Oracle® Inventory Optimization

Users Guide

Release 12.2

Part No. E48774-07

April 2017

ORACLE

Oracle Inventory Optimization Users Guide, Release 12.2

Part No. E48774-07

Primary Author: Greg Watkins

Contributing Author: Tom Myers

Contents

4 Key Setups

5 Viewing Output

9 Oracle Inventory Optimization and Asset Intensive Planning

10 Managing Oracle Inventory Optimization Plans from Oracle Advanced Planning Command Center

11 Oracle Inventory Optimization Warehouse Capacity Constraints and Cycle Inventory Safety Stock

12 Accounting for Cycle Inventory in Safety Stock Calculation

13 Service Parts Planning

14 Cross-Product Integration

Send Us Your Comments

Oracle Inventory Optimization Users Guide, Release 12.2

Part No. E48774-07

Oracle welcomes customers' comments and suggestions on the quality and usefulness of this document. Your feedback is important, and helps us to best meet your needs as a user of our products. For example:

- Are the implementation steps correct and complete?
- Did you understand the context of the procedures?
- Did you find any errors in the information?
- Does the structure of the information help you with your tasks?
- Do you need different information or graphics? If so, where, and in what format?
- Are the examples correct? Do you need more examples?

If you find any errors or have any other suggestions for improvement, then please tell us your name, the name of the company who has licensed our products, the title and part number of the documentation and the chapter, section, and page number (if available).

Note: Before sending us your comments, you might like to check that you have the latest version of the document and if any concerns are already addressed. To do this, access the new Oracle E-Business Suite Release Online Documentation CD available on My Oracle Support and www.oracle.com. It contains the most current Documentation Library plus all documents revised or released recently.

Send your comments to us using the electronic mail address: appsdoc_us@oracle.com

Please give your name, address, electronic mail address, and telephone number (optional).

If you need assistance with Oracle software, then please contact your support representative or Oracle Support Services.

If you require training or instruction in using Oracle software, then please contact your Oracle local office and inquire about our Oracle University offerings. A list of Oracle offices is available on our Web site at www.oracle.com.

Preface

Intended Audience

Welcome to Release 12.2 of the *Oracle Inventory Optimization Users Guide.*

Welcome to the Oracle Inventory Optimization User's Guide, Release 12.

This guide assumes you have a working knowledge of the following:

- The principles and customary practices of your business area.
- Oracle Advanced Supply Chain Planning and Oracle Inventory Optimization

  If you have never used Oracle Advanced Planning or Oracle Inventory Optimization, Oracle suggests you attend one or more of the Oracle Applications training classes available through Oracle University.
- Oracle Self-Service Web Applications

  To learn more about Oracle Self-Service Web Applications, read the *Oracle Self-Service Web Applications Implementation Manual*.
- The Oracle Applications graphical user interface

  To learn more about the Oracle Applications graphical user interface, read the *Oracle E-Business Suite User's Guide*.
- See Other Information Sources for more information about Oracle Applications product information.

See Related Information Sources on page xiii for more Oracle E-Business Suite product information.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle

Accessibility Program website at http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc.

Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info or visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs if you are hearing impaired.

Structure

1 Overview

This chapter describes Oracle Inventory Optimization and its benefits. It also provides an overview of how Oracle Inventory Optimization works and its input and output data.

2 Defining an Inventory Plan

3 Inventory Plan Options

This chapter details various options that you can set for your inventory plan by using Oracle Inventory Optimization.

4 Key Setups

This chapter describes the key setups such as the target service levels and performance indicators that you need to specify before you run your inventory plan.

5 Viewing Output

This chapter details how to view the output after you run an inventory plan.

6 Analysis Workbench

This chapter describes the Analysis Workbench and how you can use it to analyze your inventory plans.

7 Managing Inventory and Safety Stock

This chapter documents procedures for planning safety stock inventory.

8 Oracle Inventory Optimization Policy Planning

9 Oracle Inventory Optimization and Asset Intensive Planning

10 Managing Oracle Inventory Optimization Plans from Oracle Advanced Planning Command Center

11 Oracle Inventory Optimization Warehouse Capacity Constraints and Cycle Inventory Safety Stock

12 Accounting for Cycle Inventory in Safety Stock Calculation

13 Service Parts Planning

14 Cross-Product Integration

This chapter details the integration between Oracle Inventory Optimization and Oracle Demand Planning.

A Profile Options

Glossary

Related Information Sources

Oracle Inventory Optimization shares business and setup information with other Oracle Applications products. Therefore, you may want to refer to other guides when you set up and use Oracle Inventory Optimization.

You can access other guides from the Oracle E-Business Suite Online Documentation Library CD that was included with your media pack:

- Oracle E-Business Suite User's Guide
- Oracle Advanced Planning Command Center User's Guide
- Oracle Advanced Supply Chain Planning Implementation and User's Guide
- Oracle Bills of Material User's Guide
- Oracle Collaborative Planning Implementation and User's Guide
- Oracle E-Business Suite Upgrade Guide: Release 11i to Release 12.1.1
- Oracle E-Business Suite Installation Guide: Using Rapid Install
- Oracle Global Order Promising Implementation and User's Guide
- Oracle Inventory Optimization User's Guide
- Oracle Inventory User's Guide
- Oracle Manufacturing Operations Center Implementation Guide
- Oracle Order Management Using Oracle Workflow in Oracle Order Management
- Oracle Production Scheduling Implementation Guide
- Oracle Project Manufacturing User's Guide
- Oracle Project Manufacturing Implementation Guide
- Oracle Purchasing User's Guide
- Oracle Service Parts Planning Implementation and User's Guide
- Oracle Shopfloor Management User's Guide
- Oracle Strategic Network Optimization Implementation Guide
- Oracle Work in Process User's Guide

- Oracle Workflow User's Guide

Integration Repository

The Oracle Integration Repository is a compilation of information about the service endpoints exposed by the Oracle E-Business Suite of applications. It provides a complete catalog of Oracle E-Business Suite's business service interfaces. The tool lets users easily discover and deploy the appropriate business service interface for integration with any system, application, or business partner.

The Oracle Integration Repository is shipped as part of the Oracle E-Business Suite. As your instance is patched, the repository is automatically updated with content appropriate for the precise revisions of interfaces in your environment.

Do Not Use Database Tools to Modify Oracle E-Business Suite Data

Oracle STRONGLY RECOMMENDS that you never use SQL*Plus, Oracle Data Browser, database triggers, or any other tool to modify Oracle E-Business Suite data unless otherwise instructed.

Oracle provides powerful tools you can use to create, store, change, retrieve, and maintain information in an Oracle database. But if you use Oracle tools such as SQL*Plus to modify Oracle E-Business Suite data, you risk destroying the integrity of your data and you lose the ability to audit changes to your data.

Because Oracle E-Business Suite tables are interrelated, any change you make using an Oracle E-Business Suite form can update many tables at once. But when you modify Oracle E-Business Suite data using anything other than Oracle E-Business Suite, you may change a row in one table without making corresponding changes in related tables. If your tables get out of synchronization with each other, you risk retrieving erroneous information and you risk unpredictable results throughout Oracle E-Business Suite.

When you use Oracle E-Business Suite to modify your data, Oracle E-Business Suite automatically checks that your changes are valid. Oracle E-Business Suite also keeps track of who changes information. If you enter information into database tables using database tools, you may store invalid information. You also lose the ability to track who has changed your information because SQL*Plus and other database tools do not keep a record of changes.

1

Overview

This chapter describes Oracle Inventory Optimization and its benefits. It also provides an overview of how Oracle Inventory Optimization works and its input and output data.

This chapter covers the following topics:

- Overview of Oracle Inventory Optimization
- Stochastic Optimization Technology
- Business Process
- Key Inventory Decisions
- Input
- Output
- BIS Key Performance Indicators

Overview of Oracle Inventory Optimization

Oracle Inventory Optimization is a comprehensive Internet-based inventory planning solution that enables you to determine when and where to hold your inventories across the supply chain to achieve the desired customer service levels. You can factor in criteria such as demand variability and supply lead time variability when you make your inventory decisions. It is a strategic planning tool that can help you address the following key business issues:

- How can I improve customer service while reducing inventory?
    - Where do I position my inventories?
    - How can I manage demand and supply variability?
- What service levels can I achieve given specific budgets and other constraints?

The following are the key capabilities of Oracle Inventory Optimization:

- Oracle Inventory Optimization uses stochastic optimization technology that enables you to factor in the multilevel supply chain network and interdependence of demand variability and supply lead time variability when generating time-phased safety stock recommendations.

- Oracle Inventory Optimization enables you to evaluate multiple inventory planning scenarios and graphically compare the results. The planning scenarios for example can include different sets of customer service levels, budget constraints, and capacity constraints.

- Oracle Inventory Optimization is integrated with Oracle's E-Business Suite and Advanced Planning products including Oracle Advanced Supply Chain Planning.. This enables collaboration between these applications. For example, the safety stock recommendations of Oracle Inventory Optimization can be automatically fed into Oracle Advanced Supply Chain Planning to drive tactical supply chain planning decisions.

Stochastic Optimization Technology

Stochastic optimization is a technique for prudent decision-making under uncertainty. Stochastic optimization considers:

- Factors that you are trying to maximize or minimize. For example, you would want to maximize service level and profit and minimize cost.

- Factors that you have under control. For example the investment on inventory when there are no budget constraints.

- The limiting factors of your plan such as service level and budget constraints.

Oracle Inventory Optimization uses this technology to help you manage the uncertainty inherent to your business decisions. Based on your requirements and objectives, you can determine the optimal inventory stocking levels and other operational policies.

Oracle Inventory Optimization enables you to:

- Determine the optimal inventory levels across the supply chain, which improves customer service while lowering inventory investment.

- Consider uncertainty in demand and supply.

- Manage variability and risk.

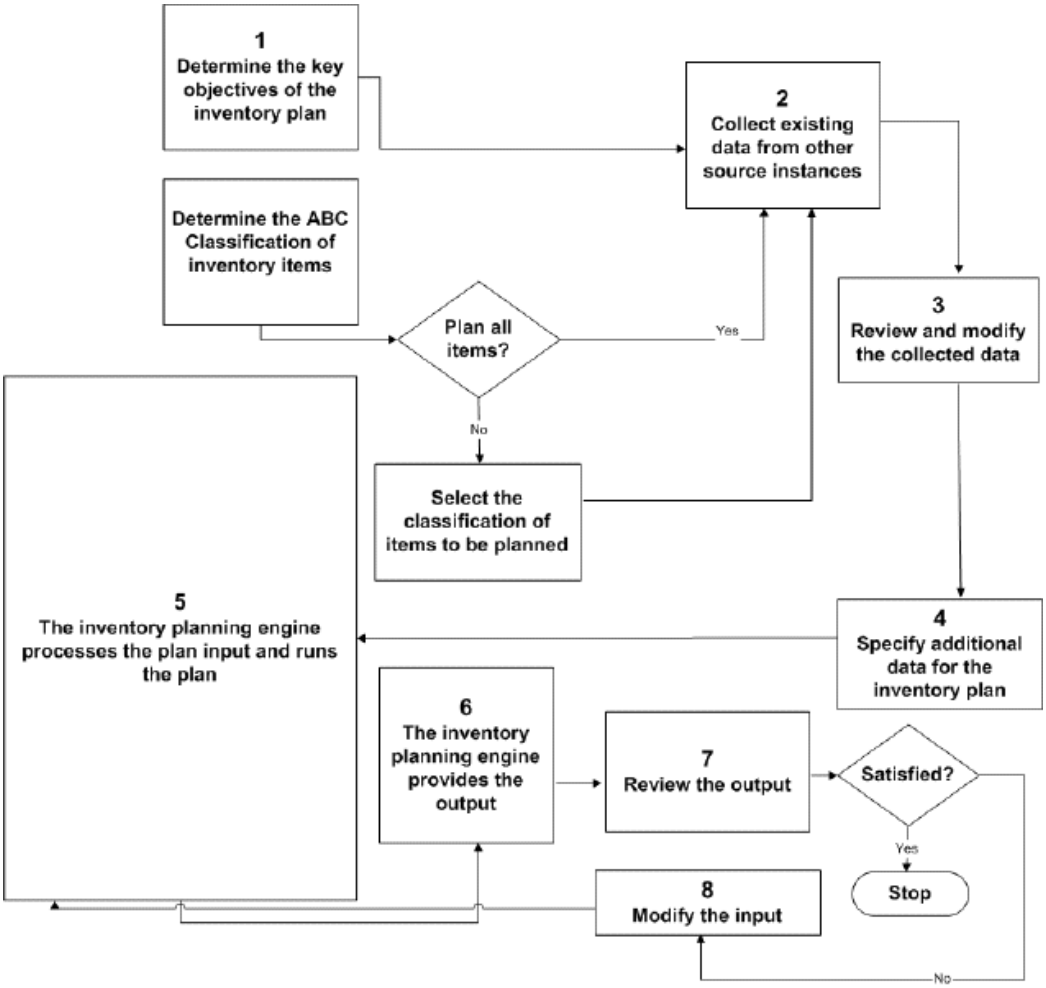
- Evaluate cost and risk trade-off.

- See a graphical representation of your strategic inventory plan.

