level Trade-off curve. This view is at the group/warehouse group/subgroup/frontier points intersection and is read-only.

Figure 3–27 Subgroup Optimization Results Review for Warehouse Optimization View



	subgroup 00	subgroup 01	subgroup 02	subgroup 03	subgroup 04	subgrou
Average Inventory Cost Current Warehouse-Level Optimization						
Average Inventory Cost Constrained Warehouse-Level Optimization	0.00	0.00	0.00	0.00	0.00	
Average Inventory Cost Optimal Unconstrained Warehouse-Level Optimization	0.00	0.00	0.00	0.00	0.00	
Average Inventory Current Warehouse-Level Optimization						
Average Inventory Constrained Warehouse-Level Optimization	0.00	0.00	0.00	0.00	0.00	
Average Inventory Optimal Unconstrained Warehouse-Level Optimization	0.00	0.00	0.00	0.00	0.00	
Average Order Quantity Constrained Warehouse-Level Optimization	0.00	0.00	0.00	0.00	0.00	
Average Order Quantity Optimal Unconstrained Warehouse-Level Optimization	0.00	0.00	0.00	0.00	0.00	
Average WOS Current Warehouse-Level Optimization						
Average WOS Constrained Warehouse-Level Optimization	-1.00	-1.00	-1.00	-1.00	-1.00	
Average WOS Optimal Unconstrained Warehouse-Level Optimization	-1.00	-1.00	-1.00	-1.00	-1.00	
Gross Margin Current Warehouse-Level Optimization						
Gross Margin Constrained Warehouse-Level Optimization	0.00	0.00	0.00	0.00	0.00	
Gross Margin Optimal Unconstrained Warehouse-Level Optimization	0.00	0.00	0.00	0.00	0.00	
Lost Sales Current Warehouse-Level Optimization						
Lost Sales Constrained Warehouse-Level Optimization	0.00	0.00	0.00	0.00	0.00	
Lost Sales Optimal Unconstrained Warehouse-Level Optimization	0.00	0.00	0.00	0.00	0.00	
Sales Unit Current Warehouse-Level Optimization						
Sales Unit Constrained Warehouse-Level Optimization	0.00	0.00	0.00	0.00	0.00	
Sales Unit Optimal Unconstrained Warehouse-Level Optimization	0.00	0.00	0.00	0.00	0.00	
Out of Stock Rate Constrained Warehouse-Level Optimization	0.00	0.00	0.00	0.00	0.00	
Out of Stock Rate Optimal Unconstrained Warehouse-Level Optimization	0.00	0.00	0.00	0.00	0.00	
Order Frequency Constrained Warehouse-Level Optimization	0.00	0.00	0.00	0.00	0.00	
Order Frequency Optimal Unconstrained Warehouse-Level Optimization	0.00	0.00	0.00	0.00	0.00	
Sales Revenue Current Warehouse-Level Optimization						
Sales Revenue Constrained Warehouse-Level Optimization	0.00	0.00	0.00	0.00	0.00	
Sales Revenue Optimal Unconstrained Warehouse-Level Optimization	0.00	0.00	0.00	0.00	0.00	
Service Level Current Warehouse-Level Optimization						
Service Level Constrained Warehouse-Level Optimization						
Service Level Optimal Unconstrained Warehouse-Level Optimization						
Wastage Constrained Warehouse-Level Optimization	0.00	0.00	0.00	0.00	0.00	
Wastage Optimal Unconstrained Warehouse-Level Optimization	0.00	0.00	0.00	0.00	0.00	
Optimization Subgroup Weight Warehouse-Level Optimization						

Compare Targets - Warehouse View

This view enables you to review item/warehouse level replenishment recommendations for the point you selected on the frontier curve. It displays both the optimal, as well as the constrained method and parameters.

When you have selected the points, click **Select Target and Approve** in the top, right corner to approve the targets.

Figure 3–28 Compare Targets - Warehouse View

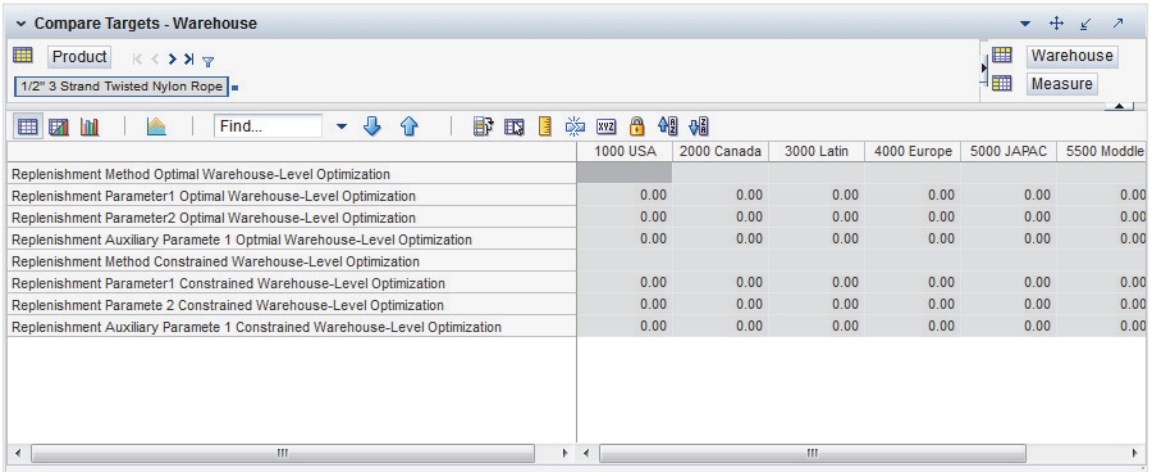


Table 3–15 Compare Targets - Warehouse View Measures

Measure	Description
Internal Replenishment Method Constrained	This measure stores the internally recommended replenishment method when constraints are considered. If the measure displays Forecast Driven Min/Max, the Replenishment Method Optimal will display either Min/Max or Time Supply. Otherwise the two measures display the same replenishment method.
Internal Replenishment Method Optimal	This measure stores the internally recommended replenishment method when no constraints are considered. If the measure displays Forecast Driven Min/Max, the Replenishment Method Optimal will display either Min/Max or Time Supply. Otherwise the two measures display the same replenishment method.
Replenishment Auxiliary Parameter 1 Constrained	This measures stores the auxiliary replenishment parameter for the replenishment method stored in the Replenishment Method Constrained measure.
Replenishment Auxiliary Parameter 1 Optimal	This measure stores the auxiliary replenishment parameter for the replenishment method stored in the Replenishment Method Optimal measure.
Replenishment Method Constrained	This measure stores the recommended replenishment method with constraints applied.
Replenishment Method Optimal	This measure stores the recommended replenishment method without constraints applied.
Replenishment Parameter 1 Constrained	This measure stores the first replenishment parameter for the replenishment method stored in the Replenishment Method Constrained measure.
Replenishment Parameter 1 Optimal	This measure stores the first replenishment parameter for the replenishment method stored in the Replenishment Method Optimal measure.
Replenishment Parameter 2 Constrained	This measure stores the second replenishment parameter for the replenishment method stored in the Replenishment Method Constrained measure.
Replenishment Parameter 2 Optimal	This measure stores the second replenishment parameter for the replenishment method stored in the Replenishment Method Optimal measure.

Target Selection and Approve for Warehouse Optimization View

This view enables you to specify the target inventory and service levels for the optimization level (group/warehouse group). You also have the option to apply unconstrained or constrained optimization results for approval. Note that only one point or target can be selected for an optimization level.

When you have selected the points, click **Select Target and Approve** in the top, right corner to approve the targets.

Figure 3–29 Target Selection and Approve for Warehouse Optimization View

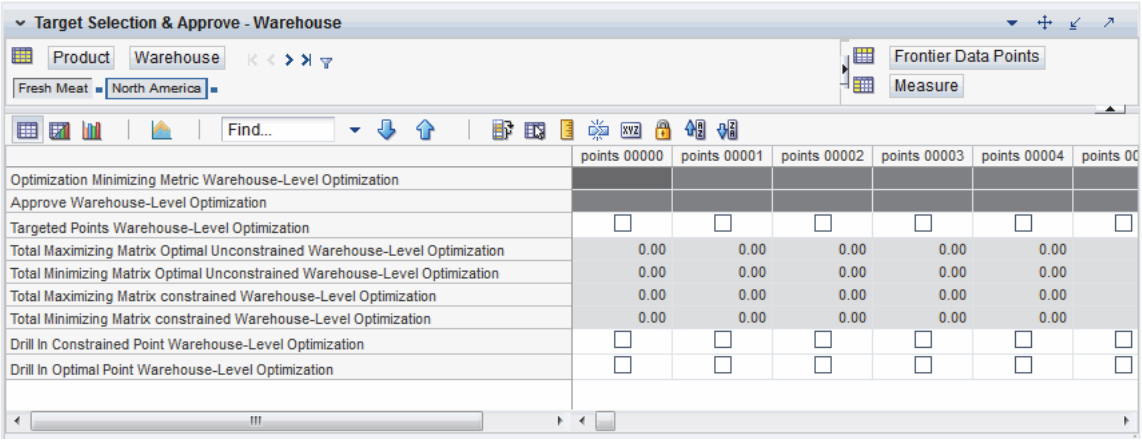


Table 3–16 Target Selection and Approve for Warehouse Optimization View Measures

Measure	Description
Approve Warehouse Level Optimization	Enables you to specify the version of the optimization result to approve for the group/warehouse group. Options are None, Approve Optimal, and Approve Constrained.
Drill In Constrained Point	If one frontier point is selected, and the Store Optimization Drill In custom menu is run, the user can review constrained item/store level replenishment methods and parameters in the Compare Targets - Store view.
Drill In Optimal Point	If one frontier point is selected, and the Store Optimization Drill In custom menu is run, the user can review unconstrained item/store level replenishment methods and parameters in the Compare Targets - Store view.
Optimization Minimizing Metric	Displays the Minimizing Metric selected in the optimization setup task / store optimization targets & constraints step / Optimization Goals view.
Targeted Points Warehouse Level Optimization	Enables you to specify which point along the curve to pick as a target. Only one point can be selected for a group/warehouse group.
Total Maximizing Matrix Constrained	This measure displays the value of the maximizing metric after running the optimization with constraints.

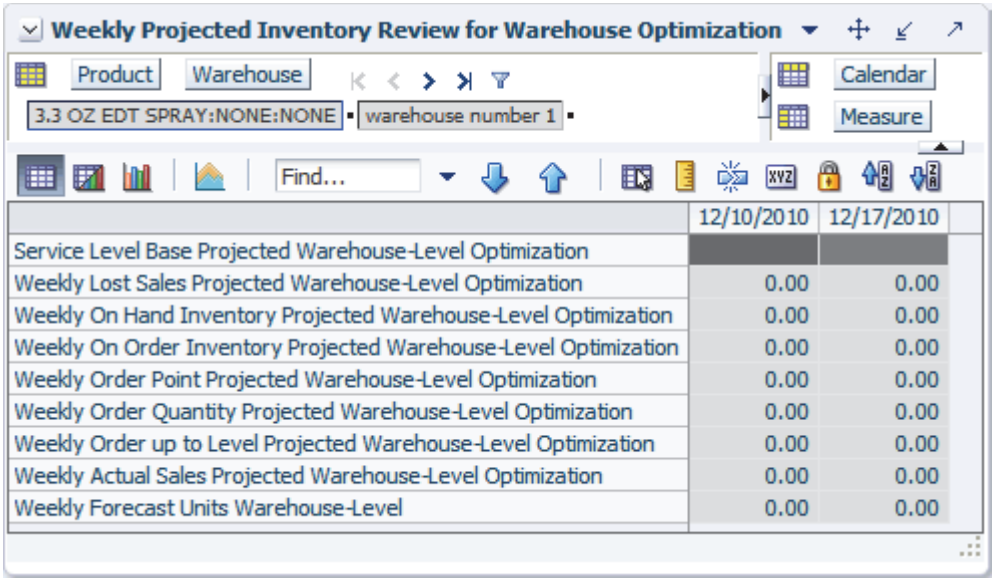
Table 3–16 (Cont.) Target Selection and Approve for Warehouse Optimization View Measures

Measure	Description
Total Maximizing Matrix Optimal Unconstrained	This measure displays the value of the maximizing metric after running the unconstrained optimization.
Total Minimizing Matrix Constrained	This measure displays the value of the minimizing metric after running the optimization with constraints
Total Minimizing Matrix Optimal Unconstrained	This measure displays the value of the minimizing metric after running the unconstrained optimization.

Weekly Projected Inventory Review for Warehouse Optimization View

This view displays the weekly projected inventory at the item/warehouse/week level. It is a read-only view.

Figure 3–30 Weekly Projected Inventory Review for Warehouse Optimization View



Review and Analyze Warehouse Constraints Step

The Review and Analyze Constraints step contains the following views:

- Max Order Frequency Review - Warehouse View View
- Maximum Constraint Review - Warehouse View
- Minimum Constraint Review - Warehouse View
- Optimization Goal Review - Warehouse View

Max Order Frequency Review - Warehouse View View

This view enables you to review the maximum order frequency used in the optimization.

Figure 3–31 Max Order Frequency Review - Warehouse View View

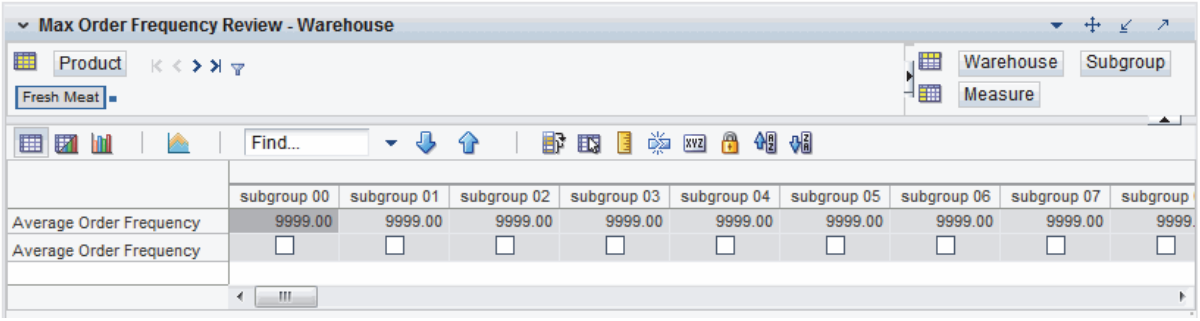


Table 3–17 Max Order Frequency Review - Warehouse View Measures

Measure	Description
Average Order Frequency Maximum Default Warehouse Level Optimization	The default maximum order frequency value for a subgroup used in the optimization batch. This is a read-only measure.
Maximum Constraints Failure Default Warehouse Level Optimization	Displays if the constraint was met or not. If selected, the constraint was not met.

Maximum Constraint Review - Warehouse View

This view enables you to review the maximum constraint type and value used in the optimization.

Figure 3–32 Maximum Constraint Review - Warehouse View

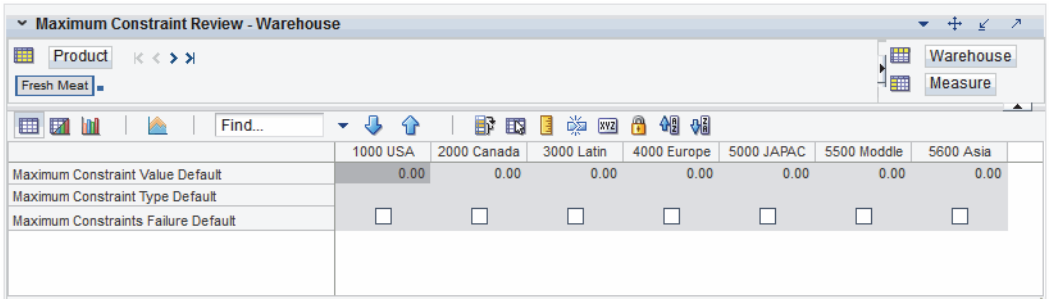


Table 3–18 Maximum Constraint Review - Warehouse View Measures

Measure	Description
Maximum Constraint Type Default Warehouse Level Optimization	The default maximum constraint type for a group/warehouse used in the optimization batch. It can be Inventory Units, Inventory Cost, Weeks of Supply, or Space. This measure is read-only.
Maximum Constraint Value Default Warehouse Level Optimization	The default maximum constraint value for a group/warehouse used in the optimization batch. This measure is read-only.
Maximum Constraints Failure Default Warehouse Level Optimization	Displays if the constraint was met or not. If selected, the constraint was not met.

Minimum Constraint Review - Warehouse View

This view enables you to review the minimum constraint type and value used in the optimization.

Figure 3–33 Minimum Constraint Review - Warehouse View

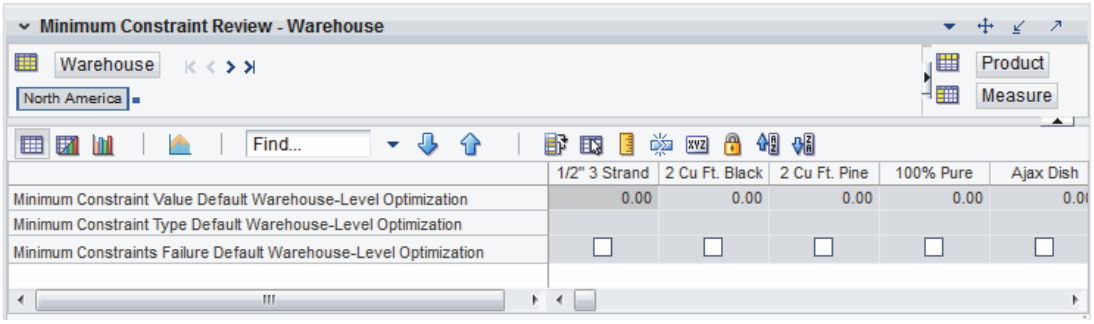


Table 3–19 Minimum Constraint Review - Warehouse View Measures

Measure	Description
Minimum Constraint Type Default Warehouse Level Optimization	The default minimum constraint type for an item/warehouse group used in the optimization batch. It can be Sales Units, Sales Revenue, Sales Margin, or Service Level. This measure is read-only.
Minimum Constraint Value Default Warehouse Level Optimization	The default minimum constraint value for an item/warehouse group used in the optimization batch. This measure is read-only.
Minimum Constraints Failure Default Warehouse Level Optimization	Displays if the constraint was met or not. If selected, the constraint was not met.

Optimization Goal Review - Warehouse View

This view enables you to review the maximizing and minimizing matrix for the regular optimization run.

Figure 3–34 Optimization Goal Review - Warehouse View

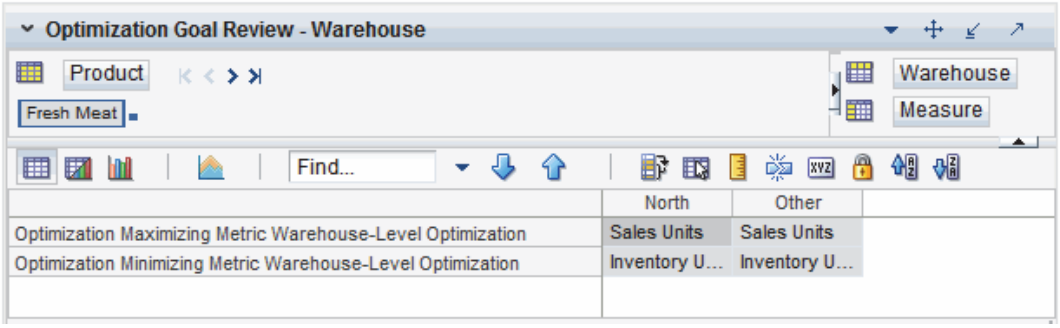


Table 3–20 Optimization Goal Review - Warehouse View Measures

Measure	Description
Optimization Minimizing Metric Warehouse Level Optimization	Displays the minimizing metric used in the optimization run.
Optimization Maximizing Metric Warehouse Level Optimization	Displays the maximizing metric used in the optimization run.

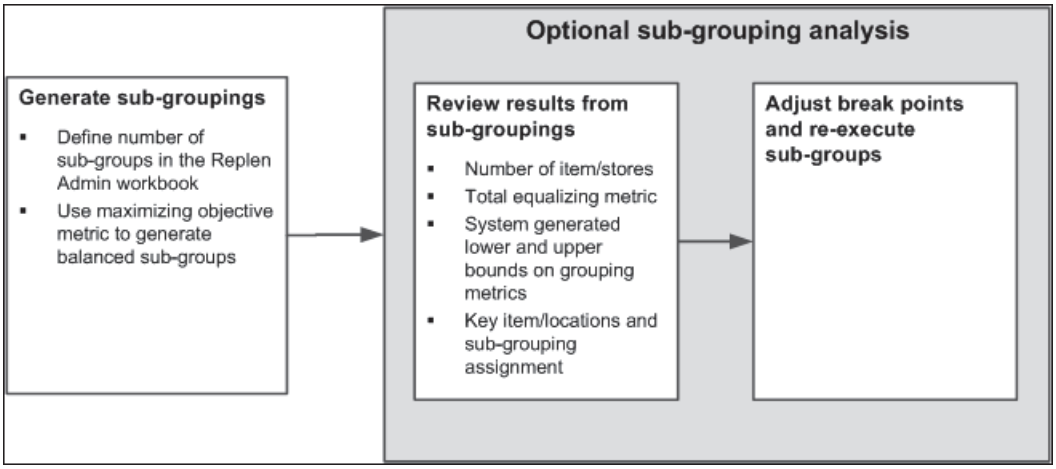
4

Subgroup Analysis Workbook

This chapter describes the Subgroup Analysis workbook, which enables you to dynamically alter the subgroup parameters to analyze and refine the subgroup parameters prior to full mode batch process. The modified subgroup parameters can be committed back to the domain to be used in the next batch. Any change to the subgroup parameters means that the approved optimization parameters in the domain are out of date. A full mode batch process needs to be rerun and reapproved before any refresh mode batch process is invoked.

The user process flow of the Subgroup Analysis workbook is shown in Figure 4–1.

Figure 4–1 Subgroup Analysis Workbook User Process Flow



The Subgroup Analysis workbook contains the following steps:

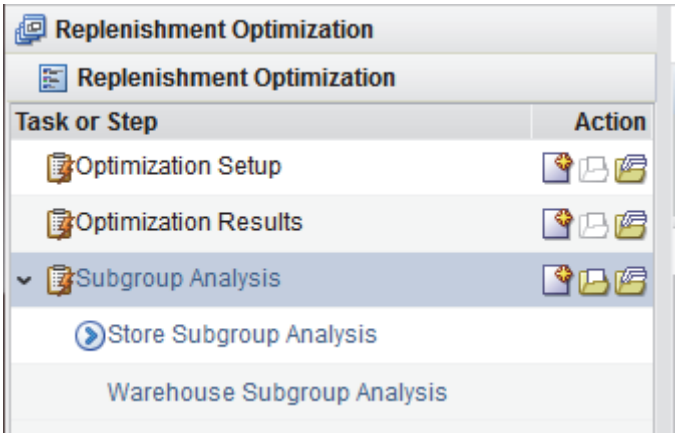
- Store Subgroup Analysis Step
- Warehouse Subgroup Analysis Step

Subgroup Analysis Wizard

To create a Subgroup Analysis workbook, perform the following:

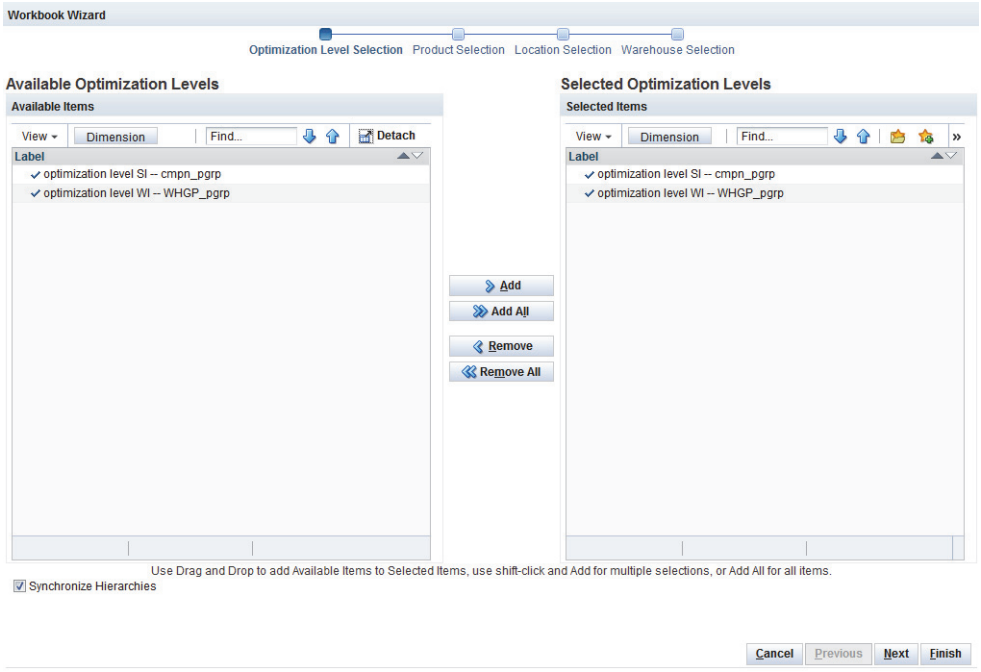
1. Click the Create New Workbook icon in the Subgroup Analysis task.

Figure 4–2 Creating a New Subgroup Analysis Workbook



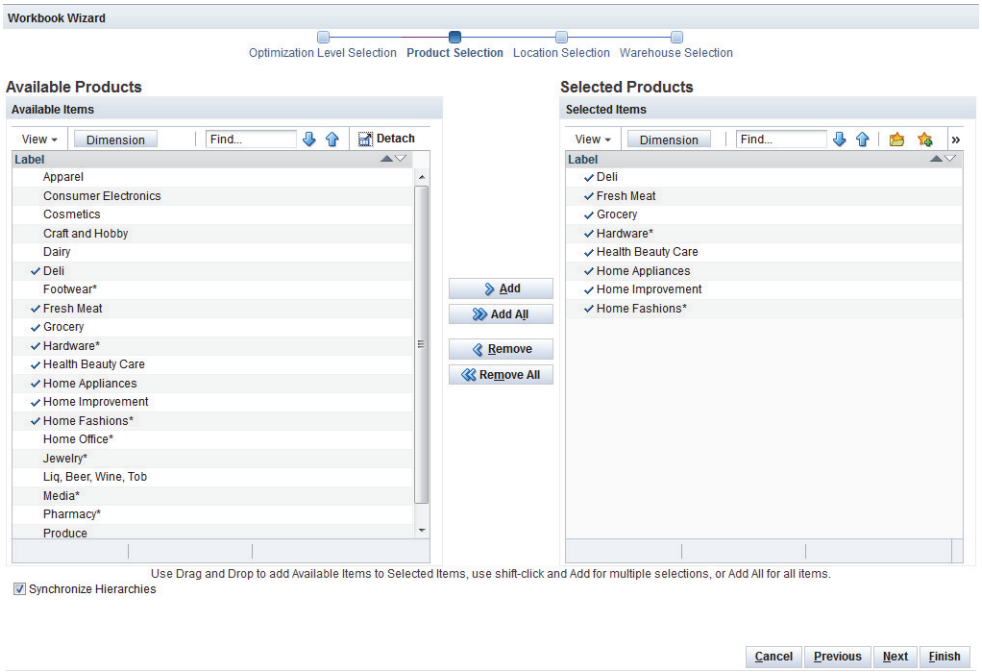
2. The Available Optimization Level window opens. Select either or both the warehouse (SL) or the warehouse level (WL) and then click **Next**.

Figure 4–3 Available Optimization Level



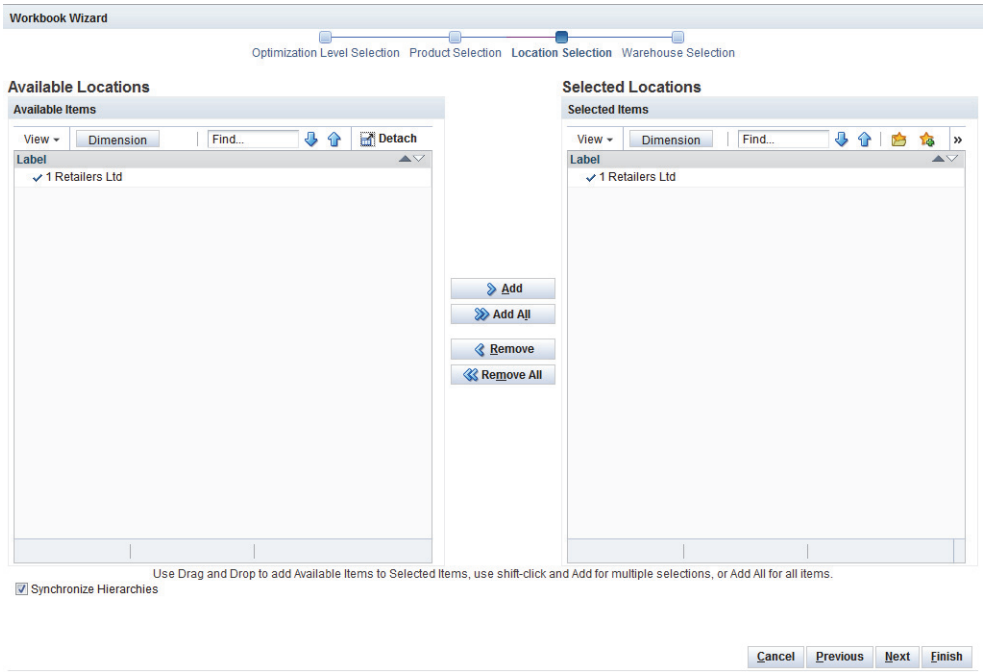
3. The Available Products window opens. Select the items to be displayed in the workbook and click **Next**.

Figure 4–4 Available Products



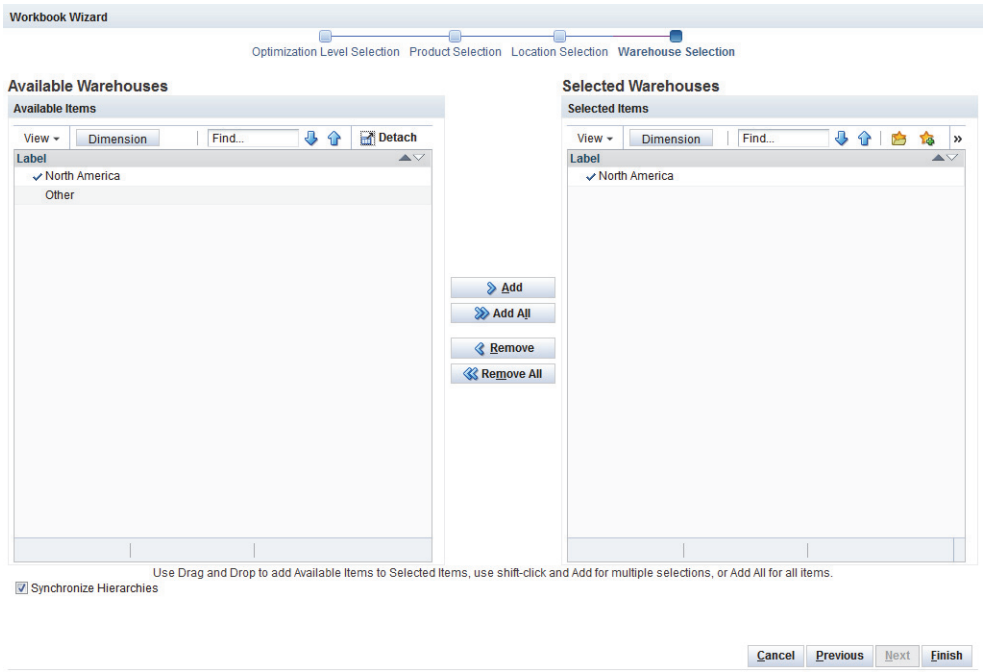
4. The Available Locations window opens. Select the regions to be displayed in the workbook and click **Next**.

Figure 4–5 Available Locations



5. The Available Warehouses window opens. Select the warehouses to be displayed in the workbook and click **Finish**.

Figure 4–6 Available Warehouses



The Subgroup Analysis workbook is built.

Store Subgroup Analysis Step

The Store Subgroup Analysis step contains the following views:

- Detail Subgroup Criteria Review - Store View
- Subgrouping Criteria Review - Store View
- Interactive User Breakpoint Overrides - Store View
- Interactive Subgroup Criteria - Store View

Detail Subgroup Criteria Review - Store View

This view enables you to review the subgrouping information for the items/stores in the departments/regions that were selected in the wizard. This view is read-only.

Figure 4–7 shows the worksheet at the item/store intersection.

Figure 4–7 Detail Subgroup Criteria Review - Store View

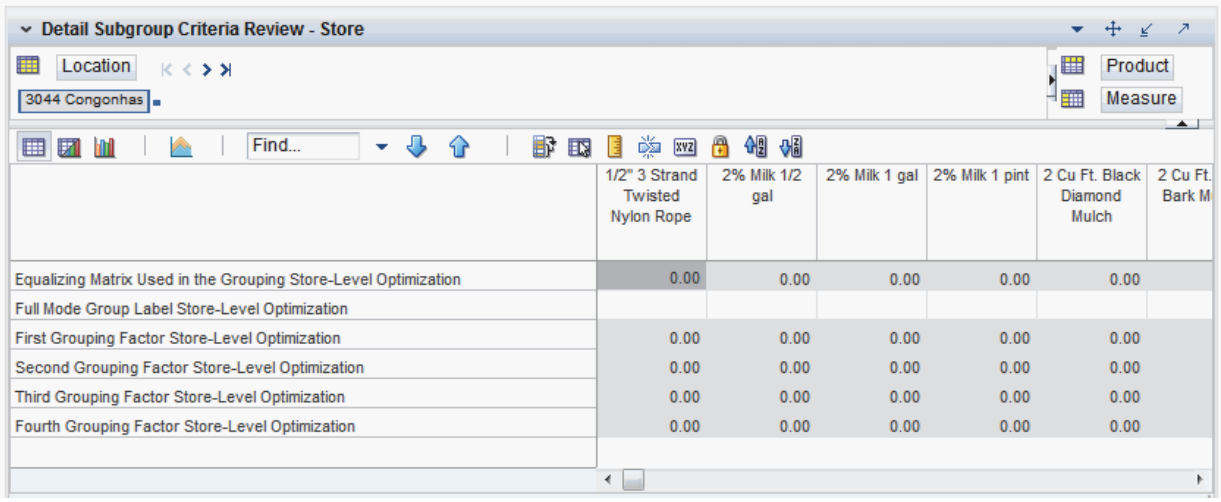


Table 4–1 Detail Subgroup Criteria Review - Store View Measures

Measure	Description
Equalizing Matrix Used in the Grouping Store Level Optimization	The value of the equalizing matrix used in subgrouping.
Full Mode Group Label Store Level Optimization	Displays the label of the subgroup that the item/store belongs to.
First Grouping Factor Store Level Optimization	The value of grouping Factor 1.
Second Grouping Factor Store Level Optimization	The value of grouping Factor 2.
Third Grouping Factor Store Level Optimization	The value of grouping Factor 3.
Fourth Grouping Factor Store Level Optimization	The value of grouping Factor 4.

Subgrouping Criteria Review - Store View

This view enables you to review the subgrouping results from the full mode batch run. Only valid subgroups are displayed. All measures, except SubGroup Labels, are read-only.

Figure 4–8 shows the worksheet at the department/region/subgroup intersection.

Figure 4–8 Subgrouping Criteria Review - Store View

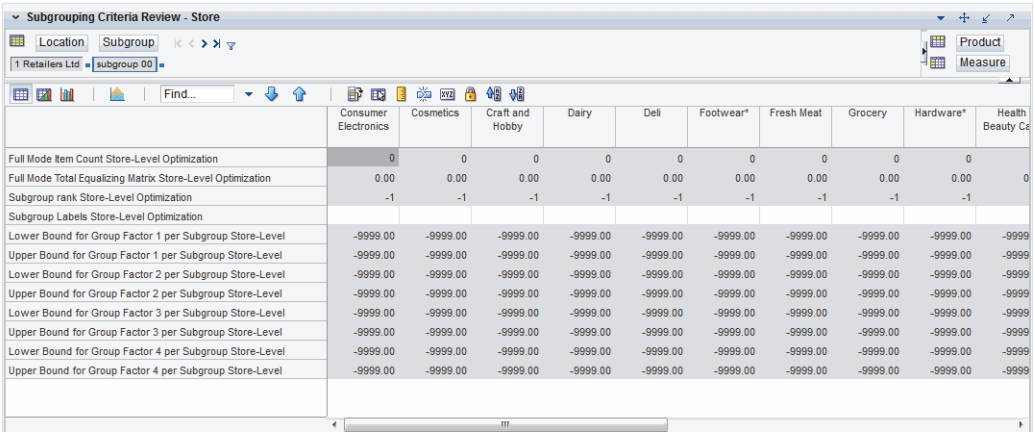


Table 4–2 Subgrouping Criteria Review - Store View Measures

Measure	Description
Full Mode Item Count Per Subgroup Store Level Optimization	The number of item/stores for the subgroup.
Lower Bound for Group Factor 1 per Subgroup Store Level Optimization	The lower bound of the grouping Factor 1 for the subgroup.
Lower Bound for Group Factor 2 per Subgroup Store Level Optimization	The lower bound of the grouping Factor 2 for the subgroup.
Lower Bound for Group Factor 3 per Subgroup Store Level Optimization	The lower bound of the grouping Factor 3 for the subgroup.
Lower Bound for Group Factor 4 per Subgroup Store Level Optimization	The lower bound of the grouping Factor 4 for the subgroup.
SubGroup Labels Store Level Optimization	User-defined label of the subgroup.
Subgroup Rank Store Level Optimization	Ranking of the subgroups for each department/region.
Full Mode Total Equalizing Matrix per Subgroup Store Level Optimization	The total of equalizing matrix for each subgroup.
Upper Bound for Group Factor 1 per Subgroup Store Level Optimization	The upper bound of the grouping Factor 1 for the subgroup.
Upper Bound for Group Factor 2 per Subgroup Store Level Optimization	The upper bound of the grouping Factor 2 for the subgroup.
Upper Bound for Group Factor 3 per Subgroup Store Level Optimization	The upper bound of the grouping Factor 3 for the subgroup.
Upper Bound for Group Factor 4 per Subgroup Store Level Optimization	The upper bound of the grouping Factor 4 for the subgroup.

Interactive User Breakpoint Overrides - Store View

This view enables you to review and alter the breakpoint overrides.

Figure 4–9 shows the worksheet at the department/region/breakpoint intersection.

Figure 4–9 Interactive User Breakpoint Overrides - Store View

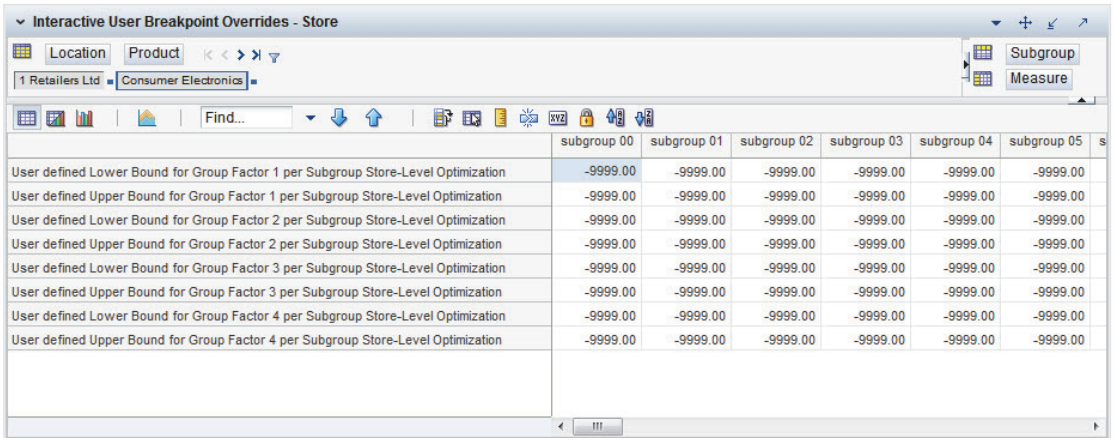


Table 4–3 Interactive User Breakpoint Overrides - Store View Measures

Measure	Description
User defined Lower Bound for Group Factor 1 per Subgroup Store-Level Optimization	Specify the lower bound for the Group Factor 1 for the group/company. The range set in lower bound is inclusive.
User defined Lower Bound for Group Factor 2 per Subgroup Store-Level Optimization	Specify the lower bound for the Group Factor 2 for the group/company. The range set in lower bound is inclusive.
User defined Lower Bound for Group Factor 3 per Subgroup Store-Level Optimization	Specify the lower bound for the Group Factor 3 for the group/company. The range set in lower bound is inclusive.
User defined Lower Bound for Group Factor 4 per Subgroup Store-Level Optimization	Specify the lower bound for the Group Factor 4 for the group/company. The range set in lower bound is inclusive.
User defined Upper Bound for Group Factor 1 per Subgroup Store-Level Optimization	Specify the upper bound for the Group Factor 1 for the group/company. The range set in upper bound is exclusive.
User defined Upper Bound for Group Factor 2 per Subgroup Store-Level Optimization	Specify the upper bound for the Group Factor 2 for the group/company. The range set in upper bound is exclusive.
User defined Upper Bound for Group Factor 4 per Subgroup Store-Level Optimization	Specify the upper bound for the Group Factor 4 for the group/company. The range set in upper bound is exclusive.

Interactive Subgroup Criteria - Store View

This view enables you to review the subgrouping criteria for a for a higher level intersection (such as department/region) and change it if necessary.

The number of total subgroupings for the higher level intersection cannot exceed 50. In other words, when entering the values for each of the # of Groups SubGrouping measures, the product of these three numbers cannot exceed 50. The first subgrouping takes priority over the second and third subgroupings, and the second subgrouping takes priority over the third.

If you enter a number in the second or third subgrouping measure that causes the product of the three numbers to exceed 50, an **Out of Range** message is displayed, which suggests a range of acceptable values.

If the values for each of the three subgroupings have already been calculated, and then you change the value of the first subgrouping to a number less than 50 that causes the product of the three measures to exceed 50, an out of range message does not appear. However, when you click **Calculate**, the Subgroup Setup Error Flag measure is selected and an error message is displayed in the Subgroup Setup Error Message measure.

Figure 4–10 shows the worksheet at the department/region intersection.

Figure 4–10 Interactive Subgroup Criteria - Store View

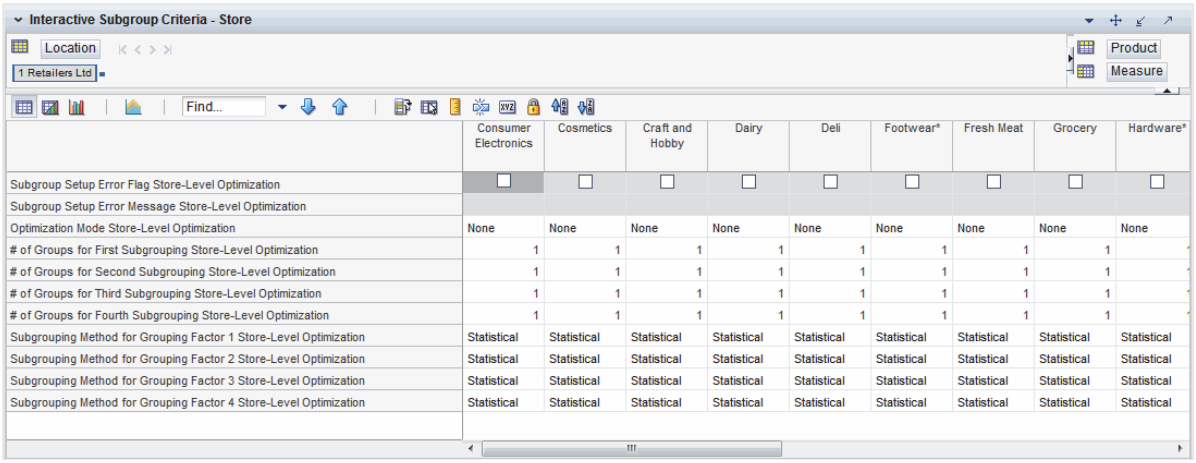


Table 4–4 Interactive Subgroup Criteria - Store Measures

Measure	Description
# of Groups for First SubGrouping Store Level Optimization	Specify the number of group for the first group factor. This is an integer measure based on the department/region.
# of Groups for Second SubGrouping Store Level Optimization	Specify the number of group for the second group factor. This is an integer measure based on the department/region.
# of Groups for Third SubGrouping Store Level Optimization	Specify the number of group for the third group factor. This is an integer measure based on the group/company.
Subgroup Setup Error Flag Store Level Optimization	Boolean measure that indicates an error in the subgroup setup. A true value may be triggered by one of the # of Groups for Subgroupings measures being over the limit or by an incorrect setup of one of the SubGrouping Metric measures.
Subgroup Setup Error Message Store Level Optimization	Displays the message **resulting total subgroup number over limit**, if the number of subgroups is larger than the limit, which is 50.
Optimization Mode Store Level Optimization	Specifies the optimization type. Options are Full, Refresh, and None.
SubGrouping Method for Grouping Factor 1 Store Level Optimization	The subgroup method used for Grouping Factor 1. Options are Breakpoints and Statistical. Breakpoints are defined in User Breakpoints Override for Store Optimization View.

Table 4–4 (Cont.) Interactive Subgroup Criteria - Store Measures

Measure	Description
SubGrouping Method for Grouping Factor 2 Store Level Optimization	The subgroup method used for Grouping Factor 2. Options are Breakpoints and Statistical.
SubGrouping Method for Grouping Factor 3 Store Level Optimization	The subgroup method used for Grouping Factor 3. Options are Breakpoints and Statistical.
SubGrouping Method for Grouping Factor 4 Store Level Optimization	The subgroup method used for Grouping Factor 4. Options are Breakpoints and Statistical.

Committing Subgroup Criteria

When you have modified the subgroup criteria, performed a What-if case to review the outcome of the modifications, and decided to use the new settings, you can commit them to the domain by selecting **Commit** in the **File** menu. Note that only the criteria for subgroupings is committed, not the arrangement of the item/stores within the subgroupings. The item/stores are not sorted into the new subgroupings until the next batch run.

Warehouse Subgroup Analysis Step

The Warehouse Subgroup Analysis step contains the following views:

- Detail Subgroup Criteria Review - Warehouse View
- Subgrouping Criteria Review - Warehouse View
- Interactive User Breakpoint Overrides - Warehouse View
- Interactive Subgroup Criteria - Warehouse View

Detail Subgroup Criteria Review - Warehouse View

This view enables you to review the subgrouping information for the items/warehouses in the department/warehouse groups that were selected in the wizard. This view is read-only.

Figure 4–11 shows the worksheet at the item/warehouse intersection.

Figure 4–11 Detail Subgroup Criteria Review - Warehouse View

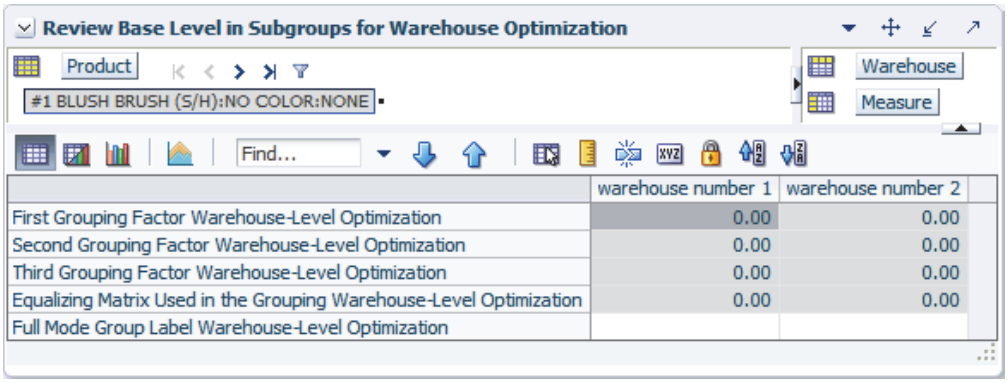


Table 4–5 Detail Subgroup Criteria Review - Warehouse View Measures

Measure	Description
Equalizing Matrix Used in the Grouping Warehouse Level Optimization	The value of the equalizing matrix used in subgrouping.
Full Mode Group Label Warehouse Level Optimization	Displays the label of the subgroup that the item/warehouse belongs to.
First Grouping Factor Warehouse Level Optimization	The value of grouping factor 1.
Second Grouping Factor Warehouse Level Optimization	The value of grouping factor 2.
Third Grouping Factor Warehouse Level Optimization	The value of grouping factor 3.
Fourth Grouping Factor Warehouse Level Optimization	The value of grouping factor 4.

Subgrouping Criteria Review - Warehouse View

This view enables you to review the subgrouping results from the full mode batch run. Only valid subgroups are displayed. All measures but SubGroup Labels are read-only.

Figure 4–12 shows the worksheet at the department/warehouse group/subgroup intersection.

Figure 4–12 Subgrouping Criteria Review - Warehouse View

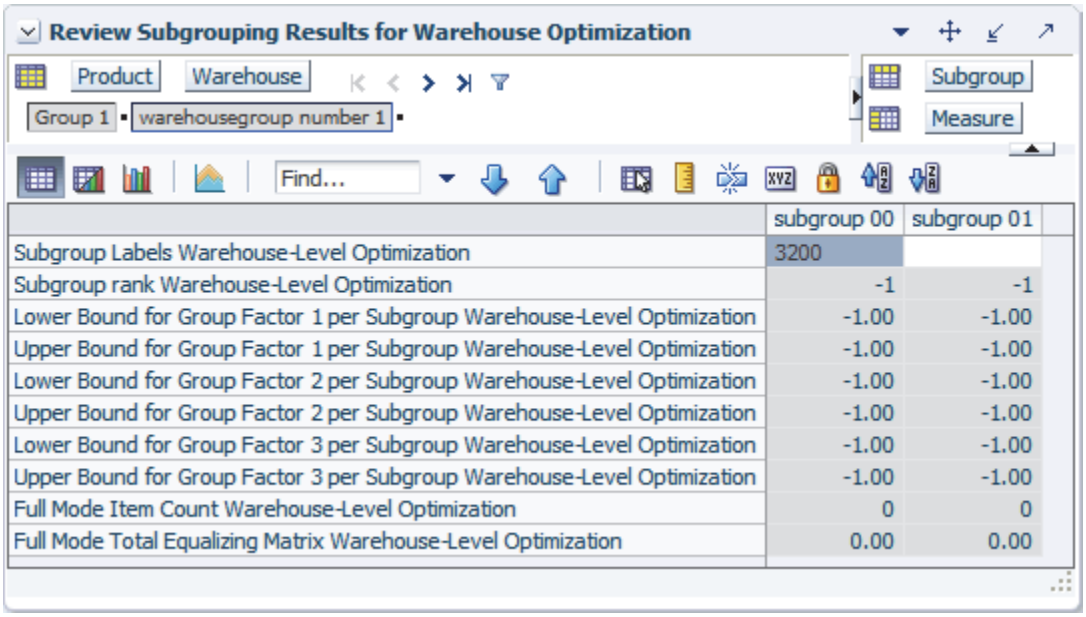


Table 4–6 Subgrouping Criteria Review - Warehouse View Measures

Measure	Description
Full Mode Item Count Per Subgroup Warehouse Level Optimization	The number of items/warehouses for the subgroup.
Lower Bound for Group Factor 1 per Subgroup Warehouse Level Optimization	The lower bound of the grouping Factor 1 for the subgroup.
Lower Bound for Group Factor 2 per Subgroup Warehouse Level Optimization	The lower bound of the grouping Factor 2 for the subgroup.
Lower Bound for Group Factor 3 per Subgroup Warehouse Level Optimization	The lower bound of the grouping Factor 3 for the subgroup.
Lower Bound for Group Factor 4 per Subgroup Warehouse Level Optimization	The lower bound of the grouping Factor 4 for the subgroup.
SubGroup Labels Warehouse Level Optimization	User-defined label of the subgroup.
Subgroup Rank Warehouse Level Optimization	Ranks the subgroups for each department/warehouse group.
Full Mode Total Equalizing Matrix per Subgroup Warehouse Level Optimization	The total of equalizing matrix for each subgroup.
Upper Bound for Group Factor 1 per Subgroup Warehouse Level Optimization	The upper bound of the grouping Factor 1 for the subgroup.
Upper Bound for Group Factor 2 per Subgroup Warehouse Level Optimization	The upper bound of the grouping Factor 2 for the subgroup.
Upper Bound for Group Factor 3 per Subgroup Warehouse Level Optimization	The upper bound of the grouping Factor 3 for the subgroup.
Upper Bound for Group Factor 4 per Subgroup Warehouse Level Optimization	The upper bound of the grouping Factor 4 for the subgroup.