- Plan telescoping time horizons.
- Provide accurate inputs to tactical plans.
- Manage key performance indicators (KPIs) and drive continuous improvement.

Business Process

The following diagram describes the business process flow for Oracle Inventory Optimization:



The following steps summarize the business process flow depicted in the diagram:

1. Determine the key objective of the inventory plan by linking to Corporate Balanced Scorecard.
2. Collect existing data from other source instances. For detailed information about

collections, see *Oracle Advanced Planning Implementation and User's Guide.*

3. Review the data collected by the inventory planning engine and make changes as needed.

4. Specify additional inputs for the inventory plan. The following are the data that you can specify:
   - Service level policy
   - Inventory budget (optional)
   - Supplier lead time variability
   - Safety stock levels
   - Minimum and maximum inventory levels

5. The inventory planning engine processes the input and runs the inventory plan.

6. The inventory planning engine reports the results after running the inventory plan.

7. Review the output generated by the inventory planning engine.

8. If the inventory plan is not optimal, make changes to the input. Step 3 through 6 are repeated until the inventory plan is optimal.

For information on what Oracle Inventory Optimization takes as input, see Input, page 1-5.

For information on what Oracle Inventory Optimization provides as output, see Output, page 1-6.

For information on setting up Oracle Inventory Optimization, see *Oracle Advanced Planning Implementation and User's Guide*.

Key Inventory Decisions

Some of the key factors that can influence your decision factors are:

- Service Level Decision Factors, page 1-5
- Safety Stock Decision Factors, page 1-5
- Inventory Location Decision Factors, page 1-5

Service Level Decision Factors

Service level is a measure of satisfying demand through inventory or by the current production schedule to satisfy the customers' requested delivery dates and quantities. The decision on service level may depend on factors such as your business objectives, budget constraints, and targeted profit. For example, profits may rise as you increase the service level. However, increased service level beyond a certain point may not increase the profits because of the relative increase in inventory costs. Therefore, if your service level is driven by profit, you need to determine the most profitable scenario with an acceptable service level.

The service level may also influence your safety stock level and inventory location. For example, if you are targeting a high service level, you may want to reduce the transportation lead time by locating your inventory close to your customers.

Safety Stock Decision Factors

As safety stock can provide a buffer against uncertainty, you may want to consider the variability in demand and supply when you calculate the safety stock level. In many cases, the degree of variability in supply and demand changes over time. You need to consider all possible scenarios when you calculate safety stock.

Inventory Location Decision Factors

The decision on where to locate your inventory can be a trade-off between several factors such as supplier lead times, transportation lead time, manufacturing lead time, and the flexibility of your manufacturing system. For example, when you store safety stock in the form of finished goods, the manufacturing lead time for those finished goods decreases. However, the components and materials used in making those finished goods are committed and you cannot use them to meet unexpected customer requirements. Therefore, if your safety stock is in the form of raw materials, then you may want to locate your inventory close to your manufacturing plant.

Input

Oracle Inventory Optimization takes the following information as input:

- Demand uncertainty
- Customer service level for each demand

  If the customer service level is specified at a deeper level of granularity, the service level value will apply to all independent demands for that customer.

- Supplier lead time variation

- Supply chain network in the form of sourcing rules and bill of distribution
- List of items to be included in the plan
- Bills of material including effectivity
- Routings and key resources for items
- Capacity constraints

  Capacity constraints can be in the form of supplier capacity, transportation capacity, and resource availability or line rates.

- Cost elements

  Cost can include production cost, item cost, carrying cost percentages, purchase cost, transportation cost, and resource cost.

You can establish the following instances as eligible source instances for Oracle Inventory Optimization:

- Oracle Applications R11 (Discrete or Process Manufacturing)
- Oracle Applications R11*i* (Discrete or Process Manufacturing)
- Oracle Applications R12 (Discrete or Process Manufacturing)

Output

The output of Oracle Inventory Optimization is a time-phased strategic inventory plan. More specifically, output includes the following:

- Time-phased constrained and unconstrained safety stock levels for each item

  You can specify the time-phased constrained safety stock quantities as input to Oracle Advanced Supply Chain Planning in the form of demand plan(s).

- Recommended service levels
- Key performance indicators
- Recommendations and exception messages such as for service level and budget violations
- Total cost of achieving the target customer service level and the individual cost elements that make up the total cost

BIS Key Performance Indicators

Oracle Inventory Optimization is integrated with Oracle Business Intelligence System's Performance Management System. You can set your organizational objectives using Oracle Business Intelligence System.

You can use key performance indicators to drive continuous improvement in your enterprise. You can set performance targets and exception tolerances by business units or by period and automatically notify the appropriate people when exceptions arise.

> **Note:** Organizational objectives are referred to as Performance Measures in Oracle Business Intelligence System and as key performance indicators in Oracle Inventory Optimization and Oracle Advanced Supply Chain Planning

2

Defining an Inventory Plan

Running an Inventory Plan

Before you run an inventory plan, complete the prerequisite tasks. For information on how to perform these tasks, see the *Oracle Advanced Planning Implementation and User's Guide.*

To create and launch an inventory plan:

Prerequisites

- ❒ Set up each planned organization on the source instance.
- ❒ Direct the collection programs to collect data from the transactional instance of each planned organization.
- ❒ Enable the items to be planned in each organization that can produce or distribute the item. During item setup, you can enable items in all organizations or only in specific organizations.
- ❒ Set up bills of material.
- ❒ Enable the routings and bills of resource for each planned item in all planned organizations.
- ❒ Enable the suppliers and sourcing rules in all relevant organizations.

Steps:

1. Sign in using the Inventory Planner responsibility.
2. Choose Inventory Plan > Names.

The Inventory Plan Names window appears.

The following table describes the fields in the Inventory Plan Names window.

Field	Description
Name	Name of the plan.
Description	Description of the plan.
Inactive Date	The date until when the plan is active.

3. Click Plan Options.

   The Plan Options window appears.

4. Continue setting plan options and parameters.

   Only selected organizations are planned regardless of whether planned items, routings, and so on have been enabled in other organizations.

5. Click Launch Plan in the Inventory Plan Names window.

   The Parameters window appears.

   The following table describes the fields in the Parameters window.

Field	Description
Plan Name	Name of the plan.
Launch Snapshot	Set it to "yes" if you want the inventory planning engine to snapshot data such as items and BOMs.
Launch Planner	Set it to "yes" if you want the inventory planning engine to run the netting.
Anchor Date	The plan start date is displayed by default. For more information, see *Oracle Advanced Planning Implementation and User's Guide.*

6. Click OK in the Parameters window after you have verified the parameters.

   The parameters appear in the Parameters field in the Launch Inventory Plan window.

7. Click Submit to launch the plan.

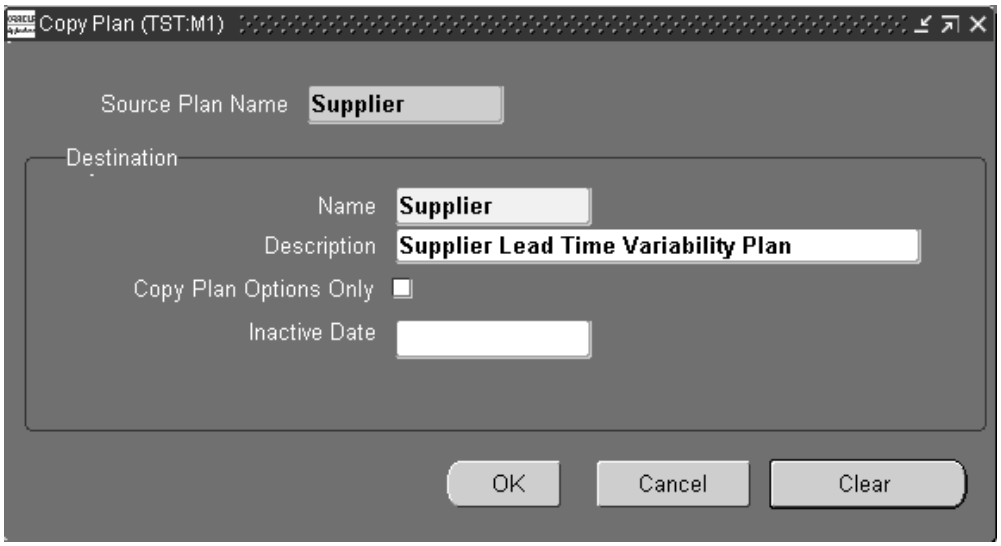
Copying an Inventory Plan

To copy an inventory plan, follow these procedure steps:

Steps:

1. Select a plan in the Inventory Plan Names window.
2. Click Copy Plan. The Copy Plan window appears.

Copy Plan window



3. Enter information for the new plan in the Name and Description fields.
4. To copy only the plan options, select Copy Plan Options Only.
5. Enter the inactive date for the new plan.
6. Click OK.
7. Save your work.

Sourcing

You use the following entities to source material:

- Sourcing rules

- Bills of distribution
- Assignment sets

You can specify these entities in either of the following ways:

- Forms windows
- ADF pages

The names of the Forms windows are:

- Sourcing Rules
- Bills of Distribution
- Assign Sourcing Rules

You see information about these forms in *Oracle Advanced Supply Chain Planning Implementation and User's Guide* > chapter Supply Chain Plan Modeling > Setting Up the Supply Chain.

The names of the ADF pages are:

- Manage Sourcing Rules (ADF)
- Manage Bills of Distribution (ADF)
- Manage Assignment Sets (ADF)

You see information about these pages in *Oracle Advanced Supply Chain Planning Implementation and User's Guide* > chapter Supply Planning Work Area > Plan Input Links.

Manage Inventory Levels

Use the Inventory Optimization page to set minimum, maximum, and target inventory levels for an item.

To display the Inventory Optimization page, expand the Inventory Planner, Standard responsibility, expand the Setup folder, and click the Manage Inventory Levels (ADF) link.

The corresponding Oracle Forms window is called Enter Inventory Levels. Its description is in the chapter Managing Inventory and Safety Stock, section Using User-specified Safety Stock, in the *Oracle Inventory Optimization Users Guide.*

3

Inventory Plan Options

This chapter details various options that you can set for your inventory plan by using Oracle Inventory Optimization.

This chapter covers the following topics:

- Plan Options Overview
- Plan Options
- Setups
- Planned Items: ABC Classification
- Selecting Planned Items
- The Main Tabbed Region
- Plan Start Date in Future
- Plan End Date
- The Organizations Tabbed Region
- Using an Existing Plan as a Demand Schedule For a New Plan
- Setting Demand Variability
- Cumulative Demand Distribution
- How Probability Data is Used by Oracle Inventory Optimization
- Weighted Average Calculation
- How to Assign Forecasts and Forecast Sets to Scenario Sets
- Specifying Sources of Demand
- The Constraints Tabbed Region
- Service Level and Fulfillment Lead Time
- Lead Time Variability
- Inventory Budget

Plan Options Overview

Several factors define the basis for calculating optimal levels of inventory. The level of inventory you hold has an impact on the service level that you can offer. You can set various plan options in Oracle Inventory Optimization based on your requirements. For example, you can specify the desired service level and calculate the safety stock required to achieve the service level. You can also specify budget constraints.

Plan Options

This section describes plan options. The plan options appear in the following tabbed regions of the Plan Options window:

- Main, page 3-4
- Organizations, page 3-9
- Constraints, page 3-19

You can access the plan options, via either of the following navigation methods:

- From the Navigator select Inventory Plan > Options, or.
- From the Navigator select Inventory Plan > Names. From the Plan Names form, select a plan, and then click Plan Options.

This table describes the fields located in the header region of the Plan Options window.

Field	Description
Plan	This field contains the Plan Name. The Plan description field appears in the next field to the right.
Planned Items	The selected ABC classification determines the planned items in this plan. For more information on how the inventory planner engine calculates the safety stock based on this classification, see Planned Items: ABC Classification, page 3-3.
Assignment Set	An assignment set is a named group of sourcing rules and bills of distribution that control replenishment of designated items and organizations.

Field	Description
Service Level Set	A Service Level Set is a named group of specific service level targets and demand fulfillment lead times assigned to items, categories of items, customers, classes of demand, organizations, or combinations of these. See Defining Service Agreement Simulation Sets, page 4-4.
Item Simulation Set	Item attribute simulation sets enable Inventory Optimization plans to simulate changes to key item attributes. You attach values of key attributes to item-organizations or to item-regions, and then save those assignments under an item attribute simulation set name. Item Simulation Sets provide the ability to mass maintain planning-related item attributes. Planners can create multiple item simulation sets, with each simulation set addressing a set of "what-if" scenarios. See Defining Item Attribute Simulation Sets, page 4-13.

Setups

You use the parameters entity to set planning parameters.

You can specify this entity in either of the following ways:

- Forms window
- ADF page

The name of the Forms window is Parameters.

You see information about this window in the *Oracle Advanced Supply Chain Planning Implementation and User's Guide* > chapter Defining Supply Chain Plans > Setting Plan Options.