Interactive User Breakpoint Overrides - Warehouse View

This view enables you to review and alter the breakpoint overrides.

Figure 4–13 shows the worksheet at the group/warehouse group/breakpoint intersection.

Figure 4–13 Interactive User Breakpoint Overrides - Warehouse View

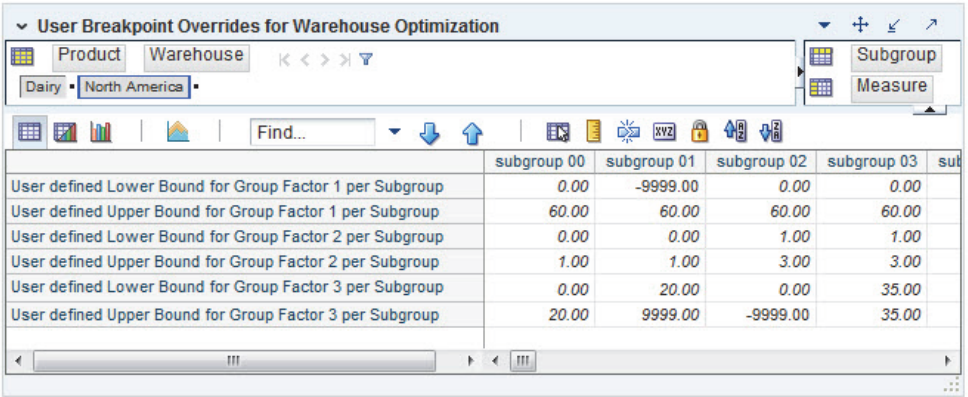


Table 4–7 Interactive User Breakpoint Overrides - Warehouse View Measures

Measure	Description
User defined Lower Bound for Group Factor 1 per Subgroup Warehouse-Level Optimization	Specify the lower bound for the Group Factor 1 for the group/warehouse group. The range set in lower bound is inclusive.
User defined Lower Bound for Group Factor 2 per Subgroup Warehouse-Level Optimization	Specify the lower bound for the Group Factor 2 for the group/warehouse group. The range set in lower bound is inclusive.
User defined Lower Bound for Group Factor 3 per Subgroup Warehouse-Level Optimization	Specify the lower bound for the Group Factor 3 for the group/warehouse group. The range set in lower bound is inclusive.
User defined Lower Bound for Group Factor 4 per Subgroup Warehouse-Level Optimization	Specify the lower bound for the Group Factor 4 for the group/warehouse group. The range set in lower bound is inclusive.
User defined Upper Bound for Group Factor 1 per Subgroup Warehouse-Level Optimization	Specify the upper bound for the Group Factor 1 for the group/warehouse group. The range set in upper bound is exclusive.
User defined Upper Bound for Group Factor 2 per Subgroup Warehouse-Level Optimization	Specify the upper bound for the Group Factor 2 for the group/warehouse group. The range set in upper bound is exclusive.
User defined Upper Bound for Group Factor 3 per Subgroup Warehouse-Level Optimization	Specify the upper bound for the Group Factor 3 for the group/warehouse group. The range set in upper bound is exclusive.
User defined Upper Bound for Group Factor 4 per Subgroup Warehouse-Level Optimization	Specify the upper bound for the Group Factor 4 for the group/warehouse group. The range set in upper bound is exclusive.

Interactive Subgroup Criteria - Warehouse View

This view enables you to review the subgrouping criteria for a higher level intersection (such as group/warehouse group) and change it if necessary.

The number of total subgroupings for the higher level intersection cannot exceed 50. In other words, when entering the values for each of the # of Groups SubGrouping measures, the product of these three numbers cannot exceed 50. The first subgrouping takes priority over the second and third subgroupings, and the second subgrouping takes priority over the third.

If you enter a number in the second or third subgrouping measure that causes the product of the three numbers to exceed 50, an **Out of Range** message is displayed, which suggests a range of acceptable values.

If the values for each of the three subgroupings have already been calculated, and then you change the value of the first subgrouping to a number less than 50 that causes the product of the three measures to exceed 50, an out of range message does not appear. However, when you click **Calculate**, the Subgroup Setup Error Flag measure is selected and an error message is displayed in the Subgroup Setup Error Message measure.

Figure 4–14 shows the worksheet at the group/warehouse group intersection.

Figure 4–14 Interactive Subgroup Criteria - Warehouse View

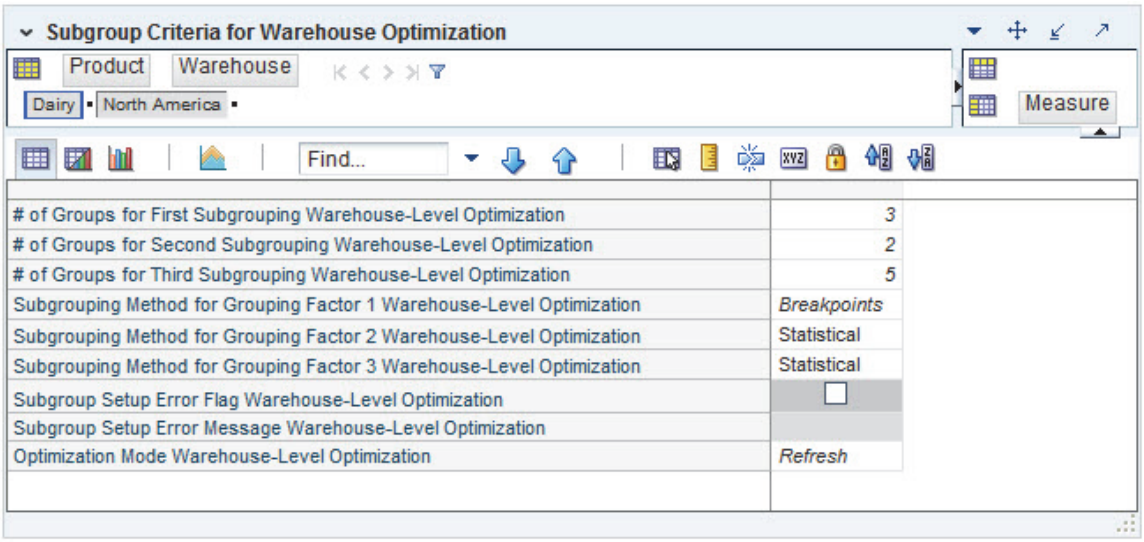


Table 4–8 Interactive Subgroup Criteria - Warehouse Measures

Measure	Description
# of Groups for First SubGrouping Warehouse Level Optimization	Specify the number of groups for the first group factor. This is an integer measure based on the group/warehouse group.
# of Groups for Second SubGrouping Warehouse Level Optimization	Specify the number of group for the second group factor. This is an integer measure based on the group/warehouse group.
# of Groups for Third SubGrouping Warehouse Level Optimization	Specify the number of group for the third group factor. This is an integer measure based on the group/warehouse group.
SubGrouping Method for Grouping Factor 1 Warehouse Level Optimization	The subgroup method used for Grouping Factor 1. Options are Breakpoints and Statistical.
SubGrouping Method for Grouping Factor 2 Warehouse Level Optimization	The subgroup method used for Grouping Factor 2. Options are Breakpoints and Statistical.
SubGrouping Method for Grouping Factor 3 Warehouse Level Optimization	The subgroup method used for Grouping Factor 3. Options are Breakpoints and Statistical.
SubGrouping Method for Grouping Factor 4 Warehouse Level Optimization	The subgroup method used for Grouping Factor 4. Options are Breakpoints and Statistical.
Subgroup Setup Error Flag Warehouse Level Optimization	Indicates an error in the subgroup setup. A true value may be triggered by one of the # of Groups for Subgroupings measures being over the limit or by an incorrect setup of one of the SubGrouping Metric measures.
Subgroup Setup Error Message Warehouse Level Optimization	Displays the message, resulting total subgroup number over limit, if the number of subgroups is larger than the limit, which is 50.
Optimization Mode Warehouse Level Optimization	Specifies the optimization type. Options are Full, Refresh, and None.

5

Summary Level Analysis Workbook

The Summary Level Analysis workbook provides managers with high-level reports of the approved plan. Managers can review and track replenishment performance at aggregate levels. This workbook is intended for use by Replenishment Managers, who are interested in reviewing replenishment performances for their department/region or department/warehouse group.

The Summary Level Analysis task contains the following steps:

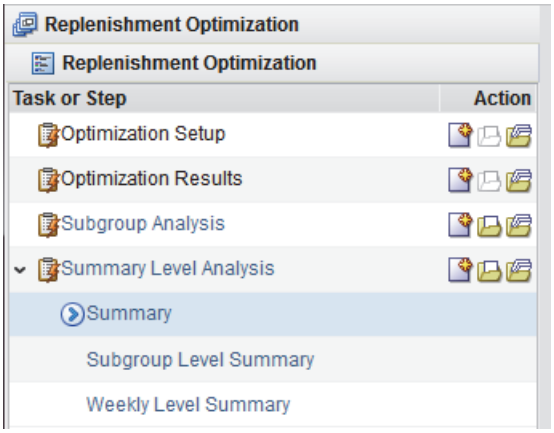
- Summary Step
- Weekly Level Summary Step

Summary Level Analysis Wizard

To create a Summary Level Analysis workbook, perform the following:

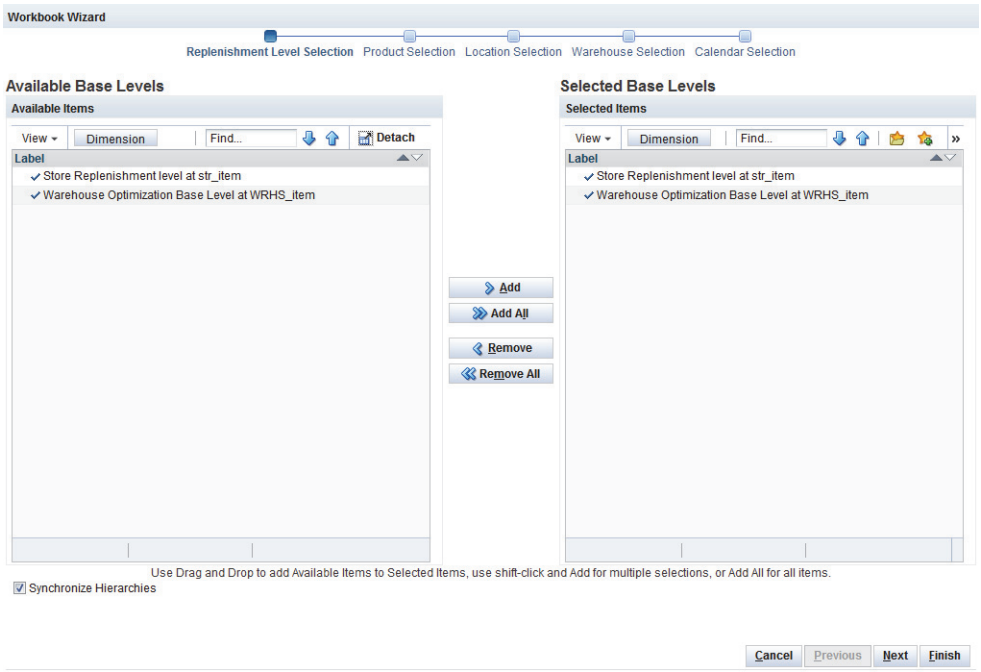
1. Click the Create New Workbook icon in the Summary Level Analysis task.

Figure 5–1 Creating a New Summary Level Analysis Workbook



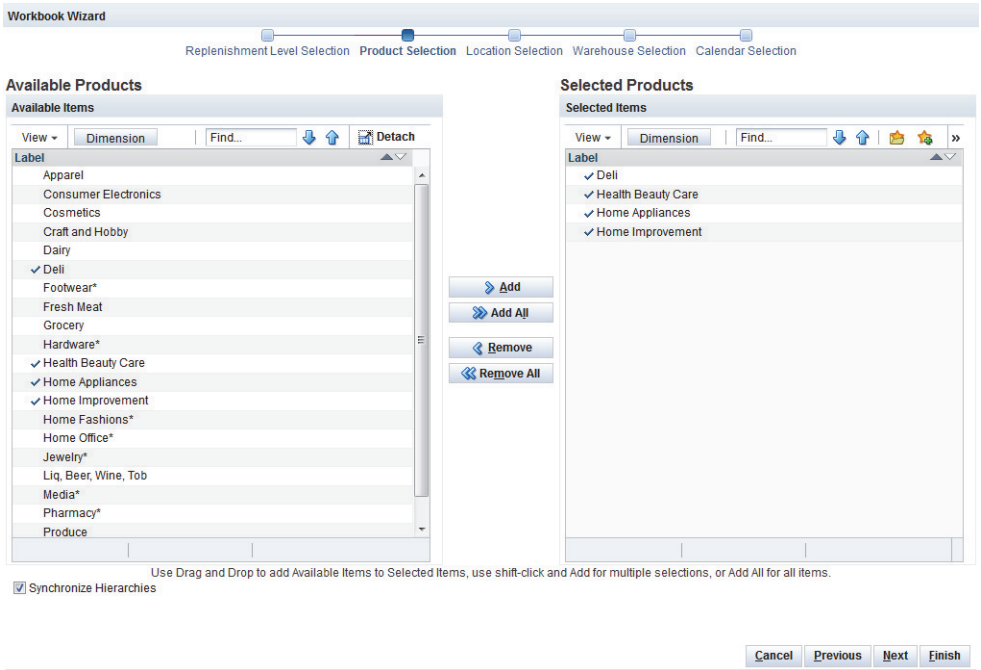
2. The Available Base Levels window opens. Select either or both the store level (SL) or the warehouse level (WL) and click **Next**.

Figure 5–2 Available Base Levels



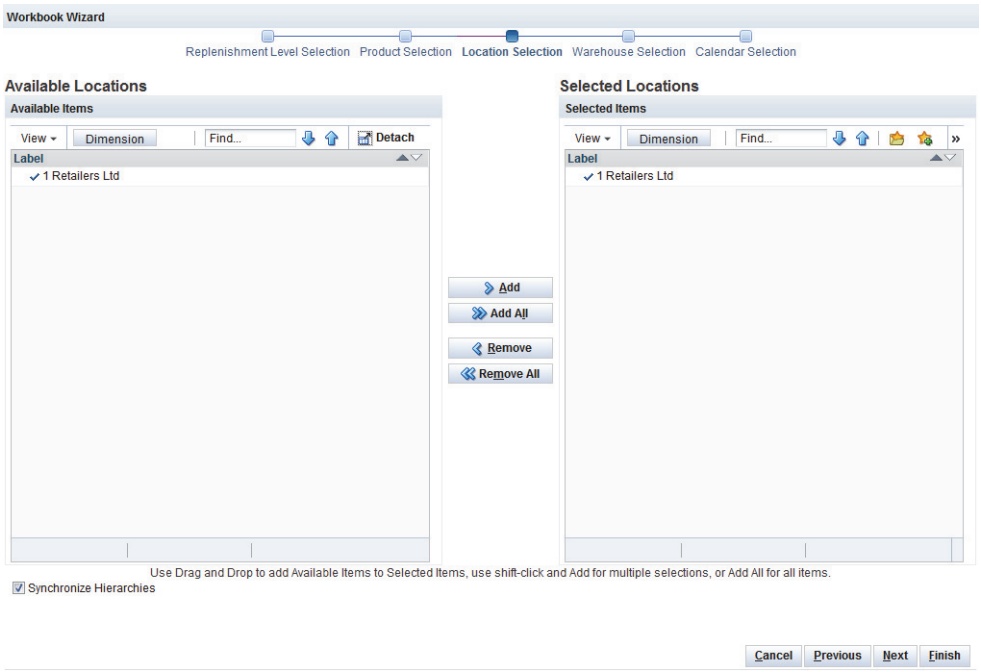
3. The Available Products window opens. Select the items to appear in the workbook and click **Next**.

Figure 5–3 Available Products



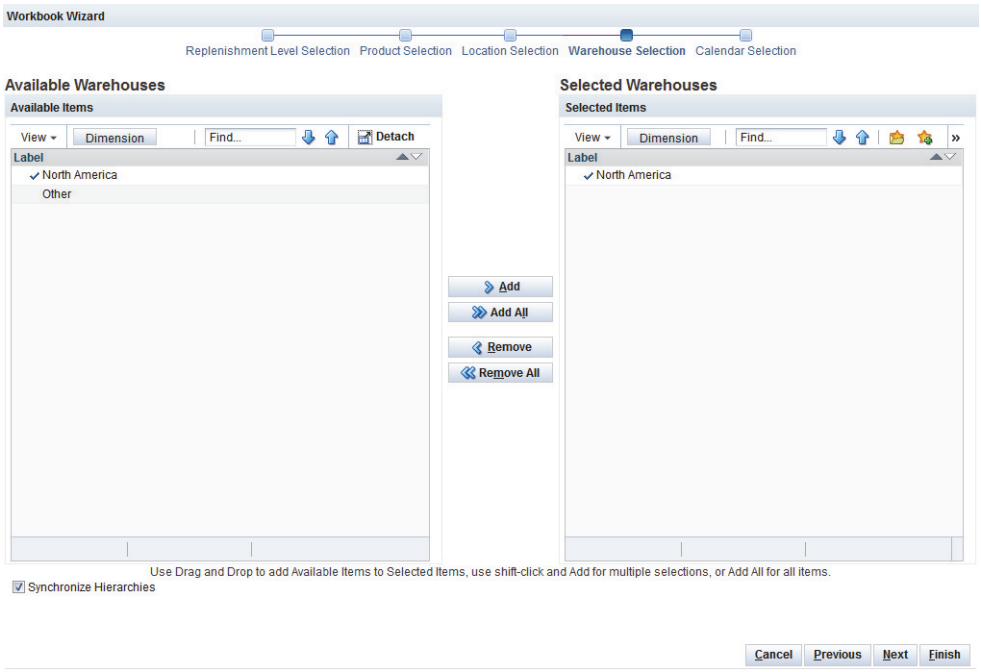
4. The Available Locations window opens. Select the locations to appear in the workbook and click **Next**.

Figure 5–4 Available Locations



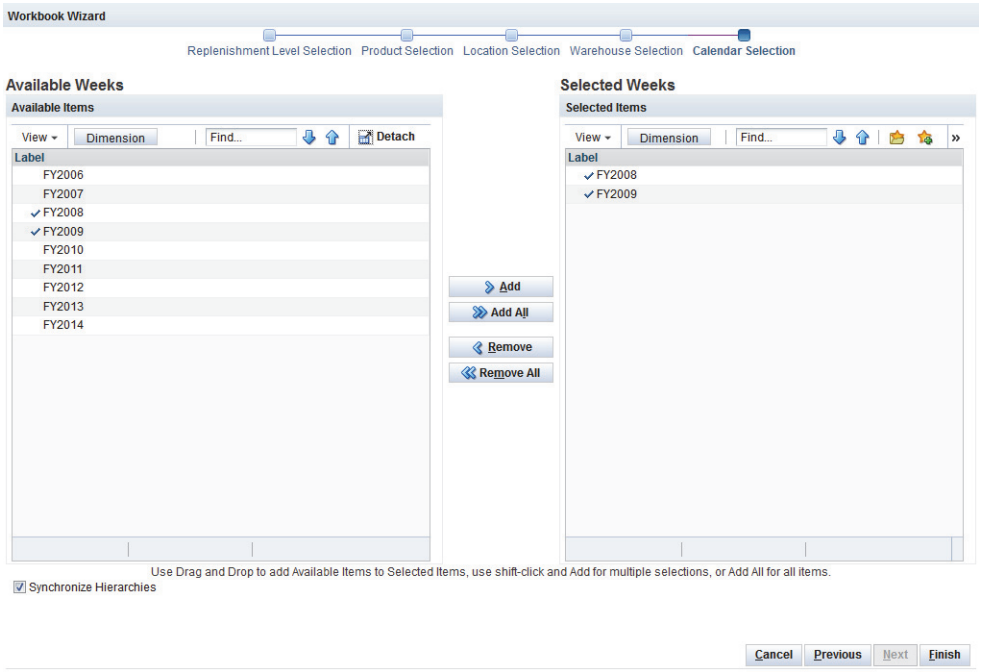
5. The Available Warehouses window opens. Select the warehouse locations to appear in the workbook and click **Next**.

Figure 5–5 Available Warehouses



6. The Available Warehouses window opens if a warehouse level (WL) was selected in Step 2. Select the weeks to appear in the workbook and click **Finish**.

Figure 5–6 Available Weeks



The Summary Level Analysis workbook is built.

Summary Step

This step has the following views:

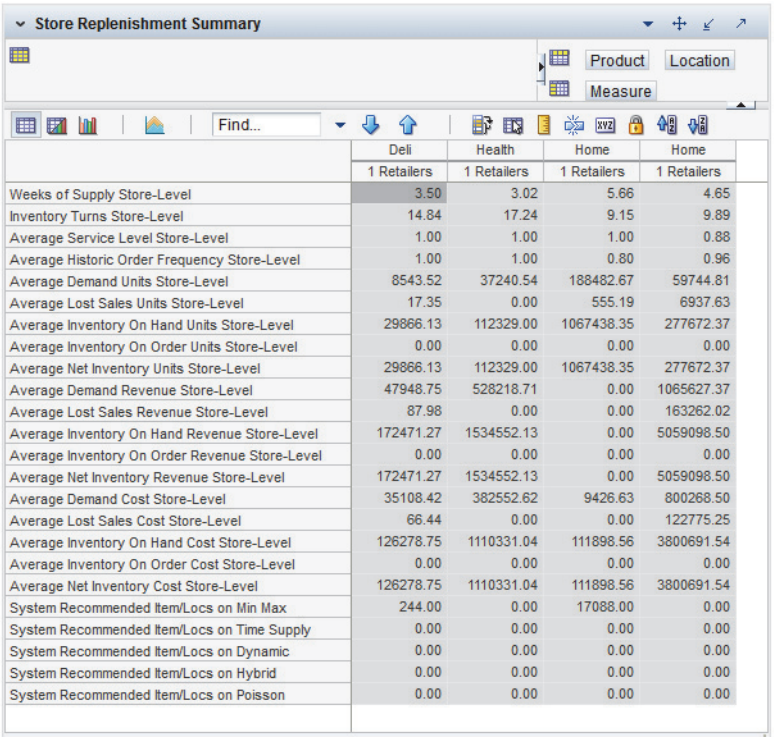
- Store Replenishment Summary View
- Warehouse Replenishment Summary View

The Summary views display the overall metrics of the approved plan.

Store Replenishment Summary View

This view displays a high level summary at the department/region level.

Figure 5–7 Store Replenishment Summary View



	Deli	Health	Home	Home
	1 Retailers	1 Retailers	1 Retailers	1 Retailers
Weeks of Supply Store-Level	3.50	3.02	5.66	4.65
Inventory Turns Store-Level	14.84	17.24	9.15	9.89
Average Service Level Store-Level	1.00	1.00	1.00	0.88
Average Historic Order Frequency Store-Level	1.00	1.00	0.80	0.96
Average Demand Units Store-Level	8543.52	37240.54	188482.67	59744.81
Average Lost Sales Units Store-Level	17.35	0.00	555.19	6937.63
Average Inventory On Hand Units Store-Level	29866.13	112329.00	1067438.35	277672.37
Average Inventory On Order Units Store-Level	0.00	0.00	0.00	0.00
Average Net Inventory Units Store-Level	29866.13	112329.00	1067438.35	277672.37
Average Demand Revenue Store-Level	47948.75	528218.71	0.00	1065627.37
Average Lost Sales Revenue Store-Level	87.98	0.00	0.00	163262.02
Average Inventory On Hand Revenue Store-Level	172471.27	1534552.13	0.00	5059098.50
Average Inventory On Order Revenue Store-Level	0.00	0.00	0.00	0.00
Average Net Inventory Revenue Store-Level	172471.27	1534552.13	0.00	5059098.50
Average Demand Cost Store-Level	35108.42	382552.62	9426.63	800268.50
Average Lost Sales Cost Store-Level	66.44	0.00	0.00	122775.25
Average Inventory On Hand Cost Store-Level	126278.75	1110331.04	111898.56	3800691.54
Average Inventory On Order Cost Store-Level	0.00	0.00	0.00	0.00
Average Net Inventory Cost Store-Level	126278.75	1110331.04	111898.56	3800691.54
System Recommended Item/Locs on Min Max	244.00	0.00	17088.00	0.00
System Recommended Item/Locs on Time Supply	0.00	0.00	0.00	0.00
System Recommended Item/Locs on Dynamic	0.00	0.00	0.00	0.00
System Recommended Item/Locs on Hybrid	0.00	0.00	0.00	0.00
System Recommended Item/Locs on Poisson	0.00	0.00	0.00	0.00

Table 5–1 Store Replenishment Summary View Measures

Measure	Description
Inventory Performance Statistical Measures	
Weeks of Supply Store-Level	The number of Weeks of Supply or Weeks on-hand, calculated as Average Inventory On Hand Units divided by Average Demand Units. This measure is calculated by using the department/region level measures.
Inventory Turns Store-Level	Average Inventory Turns calculated as Average Demand Units over the last 52 weeks divided by Average Inventory On Hand Units the last 52 weeks. This measure is calculated by using the department/region level measures.
Average Service Level Store-Level	The percentage of demand that was met is calculated as 1 minus Average Lost Sales Units/Average Demand Units. This measure is calculated by using the department/region level measures.
Average Historic Order Frequency Store-Level	The average number of orders in a week. This measure is calculated by averaging at the item /store level for the past year and then summing up to the department/region level.
Demand and Inventory Units Measures	
Average Demand Units Store-Level	The average demand in Revenue, obtained by multiplying Average Demand Units and Unit Price. Demand is calculated as historic sales plus historic Lost Sales. This measure is calculated by averaging at the item /store level for the past year and then summing up to the department/region level.
Average Lost Sales Units Store-Level	The Average Lost Sales Revenue value. This measure is calculated by averaging at the item /store level for the past year and then summing up to the department/region level.

Table 5–1 (Cont.) Store Replenishment Summary View Measures

Measure	Description
Average Inventory On Hand Units Store-Level	The Average on-hand Inventory in revenue value. This measure is calculated by averaging at the item /store level for the past year and then summing up to the department/region level.
Average Inventory On Order Units Store-Level	The Average On Order Inventory in revenue value. This measure is calculated by averaging at the item /store level for the past year and then summing up to the department/region level.
Average Net Inventory Units Store-Level	The Average Net Inventory in revenue value. This measure is calculated by averaging at the item /store level for the past year and then summing up to the department/region level.
Demand and Inventory Cost Measures	
Average Demand Revenue Store-Level	Average demand in cost, obtained by multiplying Average Demand Units by Unit Cost. Demand is calculated as historic sales plus historic Lost Sales. This measure is calculated by averaging at the item /store level for the past year and then summing up to the department/region level.
Average Lost Sales Revenue Store-Level	Average Lost Sales cost. This measure is calculated by averaging at the item /store level for the past year and then summing up to the department/region level.
Average Inventory On Hand Revenue Store-Level	The Average on-hand Inventory in cost. This measure is calculated by averaging at the item /store level for the past year and then summing up to the department/region level.
Average Inventory On Order Revenue Store-Level	The Average On Order Inventory in cost. This measure is calculated by averaging at the item /store level for the past year and then summing up to the department/region level.
Average Net Inventory Revenue Store-Level	The Average Net Inventory in cost. This measure is calculated by averaging at the item /store level for the past year and then summing up to the department/region level.
Number of Weeks for Stats Store-Level	The number of weeks in history over which the above statistics have been calculated. This measure is calculated by averaging at the item /store level for the past year and then summing up to the department/region level.
Replenishment Settings Statistical Measures	
System Recommended Item/Locs on Dynamic Store-Level	The number of items/locations for which the System recommends the Dynamic Replenishment Method. This measure is calculated by averaging at the item /store level for the past year and then summing up to the department/region level.
System Recommended Item/Locs on Hybrid Store-Level	The number of items/locations for which the System recommends the Hybrid Replenishment Method. This measure is calculated by averaging at the item /store level for the past year and then summing up to the department/region level.
System Recommended Item/Locs on MinMax Store-Level	The number of items/locations for which the System recommends the MinMax Replenishment Method. This measure is calculated by averaging at the item /store level for the past year and then summing up to the department/region level.

Table 5–1 (Cont.) Store Replenishment Summary View Measures

Measure	Description
System Recommended Item/Locs on Poisson Store-Level	The number of items/locations for which the System recommends the Poisson Replenishment Method. This measure is calculated by averaging at the item /store level for the past year and then summing up to the department/region level.
System Recommended Item/Locs on TimeSupply Store-Level	The number of items/locations for which the System recommends the Time Supply Replenishment Method. This measure is calculated by averaging at the item /store level for the past year and then summing up to the department/region level.
System Recommended Projected Average Inv OH Over Next Quarter Units Store-Level	Projected Average On-Hand Inventory units over the next quarter, based on system-recommended Replenishment settings. This measure represents the long-term steady state average on-hand Inventory, assuming current Inventory level is not too high or too low to drive long-term Inventory and Service levels. This measure is calculated by averaging at the item /store level for the past year and then summing up to the department/region level.
System Recommended Projected Lost Sales Units Over Next Quarter Units Store-Level	Projected Average Lost Sales over the next quarter, based on system-recommended Replenishment settings. This measure represents the long-term steady state Lost Sales, assuming current Inventory level is not too high or too low to drive long-term Inventory and Service levels. This measure is calculated by averaging at the item /store level for the past year and then summing up to the department/region level.
System Recommended Projected Average Service Level over next quarter Units Store-Level	Projected Average Service Level over the next quarter, based on system-recommended Replenishment settings. This measure represents the long-term steady state Service Level, assuming current Inventory level is not too high or too low to drive long-term Inventory and Service levels. This measure is calculated by averaging at the item /store level for the past year and then summing up to the department/region level.
System Recommended Projected Weeks of Supply over next quarter Store-Level	Projected Weeks of Supply over the next quarter, based on system-recommended Replenishment settings. The number of Weeks of Supply or Weeks on-hand is calculated as average on-hand Inventory divided by average Demand. This measure is calculated by averaging at the item /store level for the past year and then summing up to the department/region level.
Working Projected Average Inv OH over next Quarter Units Store-Level	Projected Average on-hand Inventory units over the next quarter, based on Working Replenishment settings. This measure represents the long-term steady state average on-hand Inventory, assuming current inventory level is not too high or too low to drive long-term Inventory and Service levels. This measure is calculated by averaging at the item /store level for the past year and then summing up to the department/region level.

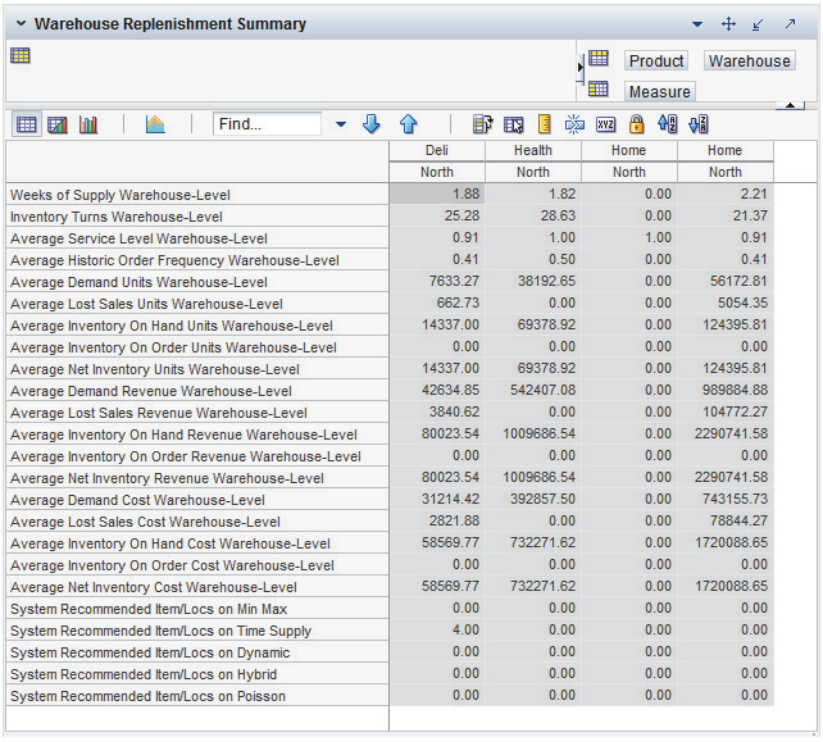
Table 5–1 (Cont.) Store Replenishment Summary View Measures

Measure	Description
Working Projected Average Lost Sales over next quarter Units Store-Level	Projected Average Lost Sales over the next quarter, based on Working Replenishment settings. This measure represents the long-term steady state Lost Sales, assuming current inventory level is not too high or too low to drive long-term Inventory and Service levels. This measure is calculated by averaging at the item /store level for the past year and then summing up to the department/region level.
Working Projected Average Service Level over next quarter Store-Level	Projected Average Service Level over the next quarter, based on Working Replenishment settings. This measure represents the long-term steady state Service Level, assuming current inventory level is not too high or too low to drive long-term Inventory and Service levels. This measure is calculated by averaging at the item /store level for the past year and then summing up to the department/region level.
Working Projected Weeks of Supply for next quarter Store-Level	Projected Weeks of Supply over the next quarter, based on Working Replenishment settings. The number of Weeks of Supply or Weeks on-hand is calculated as average on-hand Inventory divided by Average Demand. This measure is calculated by averaging at the item /store level for the past year and then summing up to the department/region level.

Warehouse Replenishment Summary View

This view displays a high level summary at the department/warehouse group level.

Figure 5–8 Warehouse Replenishment Summary View



	Deli North	Health North	Home North	Home North
Weeks of Supply Warehouse-Level	1.88	1.82	0.00	2.21
Inventory Turns Warehouse-Level	25.28	28.63	0.00	21.37
Average Service Level Warehouse-Level	0.91	1.00	1.00	0.91
Average Historic Order Frequency Warehouse-Level	0.41	0.50	0.00	0.41
Average Demand Units Warehouse-Level	7633.27	38192.65	0.00	56172.81
Average Lost Sales Units Warehouse-Level	662.73	0.00	0.00	5054.35
Average Inventory On Hand Units Warehouse-Level	14337.00	69378.92	0.00	124395.81
Average Inventory On Order Units Warehouse-Level	0.00	0.00	0.00	0.00
Average Net Inventory Units Warehouse-Level	14337.00	69378.92	0.00	124395.81
Average Demand Revenue Warehouse-Level	42634.85	542407.08	0.00	989884.88
Average Lost Sales Revenue Warehouse-Level	3840.62	0.00	0.00	104772.27
Average Inventory On Hand Revenue Warehouse-Level	80023.54	1009686.54	0.00	2290741.58
Average Inventory On Order Revenue Warehouse-Level	0.00	0.00	0.00	0.00
Average Net Inventory Revenue Warehouse-Level	80023.54	1009686.54	0.00	2290741.58
Average Demand Cost Warehouse-Level	31214.42	392857.50	0.00	743155.73
Average Lost Sales Cost Warehouse-Level	2821.88	0.00	0.00	78844.27
Average Inventory On Hand Cost Warehouse-Level	58569.77	732271.62	0.00	1720088.65
Average Inventory On Order Cost Warehouse-Level	0.00	0.00	0.00	0.00
Average Net Inventory Cost Warehouse-Level	58569.77	732271.62	0.00	1720088.65
System Recommended Item/Locs on Min Max	0.00	0.00	0.00	0.00
System Recommended Item/Locs on Time Supply	4.00	0.00	0.00	0.00
System Recommended Item/Locs on Dynamic	0.00	0.00	0.00	0.00
System Recommended Item/Locs on Hybrid	0.00	0.00	0.00	0.00
System Recommended Item/Locs on Poisson	0.00	0.00	0.00	0.00

Table 5–2 Warehouse Replenishment Summary View Measures

Measure	Description
Inventory Performance Statistical Measures	
Weeks of Supply Warehouse Level	The number of Weeks of Supply or Weeks on-hand, calculated as average on-hand Inventory divided by Average Demand.
Inventory Turns Warehouse Level	Average Inventory Turns calculated as Sales over the last 52 weeks divided by average on-hand Inventory the last 52 weeks.
Average Service Level Warehouse Level	The percentage of demand that was met, calculated as Average Sales/Average Demand.
Average Historic Order Frequency Warehouse Level	The average number of orders in a week.
Demand and Inventory Units Measures	
Average Demand Revenue Warehouse Level	The average demand in Revenue, obtained by multiplying Average Demand Units by Unit Price. Demand is calculated as historic sales plus historic Lost Sales.
Average Lost Sales Revenue Warehouse Level	The Average Lost Sales Revenue value.
Average Inventory On Hand Revenue Warehouse Level	The Average on-hand Inventory in revenue value.
Average Inventory On Order Revenue Warehouse Level	The Average On Order Inventory in revenue value.
Average Net Inventory Revenue Warehouse Level	The Average Net Inventory in revenue value.
Demand and Inventory Cost Measures	
Average Demand Cost Warehouse Level	Average demand in cost, obtained by multiplying Average Demand Units and Unit Cost. Demand is calculated as historic sales plus historic Lost Sales.
Average Lost Sales Cost Warehouse Level	Average Lost Sales cost.
Average Inventory On Hand Cost Warehouse Level	The Average on-hand Inventory in cost.
Average Inventory On Order Cost Warehouse Level	The Average On Order Inventory in cost.
Average Net Inventory Cost Warehouse Level	The Average Net Inventory in cost.
Number of Weeks for Stats Warehouse Level	The number of weeks in history over which the above statistics have been calculated.
Replenishment Settings Statistical Measures	
System Recommended Item/Locs on Dynamic Warehouse Level	The number of items/locations for which the System recommends the Dynamic Replenishment Method.
System Recommended Item/Locs on Hybrid Warehouse Level	The number of items/locations for which the System recommends the Hybrid Replenishment Method.
System Recommended Item/Locs on MinMax Warehouse Level	The number of items/locations for which the System recommends the MinMax Replenishment Method.

Table 5–2 (Cont.) Warehouse Replenishment Summary View Measures

Measure	Description
System Recommended Item/Locs on Poisson Warehouse Level	The number of items/locations for which the System recommends the Poisson Replenishment Method.
System Recommended Item/Locs on TimeSupply Warehouse Level	The number of items/locations for which the System recommends the Time Supply Replenishment Method.
Projected Inventory and Service Level Statistics These measures provide projected statistics on Inventory, Service Level, and Lost Sales. The Working and System Recommended statistics allow the Manager to view the projected impacts of both statistical versions at the same time.	
System Recommended Projected Average Inv OH Over Next Quarter Units Warehouse Level	Projected Average On Hand Inventory units over the next quarter, based on system-recommended Replenishment settings. This measure represents the long-term steady state average on-hand Inventory, assuming current Inventory level is not too high or too low to drive long-term Inventory and Service levels.
System Recommended Projected Lost Sales Units Over Next Quarter Units Warehouse Level	Projected Average Lost Sales over the next quarter, based on system-recommended Replenishment settings. This measure represents the long-term steady state Lost Sales, assuming current Inventory level is not too high or too low to drive long-term Inventory and Service levels.
System Recommended Projected Average Service Level over next quarter Units Warehouse Level	Projected Average Service Level over the next quarter, based on system-recommended Replenishment settings. This measure represents the long-term steady state Service Level, assuming current Inventory level is not too high or too low to drive long-term Inventory and Service levels.
System Recommended Projected Weeks of Supply over next quarter Warehouse Level	Projected Weeks of Supply over the next quarter, based on system-recommended Replenishment settings. The number of Weeks of Supply or Weeks on-hand is calculated as average on-hand Inventory divided by average Demand.
Working Projected Average Inv OH over next Quarter Units Warehouse Level	Projected Average on-hand Inventory units over the next quarter, based on Working Replenishment settings. This measure represents the long-term steady state average on-hand Inventory, assuming current Inventory level is not too high or too low to drive long-term Inventory and Service levels.
Working Projected Average Lost Sales over next quarter Units Warehouse Level	Projected Average Lost Sales over the next quarter, based on Working replenishment settings. This measure represents the long-term steady state Lost Sales, assuming current Inventory level is not too high or too low to drive long-term Inventory and Service levels.
Working Projected Average Service Level over next quarter Warehouse Level	Projected Average Service Level over the next quarter, based on Working replenishment settings. This measure represents the long-term steady state Service Level, assuming current Inventory level is not too high or too low to drive long-term Inventory and Service levels.
Working Projected Weeks of Supply for next quarter Warehouse Level	Projected Weeks of Supply over the next quarter, based on Working replenishment settings. The number of Weeks of Supply or Weeks on-hand is calculated as average on-hand Inventory divided by Average Demand.

Weekly Level Summary Step

This step has the following views:

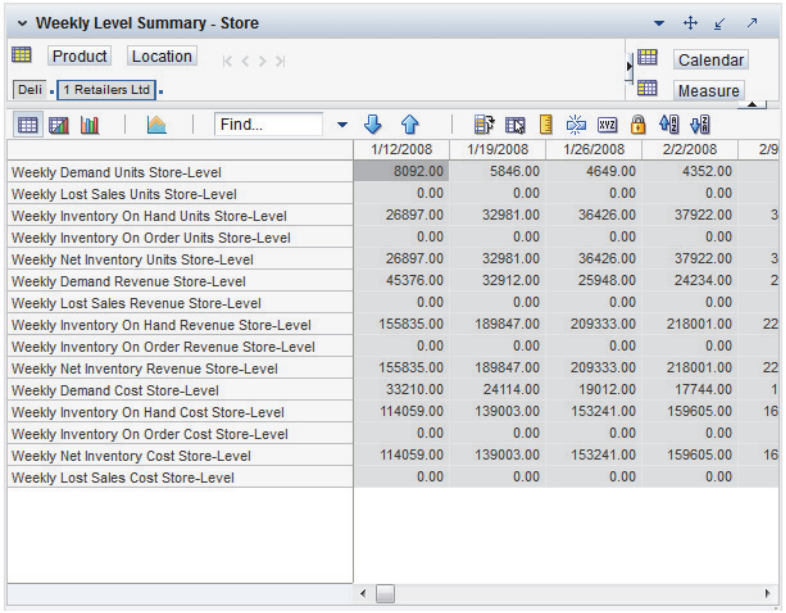
- Weekly Level Summary - Store View
- Weekly Level Summary - Warehouse View

These views provide weekly information to help Replenishment Managers track inventory movement.

Weekly Level Summary - Store View

This view displays a high level weekly summary at the department/region level.

Figure 5–9 Weekly Level Summary - Store View



	1/12/2008	1/19/2008	1/26/2008	2/2/2008	2/9
Weekly Demand Units Store-Level	8092.00	5846.00	4649.00	4352.00	
Weekly Lost Sales Units Store-Level	0.00	0.00	0.00	0.00	
Weekly Inventory On Hand Units Store-Level	26897.00	32981.00	36426.00	37922.00	3
Weekly Inventory On Order Units Store-Level	0.00	0.00	0.00	0.00	
Weekly Net Inventory Units Store-Level	26897.00	32981.00	36426.00	37922.00	3
Weekly Demand Revenue Store-Level	45376.00	32912.00	25948.00	24234.00	2
Weekly Lost Sales Revenue Store-Level	0.00	0.00	0.00	0.00	
Weekly Inventory On Hand Revenue Store-Level	155835.00	189847.00	209333.00	218001.00	22
Weekly Inventory On Order Revenue Store-Level	0.00	0.00	0.00	0.00	
Weekly Net Inventory Revenue Store-Level	155835.00	189847.00	209333.00	218001.00	22
Weekly Demand Cost Store-Level	33210.00	24114.00	19012.00	17744.00	1
Weekly Inventory On Hand Cost Store-Level	114059.00	139003.00	153241.00	159605.00	16
Weekly Inventory On Order Cost Store-Level	0.00	0.00	0.00	0.00	
Weekly Net Inventory Cost Store-Level	114059.00	139003.00	153241.00	159605.00	16
Weekly Lost Sales Cost Store-Level	0.00	0.00	0.00	0.00	

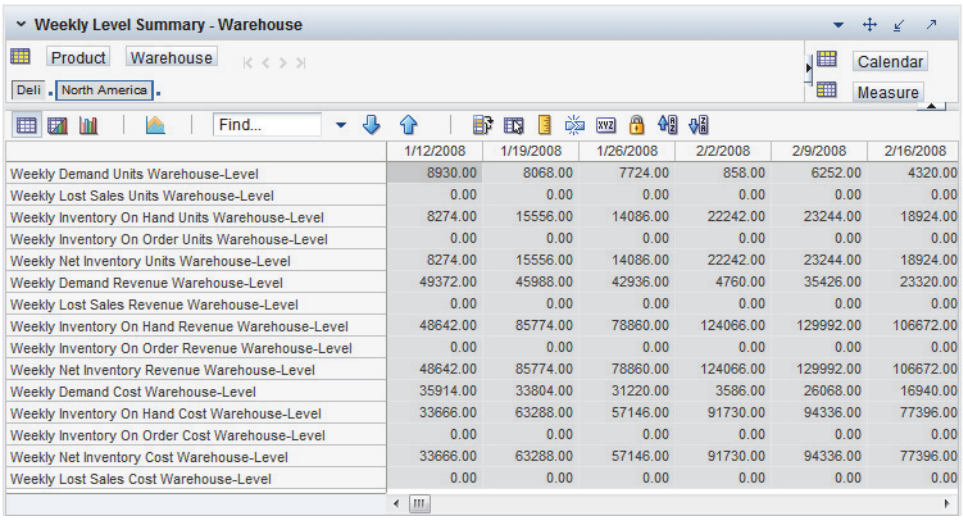
Table 5–3 Weekly Level Summary - Store View Measures

Measure	Description
Weekly Demand Units Store Level	The Weekly Demand Units value.
Weekly Lost Sales Units Store Level	The Weekly Lost Sales Units value.
Weekly Inventory On Hand Units Store Level	The Weekly on-hand Inventory Units value.
Weekly Inventory On Order Units Store Level	The Weekly On Order Inventory Units value.
Weekly Net Inventory Units Store Level	The Weekly Net Inventory Units value.
Weekly Demand Revenue Store Level	The Weekly Demand Revenue value.
Weekly Lost Sales Revenue Store Level	The Weekly Lost Sales Revenue value.
Weekly Inventory On Hand Revenue Store Level	The Weekly on-hand Inventory Revenue value.
Weekly Inventory On Order Revenue Store Level	The Weekly On Order Inventory Revenue value.
Weekly Net Inventory Revenue Store Level	The Weekly Net Inventory Revenue value.
Weekly Demand Cost Store Level	The Weekly Demand Cost value.
Weekly Lost Sales Cost Store Level	The Weekly Lost Sales Cost value.
Weekly Inventory On Hand Cost Store Level	The Weekly on-hand Inventory Cost value.
Weekly Inventory On Order Cost Store Level	The Weekly On Order Inventory Cost value.
Weekly Net Inventory Cost Store Level	The Weekly Net Inventory Cost value.

Weekly Level Summary - Warehouse View

This view displays a high level weekly summary at the department/warehouse group level.

Figure 5–10 Weekly Level Summary - Warehouse View



	1/12/2008	1/19/2008	1/26/2008	2/2/2008	2/9/2008	2/16/2008
Weekly Demand Units Warehouse-Level	8930.00	8068.00	7724.00	858.00	6252.00	4320.00
Weekly Lost Sales Units Warehouse-Level	0.00	0.00	0.00	0.00	0.00	0.00
Weekly Inventory On Hand Units Warehouse-Level	8274.00	15556.00	14086.00	22242.00	23244.00	18924.00
Weekly Inventory On Order Units Warehouse-Level	0.00	0.00	0.00	0.00	0.00	0.00
Weekly Net Inventory Units Warehouse-Level	8274.00	15556.00	14086.00	22242.00	23244.00	18924.00
Weekly Demand Revenue Warehouse-Level	49372.00	45988.00	42936.00	4760.00	35426.00	23320.00
Weekly Lost Sales Revenue Warehouse-Level	0.00	0.00	0.00	0.00	0.00	0.00
Weekly Inventory On Hand Revenue Warehouse-Level	48642.00	85774.00	78860.00	124066.00	129992.00	106672.00
Weekly Inventory On Order Revenue Warehouse-Level	0.00	0.00	0.00	0.00	0.00	0.00
Weekly Net Inventory Revenue Warehouse-Level	48642.00	85774.00	78860.00	124066.00	129992.00	106672.00
Weekly Demand Cost Warehouse-Level	35914.00	33804.00	31220.00	3586.00	26068.00	16940.00
Weekly Inventory On Hand Cost Warehouse-Level	33666.00	63288.00	57146.00	91730.00	94336.00	77396.00
Weekly Inventory On Order Cost Warehouse-Level	0.00	0.00	0.00	0.00	0.00	0.00
Weekly Net Inventory Cost Warehouse-Level	33666.00	63288.00	57146.00	91730.00	94336.00	77396.00
Weekly Lost Sales Cost Warehouse-Level	0.00	0.00	0.00	0.00	0.00	0.00

Table 5–4 Weekly Level Summary - Warehouse View Measures

Measure	Description
Weekly Demand Units Warehouse Level	The Weekly Demand Units value.
Weekly Lost Sales Units Warehouse Level	The Weekly Lost Sales Units value.
Weekly Inventory On Hand Units Warehouse Level	The Weekly on-hand Inventory Units value.
Weekly Inventory On Order Units Warehouse Level	The Weekly On Order Inventory Units value.
Weekly Net Inventory Units Warehouse Level	The Weekly Net Inventory Units value.
Weekly Demand Revenue Warehouse Level	The Weekly Demand Revenue value.
Weekly Lost Sales Revenue Warehouse Level	The Weekly Lost Sales Revenue value.
Weekly Inventory On Hand Revenue Warehouse Level	The Weekly on-hand Inventory Revenue value.
Weekly Inventory On Order Revenue Warehouse Level	The Weekly On Order Inventory Revenue value.
Weekly Net Inventory Revenue Warehouse Level	The Weekly Net Inventory Revenue value.
Weekly Demand Cost Warehouse Level	The Weekly Demand Cost value.
Weekly Lost Sales Cost Warehouse Level	The Weekly Lost Sales Cost value.
Weekly Inventory On Hand Cost Warehouse Level	The Weekly on-hand Inventory Cost value.
Weekly Inventory On Order Cost Warehouse Level	The Weekly On Order Inventory Cost value.
Weekly Net Inventory Cost Warehouse Level	The Weekly Net Inventory Cost value.

6

Detail Level Analysis Workbook

The Detail Level Analysis workbook enables you to monitor replenishment performance and modify item/location level replenishment settings. This workbook also includes What-if capabilities, allowing you to view projected impact of Replenishment Settings on parameters such as Inventory, Order Points, Order Up-to Levels, and Service Level.

This workbook enables you to make an informed decision based on the impact of the changes in the Detail Level Analysis Settings. You have the option of applying System Recommended Settings, Previously Approved Settings, or Override with Special user input settings.

This workbook is intended to include all items/locations for which the Detail Level Analysis is responsible.