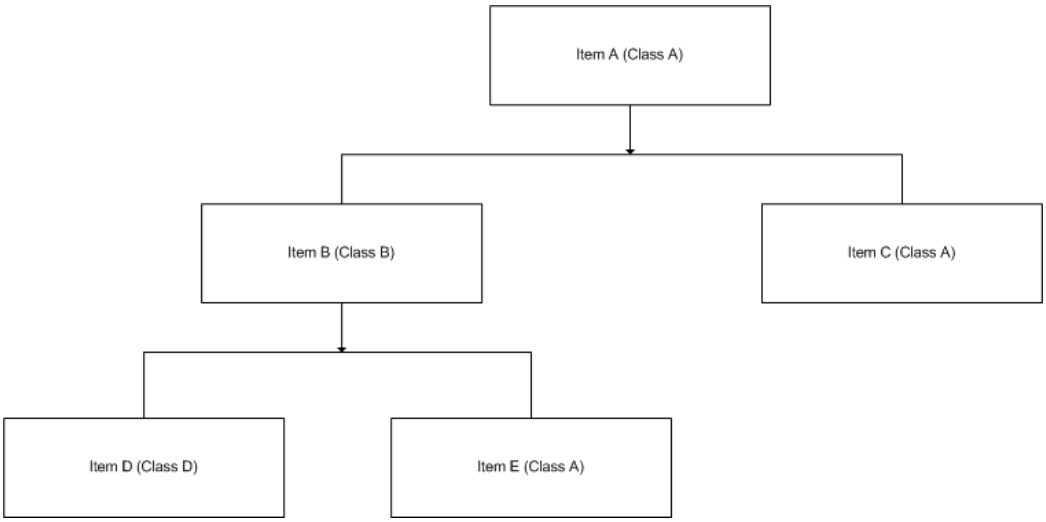
The name of the ADF page is Manage Organization Parameters (ADF).

You see information about this page in *Oracle Advanced Supply Chain Planning Implementation and User's Guide* > *cha*pter Supply Planning Work Area > Plan Input Links.

Planned Items: ABC Classification

The inventory planner engine may include items that have a classification other than what you specify in the Planned Items field in the Plan Options window. Consider the following illustration that depicts the bill of material for Item A.

The inventory planner engine may include items that have a classification other than what you specify in the Planned Items field in the Plan Options window. Consider the following illustration that depicts the bill of material for Item A.



Item A belongs to class A. Items B and C are components of item A. Items B and C belong to classes B and A, respectively. Items D and E are components of item B. Items D and E belong to classes C and A, respectively. If you choose to plan for class A items, the inventory planner engine plans for items A, B, C, and E. The inventory planner engine includes item B in the plan because item E, a component of item B, belongs to class A.

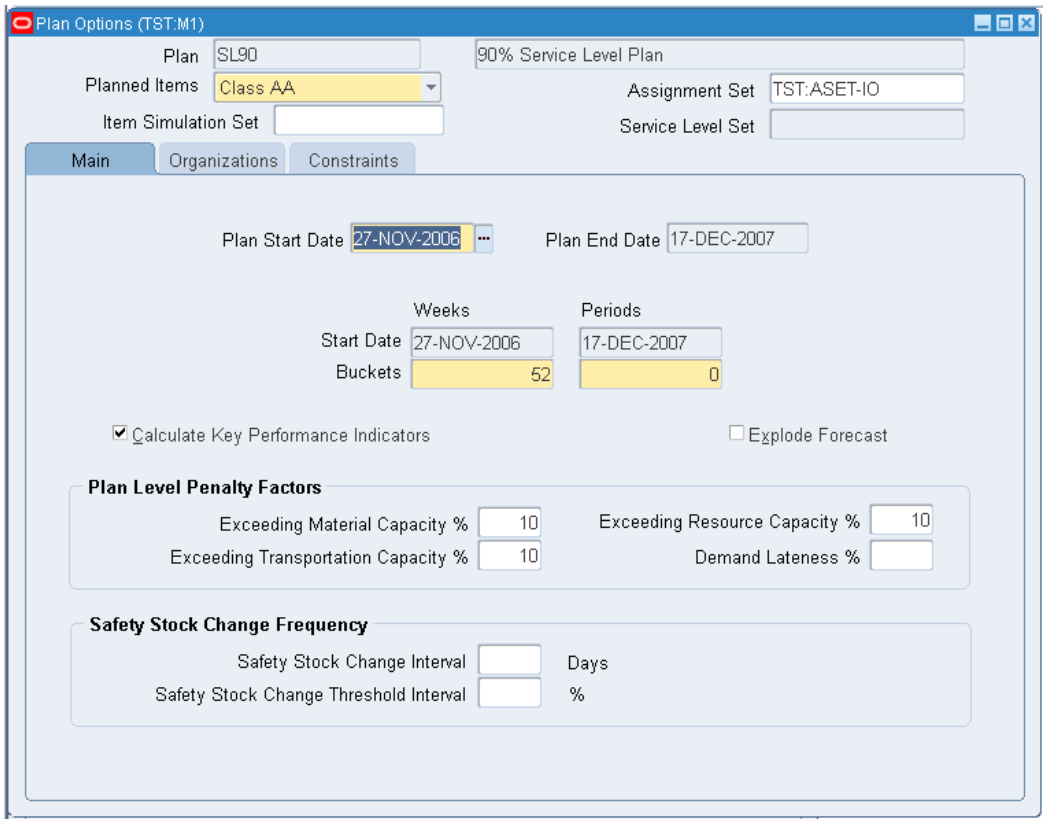
Selecting Planned Items

Oracle Inventory Optimization calculates safety stock quantities only for those items whose safety stock planning method is set to MRP planned %. Safety stock quantities are not calculated for items whose safety stock planning method is set to Non-MRP planned.

The Main Tabbed Region

You can specify the plan start and end dates in the Main tabbed region. In addition, you can set various plan level penalty factors and details regarding changes to the safety stock.

Main tabbed region



Penalty factors are plan level values that:

- You can override by setting values for organizations and items in the source instance
- Override those set in profile options

The following table describes the fields and options in the Main tabbed region:

Field	Description
Plan Start Date	If you have not run the plan, choose a start date for your plan; the default is beginning of the first planned time bucket. You can even specify a date in the future as your start date. If you have run the plan, this displays the planning horizon start date of the latest run. If you enter a start date in the middle of bucket, the inventory planning engine starts the plan on the first day of the bucket. You cannot change the start date of the plan when you copy one plan to another. For more information, see Plan Start Date in Future.
Plan End Date	Calculated planning horizon end date based on your entries in Buckets and the owning organization calendar.
Start Date	Calculated start date for each bucket based on your entries in Buckets and the owning organization calendar. The value for the Days column is the Plan Start Date.
Buckets	Number of buckets of this bucket type.
Display Key Performance Indicators	Select this plan option to instruct the planning engine to calculate key performance indicators for the plan.
Explode Forecast	Select this plan option to instruct the planning engine to explode forecasts as follows: - Product family forecasts to item forecasts - Model forecasts to other model, option class, and item forecasts. This option applies to items with forecasts with forecast control Consume and derive. If you clear this plan option, the explosion is assumed to happen in the source instance or in Oracle Demand Planning before the plan run.
Exceeding material capacity %	Enter a numerical value to quantify the impact of exceeding material capacity.
Exceeding resource capacity %	Enter a numerical value to quantify the impact of exceeding resource capacity.
Exceeding transportation capacity %	Enter a numerical value to quantify the impact of exceeding transportation capacity.

Field	Description
Demand lateness %	Enter a numerical value to quantify the impact of late demand.
Safety Stock Change Interval	Enter the number of days that the inventory planning engine should hold the item safety stock levels constant. It does not recommend a change in safety stock levels during this time but may recommend a change after this time.
Safety Stock Change Threshold Interval	Enter the percentage of safety stock change that is significant to your business. When the inventory planning engine calculates a new recommended safety stock level for an item, it checks its percentage difference from the safety stock values of the previous adjacent change interval. If this percentage difference is lower than the this plan option, the inventory planning process does not recommend a change to the safety stock level for the item.

Plan Start Date in Future

If you consider immediate demand and supplies, your safety stock level requirements may vary across the horizon. For example, owing to short term jobs and on-hand, you may have an excess supply in the beginning of a horizon. As such, your safety stock requirement may be low. However, your safety stock requirements may be higher later in the planning horizon.

To calculate stable safety stock levels, you may want to consider demand in a relatively stable part of the horizon to determine long-term inventory holding policies.

To determine your plan start date, use the following guidelines:

- Determine the initial part of the plan horizon where you want to disregard the demand and supply. Select a date in future to avoid near-term supplies.
- Choose to start the plan after the initial time period in the plan horizon. The inventory planning engine validates the start date to ensure that it matches with the bucket start date.
- Review the safety stocks suggested by the plan across the horizon.

Consideration of existing supplies:

The inventory planning engine does not consider those supplies that are available before the plan start date. For example, the inventory planning engine considers the on-hand supplies if you specify the system date as the plan start date. However, if you specify a future date as the plan start date, the inventory planning engine ignores the on-hand supplies. You can use the Organizations tabbed region to indicate whether or

not you want the inventory planning engine to consider the net purchased supplies, work in process, and on-hand.

Consideration of demand and supplies available before the system date:

If you specify the system date as your plan start date, the inventory planning engine does not consider any demands and supplies that were available before the system date. This helps avoid issues arising out of huge backlogs and spikes in supplies required due to an increase in the near term demand.

Consideration of demand and supplies available before the plan start date in future:

The inventory planning engine does not consider past due forecasts, immediate forecasts, dependent demands, and their supplies to calculate safety stocks. The inventory planning engine calculates safety stock based on the demand and supply available after the start date in future so that you can plan accordingly.

> **Note:** To determine the plan start date, you can use the planning time fence that works for most of your items. Alternatively, you can estimate the length of time until when the existing supplies are going to last. The inventory planning engine does not consider any dependent demands that are placed before the plan start date.

Consequences of changing the plan start date:

If you change the plan start date after selecting the safety stock change interval, the inventory planning engine displays a warning message as the safety stock change interval may not be valid in certain cases.

If the number of days in the planning horizon is less than the safety stock change interval, the inventory planning engine replaces the value of the safety stock change interval with null. In addition, the inventory planning engine displays a warning message prompting you to enter a different value for the safety stock change interval.

Defaulting of week start date or period start date:

The inventory planning engine defaults the week start date to be the plan start date. Conversely, if your plan does not consider weekly buckets, the inventory planning engine defaults the period start date to be the plan start date.

For example, the week start and end dates are D1 - D7, D8 - D14, D-15 - D21. If you define a plan starting in weekly buckets on day 11 (D11), the inventory planning engine starts the plan on D15. If you choose your start date as D20, which is in the future, the inventory planning engine selects D22, which is the corresponding week start date.

> **Note:** The inventory planning engine may starts the plan on a non-working day if you specify the week start date or the period start date to be on a non-working day.

Plan End Date

Forecast bucket and plan bucket granularity

In the inventory plan, the forecast buckets and granularity (defined in the ERP system in the Forecast Entries window) and the planning granularity (defined in the Plan Options window) should be aligned correctly so that the appropriate safety stock requirements are passed on to Oracle Advanced Supply Chain Planning. It is recommended that the start date and the end date for each forecast entry should match the start date and the end date for each planning bucket, respectively.

The plan end date is calculated based on the length of the planning horizon defined by the specified bucket sizes in the Main tab.

You cannot change the start date that appears in the Weeks field. The start date in the Weeks field defaults from the plan start date.

To view the end date for your inventory plan

Steps:

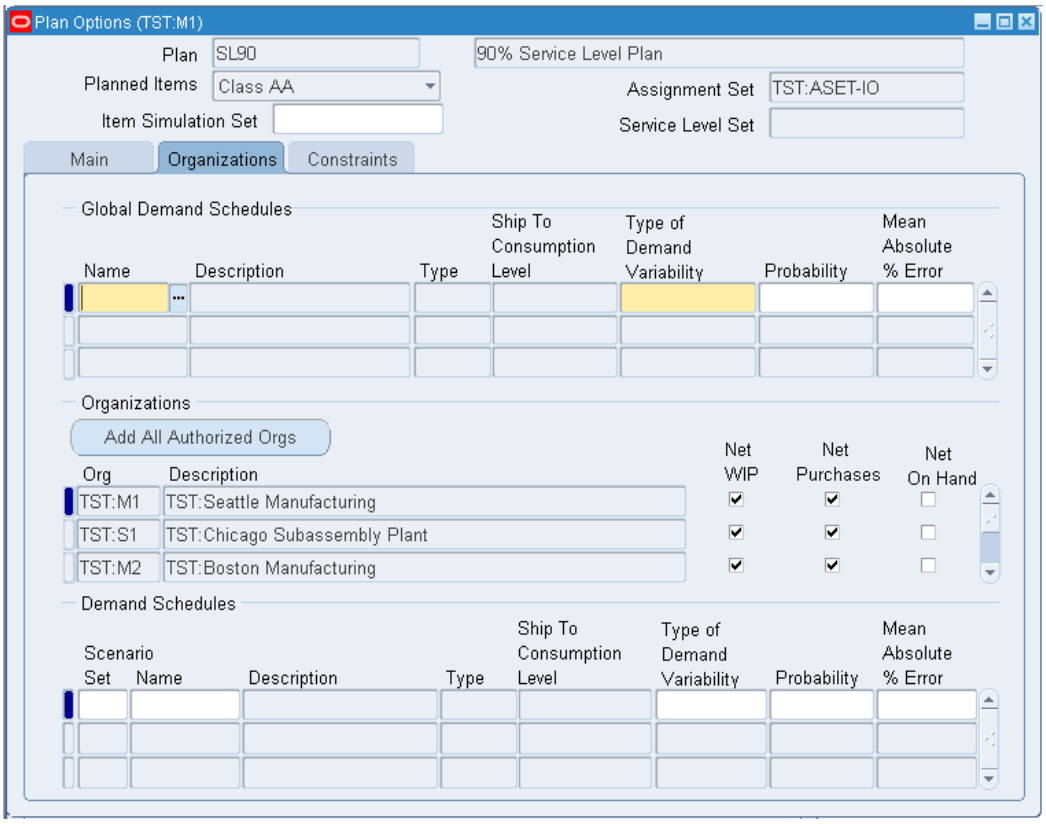
1. Navigate to the Planner Workbench.
2. Choose Plan Options > Main tab.