The Detail Level Analysis workbook contains the following steps and views:

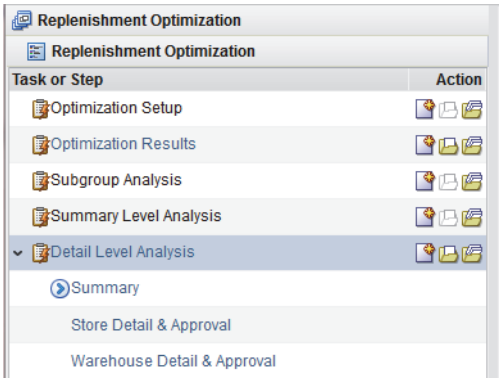
- Summary Step
- Store Detail & Approval Step
- Warehouse Detail & Approval Step

Detail Level Analysis Wizard

To create a Detail Level Analysis workbook, perform the following:

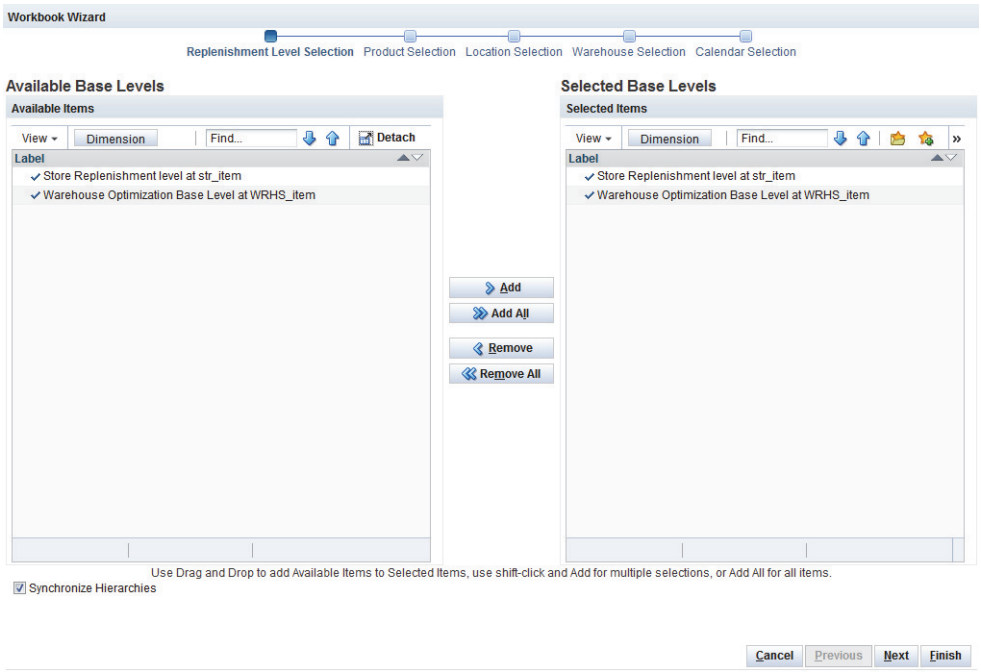
1. Click the Create New Workbook icon in the Detail Level Analysis task.

Figure 6–1 Creating a New Detail Level Analysis Workbook



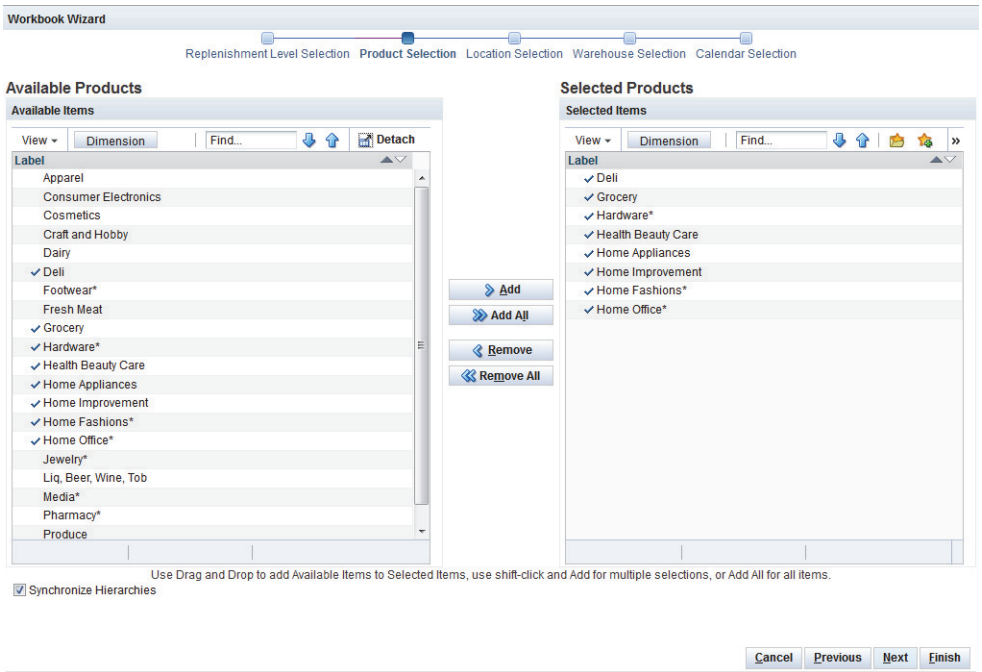
2. The Available Base Level window opens. Select either or both the store level (SL) or warehouse level (WL) to be displayed in the workbook and click **Next**.

Figure 6–2 Available Base Level



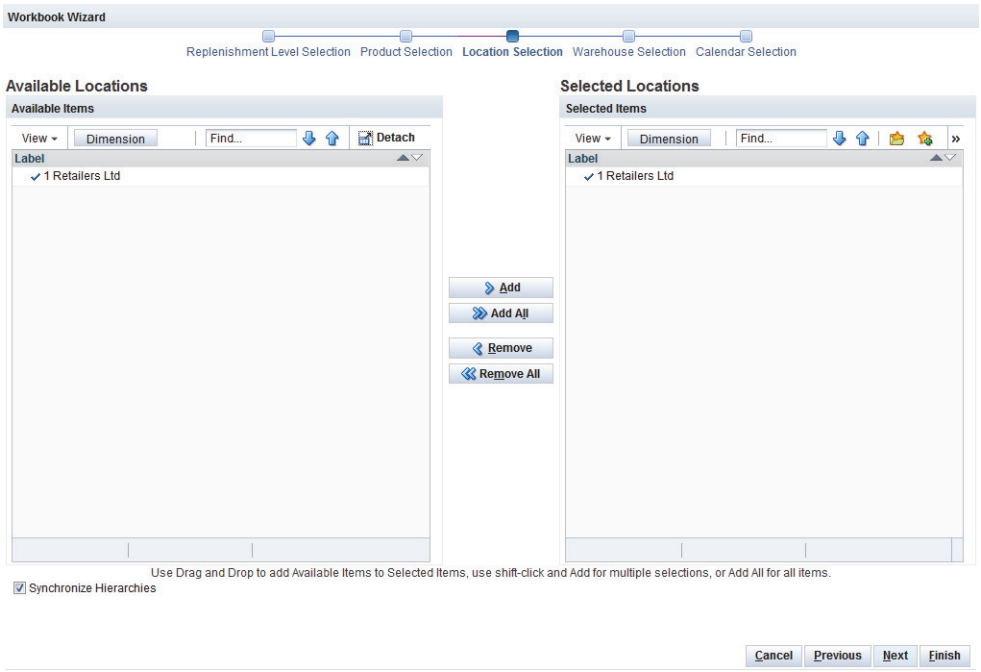
3. The Available Products window opens. Select the items to be displayed in the workbook and click **Next**.

Figure 6–3 Available Products



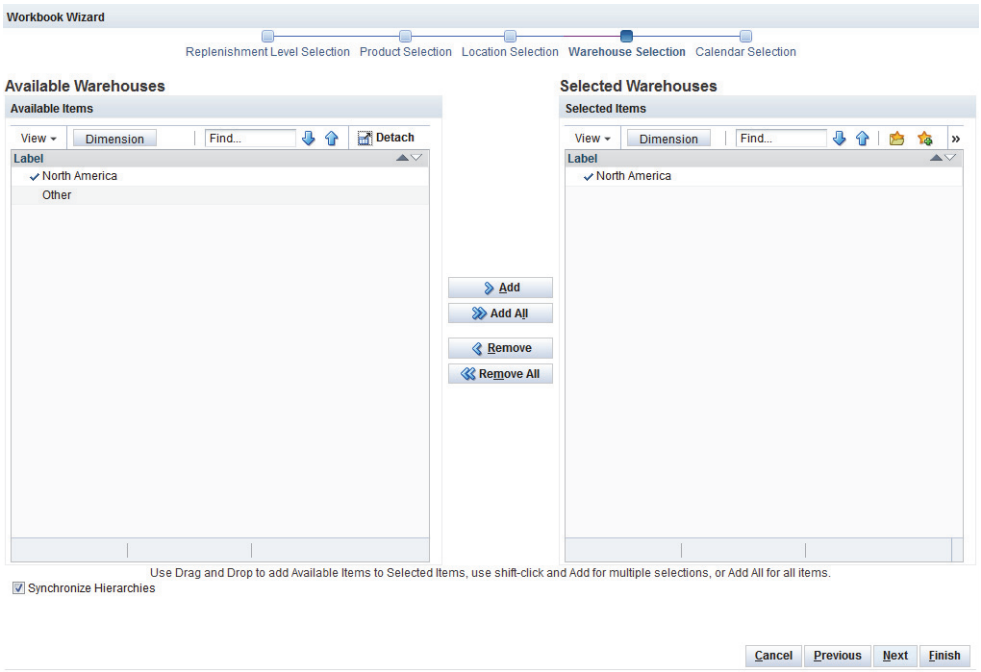
4. The Available Locations window opens. Select the stores to be displayed in the workbook and click **Next**.

Figure 6–4 Available Locations



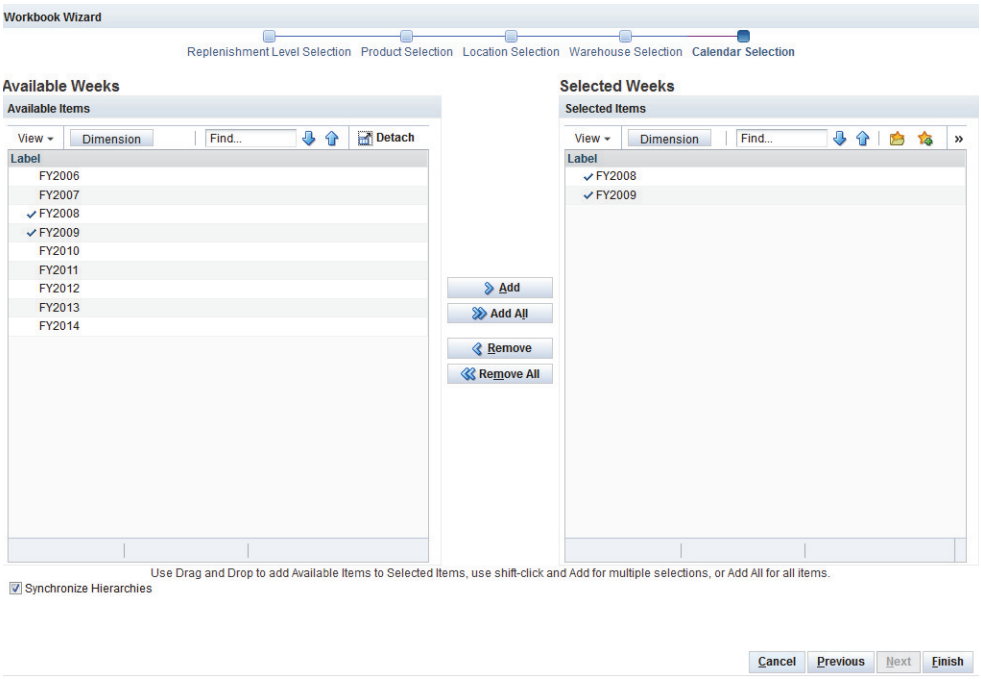
5. The Available Warehouses window opens. Select the warehouses to be displayed in the workbook and click **Next**.

Figure 6–5 Available Warehouses



6. The Available Weeks window opens. Select the weeks to be displayed in the workbook and click **Finish**.

Figure 6–6 Available Weeks



The Detail Level Analysis workbook is built.

Replenishment Methods and Parameters Overview

Replenishment methods and parameters are concepts that are modified and reviewed in the Detail Level Analysis workbook. In the Detail Level Analysis workbook, there are several versions of these concepts, including:

- System Recommended
- Approved Version

Replenishment Method

Replenishment Method to be applied to all items/locations that meet the Replenishment Rule Group and Replenishment Rule ID thresholds. This is a writable measure.

Replenishment Param Name1

This is a read-only measure that prompts you with what Replenishment Parameters need to be entered for the selected Replenishment Method. This measure gets populated when you enter a Replenishment Method and click **Calculate**.

Replenishment Param Name2

This is a read-only measure that prompts you with the Replenishment Parameters that need to be entered for the selected Replenishment Method. This measure gets populated when you enter a Replenishment Method and click **Calculate**.

Auxiliary Replenishment Param Name1

This is a read-only measure that prompts you with the Replenishment Parameters that need to be entered for the selected Replenishment Method. This measure gets populated when you enter a Replenishment Method and click **Calculate**.

Auxiliary Replenishment Param Name2

This is a read-only measure that prompts you with the Replenishment Parameters that need to be entered for the selected Replenishment Method. This measure gets populated when you enter a Replenishment Method and click **Calculate**.

Replenishment Param Value1

This is a writable measure, which can either be loaded or entered through this workbook. This measure holds the value for Replenishment Param1. For example, if you choose a Replenishment Method of MinMax, then this measure stores the Min value (as suggested by the Replenishment Param Name1 measure).

Replenishment Param Value2

This is a writable measure, which can either be loaded or entered through this workbook. This measure holds the value for Replenishment Param1. For example, if you choose a Replenishment Method of MinMax, then this measure stores the Max value (as suggested by the Replenishment Param Name2 measure).

Auxiliary Replenishment Param Value1

This is a writable measure, which can either be loaded or entered through this workbook. This measure holds the value for Auxiliary Replenishment Param1.

Auxiliary Replenishment Param Value2

This is a writable measure, which can either be loaded or entered through this workbook. This measure holds the value for Auxiliary Replenishment Param2.

User Message

This is a read-only measure that contains any error or warning messages from the system. When you select Calculate, the system validates the user input values and populates this measure with any error or warning messages.

Replenishment Parameters and Validity

Table 6–1 lists the replenishment methods and valid values of the corresponding parameters.

Table 6–1 Replenishment Parameters and Validity Table

Repl Method	Repl Param1	Repl Param2	Auxiliary Repl Param1	Auxiliary Repl Param2	Validity
MinMax	Min	Max			Min>0; Max>0; Max>Min
					SafetyStockFactor >0; WOS factor>0
					If Min, Max, SafetyStock, and WOS factors are all input, then the Min/Max values will be ignored.
Dynamic	Service Level	Inventory Selling Days			Service Level>0 and <1 Inventory Selling days>0
TimeSupply	MinTS	MaxTS	TSHorizon		MinTS>0; MaxTS>0; MaxTS>MinTS
					TSHorizon> 0
Poisson	Service Level	Inventory Selling Days			Service Level>0 and <1 Inventory Selling days>0
Hybrid	MinTS	Inventory Selling Days	TSHorizon		MinTS>0; TSHorizon>0

Summary Step

The Summary step summarizes the alert review progress, performance statistics, and system recommendations for all items/locations that are included in this workbook. This workbook gives Replenishment Analysts a high-level summary of inventory, sales, service level, and other performance statistics of all items/locations for which they are responsible.

The Summary step contains the following views:

- Store Replenishment Summary View
- Warehouse Replenishment Summary Details View

Store Replenishment Summary View

In this view, the metrics are presented at the aggregate level, for all item/store combinations selected in the wizard.

Figure 6–7 Store Replenishment Summary View

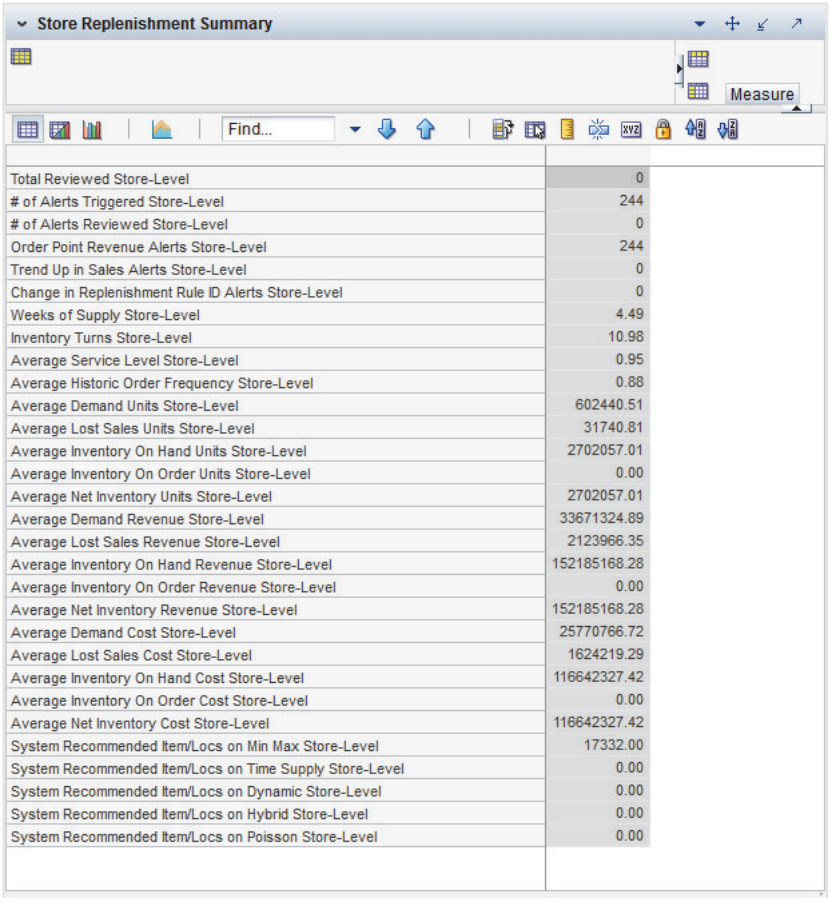


Table 6–2 Store Replenishment Summary View Measures

Measure	Description
Alert Statistical Measures	
Total Reviewed Store - Level	The total number of items/locations that have been reviewed so far.
# of Alerts Triggered - Store Level	The total number of items/locations that have any alerts triggered.
# of Alerts Reviewed - Store Level	The total number of items/locations that have any alert triggered and have been reviewed.
Order Point Revenue Alerts - Store Level	The number of items/locations that have the order point revenue alert triggered. This alert is triggered when order point revenue exceeds a threshold. The threshold is the value entered in the Exception Threshold Workbook.
Trend Up in Sales Alerts - Store Level	The number of items/locations that have the trend in sales alert triggered. This alert is triggered when the absolute value of trend in sales over the last month exceeds a threshold. The threshold is the value entered in the Exception Threshold Workbook.
Change in Replenishment Rule ID Alerts - Store Level	The number of items/locations that have been reassigned to different subgroupings.
Inventory Performance Statistical Measures	
Weeks of Supply Store Level	The number of weeks of supply or weeks on-hand, calculated as average on-hand inventory divided by average demand.

Table 6–2 (Cont.) Store Replenishment Summary View Measures

Measure	Description
Inventory Turns - Store Level	The average inventory turns calculated as sales over that last 52 weeks divided by average on-hand inventory the last 52 weeks.
Average Service Level - Store Level	The percentage of demand that was met. Calculated as average sales/average demand.
Average Historic Order Frequency - Store Level	The average number of orders in a week.
Demand and Inventory Units Measures	
Average Demand Units - Store Level	The average demand in units value. Demand is calculated as historic sales plus historic lost sales.
Average Lost Sales Units - Store Level	The average lost sales units.
Average Inventory On Hand Units - Store Level	The average on-hand inventory in units.
Average Inventory On Order Units - Store Level	The average on order inventory in units.
Average Net Inventory Units -Store Level	The average net inventory in units.
Demand and Inventory Revenue Measures	
Average Demand Revenue - Store Level	The average demand in revenue value is calculated by multiplying average demand units by unit price. Demand is calculated as historic sales plus historic lost sales.
Average Lost Sales Revenue - Store Level	The average lost sales revenue value.
Demand and Inventory Revenue Measures	
Average Inventory On Hand Revenue - Store Level	The average on-hand inventory in revenue value.
Average Inventory On Order Revenue - Store Level	The average on order inventory in revenue value.
Average Net Inventory Revenue - Store Level	The average net inventory in revenue value.
Demand and Inventory Cost Measures	
Average Demand Cost - Store Level	The average demand in cost value is calculated by multiplying average demand units by unit cost. Demand is calculated as historic sales plus historic lost sales.
Average Lost Sales Cost - Store Level	The average lost sales cost value.
Average Inventory On Hand Cost - Store Level	The average on-hand inventory in cost value.
Average Inventory On Order Cost - Store Level	The average on order inventory in cost value.
Average Net Inventory Cost - Store Level	The average net inventory in cost value.
Number of Weeks for Stats - Store Level	The number of weeks in history over which the above statistics have been calculated.
Replenishment Settings Statistical Measures	
System Recommended Item/Locs on MinMax - Store Level	The number of items/locations for which the system recommends the MinMax Replenishment Method.

Table 6–2 (Cont.) Store Replenishment Summary View Measures

Measure	Description
System Recommended Item/Locs on TimeSupply - Store Level	The number of items/locations for which the system recommends the Time Supply Replenishment Method.
System Recommended Item/Locs on Dynamic - Store Level	The number of items/locations for which the system recommends the Dynamic Replenishment Method.
System Recommended Item/Locs on Hybrid - Store Level	The number of items/locations for which the system recommends the Hybrid Replenishment Method.
System Recommended Item/Locs on Poisson - Store Level	The number of items/locations for which the system recommends the Poisson Replenishment Method.

Warehouse Replenishment Summary Details View

In this view, the metrics are presented at the aggregate level, for all item/warehouse combinations selected in the wizard.

Figure 6–8 Warehouse Replenishment Summary Details

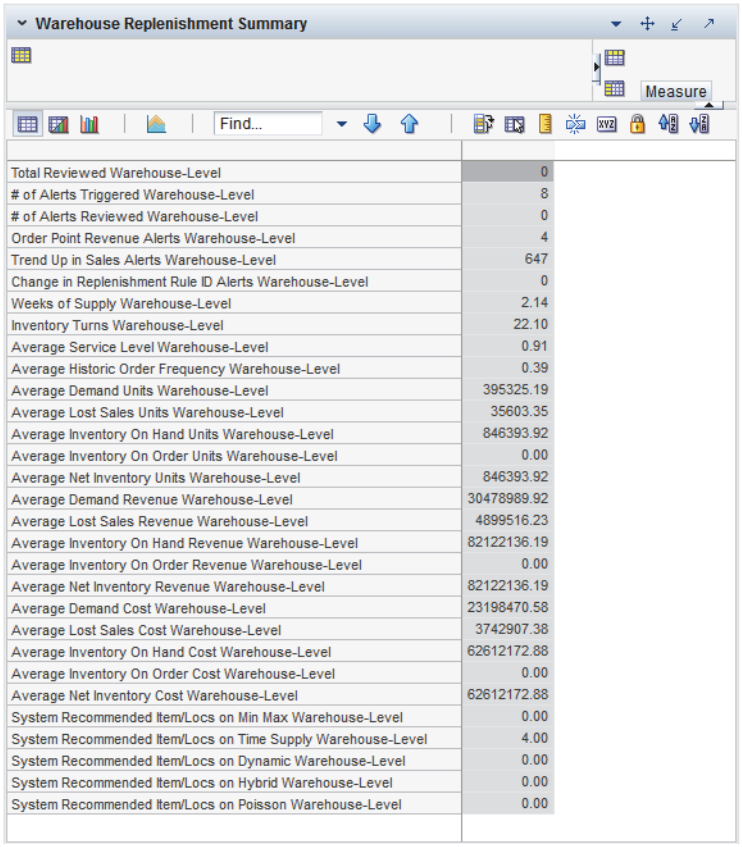


Table 6–3 Warehouse Replenishment Summary Details View Measures

Measure	Description
Alert Statistical Measures	
Total Reviewed - Warehouse Level	The total number of items/locations that have been reviewed so far.
# of Alerts Triggered - Warehouse Level	The total number of items/locations that have any alerts triggered.

Table 6–3 (Cont.) Warehouse Replenishment Summary Details View Measures

Measure	Description
# of Alerts Reviewed - Warehouse Level	The total number of items/warehouses that have any alert triggered and have been reviewed.
Order Point Revenue Alerts - Warehouse Level	The number of items/locations that have the Order Point Revenue alert triggered. This alert is triggered when the Order Point Revenue exceeds a threshold. The threshold is the value entered in the Exception Threshold Workbook.
Trend Up in Sales Alerts - Warehouse Level	The number of items/locations that have the Trend is Sales alert triggered. This alert is triggered when the absolute value of trend in Sales over the last month exceeds a threshold. The threshold is the value entered in the Exception Threshold Workbook.
Change in Replenishment Rule ID Alerts - Warehouse Level	The number of items/locations that have been reassigned to different subgroupings.
Inventory Performance Statistical Measures	
Weeks of Supply Warehouse Level	The number of Weeks of Supply or Weeks On-Hand, calculated as average On-Hand Inventory divided by average Demand.
Inventory Turns - Warehouse Level	The Average Inventory Turns calculated as Sales over that last 52 weeks divided by average On-Hand Inventory the last 52 weeks.
Average Service Level - Warehouse Level	The percentage of demand that was met. Calculated as average sales/average Demand.
Average Historic Order Frequency - Warehouse Level	The Average number of Orders in a week.
Demand and Inventory Units Measures	
Average Demand Units - Warehouse Level	The average demand in units value. Demand is calculated as historic sales plus historic Lost Sales.
Average Lost Sales Units - Warehouse Level	The average lost sales units.
Average Inventory On Hand Units - Warehouse Level	The average on-hand inventory in units.
Average Inventory On Order Units - Warehouse Level	The average on order inventory in units.
Average Net Inventory Units - Warehouse Level	The average net inventory in units.
Demand and Inventory Revenue Measures	
Average Demand Revenue - Warehouse Level	The average demand in revenue value is calculated by multiplying Average Demand Units by Unit Price. Demand is calculated as historic sales plus historic Lost Sales.
Average Lost Sales Revenue - Warehouse Level	The average lost sales revenue value.
Demand and Inventory Revenue Measures	
Average Inventory On Hand Revenue - Warehouse Level	The average on-hand inventory in revenue value.
Average Inventory On Order Revenue - Warehouse Level	The average on order inventory in revenue value.
Average Net Inventory Revenue - Warehouse Level	The average net inventory in revenue value.

Table 6–3 (Cont.) Warehouse Replenishment Summary Details View Measures

Measure	Description
Demand and Inventory Cost Measures	
Average Demand Cost - Warehouse Level	The average demand in cost value is calculated by multiplying Average Demand Units by Unit Cost. Demand is calculated as historic sales plus historic Lost Sales.
Average Lost Sales Cost - Warehouse Level	The average lost sales cost value.
Average Inventory On Hand Cost - Warehouse Level	The average on-hand inventory in cost value.
Average Inventory On Order Cost - Warehouse Level	The average on order inventory in cost value.
Average Net Inventory Cost - Warehouse Level	The average net inventory in cost value.
Number of Weeks for Stats - Warehouse Level	The number of weeks in history over which the above statistics have been calculated.
Replenishment Settings Statistical Measures	
System Recommended Item/Locs on MinMax - Warehouse Level	The number of items/locations for which the system recommends the MinMax Replenishment Method.
System Recommended Item/Locs on TimeSupply - Warehouse Level	The number of items/locations for which the system recommends the Time Supply Replenishment Method.
System Recommended Item/Locs on Dynamic - Warehouse Level	The number of items/locations for which the system recommends the Dynamic Replenishment Method.
System Recommended Item/Locs on Hybrid - Warehouse Level	The number of items/locations for which the system recommends the Hybrid Replenishment Method.
System Recommended Item/Locs on Poisson - Warehouse Level	The number of items/locations for which the system recommends the Poisson Replenishment Method.