   The Main tab appears showing the end date for your inventory plan.

The Organizations Tabbed Region

The Organizations tabbed region enables you to specify information including the global demand schedule, type of demand variability that applies to the plan, and the forecast scenario.

Organizations Tabbed Region



The following table describes the fields and options in the Organizations tabbed region:

Field	Description
Global Demand Schedules	Select the names of Oracle Demand Planning scenarios that drive this plan. For more information on global forecasting, see *Oracle Advanced Planning Implementation and User's guide.*

Field	Description
Type of Demand Variability	Select a demand variability type for the global forecast. Values are: • Accuracy Metric MAPE or Accuracy Metric MAD: Instructs the Oracle Demand Planning to use demand variability information. This selection changes according to the scenario and the error measure provided by Oracle Demand Planning. • Probability: If Oracle Demand Planning demand variability information is not available or you want to run quick variability simulations, select this value, determine a confidence factor for this forecast, and enter it in Probability. • Mean Absolute % Error: If Oracle Demand Planning demand variability information is not available or you want to run quick variability simulations, select this value, determine a mean absolute percent error (MAPE) of this forecast, and enter it in Mean Absolute % Error. **Note:** If you select a value for one forecast in a scenario set, that value applies to all forecasts in that scenario set; you cannot select different variability for the other forecasts in the scenario set.
Mean Absolute % Error	If Type of Demand Variability is Mean Absolute % Error, enter your mean absolute percent error (MAPE) of the global forecast. If you enter a value for one forecast in a scenario set, that value applies to all forecasts in that scenario set; you cannot enter different mean absolute percent errors for the other forecasts in the scenario set. '
Add All Authorized Orgs	When you click, the form retains the organizations that appear in Org and adds all organizations to which you have organization security (according to your responsibility). If one of your authorized organizations is already listed, the form does not add it a second time.
Org	An organization for which this plan is intended.
Description	The name of the organization.

Field	Description
Net WIP	Select to consider discrete jobs and other production orders as supply in the planning demand/supply netting process. Only firm supplies are considered. Clear this plan option for Inventory Optimization Plans. These supplies do not influence IO plan output, even though you can see them in Collections Workbench.
Net Purchases	Select to consider purchase orders, purchase requisitions, in-transit shipments and other non production order scheduled receipts as supply in the planning demand/supply netting process. Only firm supplies are considered. Clear this plan option for Inventory Optimization Plans. These supplies do not influence IO plan output, even though you can see them in Collections Workbench.
Net On Hand	Select to consider on-hand inventory in the netting process.
Demand Schedules	Select the names of forecasts and Oracle Demand Planning scenarios that drive this plan.
Scenario Set	Enter the identifier for the scenario set with which the forecast is associated. See Setting Demand Variability.
Probability	If Type of Demand Variability is Probability, enter your confidence in the local forecast. For 35% confidence, enter 35. If you enter a value for one forecast in a scenario set, that value applies to all forecasts in that scenario set; you cannot enter different probabilities for the other forecasts in the scenario set.

Using an Existing Plan as a Demand Schedule For a New Plan

The plan for one organization can be used as a demand source (or demand schedule) for the plan of another organization.

Setting Demand Variability

You can specify demand variability as a discrete distribution. Using the Plan Options window, you can specify the probability for a given forecast set. Forecast sets are grouped together in scenario sets by using the scenario set field.

Note: Scenario sets are planned separately.

To set demand variability

Steps:

1. Choose Plan Options > Organizations tab.
2. In the Scenario Set field, enter the scenario set number.
3. In the Name field, enter the demand schedule name (forecast set).
4. In the Probability field, specify corresponding probabilities for forecast sets.

Note: One scenario set includes a list of one or more forecast sets. A forecast set includes a list of one or more forecasts. Use the Probability field to enter an estimate of probability that a particular forecast set within the scenario set will occur. For example, if a scenario set includes three forecasts sets named; Optimistic, Most likely, and Pessimistic, you can enter the probability of the forecasts occurring as 0.15, 0.65, and 0.20, respectively.

Note: The sum of probabilities of forecast sets in a scenario set can be more than 1. If a forecast set probability is not specified, a value of 1 is considered as default.

Note: Safety stock is not calculated if there is no demand and supplier lead time.

Cumulative Demand Distribution

You can specify demand uncertainty in terms of either noncumulative probabilities or cumulative probability distribution. You can view the demand probability in the Supply/Demand window of the Planner Workbench.

Profile option to indicate demand distribution format

The profile option MSR: Probability Distribution Type is used to indicate whether the demand variability is assumed to be in terms of forecast set probabilities or in terms of forecast set cumulative probabilities. The valid options are Probabilities and Cumulative Probabilities. The default value is Probabilities.

This option applies uniformly to all scenario sets. It is not possible to express demand variability in one scenario set in terms of probabilities and in another scenario set in terms of cumulative probabilities. You need to implement a consistent type of demand variability across scenario sets.

Specifying cumulative probabilities

You can specify cumulative probabilities in the Probability field in the Organizations tabbed region (Demand Schedules section).

The maximum value of the cumulative probability, for a given scenario set, needs to equal 1.0. If this is not true, a warning message appears when you attempt to save the plan options. If you run the plan at this point, the plan errors out.

The following tables provide an example of the correct user input:

Scenario Set	Forecast Set	Qty	Prob
1	FSET-A	50	0.4
1	FSET-B	75	0.2
1	FSET-C	100	0.4

Scenario Set	Forecast Set	Qty	Cum. Prob
1	FSET-A	50	0.4
1	FSET-B	75	0.6
1	FSET-C	100	1.0

The following two tables provide examples of incorrect user input:

Scenario Set	Forecast Set	Qty	Cum. Prob.
1	FSET-B	75	0.4
1	FSET-A	50	0.6
1	FSET-C	100	1.0

The cumulative probability cannot go up when the demand quantity comes down. For example, if the cumulative probability is 0.4 for a quantity of 75, the cumulative probability should be less than 0.4 for a quantity of 50. Oracle Inventory Optimization logs the following message during planning and exits if the forecast quantities in the demand distribution do not increase with the cumulative probabilities:

- Error: Forecast quantity does not follow cumulative pattern for scenario set:

<scenario_set>, forecast set id: <forecast_set_id>, item_id: <item_id>, org_id: <org_id>, instance_id: <instance_id>, date: <date>

Scenario Set	Forecast Set	Qty	Cum. Prob
1	FSET-A	50	0.4
1	FSET-B	75	0.6
1	FSET-C	100	0.9

In Example 2, the maximum cumulative probability equals 0.9. However, as the maximum value of the cumulative probability needs to equal 1.0, an error message appears. If you run the plan at this point, the plan errors out.

How Probability Data is Used by Oracle Inventory Optimization

The probability information is used in three ways:

- Probability acts like a weight in a normalization calculation.
- Normalized probabilities are used to calculate an expected value for forecast quantities.
- The distribution of the discrete probabilities is used to estimate variance, which is a factor in calculating safety stock quantity.

Safety stock is sized in proportion to the variance of forecast sets probability distributions.

The following table shows how the variance of forecast set probability distribution affects the size of the safety stock.

Forecast Set	Prob. Dist A	Prob. Dist B
FCSTA	0.182	0.100
FCSTB	0.364	0.800
FCSTC	0.454	0.100

All other relevant factors being equal, the safety stock quantity for a situation depicted by probability distribution B would be smaller than safety stock quantity for a situation

depicted by probability distribution A because the variance of probability distribution B is less than the variance of probability distribution A.

Weighted Average Calculation

You can enter the probabilities of forecast sets within one scenario set so that they total more than 1. When this occurs, the inventory planning engine normalizes the probabilities so that they sum to 1. In the following table, probabilities of the forecast sets within scenario set 10 are 0.8, 0.4, and 1.0, respectively. Blank values default to 1.0. The sum of the probabilities is 2.2. Dividing the entered probabilities by the sum results in normalized probabilities 0.364, 0.182, and 0.454, respectively. The normalized probabilities sum to one.

Scenario Set	Forecast Set	Probability (entered)	Probability (used)
10	FCST1	0.4	0.4/2.2 = 0.182
10	FCST2	0.8	0.8/2.2 = 0.364
10	FCST3	(blank)	1.0/2.2 = 0.454

How to Assign Forecasts and Forecast Sets to Scenario Sets

The following tables presents the relationships of forecasts, forecast sets, and scenario sets when specifying demand variability.

Forecasts and probability distributions for Item A are displayed in the following table:

Time Period	Quantity	Probability
D1	100	0.80
D1	90	0.07
D1	80	0.13
D2	200	0.80
D2	220	0.07
D2	210	0.13

Time Period	Quantity	Probability
D3	150	0.60
D3	120	0.30
D3	180	0.10
D4	180	0.60
D4	190	0.30
D4	120	0.10

Notice that Item A has the same probability distribution for D1 and D2, and another distribution represents its demand for D3 and D4.

The scenario sets, forecast sets, and forecasts shown in the following tables specify the demand variability for item A:

Item	Quantity	Date
A	100	D1
A	200	D2

Item	Quantity	Date
A	90	D1
A	220	D2

Item	Quantity	Date
A	80	D1
A	210	D2

Item	Quantity	Date
A	150	D3
A	180	D4

Item	Quantity	Date
A	120	D3
A	190	D4

Item	Quantity	Date
A	180	D3
A	120	D4

These forecast sets are tied to their corresponding probabilities and assigned to scenarios sets in the Organization tabbed region as shown in the following table:

Scenario Set	Forecast Set	Probability
10	FCST1	0.80
10	FCST2	0.07
10	FCST3	0.13
20	FCST4	0.60
20	FCST5	0.30
20	FCST6	0.10

If item B has the same probability distribution as item A, you can include item B in the above forecasts and forecast sets. If item B does not follow the same probability distributions, then define separate forecast sets and forecasts for item B. In this case,

item A and B cannot share the same scenario sets either.

> **Note:** If there are multiple forecast sets that have forecasts for the same item, ensure that the bucket size is the same.

Specifying Sources of Demand

Demand Schedules

You can specify a forecast set or a demand planning scenario as input demand for an inventory plan.

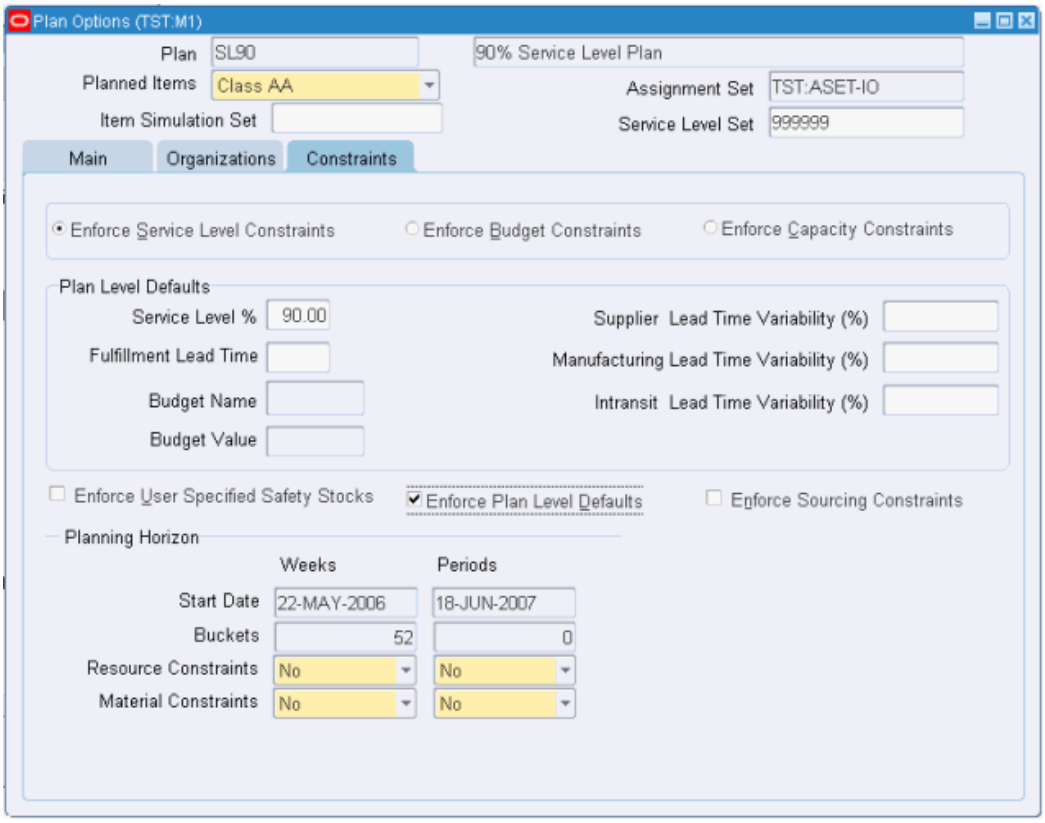
To specify sources of demand

Steps:

1. Navigate to the Planner Workbench.
2. Choose Plan Options > Organization tab.
3. Select the demand schedule (Forecast or demand planning scenario) from the list of values.

The Constraints Tabbed Region

You can specify constraints and information regarding the planning horizon in the Constraints tabbed region. Constraint-based planning is an approach for balancing material, budget and plant resources while meeting service levels. It takes into account constraints at the enterprise and plant levels. Material, resources, capacity, or budget constraints are considered. Factory, distribution, and transportation issues are integrated. This complete picture of the problem provides instant and global visibility to the effects of planning and scheduling decisions throughout the supply chain.



This table describes the fields and options in the Constraints tabbed region.

Object	Description
Enforce Service Level Constraints	Select to enforce the service levels specified at the most detailed level. The inventory planning engine exceeds the material, budget, and resource available capacity if needed.
Enforce Budget Constraints	Select this plan option to use a budget amount as a constraint on inventory investment.
Enforce Capacity Constraints	Select if you want material and resource capacity constraints to be respected.
Service Level %	If you select Enforce Service Level Constraints, enter the service level that you want the inventory optimization planning process to use as the service level requirements for all parts in the plan

Object	Description
Fulfillment Lead Time	Fulfillment Lead Time is models the time between taking an order and receipt of goods by the customer.
Budget Name	If you select Enforce Budget Constraints, select the name of the budget that you want the inventory optimization planning process to use as the budget constraint. Alternatively, you can leave this field empty if you want to specify the plan option Budget Value.
Budget Value	If you select Enforce Budget Constraints, enter a value for the inventory optimization planning process to use as the budget constraint. Do not enter this plan option if you select a value for plan option Budget Name.
Supplier Lead Time Variability (%)	This is the plan level default value for supplier lead time variability, in percent. See Setting Plan-Level Lead Time Variability Default Values, page 4-22.
Manufacturing Lead Time Variability (%)	This is the plan level default value for manufacturing lead time variability, in percent. See Setting Plan-Level Lead Time Variability Default Values, page 4-22.
In-transit Lead Time Variability (%)	This is the plan level default value for in-transit lead time variability, in percent. See Setting Plan-Level Lead Time Variability Default Values, page 4-22.
Enforce User Specified Safety Stocks	Select this plan option to enforce any safety stock levels that you define as a constraint on inventory stocking levels.
Enforce Plan Level Defaults	Select this check box to force the system to use only the plan level default values and ignore any other settings of service levels and fulfillment times. See Setting Plan-Level Default Values, page 4-2.
Enforce Sourcing Constraints	Select if you want to enforce the sourcing splits in the item sourcing rules. The inventory planning engine violates sourcing constraints if enforcing them puts the plan constraint (service level, budget, or capacity) at risk.

Object	Description
Start Date	Displays the start date for each bucket type.
Buckets	Displays the number of buckets of this bucket type.
Resource Constraints	Select Yes to consider resource constraints.
Material Constraints	Select Yes to consider material constraints.

Constraint Options

You can select one of the following three constraint options:

- Enforce Service Level Constraints

  This option enforces the service level specified at the most detailed level. In a simple example, if the plan level (global) service level is set to 95% and the service level for item AS12345 is set to 98%, the 98% service level is enforced for item AS12345 and the 95% service level is enforced for all other items of the inventory plan. Material and production resources along with budgets are utilized beyond availability if necessary to attain the desired service levels.

- Enforce Capacity Constraints

  This option enforces material and resource capacity constraints throughout the plan. The inventory planning engine calculates the service levels achieved and budgets required based on the amount of available material and production capacity.

- Enforce Budget Constraints

  This option enforces a budget amount as a constraint on inventory investment. You can create budgets and specify one for each plan run. You can specify a value for a budget at the plan level. Oracle Inventory Optimization calculates the service levels achieved based on the amount of the available budget. The inventory planning engine calculates the material and production resource requirements based on the supply created after considering budget constraints.

For more information, see *Oracle Advanced Planning Implementation and User's Guide.*

Plan Level Defaults

To facilitate simulations, you can enter plan level overrides of key Inventory Optimization planning parameters in the Plan Options window:

- Service level
- Fulfillment lead time
- Budget value
- Lead time variation
  - Manufacturing variability (%)
  - In-transit lead time variability (%)
  - Supplier lead time variability (%)

    Note: These values supersede all values specified at more granular levels when the Enforce Plan Level Defaults check box is selected.

See:

- Setting Plan Level Default Service Level, page 4-2
- Defining Budgets, page 4-18
- Setting Default Lead Time Variability, page 4-22

Service Level and Fulfillment Lead Time

The definition of *Service Level* used here is the percent of order lines received that can be filled immediately and completely from stock. It is assumed that orders can be forecast, but advance notice of orders is not typically provided by customers. Therefore safety stock is sized to buffer uncertainty of demand quantity and time.

The *Demand Fulfillment Lead Time* models the situation where the customer provides advance notice to fulfill demand. The Demand Fulfillment Lead time spans all activities between taking an order and receipt of goods by the customer. Modeling Demand Fulfillment Lead Time is useful for evaluating the cost of different fulfillment time promises and their impact on inventory. For example, comparing inventory investment requirements for a 95% service level with a promised five-day order fulfillment time versus a 90% service level with a three-day fulfillment time.

Modeling fulfillment time also allows you to evaluate the impact of changes in fulfillment time on the degree and point of postponement. *Postponement* refers to delaying commitment of material to a specific end use. This concept is sometimes called *delayed differentiation*.

Inventory stored in raw material form generally has greater flexibility with respect to how it is eventually used by the consumer. However raw material takes longer to convert to the usable form than it would if in anticipation of receiving sales orders the

material has been partially transformed and stored as modular subassemblies. Inventory stored as finished goods can fulfill customer demand immediately, but has no flexibility with respect to end use. In between raw material form and finished goods form are various degrees of completion, each with an associated lead time for transformation to end use. The trade-off is between shorter demand fulfillment lead time and postponing differentiation of material to retain end use flexibility. The longer your fulfillment time, the greater the opportunity to postpone. Postponement tends to lower your inventory carrying costs because the material that you do carry is stored in a form that can be used to fulfill demand for a variety of end items.

See Analyzing Postponement, page 6-14.

The key setup steps are:

1. Define default values for target service levels and fulfillment lead times in the Plan Options form.

   These values are used for those items for which target service levels or fulfillment lead times are not specified..

2. Setup specific values for target service levels and fulfillment lead times for specific items, categories of items, customers, demand classes, and so on, by defining a Service Level Set.

   See Defining Service Agreement Simulation Sets, page 4-4.

3. Associate a defined Service Level Set with a plan when setting up the plan options. See Setting Up Plan Options, page 3-2.

   When the plan is run, the system tries to meet the specific target service levels and fulfillment lead times assigned in the service level set.

The process is then executed as follows:

1. Run the Inventory Optimization module with service levels and fulfillment lead times setup as described.

2. Review the results of the plan – check the inventory, safety stock and service levels.

3. If the results are satisfactory, use this plan as a demand schedule in tactical planning, using Oracle Advanced Supply Chain Planner.

4. If the results are unsatisfactory you change your goals (service levels) or constraints (budgets, minimum or maximum inventory levels) to achieve your desired results.

5. Return to step 1 (rerun the plan).

Lead Time Variability

By modeling different sources of variability, it is possible to understand the

contribution to buffer inventory from each source of variability. These uncertainties in production, transportation, and procurement are expressed as a percent variance for manufacturing lead time, in-transit lead time, and supplier lead time.

The key setup steps are:

1. Set up manufacturing lead time, in-transit lead time, and supplier lead time percent default values on the Constraints tab of the Plan Options form.
2. If you want to set up lead time variability at more detailed levels, see:
   - Setting Up Manufacturing Lead Time Variability, page 4-23
   - Setting Up In-Transit Lead Time Variability, page 4-24
   - Setting Up Supplier Lead Time Variability, page 4-25

After setting up manufacturing, in-transit, and supplier lead variance percent, the process is then executed as follows:

1. Run the Inventory Optimization module with the lead time variability setup as described.
2. Review the results of the plan – check the inventory, safety stock and service levels.
3. If the results are satisfactory, use this plan as a demand schedule in tactical planning, using Oracle Advanced Supply Chain Planner.
4. If the results are unsatisfactory you change your goals (variability percentages) or constraints (budgets, minimum or maximum inventory levels) to achieve your desired results.
5. Return to step 1 (rerun the plan).

Inventory Budget

An Inventory budget is the maximum amount allocated to be spent on inventory during a planning period, and it represents the total value of the inventory. The inventory budget applies to both safety stocks and prebuilt stocks. It also applies to the surplus inventory that gets carried over from one planning bucket to the next.

You can specify budget for the following:

- Inventory plan
- Organizations in an inventory plan
- Categories in an organization

As the feasibility of an inventory plan depends on its budget, you need to take your budget into consideration in your inventory plan. After you define the budget, you can run your plans and analyze them by using the Analysis Workbench to:

- Ensure that your inventory plans are well within your budget.
- Determine if a specific service level is achievable with the given budget.
- Calculate the budget required to achieve a specific service level.

You can then drill down to the items causing budget violations using the Planner Workbench. For information on the Analysis Workbench, see Overview of Analysis Workbench, page 6-1. For information on the Planner Workbench, see *Oracle Advanced Planning Implementation and User's Guide.*

- Drill down to the items causing budget violations.

You can also allocate the budget to specific items, customers, market segments, and business units. You can also exclude some of the planned items from the budget. For example, you may want to exclude the items that are managed by your suppliers.

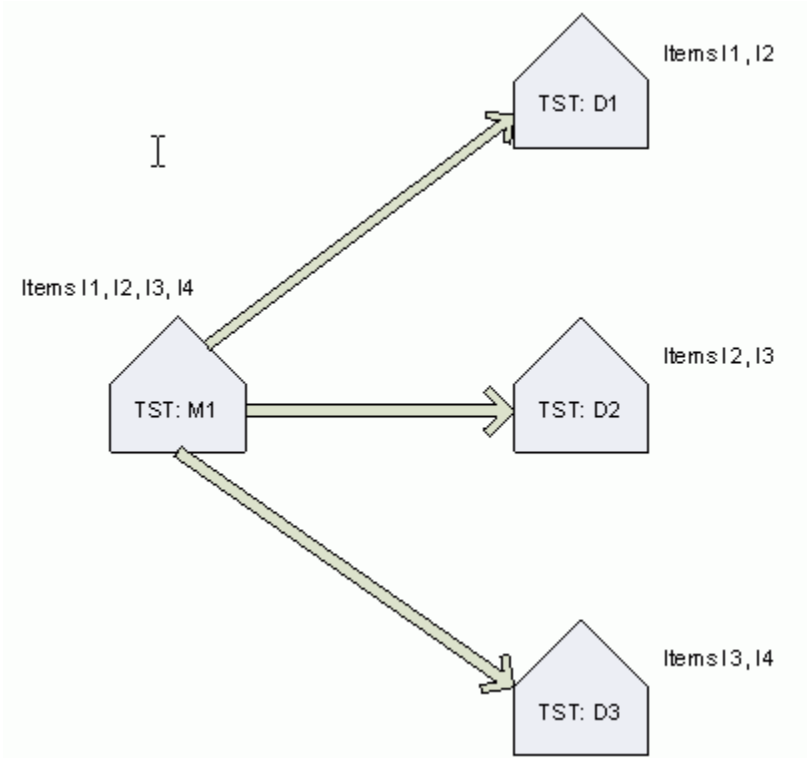
See Defining Budgets, page 4-18 and Analyzing Inventory Budgets, page 6-25.

Budget Constraints Logic

Oracle Inventory Optimization provides an enhanced logic for budget constraints. The enhanced logic ensures Inventory Optimization outputs integer safety stocks in the presence of a budget constraint and also ensures the deviation from the input budget constraint is minimal. For intermittent low volume demands the current logic was unable to provide an integer valued solution within the input budget constraint.

The logic for budget constraints is demonstrated in the following example.

The supply chain is as shown below.



The order of profitability is:

- For Items: I1 > I2 > I3 > I4
- For Organizations: D1 > D2 > D3

The target safety stock quantities are 1 unit for all Item-Organizations.

The standard cost is $1 for all Items at all the Organizations

The sorted list of order of profitability for the Item-Organizations is:

- I1 at TST:D1
- I2 at TST:D1
- I2 at TST:D2
- I3 at TST:D2
- I3 at TST:D3
- I4 at TST:D3

Example 1: Plan Level Budget = $8

Based on the above sort order, I1 at TST:D1 and I2 at TST:D1 get $2 while all other item-

organizations get $1.