Store Detail & Approval Step

The Store Detail & Approval step provides item/location and weekly details, What-if capabilities, and the option to select system-recommended, previous-approved, or user-updated settings by updating the approval status. For additional information about replenishment setting, see Understanding the Working Version of the Replenishment Settings. This step contains the following views:

- Interactive Analysis - Store View
- Replenishment Details - Store View
- Replenishment Daily Details - Store View
- Replenishment Approve - Store View

Interactive Analysis - Store View

The Interactive Analysis - Store view enables you to compare different replenishment settings, perform What-if analysis to determine impact of these settings, and ultimately select the settings to be used. You can apply system-recommended, previously-approved, or special-user input settings by updating the Replen Status measure. The workbook calculates OP, OUTL, and Projected Order Quantity. You can compare these values for various choices.

The user replenishment method and parameter measures that you set trigger a calculation that updates the read-only user measures when you click **Calculate User Overrides** in the top, right corner.

Figure 6–9 Interactive Analysis - Store View

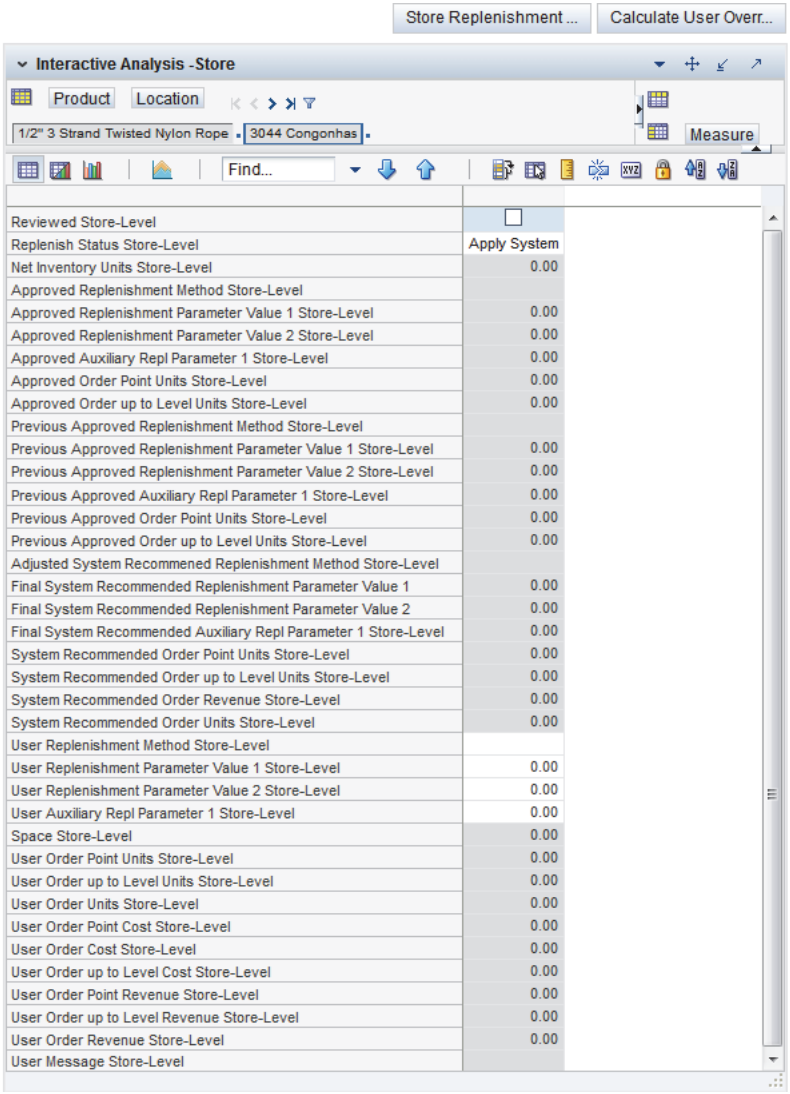


Table 6–4 Interactive Analysis - Store View Measures

Measure	Description
Approved Auxiliary Repl Parameter 1 Store Level	This measure selects the Approve option in the Approval step to invoke the Approve menu. The system will then copy the Auxiliary Replenishment Param1 indicated in the Replen Status measure to the Approved Replenishment Param1. The Approved flag will then be cleared to allow you to re-approve at a later time if needed.
Approved Order Point Units Store Level	This measure selects the Approve option in the Approval step to invoke the Approve menu. The system will then update this measure with the Order Point corresponding to the Approved Replenishment Method and Parameters.
Approved Order up to Level Units Store Level	This measure selects the Approve option in the Approval step to invoke the Approve menu. The system will then update this measure with the Order Up to Level corresponding to the Approved Replenishment Method and Parameters.
Approved Replenishment Method Store Level	This measure selects the Approve option in the Approval step to invoke the Approve menu. The system will then copy the Replenishment Settings indicated in the Replen Status measure to the Approved Replenishment Method. The Approved flag will then be cleared to allow you to re-approve at a later time if needed.
Approved Replenishment Parameter Value 1 Store Level	This measure selects the Approve option in the Approval step to invoke the Approve menu. The system will then copy the Replenishment Param1 indicated in the Replen Status measure to the Approved Replenishment Param1. The Approved flag will then be cleared to allow you to re-approve at a later time if needed.
Approved Replenishment Parameter Value 2 Store Level	This measure selects the Approve option in the Approval step to invoke the Approve menu. The system will then copy the Replenishment Param2 indicated in the Replen Status measure to the Approved Replenishment Param1. The Approved flag will then be cleared to allow you to re-approve at a later time if needed.
Net Inventory Units Store Level	The current net inventory position.
Previous Approved Auxiliary Repl Parameter 1 Store Level	Previous Approved Auxiliary Replenishment Parameter Value 1.
Previous Approved Order Point Units Store Level	The Previous Approved Order Point Units value.
Previous Approved Order up to Level Units Store Level	The Previous Approved Order Up to Level Units value.
Previous Approved Replenishment Method Store Level	The Previous Approved Replenishment Method.
Previous Approved Replenishment Parameter Value 1 Store Level	Previous Approved Replenishment Parameter Value 1.
Previous Approved Replenishment Parameter Value 2 Store Level	Previous Approved Replenishment Parameter Value 2.

Table 6–4 (Cont.) Interactive Analysis - Store View Measures

Measure	Description
Replen Status Store Level	The Replenishment Status is a writable measure that determines the set of Replenishment parameters to be applied. This measure list provides the following options: ■ Apply System ■ Apply Prev Approved ■ Apply User Input This measure defaults to Apply System Recommended Settings if no alerts are triggered for the items/locations. If any alert is triggered, this measure defaults to Apply Previous Approved. This measure will directly impact the Working Replenishment Method and Parameters.
Reviewed Store Level	This is a writable measure indicating whether or not this item/location has been reviewed by the you. This measure is used only for tracking purposes and updates the # of Alerts Reviewed and Total Reviewed measures.
Space Store Level	Space for item/store.
Final System Recommended Auxiliary Repl Parameter 1 Store Level	The Final System Recommended Auxiliary Replenishment Parameter Value 1 value.
System Recommended Order Point Units Store Level	The Order Point Units based on the System Recommended Methods and Parameters value.
System Recommended Order Revenue Store Level	The System Recommended Order Revenue measure value.
System Recommended Order Units Store Level	The Projected Order units calculated based on the System Recommended Methods and Parameters value.
System Recommended Order up to Level Units Store Level	The Order Up to Level Units based on the System Recommended Methods and Parameters value.
Adjusted System Recommended Replenishment Method Store Level	The Adjusted System Recommended Replenishment Method value.
Adjusted System Recommended Replenishment Parameter Value 1 Store Level	The Adjusted System Recommended Replenishment Parameter Value 1 value.
Adjusted System Recommended Replenishment Parameter Value 2 Store Level	The Adjusted System Recommended Replenishment Parameter Value 2 value.
User Auxiliary Repl Parameter 1 Store Level	This is a writable measure where you input auxiliary replenishment parameter 1 based on the Replenishment Method chosen. Refer to Chapter 1, "Introduction" for valid Replenishment Parameter inputs for each method.
User Message Store Level	This is a read-only measure that contains any error or warning messages returned by the system based on the user-input values.
User Order Cost Store Level	This read-only measure is the product of the cost per unit and the number of the projected order units based on the user-input methods and parameters.
User Order Point Cost Store Level	This read-only measure is the Order Point units multiplied by unit cost, calculated based on the user-input Replenishment settings.
User Order Point Revenue Store Level	This read-only measure is the product of the price per unit and the order point units based on the user-input methods and parameters.
User Order Point Units Store Level	This read-only measure is the number of order point units based on the user-input method and parameters.

Table 6–4 (Cont.) Interactive Analysis - Store View Measures

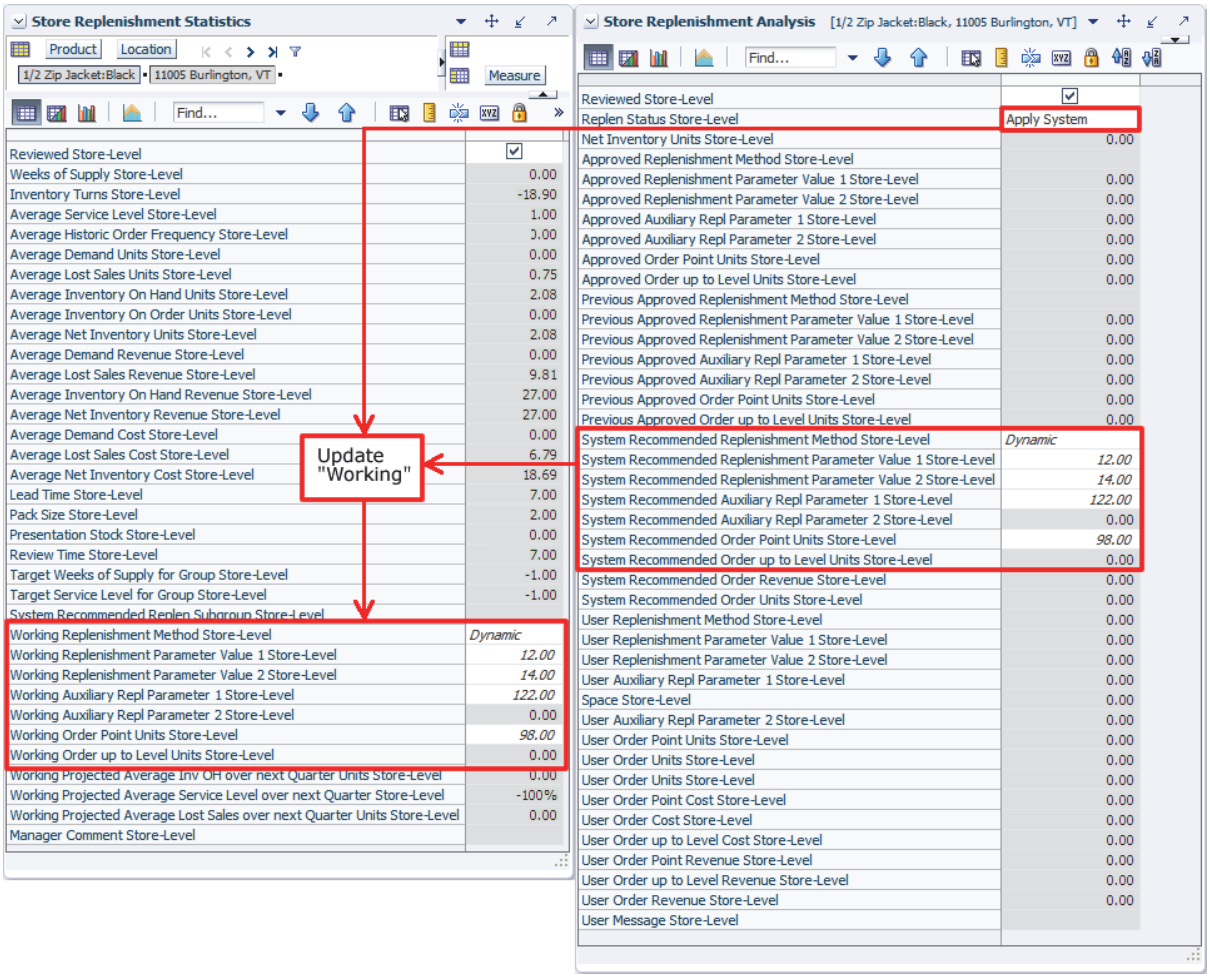
Measure	Description
User Order Revenue Store Level	This read-only measure is the number of order units multiplied by the unit retail price, calculated based on user-input Replenishment settings.
User Order Units Store Level	This read-only measure is the Projected Order Units based on the user-input Methods and Parameters.
User Order up to Level Cost Store Level	This read-only measure is the product of the Order Up to Level Units and the unit cost based on the user-input Methods and Parameters.
User Order up to Level Revenue Store Level	The Order up to Level units multiplied by unit retail price, calculated based on User Input Replenishment settings.
User Order up to Level Units Store Level	This read-only measure is the Order Up to Level Units based on the user Input Methods and Parameters.
User Replenishment Method Store Level	This is measure list provides the following Replenishment Methods options: ▪ MinMax ▪ Dynamic ▪ TimeSupply ▪ Poisson ▪ Hybrid Refer to Chapter 7, "Administration Workbook" for valid replenishment parameter inputs and for information about each method.
User Replenishment Parameter Value 1 Store Level	This is a writable measure where you input replenishment parameter 1 based on the Replenishment Method chosen. Refer to Chapter 7, "Administration Workbook" for valid replenishment parameter inputs and for information about each method.
User Replenishment Parameter Value 2 Store Level	This is a writable measure where you input replenishment parameter 2 based on the Replenishment Method chosen. Refer to Chapter 7, "Administration Workbook" for valid replenishment parameter inputs and for information about each method.

Understanding the Working Version of the Replenishment Settings

The Replenishment Status (Replen Status) determines the Working version of the Replenishment Settings as illustrated in Figure 6–10 and Figure 6–11.

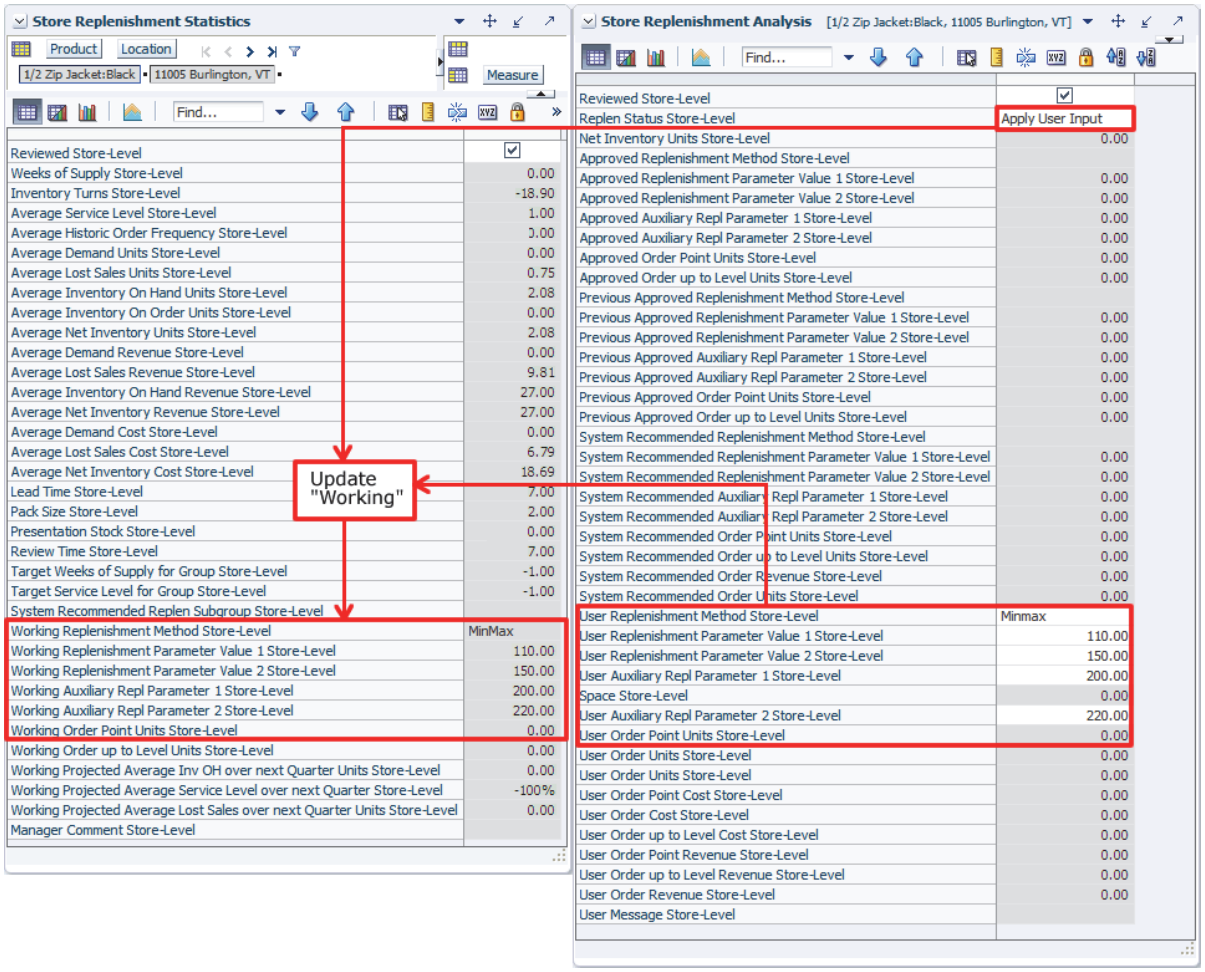
The side-by-side view of the views in Figure 6–10 shows the relationship between the assigned Replenishment Status setting and you measure in the Analyst view and the Working version of measures applied to the Statistics view. In the following example, the Replenishment Status is set to **Apply System**, which means that the System Recommended measures in the Analysis view (on the right) are used as the Working version of measures in the Statistics view (on the left).

Figure 6–10 Working Version of Replenishment Settings



In Figure 6–11, the Replenishment Status is set to **Apply User Input**, which means that the User measures in the Analysis view (on the right) are used as the Working version of measures in the Statistics view (on the left).

Figure 6–11 Apply User Input in Replenishment Status



The Replenishment Status selection drives the working version in the Statistics view. When you have reviewed the alerts, performed any necessary What-if modifications, and updated the Replenishment Status, you can review the working version to see the results. When you are satisfied with the working version, you can approve the settings in the Approval view.

The replenishment status for alerted items/locations defaults to **Apply Previous Approved**. After reviewing the alerted items/locations, if you want to accept the system recommended setting, you change the Replenishment Status to **Apply System Recommended**. Once all alerts are reviewed, you can approve the selected settings.

Replenishment Details - Store View

Several of the statistics listed in this view are the same as those listed in the Store Replenishment Summary Viewof this workbook, but at the item/store level. Refer to Table 6–2 for measure descriptions. Figure 6–12 shows a list of measure descriptions that are not included in the Store Replenishment Summary View.

Figure 6–12 Replenishment Details - Store View

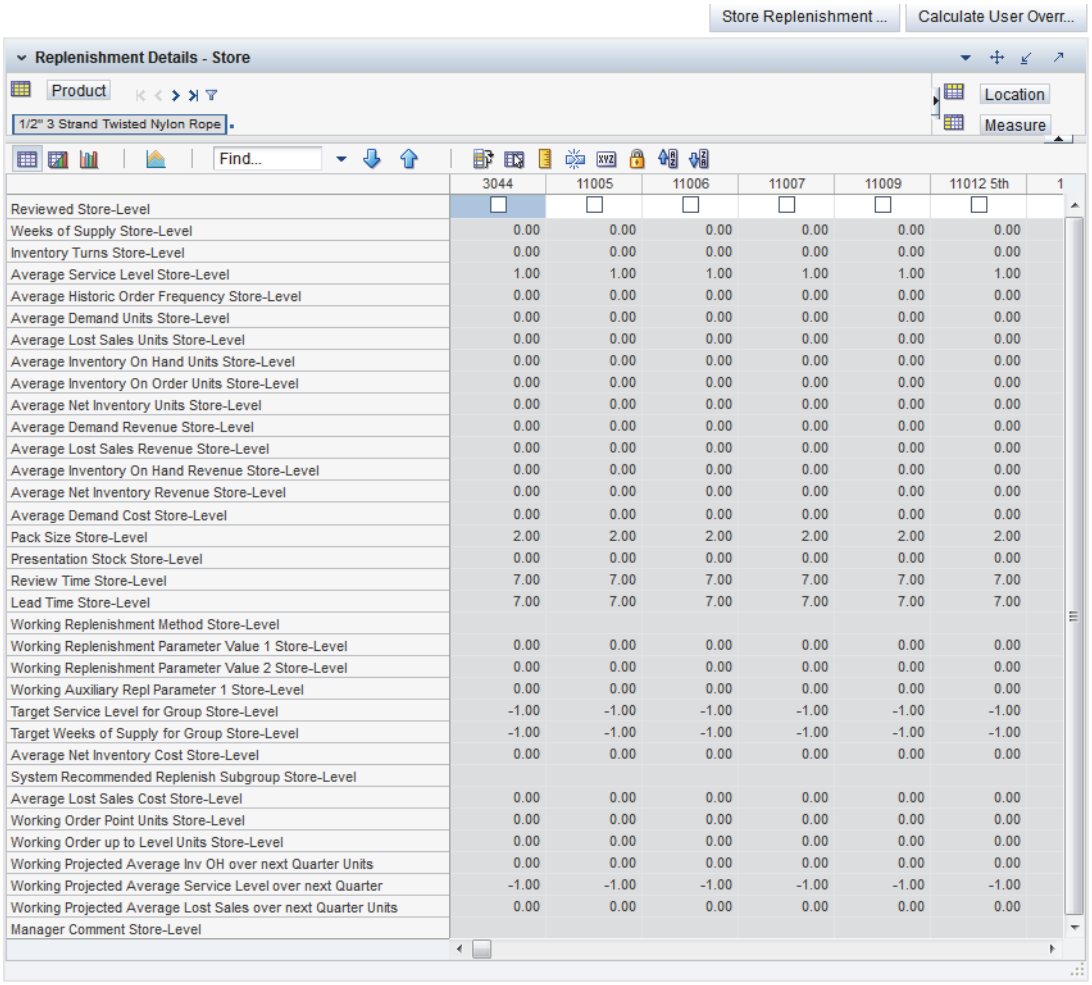


Table 6–5 Replenishment Details - Store View Measures

Measure	Description
Reviewed - Store Level	This is a writable measure indicating whether or not this item/location has been reviewed by you. This measure is used only for tracking purposes and updates the # of alerts reviewed and total reviewed measures.
Lead Time - Store Level	The total lead time of the item/location value.
Pack Size - Store Level	The item pack size value.
Presentation Stock - Store Level	The minimum presentation stock value.
Review Time - Store Level	The frequency at which inventory is reviewed for replenishment purposes.
Price - Store Level	The unit retail price of the item value.
Cost - Store Level	The unit cost of the item value.
System Recommended Replen Subgroup - Store Level	Replenishment Rule ID that the system recommends for the item/location.
Target Weeks of Supply for Group - Store Level	The overall target or optimal weeks of supply recommended by RO for the subgroup of items/locations that this item/location belongs to. While tracking inventory and service level performance against this optimal target, it is important to track performance for the entire group of items/locations as opposed to the performance of individual items/locations.

Table 6–5 (Cont.) Replenishment Details - Store View Measures

Measure	Description
Target Service Level for Group - Store Level	The overall target or optimal service level recommended by RO for the group of items/locations that this item/location belongs to. While tracking Inventory and Service Level performance against this optimal target, it is important to track performance for the entire group of items/locations as opposed to the performance of individual items/locations.
Working Replenishment Method - Store Level	Replenishment method you have currently chosen for this item/location. You can choose between system-recommended, previous-approved, and special-user input settings. This measure is updated based on the replenishment status measure. This measure represents the replenishment method that will be exported by the system, if you approve the settings now.
Working Replenishment Parameter Value 1 - Store Level	Replenishment Parameter1 you have currently chosen for this item/location. You can choose between system-recommended, previous-approved, and special user input settings. This measure is updated based on the replenishment status measure. This measure represents the replenishment method that will be exported by the system, if you approve the settings now.
Working Replenishment Parameter Value 2 - Store Level	Replenishment Parameter2 you have currently chosen for this item/location. You can choose between system-recommended, previous-approved, and special user input settings. This measure is updated based on the Replenishment Status Measure. This measure represents the Replenishment Method that will be exported by the system, if you approve the settings now.
Working Auxiliary Repl Parameter 1 - Store Level	Auxiliary Replenishment Parameter1 you have currently chosen for this item/location. You can choose between system-recommended, previous-approved, and special user input settings. This measure is updated based on the Replenishment Status Measure. This measure represents the Replenishment Method that will be exported by the system, if you approve the settings now.
Working Replenishment Settings Statistical Measures The following measures provide statistics based on the working replenishment settings. The statistics help provide you with supporting information on the impact of the chosen replenishment settings on future inventory and service levels. This helps you to choose the correct replenishment settings.	
Working Order Points Units - Store Level	Order Point Units calculated by the system based on the working replenishment method and parameters.
Working Order Up to Level Units - Store Level	Order Up to Point Units calculated by the system, based on the working replenishment method and parameters.
Working Projected Average Inv OH over next Quarter Units - Store Level	Projected Average On hand Inventory units over the next quarter, based on working replenishment settings. This measure represents the long-term steady state average on-hand inventory, assuming current inventory level is not too high or too low to drive long-term inventory and service levels.
Working Projected Average Service Level over next Quarter - Store Level	Projected Average Service Level over the next quarter, based on working replenishment settings. This measure represents the long-term steady state service level, assuming current inventory level is not too high or too low to drive long-term inventory and service levels.
Working Projected Lost Sales Units over next quarter Units - Store Level	Projected Average Lost Sales over the next quarter, based on working replenishment settings. This measure represents the long-term steady state lost sales, assuming current inventory level is not too high or too low to drive long-term inventory and service levels.
System Recommended Replenishment Settings Statistical Measures The following measures provide statistics based on the System Recommended Replenishment Settings. The statistics help provide you with supporting information on the impact of the chosen replenishment Settings on future inventory and service levels to help you choose the correct Replenishment Settings.	