Example 2: Plan Level Budget = $4

Given the sort order, I3 at TST:D3 and I4 at TST:D4 do not get any allocation while all other item-organizations get $1.

Example 3: Budget specified at Organization Level. TST:D1 = $5; TST:D2 = $1

At organization TST:D1, I1 will get $3 and I2 will get $2

At organization TST:D2, I2 will get $1 and I3 will get nothing

Example 4: Plan Level Budget = $3; User Specified SS for Item I3 at TST:D3 is 3 units

Allocate $1 to I1 at TST:D1, I2 at TST:D1, and I2 at TST:D2

Allocate $3 to I3 at TST:D3

All other Item-Organization get zero allocation

4

Key Setups

This chapter describes the key setups such as the target service levels and performance indicators that you need to specify before you run your inventory plan.

This chapter covers the following topics:

- Setting Plan Level Default Service Level
- Setting Plan Level Default Demand Fulfillment Lead Time
- Service Level Set
- Defining Service Level Sets
- Understanding Group Service Level Targets
- Determining Group Target Levels
- Enforcing Service Levels With Enforce at Aggregate Level Enabled
- Item Simulation Set
- Defining Item Attribute Simulation Sets
- Defining User-specified Safety Stock
- Defining Budgets
- Enforcing a Plan Option Budget Name or Value
- Setting Default Lead Time Variability
- Setting Up Manufacturing Lead Time Variability for a Plan
- Setting Up Manufacturing Lead Time Variability for an Item
- Setting Up In-Transit Lead Time Variability
- Setting Up Supplier Lead Time Variability
- Setting Penalty Costs
- Setting Item Purchase Price by Supplier
- Setting Performance Indicators

- Setting Intermittent Demand

Setting Plan Level Default Service Level

Target service level is the percentage of demand that you plan to satisfy using your available inventory. The inventory planning engine uses the specified target service level to make recommendations such as target safety stock.

You can enforce target service levels to make sure that the plan meets the target service levels. To meet the enforced target service levels, the plan may violate budget or capacity constraints.

You can define the plan service level in the Service Level % field in the Constraints tabbed region of the Plan Options window.

Steps:

1. From the Inventory Planner responsibility, navigate to the Plan Options window.

   Inventory Plan > Options

2. Click the Constraints tab.

3. In the Plan Level Defaults region, set the default target Service Level for the plan.

4. (Optional) To ensure that these default values override any other specification or setting that may occur at a more detailed level, select the Enforce Plan Level Defaults check box.

   Note: If the Enforce Plan Level Defaults' is unchecked, the most specific assignment of Service Levels in the Service Level Set associated with the plan is used for planning. If no value has been assigned in the associated Service Level Set, then the plan level default values, if set, are used. If the plan level default values are not set, then the system assumes a target service level of 50%.

   See Defining Service Agreement Simulation Sets, page 4-4.

5. Save your work.

Setting Plan Level Default Demand Fulfillment Lead Time

You can define the demand fulfillment service level in the Constraints tabbed region of the Plan Options window.

Steps:

1. From the Inventory Planner responsibility, navigate to the Plan Options window.

   Inventory Plan > Options

2. Click the Constraints tab.

3. In the Plan Level Defaults region, set the default Demand Fulfillment Lead Time for the plan.

4. (Optional) To ensure that these default values override any other specification or setting that may occur at a more detailed level, select the Enforce Plan Level Defaults check box.

   Note: If the Enforce Plan Level Defaults' is unchecked, the most specific assignment of Fulfillment Lead Time in the Service Level Set associated with the plan is used for planning. If no value has been assigned in the associated Service Level Set, then the plan level default values, if set, are used. If the plan level default values are not set, then the system assumes a fulfillment lead time of zero days.

   See Defining Service Agreement Simulation Sets, page 4-4.

5. Save your work.

Service Level Set

Specific service level targets can be assigned to items, categories of items, customers, classes of demand, an organization or combinations of these. These are defined in a form titled Service Levels and Fulfillment Lead Time. This form serves as a central place to set service levels for items, categories, organizations, customers, and so on. It makes obsolete several ways that service levels could be set prior to Release 12.0, such as a flex field in Oracle Inventory, and the Allocations form.

When an item has target service levels assigned at different levels of specificity, the more specific setting overrides the less specific one. The various levels of assignment allowed in a Service Level Set are listed below in *increasing* order of specificity.

Example

For example, Item-Demand Class is more specific than Customer Site. In the case where the scope of target service level overlaps Customer Site and Item-Demand Class, the settings for Item-Demand Class would be in effect.

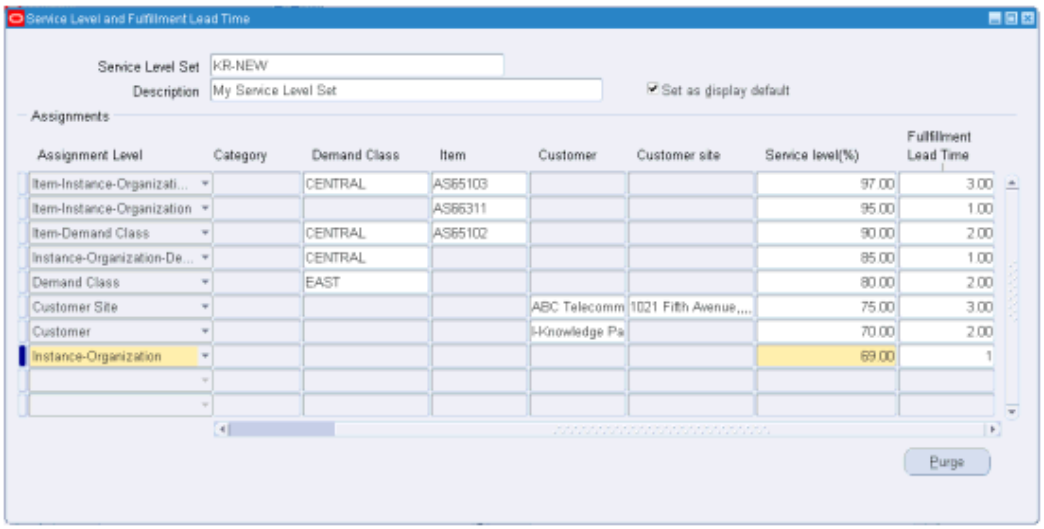
1. Instance-Organization

2. Customer
3. Customer Site
4. Demand Class
5. Instance-Organization-Demand Class
6. Category
7. Category Demand Class
8. Item-Demand Class
9. Item-Instance-Organization
10. Item-Instance-Organization-Demand Class

See Defining Service Agreement Simulation Sets, page 4-4.

Defining Service Level Sets

A service level set needs to be associated with a plan to ensure that specific assignments of target service levels and fulfillment lead times are respected in the planning process. The Service Level Set is associated with a plan by clicking the constraints tab of the Plan Options folder, and then selecting the appropriate Service Level Set from the list of values to use with the plan.



Specific service level targets can be assigned to items, categories of items, customers, classes of demand, an organization or certain allowed combinations. These are done by choosing the appropriate assignment level, and then specifying the desired target

service level and fulfillment lead time.

To set up a Service Level Set, use this procedure:

Prerequisites

- ❒ As part of the setup it is necessary to specify the value of the profile option **MSC: Service Level Category Set**. Only categories from this category set are available when assigning target service levels and fulfillment lead times at a category level during the setup of specific item or category level service levels and fulfillment lead times.

Steps:

To set up a Service Level Set

1. From the Inventory Planner responsibility, navigate to the Service Levels and Fulfillment Lead Time window.

   Inventory Planner > Setup > Service Levels & Fullment Lead Time

2. Define a Service Level Set name and description.

3. (Optional) Select the 'Set as display default' check box to indicate that this Service Level Set should appear as the default value in the header region of the Plan Options window.

4. In a row under the Assignment Level column, select an Assignment Level from the list of values.

5. For that same row, specify the applicable details, such as: Category, Demand Class, Item, Customer, and Customer site, to apply to the selected Assignment Level.

   Note: The fields in the Assignment Level row in which you can add details varies, depending on the Assignment Level you selected.

6. For that same row, in the Service Level (%) column, specify the target service level, in percent, for the Assignment Level.

7. For that same row, in the Fulfillment Lead Time column, specify the Demand Fulfillment Lead Time, in days. See Demand Fulfillment Lead Time, page 3-23.

8. Repeat steps 4 - 7 for each additional Assignment Level in the Service Level Set.

9. Save your work.

To associate a Service Level Set with a Named Plan

10. Navigate to the Inventory Plan Options window:

    Inventory Planner > Inventory Plan > Names

    The Organizations window appears.

11. Select an organization and click OK.

    The Inventory Plan Names window appears.

12. Select a plan and then click Plan Options

    The Plan Options window appears.

13. Select the Constraints Tab.

    The Service Level Set field located in the header region is enabled.

14. From the Service Level Set list of values, select a Service Level Set.

15. Save your work.

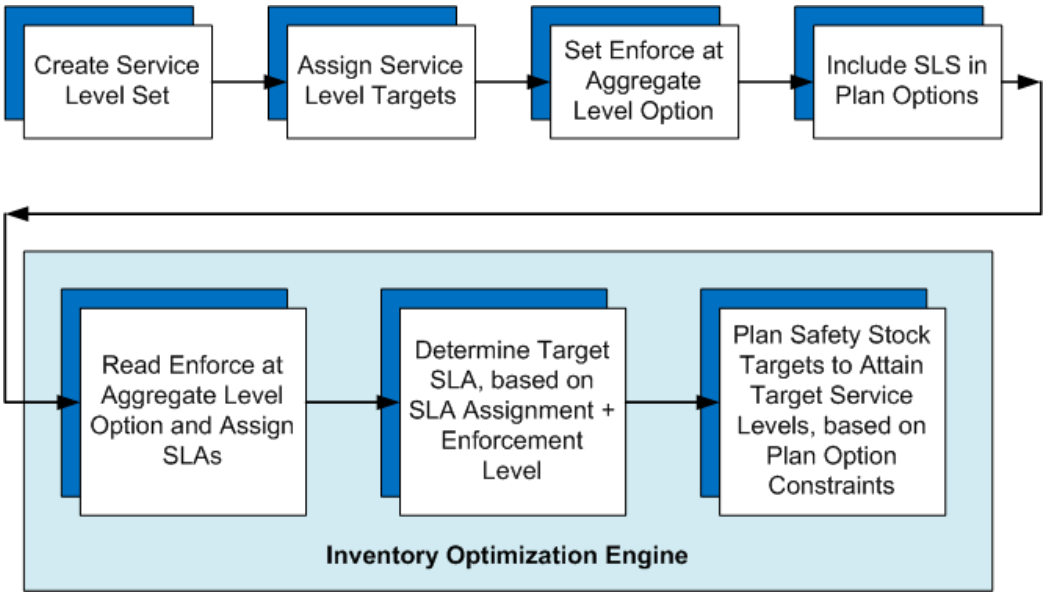
Understanding Group Service Level Targets

Oracle Inventory Optimization (IO) currently allows you to specify target service levels at multiple levels and choose the most granular one applicable as the target for an item-organization. It rolled down the target from the specified level to each individual item-organization under it and applied that target to all those item-organizations.

IO also enforces service levels at a Group (Category or Category-Demand Class) level. When you specify a service level target at a Group level, you can also specify if the target should be enforced at the group level or for individual item-organizations within the group. If you choose the group level, IO ensures that service levels are met at the group level, and individual item-organizations below it may exceed or fall short of the target service level. If you choose to enforce at the individual item-organization level, each item-organization is planned to attain the target service level. For example, if you assign a Service Level Target at the Category level as 90%; IO enforces this target of 90% to all items that are assigned to this category. This gives you more control so you can enforce it at the overall category level or for each individual item in the category.

Note: This feature applies only to Enforce Service Level plans.

The diagram below summarizes the flow of information for Service Level Targets



In APCC, you can review your IO Plans in the Inventory Analysis tab of the Supply Chain Analyst dashboard. To review the reports at the appropriate level, you must:

- Specify Service Levels at the Category level
- Enable Enforce at Aggregate Level in the service-level enforced plan that you are analyzing in APCC

The Page-level reports in APCC are at the plan level, with the ability to specify filters for Category, Organization and Period. You can drill down to detailed reports, as well as various dimensions, such as Category, Organization and so on.

New Measure for Group Service Level Targets

A new measure, Target Inventory Level to msc_safety_stocks, is the re-order point that is calculated for the item. It considers safety stocks and average demand during lead time. This is enabled for display on the IO Horizontal Plan, Vertical Plan, Supply & Demands, and in Queries. It is also archived for display in APCC.

Determining Group Target Levels

Once service levels are specified, you also need to specify whether they should be enforced at the Group level or most granular (item-organization level). A new checkbox on the Plan Options, Enforce at Aggregate Level, lets you choose if you want this option turned on (checked) or off (unchecked). The default is off.

When you check Enforce at Aggregate Level, IO enforces service levels that are specified at a Category or Category-Demand Class level, at the level you specified. If you have specified the Service Levels at any of the other supported levels, the current

behavior of enforcing at the item-organization level prevails.

For example, if a Category has a Service Level of 90% assigned to it and you enable Enforce at Aggregate Level, IO evaluates the achieved service level at the Category level and plans to ensure that the category has a service level of 90%. Individual items belonging to that category may have higher or lower service levels. When you disable Enforce at Aggregate Level, IO achieves a service level of 90% for each individual item that belongs to that category.

When Enforce at Aggregate Level is disabled, IO plans to achieve a service level of 90% for each individual item that belongs to that category.

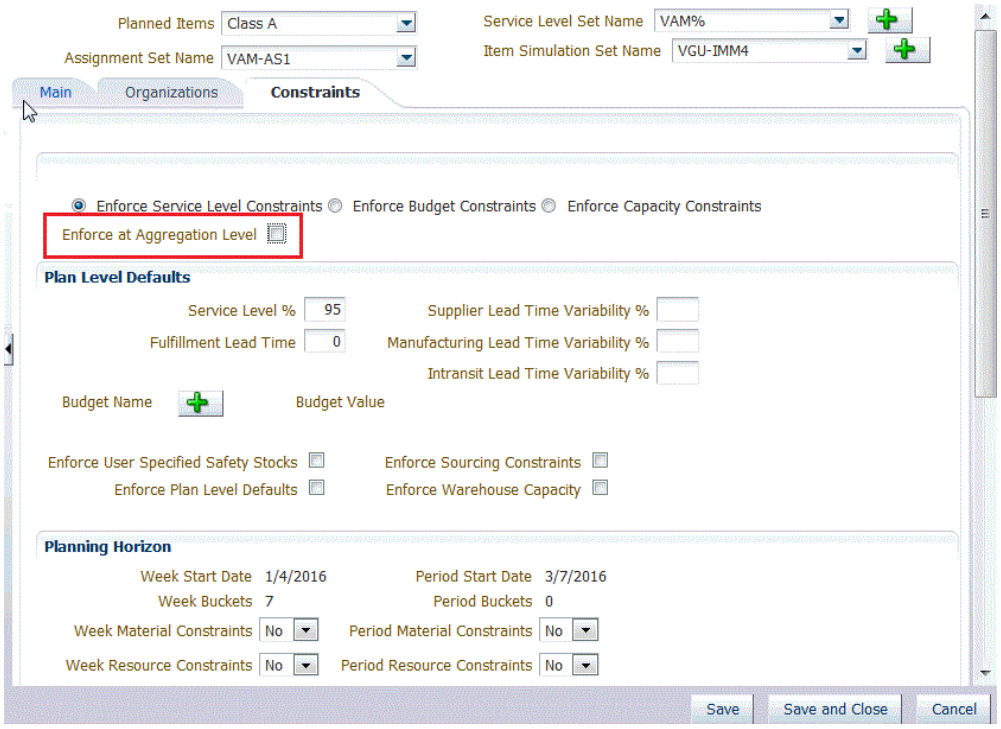
To enable group levels:

1. From the Supply Chain Analyst dashboard, navigate to the Inventory Analysis page.

2. In the drop-down menu of the Baseline Plan field, choose the plan for which you want to set the group service target level.

3. Click Base Plan Options and click the Constraints tab.

   The Constraints tab opens from where you choose to enable or disable the Enforce at Aggregate Level option.



Note: This plan option is also accessible from the Forms based User Interface.

Enforcing Service Levels With Enforce at Aggregate Level Enabled

The IO engine reads in the Enforce at Aggregate Level information at the same time that it reads in the Plan Options. When you disable Enforce at Aggregate Level, IO behaves as it did in the past.

When you enable Enforce at Aggregate Level, IO considers the Target Service Level at the assigned level when the assignment is Category or Category-Demand Class. For example, if you assign the Target Service Level at the category level, IO considers all items under the category and calculates the Projected Service Level for all items. It rolls up the projected service level to the Category level and ensures that the target is achieved.

IO currently postpones inventory to minimize budget while it attains the service levels. While enforcing service levels, it optimizes between safety stocks of the various items in a category to minimize budget while ensuring service levels at the Category level are attained.

When IO computes the safety stocks that are required to enforce service levels, it respects the Enforce User Specified Safety Stock when the Enforce at Aggregate Level is

enabled. It respects user specified safety stocks for items for which they are set. It then computes safety stocks for other items in that category to ensure that it satisfies service levels at the category level.

> **Note:** The Enforce at Aggregate Level option applies on to Service Levels.

Enforce at Aggregate Level Option is Disabled

When you disable the Enforce at Aggregate Level option, IO enforces the SLAs as shown in the table below. The first column lists the category, the second column lists the item, and the third column lists the class.

Category	Item	Class
Cat1	Item1	A
Cat1	Item2	As
Cat1	Item3	A
Cat2	Item4	A
Cat2	Item5	A
Cat2	Item6	A
Cat2	Item7	B

Suppose you specify target service levels instead of class in the third column:

Category	Item	Target Service Level
Cat1	NA	95%
NA	Item 4	91%
Cat2	NA	90%

IO is not enforcing the service levels at the Category level, that is, it continues with its current behavior. IO enforces the SLAs as follows:

Item	Category	Class	Projected Service Level	Projected Service	Reason
Item1	Cat1	A	Greater or less than 95%	Equals 95%	Can be greater or less than 95%, as long as Category A (Item 1+ Item 2+
Item2	Cat1	A	Greater or less than 95%	Equals 95%	Can be greater or less than 95%, as long as Category A (Item 1+ Item 2+
Item3	Cat1	A	Greater or less than 95%	Equals 95%	Can be greater or less than 95%, as long as Category A (Item 1+ Item 2+
Item4	Cat2	A	Equals 91%	Equals 90%	This item belongs to Category B. The most granular specification is achieved, which is 91%.
Item5	Cat2	A	Greater or less than 90%	Equals 90%	Can be great or less than 90%, as long as Category B (Item 4+ Item 5+ Item 6)

Item6	Cat2	A	Greater or less than 90%	Equals 90%	Can be greater or less than 90%, as long as Category B (Item 4+ Item 5+ Item 6) attains a SLA of 90%
Item7	Cat2	B	NA	NA	This does not belong to Class A, and therefore is not planned in this IO plan.

Item Simulation Set

Item Attribute Simulation Sets enable Inventory Optimization plans to more easily simulate changes to key item attributes. You to attach values of key attributes to item-organizations or to item-regions, and then save those assignments under an Item Attribute Simulation Set name.

Item Simulation Sets provide the ability to mass maintain planning-related item attributes. Planners can create multiple item simulation sets, with each simulation set addressing a set of "what-if" scenarios.

The Item Simulation Set field appears in the header region of the Plan Options window. When you specify a particular item attribute simulation set name in the Item Simulation Set field of the Plan Options window, the plan uses the item attribute values specified in the named simulation set.

Key setup steps are:

1. Identify the scenario to be simulated.
2. Determine the scope of the simulation.
3. Create a Query to identify Items that fit the scope.

   See Queries, page 5-2.
4. Identify attributes that need to be modified to meet the simulation objective.
5. Modify the attributes according to the scenario to be simulated.

6. Save the attributes as a named Item Simulation Set.

7. Link the Item Simulation Set to a plan in the header region of the Plan Options form.

    - The simulation set holds only the changes for the collected planning item attributes.
    - When running a plan these changes overwrite the collected data values for that specific plan.
    - Collected data remains unaltered.
    - If there is no simulation set linked with a plan, the plan runs against the collected data.

See Defining Item Attribute Simulation Sets, page 4-13.

Defining Item Attribute Simulation Sets

Steps:

1. From the Advanced Supply Chain Planner responsibility, navigate to the Item Attributes Mass Maintenance window.

    Setup > Item Attributes Mass Maintenance

    The Item Attributes Mass Maintenance window appears.

2. Define the Simulation Set Name and Description.

3. Find relevant items.

    Example

    Example, using the Find Items - 'Included' radio button:

    - Item A:
        - Make/Buy: Make
        - Planner: J. Smith
        - Processing LT: 3 days
        - Item A was previously updated.
    - Item B:

    - Make/Buy: Buy
    - Planner: J. Smith
    - Processing LT: 2 days
- Item C:
    - Make/Buy: Buy
    - Planner: J. Smith
    - Processing LT: 3 days
    - Item C was previously updated.
- Query criteria:
    - Make/Buy: Buy
    - Planner: J. Smith
    - The 'Included' radio button is selected
    - Result: the query results return Item C only.

      Note: Item B does not qualify since it has not been updated in this simulation set, and Item A does not qualify since it does not meet the query criteria

- Use the 'Not included' radio button when finding those items that have not been updated as part of the simulation set. This is useful for adding new items to the simulation set. The results of the query filters out the items that have been updated in this simulation set.

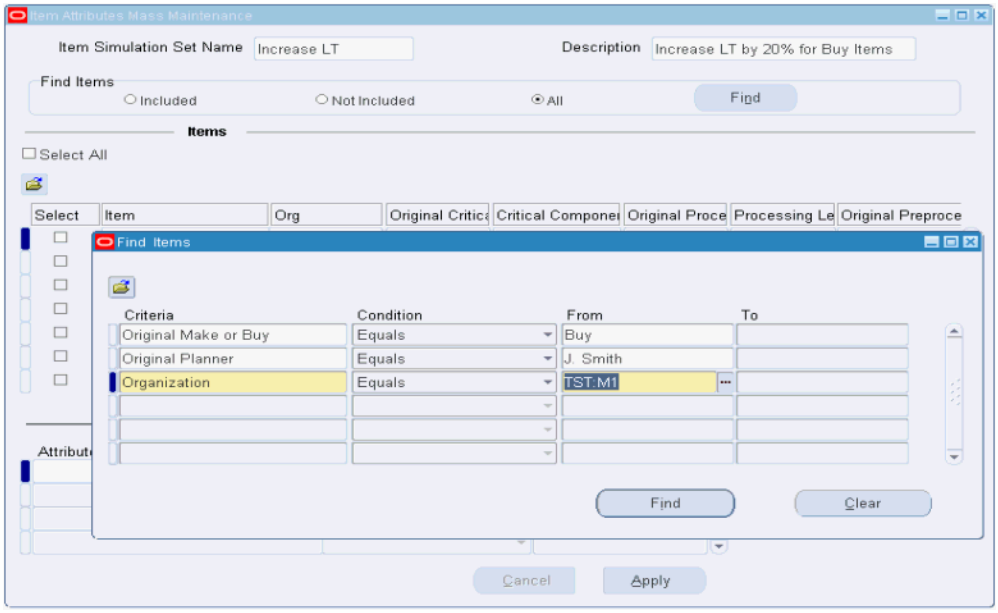
  Continuing the previous example, if the query is used in conjunction with the 'Not included' radio button, query results return Item B only.

  Note: Item C does not qualify since it has been updated in this simulation set, and Item A does not qualify since it does not meet the query criteria.

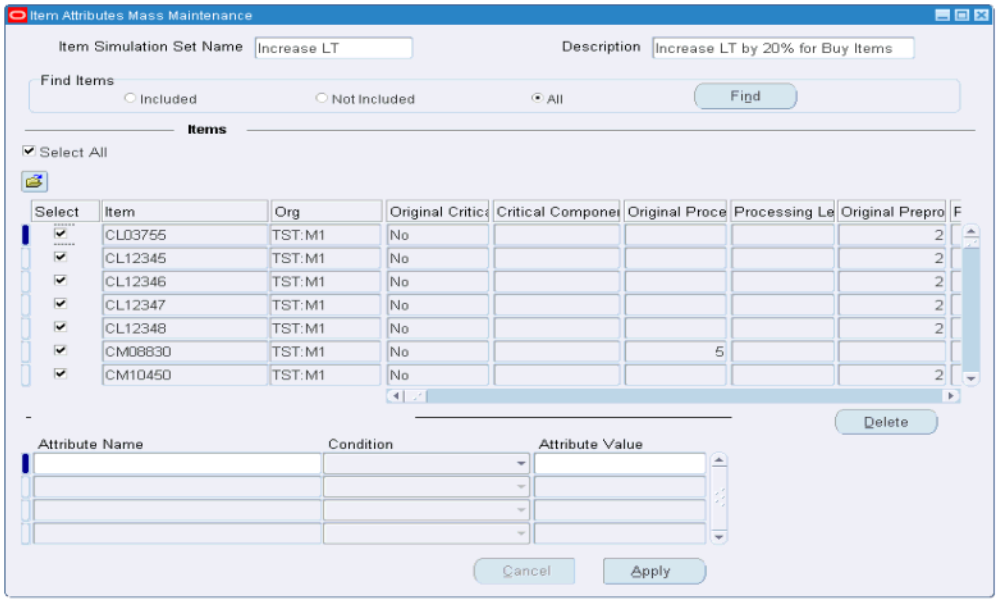
- Use the 'All' radio button for finding all items regardless of update status. This is useful in situations where a new simulation scenario is being developed and is applicable to all items.

Continuing the previous example, if the query is used in conjunction with the 'All' radio button, query results return Item B and Item C.