Table 6–5 (Cont.) Replenishment Details - Store View Measures

Measure	Description
System Recommended Projected Average Inv OH over the next Quarter Units - Store Level	Projected Average on-hand Inventory units over next quarter based on system recommended replenishment settings. This measure represents the long-term steady state average on-hand inventory, assuming current inventory level is not too high or too low to drive long-term inventory and service levels.
System Recommended Projected Average Service Level Over next Quarter - Store Level	Projected Average Service Level over next quarter based on system recommended replenishment settings. This measure represents the long-term steady state service level, assuming current inventory level is not too high or too low to drive long-term inventory and service levels.
System Recommended Projected Lost Sales Units over next quarter Units - Store Level	Projected Average Lost Sales over next quarter based on system recommended replenishment settings. This measure represents the long-term steady state lost sales, assuming current inventory level is not too high or too low to drive long-term inventory and service levels.
Manager Comment - Store Level	This is a read-only measure, indicating any comments input in the Summary Level Analysis workbook. If the replenishment manager enters any special remarks about the performance of a replenishment rule ID, the comment is visible here to the detail level analysis for all items/locations that belong to that replenishment rule ID.

Replenishment Daily Details - Store View

This view provides item/store/day-level details of historic inventory, demand, lost sales, and forecasts to help you easily identify trends in inventory and demand, large stock out situations, and so on.

Figure 6–13 Replenishment Daily Details - Store View

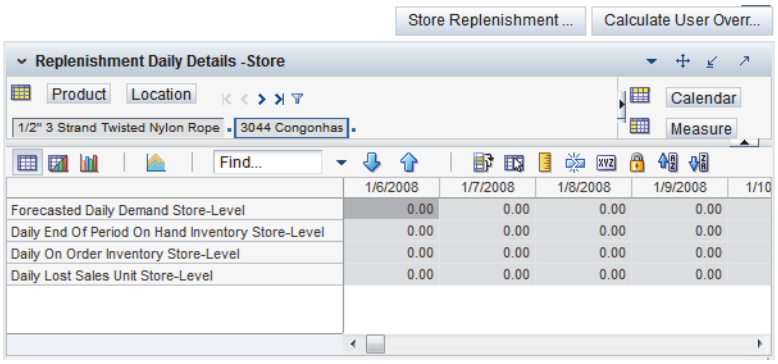


Table 6–6 Replenishment Daily Details - Store View Measures

Measure	Description
Forecasted Daily Demand Store Level	Daily forecast units
Daily End of Period On Hand Inventory Store Level	Daily on-hand inventory units
Daily On Order Inventory Store Level	Daily on order inventory units
Daily Lost Sales Unit Store Level	Daily lost sales units

Replenishment Approve - Store View

In this view, the metrics are presented at the item/store level, for all combinations selected in the wizard.

The approval process is the final step in the replenishment analysis process. After reviewing inventory performance, performing What-if-analysis, and updating the Replenishment Status, you can open the Approval view and approve the selected settings.

For additional information about the process flow, see: Approval Process Flow.

Figure 6–14 Replenishment Approve - Store View

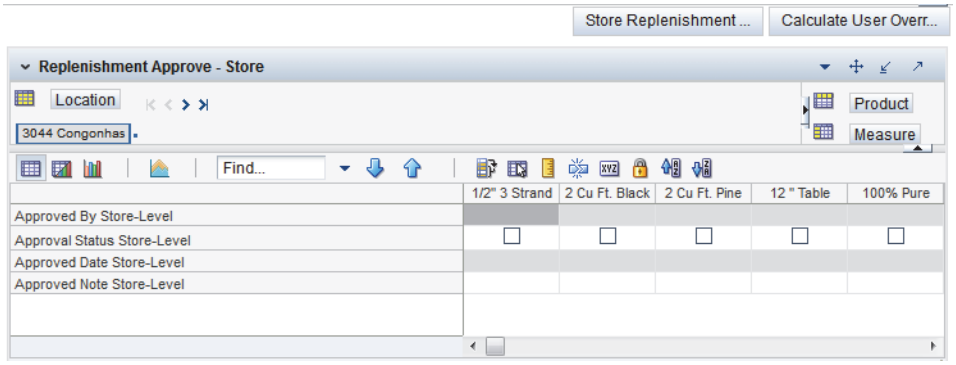


Table 6–7 Replenishment Approve - Store View Measures

Measure	Description
Approval Status Store Level	This is a writable check box measure. When you select this measure and invokes the Approve menu, the Approved Replenishment settings get updated.
Approved By Store Level	This is a read-only measure that gets updated with the user ID when you select the Approval Status measure and invoke the Approve menu.
Approved Date Store Level	This is a read-only measure that gets updated with the current date when you select the Approval Status measure and invoke the Approve menu.
Approved Note Store Level	This is a writable measure where you can input Approval notes at the time of approval.

Warehouse Detail & Approval Step

The Warehouse Detail & Approval step provides item/location and weekly details, What-if capabilities, and the option to select system-recommended, previous-approved, or user-updated settings by updating the approval status.

For additional information about replenishment setting, see Understanding the Working Version of the Replenishment Settings.

The Warehouse Detail & Approval step consists of the following views:

- Interactive Analysis - Warehouse View

  Enables you to perform the following:

  - Compare different replenishment settings
  - Perform What-if analysis to determine impact of these settings
  - Select system-recommended, previous-approved, or user-updated replenishment settings by updating the Replen Status measure

- Replenishment Details - Warehouse View

  Lists item/location-level inventory performance and other statistics.

- Replenishment Daily Details - Warehouse View

  Gives you item/location/week-level information on inventory, demand, lost sales, forecasts, and so on.

- Replenishment Approve - Warehouse View

  The approval process is the final step in the replenishment analysis process. After reviewing inventory performance, performing What-if-analysis, and updating the Replenishment Status, you can open the Approval view and approve the selected settings.

  For additional information about the process flow, see: Approval Process Flow.

Interactive Analysis - Warehouse View

The Interactive Analysis - Warehouse view enables you to compare different replenishment settings, perform What-if analysis to determine impact of these settings, and ultimately select the settings to be used. You can apply system-recommended, previously-approved, or special-user input settings by updating the Replen Status measure. The workbook calculates OP, OUTL, and Projected Order Quantity. You can compare these values for various choices.

The user replenishment method and parameter measures that you set trigger a calculation that updates the read-only user measures when you click **Calculate User Overrides** in the top, right corner.

Figure 6–15 Interactive Analysis - Warehouse View

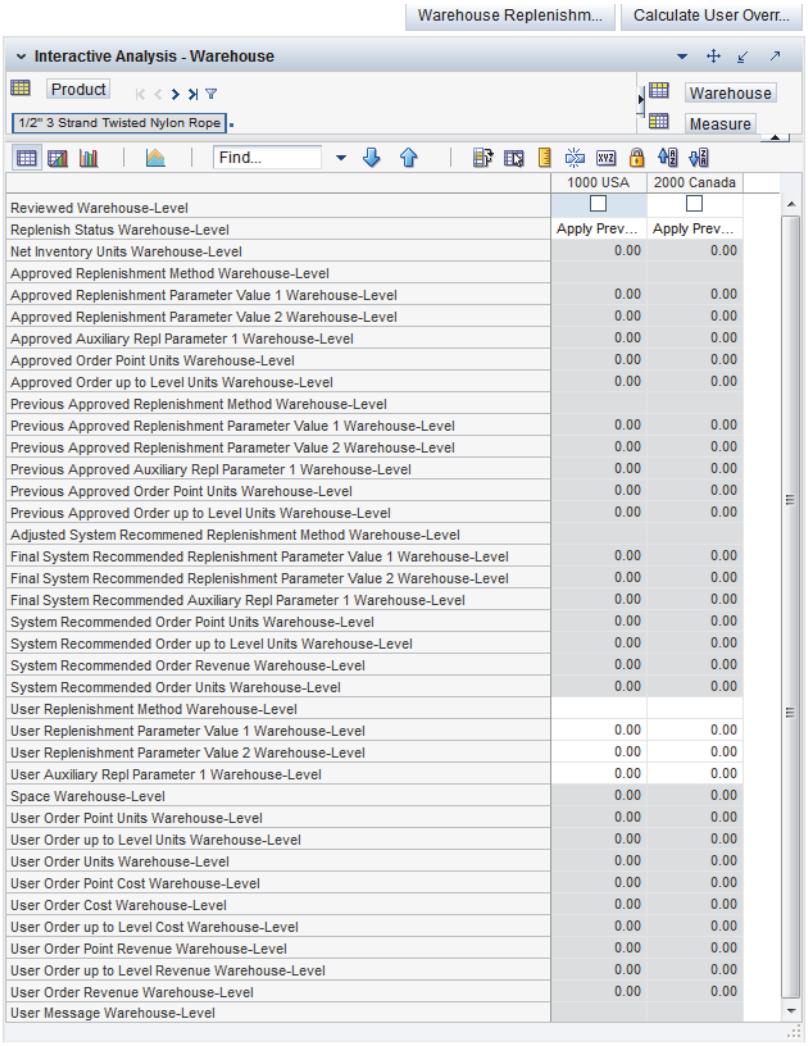


Table 6–8 Interactive Analysis - Warehouse View Measures

Measure	Description
Approved Auxiliary Repl Parameter 1 Warehouse Level	This measure selects the Approve option in the Approval step to invoke the Approve menu. The system will then copy the Auxiliary Replenishment Param1 indicated in the Replen Status measure to the Approved Replenishment Param1. The Approved flag will then be cleared to allow you to re-approve at a later time if needed.
Approved Order Point Units Warehouse Level	This measure selects the Approve option in the Approval step to invoke the Approve menu. The system will then update this measure with the Order Point corresponding to the Approved Replenishment Method and Parameters.
Approved Order up to Level Units Warehouse Level	This measure selects the Approve option in the Approval step to invoke the Approve menu. The system will then update this measure with the Order Up to Level corresponding to the Approved Replenishment Method and Parameters.

Table 6–8 (Cont.) Interactive Analysis - Warehouse View Measures

Measure	Description
Approved Replenishment Method Warehouse Level	This measure selects the Approve option in the Approval step to invoke the Approve menu. The system will then copy the Replenishment Settings indicated in the Replen Status measure to the Approved Replenishment Method. The Approved flag will then be cleared to allow you to re-approve at a later time if needed.
Approved Replenishment Parameter Value 1 Warehouse Level	This measure selects the Approve option in the Approval step to invoke the Approve menu. The system will then copy the Replenishment Param1 indicated in the Replen Status measure to the Approved Replenishment Param1. The Approved flag will then be cleared to allow you to re-approve at a later time if needed.
Approved Replenishment Parameter Value 2 Warehouse Level	This measure selects the Approve option in the Approval step to invoke the Approve menu. The system will then copy the Replenishment Param2 indicated in the Replen Status measure to the Approved Replenishment Param1. The Approved flag will then be cleared to allow you to re-approve at a later time if needed.
Net Inventory Units Warehouse Level	The current net inventory position.
Previous Approved Auxiliary Repl Parameter 1 Warehouse Level	Previous Approved Auxiliary Replenishment Parameter Value 1.
Previous Approved Order Point Units Warehouse Level	The Previous Approved Order Point Units value.
Previous Approved Order up to Level Units Warehouse Level	The Previous Approved Order Up to Level Units value.
Previous Approved Replenishment Method Warehouse Level	The Previous Approved Replenishment Method.
Previous Approved Replenishment Parameter Value 1 Warehouse Level	Previous Approved Replenishment Parameter Value 1.
Previous Approved Replenishment Parameter Value 2 Warehouse Level	Previous Approved Replenishment Parameter Value 2.
Replen Status Warehouse Level	The Replenishment Status is a writable measure that determines the set of Replenishment parameters to be applied. This measure list provides the following options: ■ Apply System ■ Apply Prev Approved ■ Apply User Input This measure defaults to Apply System Recommended Settings if no alerts are triggered for the items/locations. If any alert is triggered, this measure defaults to Apply Previous Approved. This measure will directly impact the Working Replenishment Method and Parameters.
Reviewed Warehouse Level	This is a writable measure indicating whether or not this item/location has been reviewed by you. This measure is used only for tracking purposes and updates the # of Alerts Reviewed and Total Reviewed measures.
Space Warehouse Level	Space for item/warehouse.
Final System Recommended Auxiliary Repl Parameter 1 Warehouse Level	The Final System Recommended Auxiliary Replenishment Parameter Value 1 value.
System Recommended Order Point Units Warehouse Level	The Order Point Units based on the System Recommended Methods and Parameters value.
System Recommended Order Revenue Warehouse Level	The System Recommended Order Revenue measure value.

Table 6–8 (Cont.) Interactive Analysis - Warehouse View Measures

Measure	Description
System Recommended Order Units Warehouse Level	The Projected Order units calculated based on the System Recommended Methods and Parameters value.
System Recommended Order up to Level Units Warehouse Level	The Order Up to Level Units based on the System Recommended Methods and Parameters value.
Adjusted System Recommended Replenishment Method Warehouse Level	The Adjusted System Recommended Replenishment Method value.
Adjusted System Recommended Replenishment Parameter Value 1 Warehouse Level	The Adjusted System Recommended Replenishment Parameter Value 1 value.
Adjusted System Recommended Replenishment Parameter Value 2 Warehouse Level	The Adjusted System Recommended Replenishment Parameter Value 2 value.
User Auxiliary Repl Parameter 1 Warehouse Level	This is a writable measure where you input auxiliary replenishment parameter 1 based on the Replenishment Method chosen. Refer to Chapter 1, "Introduction" for valid Replenishment Parameter inputs for each method.
User Message Warehouse Level	This is a read-only measure that contains any error or warning messages returned by the system based on the user-input values.
User Order Cost Warehouse Level	This read-only measure is the product of the cost per unit and the number of the projected order units based on the user-input methods and parameters.
User Order Point Cost Warehouse Level	This read-only measure is the Order Point units multiplied by unit cost, calculated based on user-input Replenishment settings.
User Order Point Revenue Warehouse Level	This read-only measure is the product of the price per unit and the order point units based on the user-input methods and parameters.
User Order Point Units Warehouse Level	This read-only measure is the number of order point units based on the user-input method and parameters.
User Order Revenue Warehouse Level	This read-only measure is the number of order units multiplied by the unit retail price, calculated based on User Input Replenishment settings.
User Order Units Warehouse Level	This read-only measure is the Projected Order Units based on the User Input Methods and Parameters.
User Order up to Level Cost Warehouse Level	This read-only measure is the product of the Order Up to Level Units and the unit cost based on the user Input Methods and Parameters.
User Order up to Level Revenue Warehouse Level	The Order up to Level units multiplied by unit retail price, calculated based on User Input Replenishment settings.
User Order up to Level Units Warehouse Level	This read-only measure is the Order Up to Level Units based on the user Input Methods and Parameters.

Table 6–8 (Cont.) Interactive Analysis - Warehouse View Measures

Measure	Description
User Replenishment Method Warehouse Level	This is measure list provides the following Replenishment Methods options: ■ MinMax ■ Dynamic ■ TimeSupply ■ Poisson ■ Hybrid Refer to Chapter 7, "Administration Workbook" for valid replenishment parameter inputs and for information about each method.
User Replenishment Parameter Value 1 Warehouse Level	This is a writable measure where you input replenishment parameter 1 based on the Replenishment Method chosen. Refer to Chapter 7, "Administration Workbook" for valid replenishment parameter inputs and for information about each method.
User Replenishment Parameter Value 2 Warehouse Level	This is a writable measure where you input replenishment parameter 2 based on the Replenishment Method chosen. Refer to Chapter 7, "Administration Workbook" for valid replenishment parameter inputs and for information about each method.

Replenishment Details - Warehouse View

Many of the statistics listed in this view are the same as those listed in the Warehouse Replenishment Summary Details View of this workbook, but at the item/warehouse level. Refer to Warehouse Replenishment Summary Details View Measures for measure descriptions. Figure 6–16 shows a list of measure descriptions that are not included in theWarehouse Replenishment Summary Details View.

Figure 6–16 Replenishment Details - Warehouse View

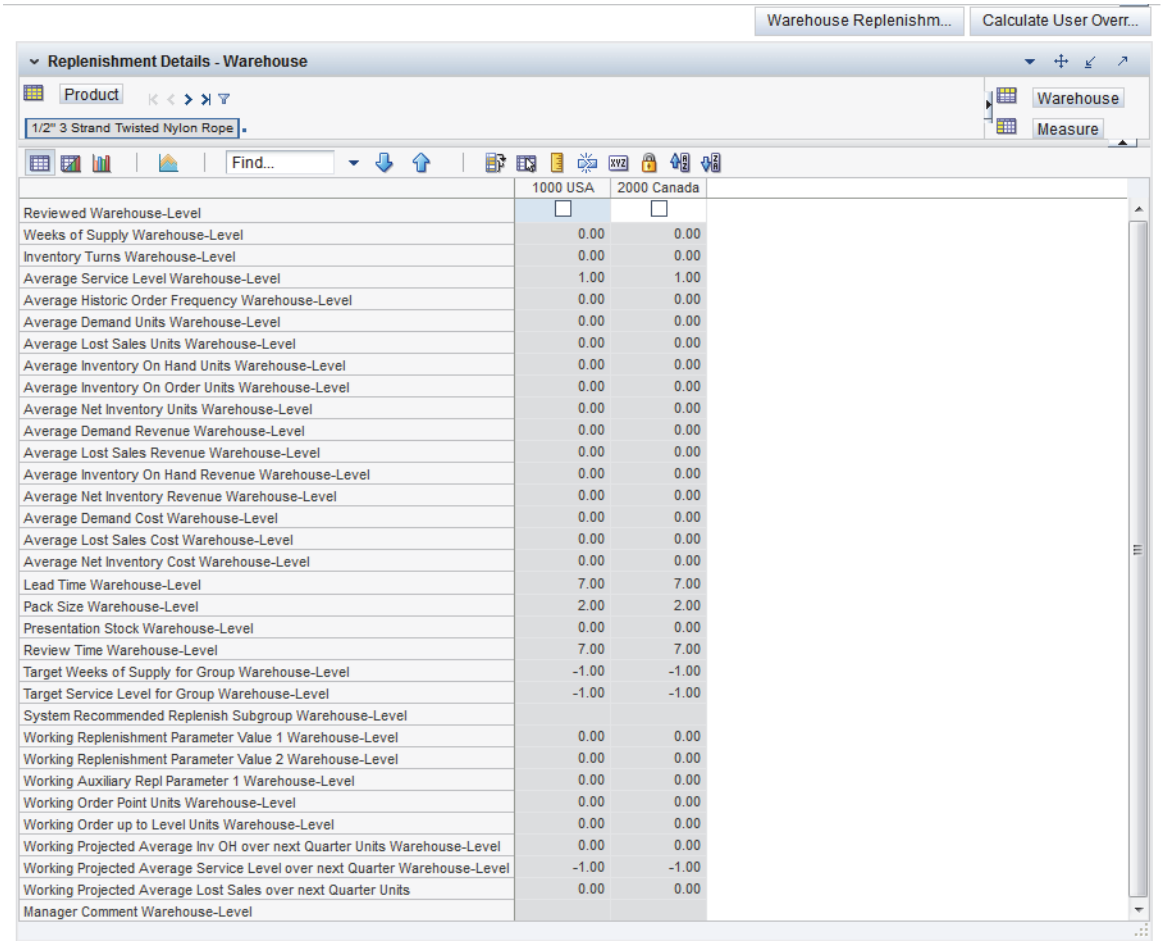


Table 6–9 Replenishment Details - Warehouse View Measures

Measure	Description
Reviewed Warehouse Level	This is a writable measure indicating whether or not this item/location has been reviewed by you. This measure is only used for tracking purposes and updates the # of Alerts Reviewed and Total Reviewed measures.
Lead Time Warehouse Level	The Total Lead Time of the item/location value.
Pack Size Warehouse Level	The Item Pack Size value.
Presentation Stock Warehouse Level	The Minimum Presentation Stock value.
Review Time Warehouse Level	The frequency at which inventory is reviewed for replenishment purposes.
Price Warehouse Level	The Unit Retail Price of the Item value.
Cost Warehouse Level	The Unit Cost of the Item value.
System Recommended Replen Subgroup Warehouse Level	Subgroup that the System recommends for the item/location.
Target Weeks of Supply for Group Warehouse Level	The overall target or optimal weeks of supply recommended by RO for the subgroup of items/locations this item/location belongs to. While tracking inventory and service level performance against this optimal target, it is important to track performance for the entire group of items/locations as opposed to the performance of individual items/locations.

Table 6–9 (Cont.) Replenishment Details - Warehouse View Measures

Measure	Description
Target Service Level for Group Warehouse Level	The overall target or optimal service level recommended by RO for the subgroup of items/locations this item/location belongs to. While tracking inventory and service level performance against this optimal target, it is important to track performance for the entire group of items/locations as opposed to the performance of individual items/locations.
Working Replenishment Method Warehouse Level	Replenishment method currently chosen by you for this item/location. You can choose between system-recommended, previous-approved, and special-user input settings. This measure is updated based on the replenishment status measure. This measure represents the replenishment method that will be exported by the system, if you approve the settings now.
Working Replenishment Parameter Value 1 Warehouse Level	Replenishment Parameter1 currently chosen by you for this item/location. You can choose between system-recommended, previous-approved, and special-user input settings. This measure is updated based on the replenishment status measure. This measure represents the replenishment method that will be exported by the system, if you approve the settings now.
Working Replenishment Parameter Value 2 Warehouse Level	Replenishment Parameter2 currently chosen by you for this item/location. You can choose between system-recommended, previous-approved, and special-user input settings. This measure is updated based on the replenishment status measure. This measure represents the replenishment method that will be exported by the system, if you approve the settings now.
Working Auxiliary Repl Parameter 1 Warehouse Level	Auxiliary Replenishment Parameter1 currently chosen by you for this item/location. You can choose between system-recommended, previous-approved, and special-user input settings. This measure is updated based on the replenishment status measure. This measure represents the replenishment method that will be exported by the system, if you approve the settings now.
Working Replenishment Settings Statistical Measures The following measures provide statistics based on the Working Replenishment Settings. The statistics help provide you with supporting information on the impact of the chosen replenishment Settings on future Inventory and Service levels to help you choose the correct Replenishment Settings.	
Working Order Points Units Warehouse Level	Order Point Units calculated by the system based on the working replenishment method and parameters.
Working Order Up to Level Units Warehouse Level	Order up to point units calculated by the system based on the working replenishment method and parameters.
Working Projected Average Inv OH over next Quarter Units Warehouse Level	Projected average on-hand inventory units over next quarter based on working replenishment settings. This measure represents the long-term steady state average on-hand inventory, assuming current inventory level is not too high or too low to drive long-term inventory and service levels.
Working Projected Average Service Level over next Quarter Warehouse Level	Projected average service level over next quarter based on working replenishment settings. This measure represents the long-term steady state service level, assuming current inventory level is not too high or too low to drive long-term inventory and service levels.
Working Projected Lost Sales Units over next quarter Units Warehouse Level	Projected average lost sales over next quarter based on working replenishment settings. This measure represents the long-term steady state lost sales, assuming current inventory level is not too high or too low to drive long-term inventory and service levels.
System Recommended Replenishment Settings Statistical Measures The following measures provide statistics based on the System Recommended Replenishment Settings. The statistics help provide you with supporting information on the impact of the chosen replenishment Settings on future Inventory and Service levels to help you choose the correct Replenishment Settings.	

Table 6–9 (Cont.) Replenishment Details - Warehouse View Measures

Measure	Description
System Recommended Projected Average Inv OH over the next Quarter Units Warehouse Level	Projected average on-hand inventory units over next quarter based on system recommended replenishment settings. this measure represents the long-term steady state average on-hand inventory, assuming current inventory level is not too high or too low to drive long-term inventory and service levels.
System Recommended Projected Average Service Level Over next Quarter Warehouse Level	Projected average service level over next quarter based on system recommended replenishment settings. This measure represents the long-term steady state service level, assuming current inventory level is not too high or too low to drive long-term inventory and service levels.
System Recommended Projected Lost Sales Units over next quarter Units Warehouse Level	Projected average lost sales over next quarter based on system recommended replenishment settings. This measure represents the long-term steady state lost sales, assuming current inventory level is not too high or too low to drive long-term inventory and service levels.
Manager Comment Warehouse Level	This is a read-only measure, indicating any comments input in the Summary Level Analysis workbook. If the replenishment manager enters any special remarks about the performance of a replenishment rule ID, the comment is visible here to the replenishment analyst for all items/locations that belong to that replenishment rule ID.

Replenishment Daily Details - Warehouse View

This view provides item/warehouse/day-level details of historic inventory, demand, lost sales, and forecasts to help you easily identify trends in inventory and demand, large stock out situations, and so on.

Figure 6–17 Replenishment Daily Details - Warehouse View

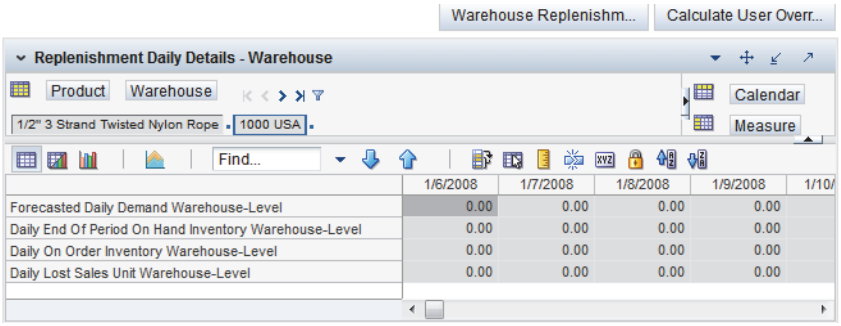


Table 6–10 Replenishment Daily Details - Warehouse View Measures

Measure	Description
Forecasted Daily Demand Warehouse Level	Daily forecast units
Daily End of Period On Hand Inventory Warehouse Level	Daily on-hand inventory units
Daily On Order Inventory Warehouse Level	Daily on order inventory units
Daily Lost Sales Unit Warehouse Level	Daily lost sales units

Replenishment Approve - Warehouse View

In this view, the metrics are presented at the item/warehouse level, for all combinations selected in the wizard.

Figure 6–18 Replenishment Approve - Warehouse View

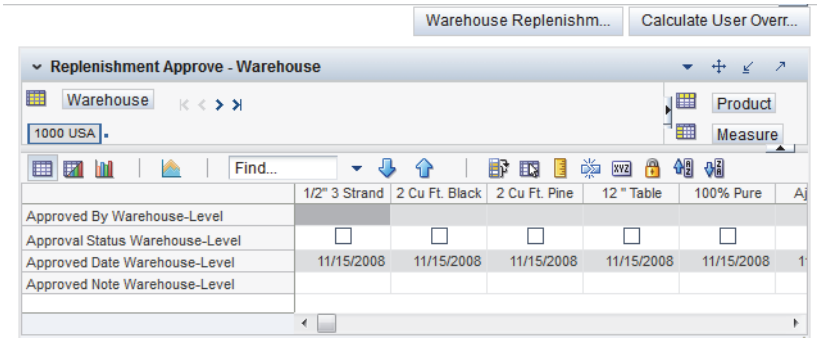


Table 6–11 Replenishment Approve - Warehouse View Measures

Measure	Description
Approval Status Warehouse Level	This is a writable check box measure. When you select this measure and invokes the Approve menu, the Approved Replenishment settings get updated.
Approved By Warehouse Level	This is a read-only measure that gets updated with the user ID when you select the Approval Status measure and invoke the Approve menu.
Approved Date Warehouse Level	This is a read-only measure that gets updated with the current date when you select the Approval Status measure and invoke the Approve menu.
Approved Note Warehouse Level	This is a writable measure where you can input Approval notes at the time of approval.

Approval Process Flow

The Approval Process Flow is a combination of front-end and back-end batch processes. The RO batch updates the system-recommended replenishment settings. You can view the system-recommended and previously approved replenishment settings in the Detail Level Analysis workbook. You can enter user-input replenishment settings, compare the impacts on inventory and service levels, and update the Replenishment Status appropriately. For items/locations that do not have any alerts triggered, the Replenishment Status defaults to Apply System Recommended settings. For items/locations that have at least one alert triggered, the Replenishment Status defaults to the Apply Previous Approved setting.

The Working Replenishment Settings get updated based on the Replenishment Status. When you approves these settings, the Working Replenishment settings get copied to the Approved Replenishment settings.

For items/locations that you have not approved at the time of the Approval batch run, the system will copy the System Recommended settings if no alerts were triggered; otherwise, the system will copy the Previous Approved settings.

The approval batch is responsible for updating the Approved Replenishment Settings for any items/locations that you have not manually approved.

Figure 6–19 illustrates how the default Replenishment Status is assigned.

Figure 6–19 Default Replenishment Status Assignment

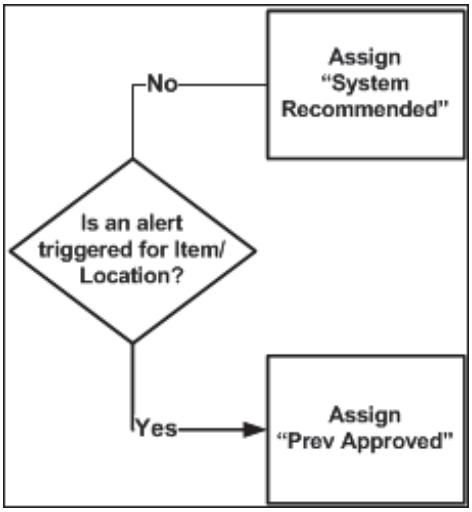
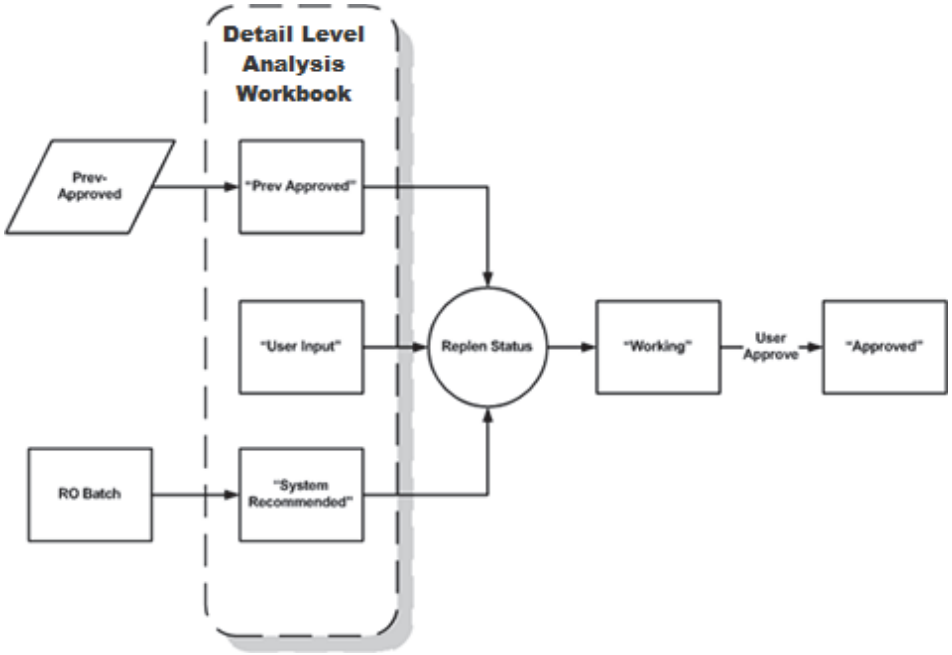


Figure 6–20 displays the approval process workflow in the Detail Level Analysis workbook.

Figure 6–20 Approval Process Workflow in Detail Level Analysis



7

Administration Workbook

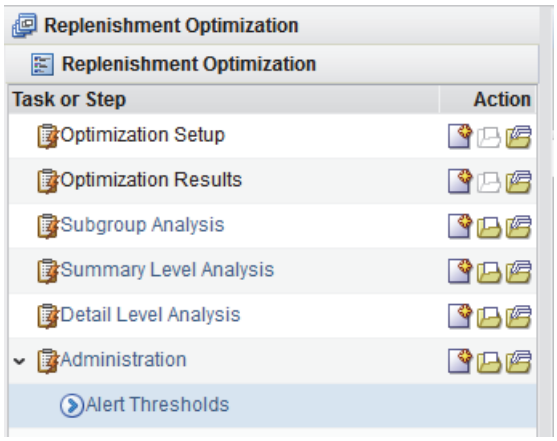
This chapter provides information on the Administration workbook, which is used to specify alert thresholds for products.

Administration Wizard

To create a Administration workbook, perform the following:

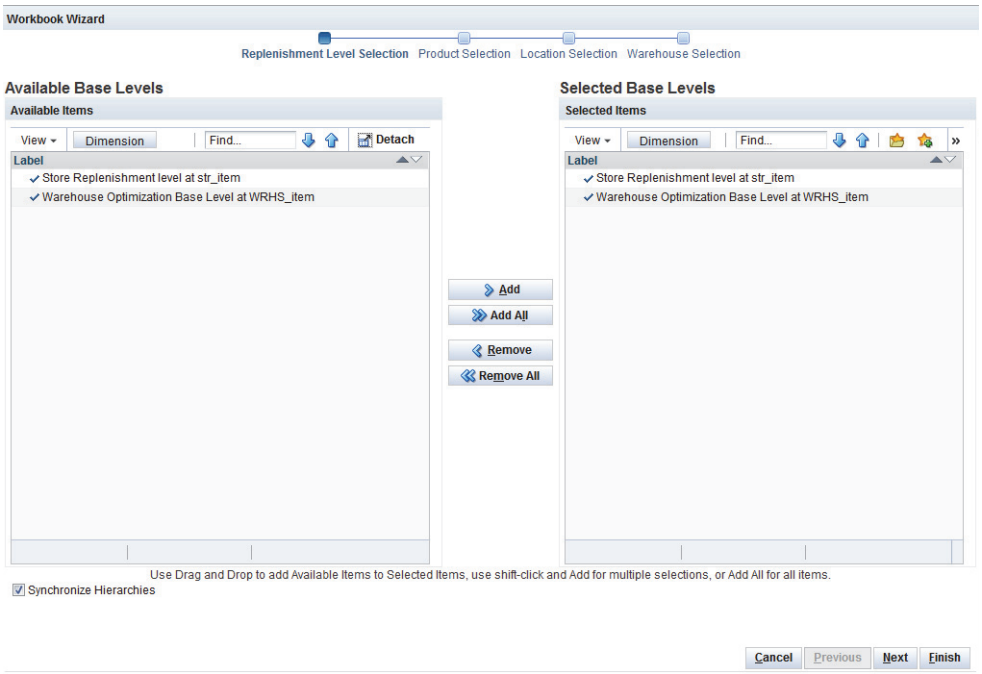
1. Click the Create New Workbook icon in the Administration task.

Figure 7–1 Creating a New Administration Workbook



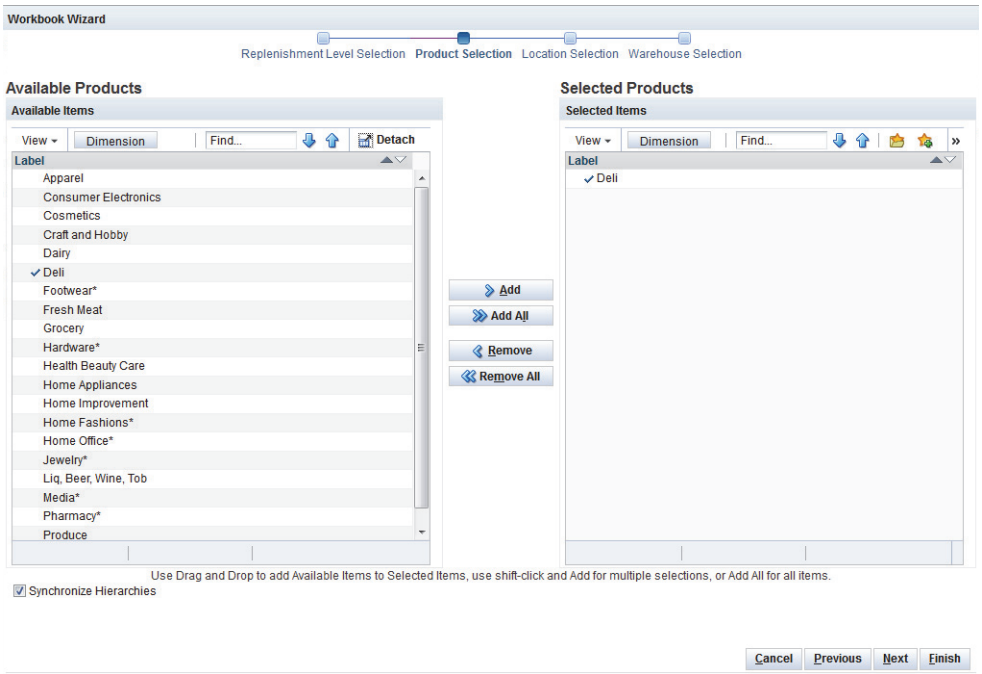
2. The Available Base Levels window opens. Select either or both the store level (SL) or warehouse level (WL) and click **Next**.

Figure 7–2 Available Base Levels



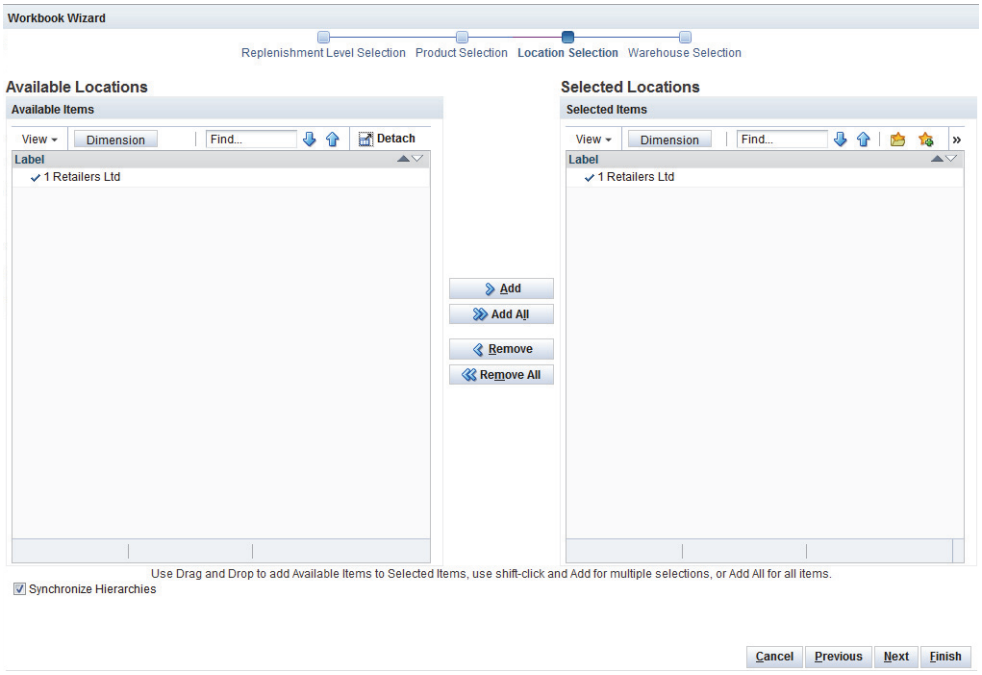
3. The Available Products window opens. Select the products to be displayed in the workbook and click **Next**.

Figure 7–3 Available Products



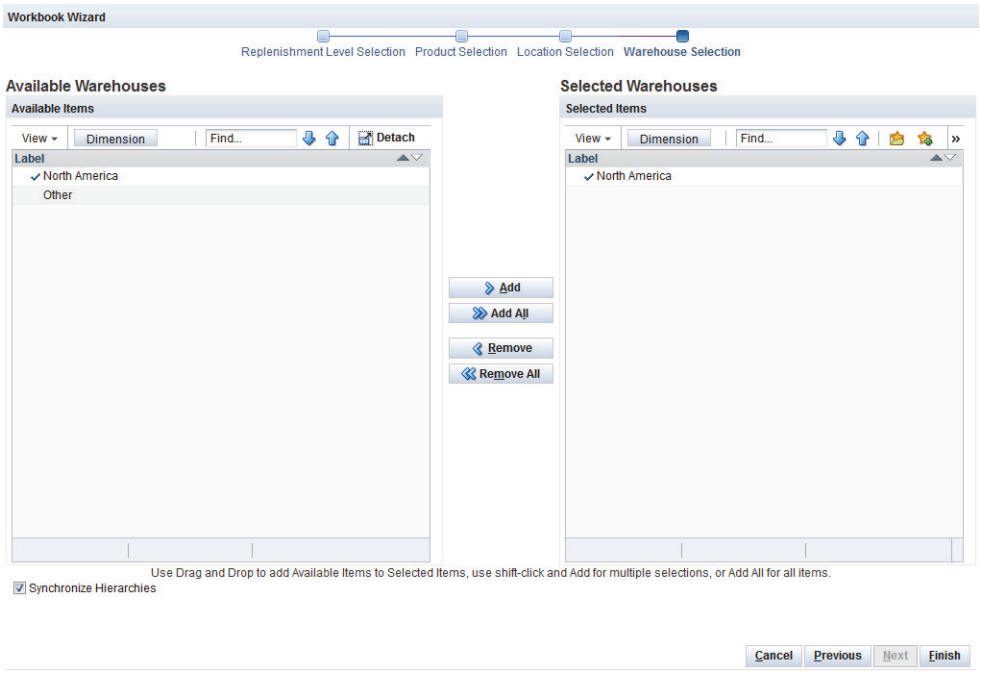
4. The Available Locations window opens. Select the locations for the store level optimization to be displayed in the workbook and click **Next**.

Figure 7–4 Available Locations



5. The Available Warehouses group window opens if a warehouse level (WL) was selected in Step 2. Select the warehouses to be displayed in the workbook and click **Finish**.

Figure 7–5 Available Warehouses



The Administration workbook is built.

Admin Thresholds Step

The Administration task contains the Admin Thresholds step, which has the following views:

- Admin Thresholds for Store Replenishment View
- Admin Thresholds for Warehouse Replenishment View

Admin Thresholds for Store Replenishment View

This view allows you to set thresholds for the Trend in Sales and Order Point Revenue alerts. If the trend in sales or order point for an item/location is higher than the threshold defined in this view, an alert is triggered.

Figure 7–6 Admin Thresholds for Store Replenishment View

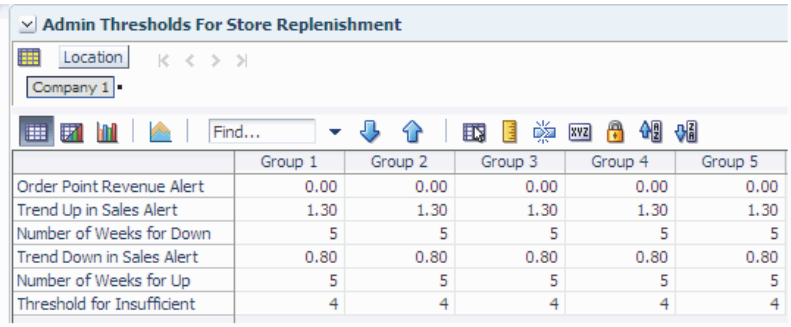


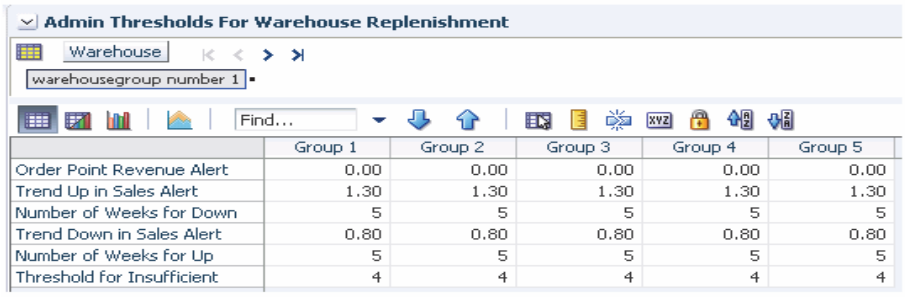
Table 7–1 Admin Threshold for Store Replenishment View Measures

Measure	Description
Order Point Revenue Alert Threshold Store-Level	The maximum value of the order point revenue that an item/location can have before an alert is triggered.
Trend Up in Sales Alert Threshold Store-Level	The maximum value of the trend in sales that an item/location can have before an alert is triggered.
Number of Weeks for Down Trend Store-Level	Determines the number of recent weeks over which store sales are averaged. The average is then divided into the long-term average and compared to a threshold to identify if a Trend Down in Sales alert should be triggered.
Trend Down in Sales Alert Threshold Store-Level	The threshold stores the values which is compared to the ratio of short term versus long term store sales averages. If the ratio is below the threshold value, the Trend Down in Sales alert is triggered.
Number of Weeks for Up Trend Store-Level	Determines the number of recent weeks over which store sales are averaged. The average is then divided into the long-term average and compared to a threshold to identify if a Trend Up in Sales alert should be triggered.
Threshold for Insufficient History Store-Level	This threshold stores the value which determines if an item/location has sufficient store sales. If the store sales history is less than the threshold value, an alert is triggered and RO's recommendations are not automatically approved.

Admin Thresholds for Warehouse Replenishment View

This view allows you to set thresholds for the Trend in Sales and Order Point Revenue alerts. If the trend in sales or order point for an item/location is higher than the threshold defined in this view, an alert is triggered.

Figure 7–7 Admin Threshold for Warehouse Replenishment View



	Group 1	Group 2	Group 3	Group 4	Group 5
Order Point Revenue Alert	0.00	0.00	0.00	0.00	0.00
Trend Up in Sales Alert	1.30	1.30	1.30	1.30	1.30
Number of Weeks for Down	5	5	5	5	5
Trend Down in Sales Alert	0.80	0.80	0.80	0.80	0.80
Number of Weeks for Up	5	5	5	5	5
Threshold for Insufficient	4	4	4	4	4

Table 7–2 Admin Thresholds for Warehouse Replenishment View Measures

Measure	Description
Order Point Revenue Alert Threshold Warehouse Level	The maximum value of the order point revenue that an item/location can have before an alert is triggered.
Trend Up in Sales Alert Threshold Warehouse-Level	The maximum value of the trend in sales that an item/location can have before an alert is triggered.
Number of Weeks for Down Trend Warehouse-Level	Determines the number of recent weeks over which warehouse demand is averaged. The average is then divided into the long-term average and compared to a threshold to identify if a Trend Down in Sales alert should be triggered.
Trend Down in Sales Alert Threshold Warehouse-Level	The threshold stores the values which is compared to the ratio of short term versus long term warehouse demand averages. If the ratio is below the threshold value, then the Trend Down in Sales alert is triggered.
Number of Weeks for Up Trend Warehouse-Level	Determines the number of recent weeks over which warehouse demand is averaged. The average is then divided into the long-term average and compared to a threshold to identify if a Trend Up in Sales alert should be triggered.
Threshold for Insufficient History Warehouse-Level	This threshold stores the value which determines if an item/location has sufficient warehouse demand. If the warehouse demand history is less than the threshold value, then an alert is triggered and RO's recommendations are not automatically approved.

A

Appendix: RO Workbooks (Fusion Client)

This appendix provides a convenient reference of all the RO steps and views by workbook on the RPAS Fusion Client.

The following sections list the RO workbooks:

- Optimization Setup Workbook
- Optimization Results Workbook
- Subgroup Analysis Workbook
- Summary Level Analysis Workbook
- Detail Level Analysis Workbook
- Administration Workbook

Optimization Setup Workbook

Use the Optimization Setup Workbook to define optimization parameters as well as to specify the mode of the RO batch run.

Table A–1 Optimization Setup Workbook

Step	View
Store Optimization Targets & Constraints Step	Classification Parameters - Store View Optimization Goals - Store View Key Adjustment Settings - Store Like SKU/Store Assignment Max Order Frequency - Store Maximum Constraints - Store Minimum Constraints - Store
Store Subgrouping Setup Step	Define Subgrouping Criteria for Store Optimization View Subgrouping Labels-Store View User Breakpoints Override for Store Optimization View

Table A–1 (Cont.) Optimization Setup Workbook

Step	View
Warehouse Optimization Run Setup Step	Basic Setup for Warehouse Optimization View Advanced Setup for Warehouse Optimization View
Warehouse Subgrouping Setup Step	Define Subgrouping Criteria for Warehouse Optimization View Subgrouping Labels for Warehouse Optimization View User Breakpoints Override for Warehouse Optimization View
Warehouse Constraints Setup Step	Specify Maximum Constraint for Warehouse Optimization View Specify Maximum Order Frequency for Warehouse Optimization View Specify Minimum Constraints for Warehouse Optimization View

Optimization Results Workbook

Use the Optimization Results Workbook to analyze and approve the full mode batch results.

Table A–2 Optimization Results Workbook

Step	View
Store Subgroup Result Review Step	Detail Subgrouping Criteria Review - Store View Subgrouping Results Review - Store View Subgrouping Criteria Review - Store View User Breakpoint Override Review - Store View
Store Optimization Result & Approval Step	Optimization Results - Store View Review Targets for Store Optimization View Subgroup Optimization Results - Store View Compare Targets - Store View Target Selection and Approve for Store Optimization View Weekly Projected Inventory Review for Store Optimization View
Review and Analyze Store Constraints Step	Maximum Constraint Review - Store View Optimization Goal Review - Store View Max Order Frequency Review - Store View Minimum Constraint Review - Store View

Table A–2 (Cont.) Optimization Results Workbook

Step	View
Warehouse Analyze Subgrouping Step	Detail Subgrouping Criteria Review - Warehouse View Subgrouping Results Review - Warehouse View Subgrouping Criteria Review - Warehouse View User Breakpoint Override Review - Warehouse View
Analyze and Approve Warehouse Optimization Results Step	Optimization Results Review for Warehouse Optimization View Review Targets for Warehouse Optimization View Subgroup Optimization Results Review for Warehouse Optimization View Compare Targets - Warehouse View Target Selection and Approve for Warehouse Optimization View Weekly Projected Inventory Review for Warehouse Optimization View
Review and Analyze Warehouse Constraints Step	Max Order Frequency Review - Warehouse View View Maximum Constraint Review - Warehouse View Minimum Constraint Review - Warehouse View Optimization Goal Review - Warehouse View

Subgroup Analysis Workbook

Use the Subgroup Analysis Workbook to dynamically alter the subgroup parameters to analyze and refine the subgroup parameters prior to full mode batch process.

Table A–3 Subgroup Analysis Workbook

Step	View
Store Subgroup Analysis Step	Detail Subgroup Criteria Review - Store View Subgrouping Criteria Review - Store View Interactive User Breakpoint Overrides - Store View Interactive Subgroup Criteria - Store View
Warehouse Subgroup Analysis Step	Detail Subgroup Criteria Review - Warehouse View Subgrouping Criteria Review - Warehouse View Interactive Subgroup Criteria - Warehouse View Detail Subgroup Criteria Review - Warehouse View

Summary Level Analysis Workbook

Managers use the Summary Level Analysis Workbook to review and track replenishment performance at aggregate levels.

Table A–4 Summary Level Analysis Workbook

Step	View
Summary Step	Store Replenishment Summary View Warehouse Replenishment Summary View
Weekly Level Summary Step	Weekly Level Summary - Store View Weekly Level Summary - Warehouse View

Detail Level Analysis Workbook

Use the Detail Level Analysis Workbook to monitor replenishment performance and modify item/location level replenishment settings.

Table A–5 Detail Level Analysis Workbook

Step	View
Summary Step	Store Replenishment Summary View Warehouse Replenishment Summary Details View
Store Detail & Approval Step	Interactive Analysis - Store View Replenishment Details - Store View Replenishment Daily Details - Store View Replenishment Approve - Store View
Warehouse Detail & Approval Step	Interactive Analysis - Warehouse View Replenishment Details - Warehouse View Replenishment Daily Details - Warehouse View Replenishment Approve - Warehouse View

Administration Workbook

Use the Administration Workbook to specify alert thresholds for products.

Table A–6 Administration Workbook

Step	View
Admin Thresholds Step	Admin Thresholds for Store Replenishment View Admin Thresholds for Warehouse Replenishment View