> **Note:** Item A does not qualify since it does not meet the query criteria

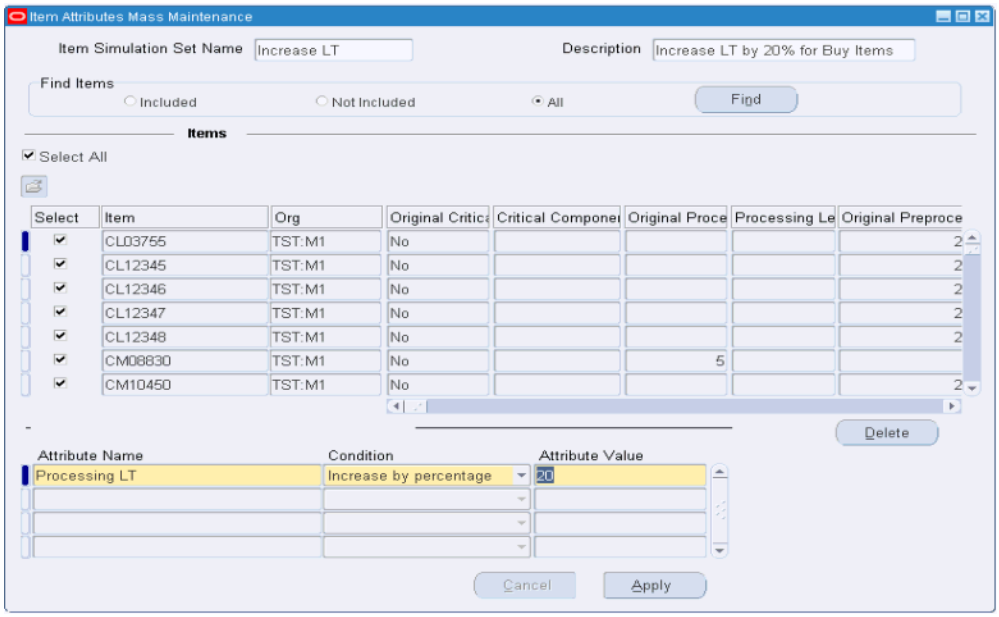


4. Define the simulation set. Select the check boxes associated with relevant items.



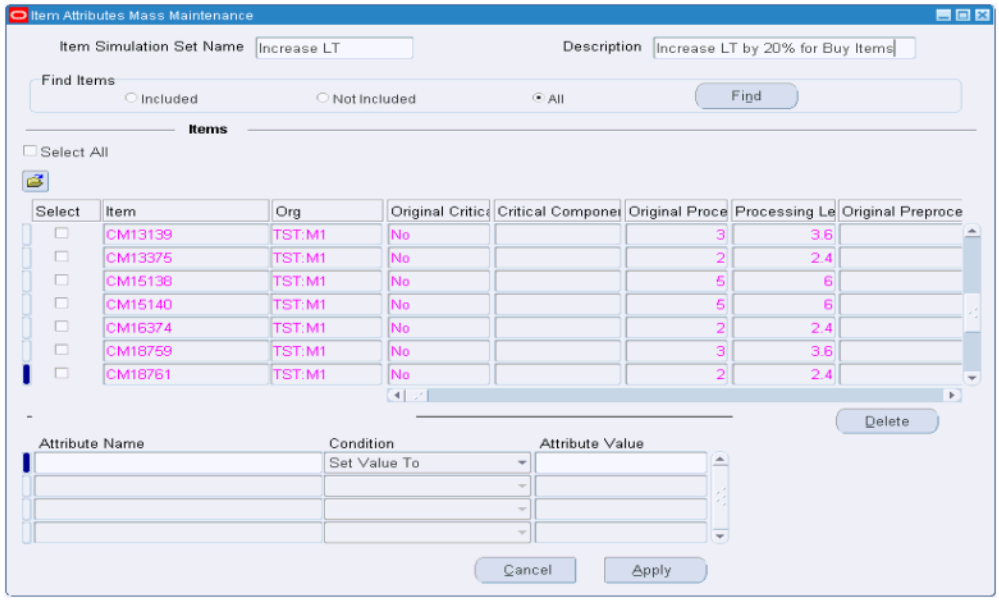
5. Modify attributes. The available conditions that can be used to update the Attributes are as follows:

   - Set value to: set the attribute to a specified value
   - Increase by value: increase the original attribute by a specified value
   - Increase by percentage: Increase the original attribute by a specified percentage (%)
   - Decrease by value: Decrease the original attribute by a specified value
   - Decrease by percentage: Decrease the original attribute by a specified percentage (%)
   - Set original value: Reset the attribute back to the original collected value



6. Repeat the preceding step for all attributes to be modified. Click Apply.

   The form updates to show the original and modified values.



   Note: The original set of values refer to the collected data, and hence cannot be updated.

7. Specify the simulation set in the Item Simulation Set field of the Plan Options window.

See Setting Up Plan Options, page 3-2.

Note: If the Item Simulation Set field is left blank, then collected data will be used for planning.

Defining User-specified Safety Stock

Several factors may influence your decision related to the level of safety stock that you need to maintain. These include:

- Contractual obligations
- Vendor-managed inventory
- Policies regarding service levels
- Subjective experience

The inventory planning engine recommends optimal safety stock levels. However, you can override the recommendations that the inventory planning engine generates with your specific inputs. For more information, see User-Specified Safety Stock, page 7-5.

Defining Budgets

To define an inventory budget

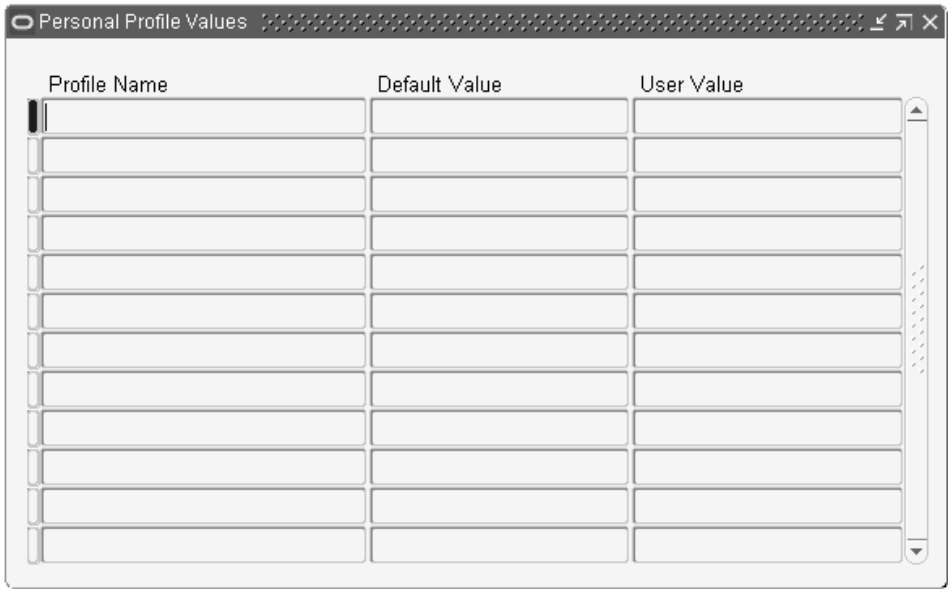
Prerequisites

❒ To define a budget, you need to set up a category set for budget purposes and associate categories to this category set. Both these tasks are done in Oracle Inventory. For more information on categories and category sets, see Oracle Inventory User's Guide.

Steps:

1. Log on to Oracle Inventory Optimization.
2. From the Navigator, choose Other > Profile.
   - The Personal Profile Values window appears.

Personal Profile Values window



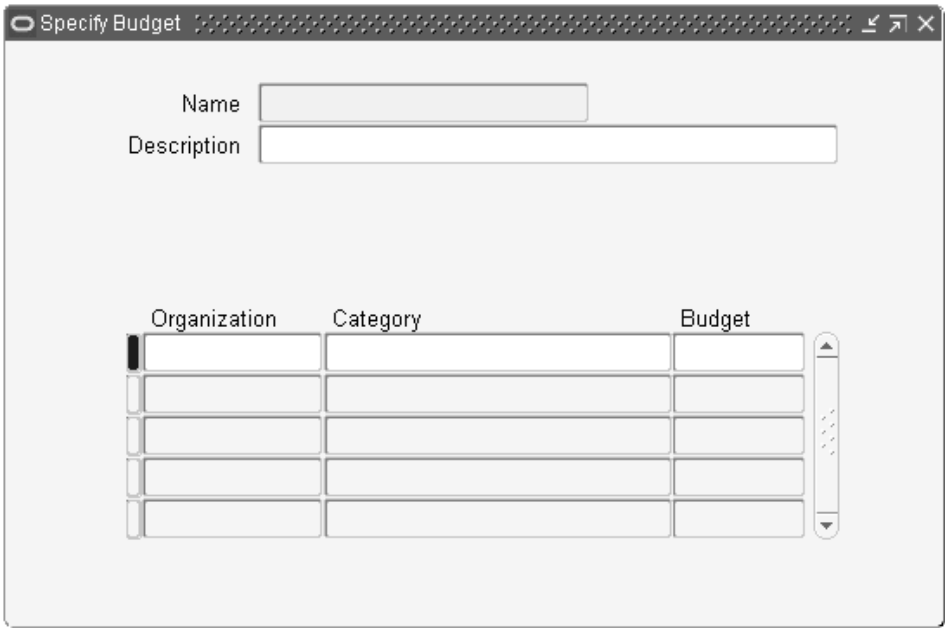
3. Use the information in the following table to complete the fields in the Personal Profile Values window.

Field	Description
Profile Name	Select the "MSR:Budget Category Set" profile name from the LOV.
User Value	Select the category set from the LOV to which the planned items belong.

4. Save your work.

5. To define the budget at the organization or category level, choose Setup > Specify Budgets.
   - The Specify Budget window appears.

Specify Budget window



6. Use the information in the following table to complete the fields in the Specify Budget window.

Field	Description
Name	Specify a name for the budget.
Description	Specify a description for the budget.
Organization	Select the organizations from the LOV for which you want to define the budget.
Category	Select the categories from the LOV for which you want to define the budget.
Budget	Specify the value for the budget.

7. To define the budget at the plan level, navigate to the Constraints tabbed region of the Plan Options window. For more information, see The Constraints Tabbed Region, page 3-19.

Note: To exclude an item from your budget, clear the Exclude From Budget check box in the MPS/MRP Planning tabbed region of the Master Item window in Oracle Inventory. For more information, see *Oracle Inventory User's Guide.*

Enforcing a Plan Option Budget Name or Value

Select Enforce Budget Constraints on the Plan Options window if you want the plan to be constrained by a budget. To Enforce Budget Constraints, select the name of the budget that you want the inventory optimization planning process to use as the budget constraint.

Alternatively, you can leave this field empty if you want to specify the plan option Budget Value. Enter a value for the inventory optimization planning process to use as the budget constraint. Do not enter a Budget Value if you select a value for the plan option Budget Name.

If you enforce the budget that you have defined, the inventory planning engine makes sure that the inventory plan adheres to the budget at all levels. Consider that you plan for two organizations where $75,000 is the total budget for the plan, and $50,000 and $30,000 are the budgets for the first and second organizations respectively. If you enforce this budget in your plan, the inventory planning engine recommends an inventory of only up to $50,000 and $30,000 for the first and second organizations respectively. At the plan level, it recommends an inventory of only up to $75,000. If the plan level budget exceeds $75,000, then the engine optimizes the recommended inventory at the organization level so that the combined budget of the two organizations does not exceed $75,000.

Enforcing service level constraints or capacity constraints may violate budget constraints. Conversely, enforcing budget constraints may violate service level constraints and capacity constraints. You can enforce budget constraints at the plan level by specifying the budget name or the budget value in the Plan Options window. For information on enforcing constraints for a plan, see The Constraints Tabbed Region, page 3-19. The inventory planning engine reports any violations as exceptions. For information on plan exception messages, see Reviewing Exception Messages, page 5-16.

Usually, target safety stock and user-defined safety stock are enforced when there is adequate budget. The inventory planning engine's built-in logic makes sure that the budget is allocated accordingly to meet the enforced service levels for all items. The inventory planning engine allocates any surplus budget based on the following criteria:

- Potential profitability
- Service levels

- Demand distribution

> **Note:** If you enforce target safety stock or user-defined safety stock, it is assumed that you have specified an adequate budget. If the budget is not adequate, the engine violates the budget constraints even if you have enforced budget constraints.

The following example details how the inventory planning engine allocates the budget surplus.

Example

Consider a plan for three items with a total budget of $10,000. Assume that you have specified a target service level of 85% for all three items. The inventory planning engine calculates the safety stock levels required to achieve a service level of 85% for the three items. Assume that the budget required for a service level of 85% for the three items is $7000. The inventory planning engine distributes the surplus $3000 proportionately for the three items based on their potential profitability and demand distribution. As a result, the actual service level for the three items may differ from one another even though you have specified a consistent service level of 85% for all the three items.

Setting Default Lead Time Variability

Plan-wide default values for manufacturing, in-transit, and supplier lead time variability are specified in the constraints tab of the Plan Options form. The values specified here are used as defaults in the case where users have not specified the value of the variability for specific items. Optionally a user can check the Enforce Plan Level Defaults check box to ensure that these defaults override any other detailed specification or setting.

Steps:

1. Plan-wide default values for lead time variability are specified in the constraints tab of the Plan Options form. From the Inventory Planner responsibility, navigate to the Plan Options window.

   Inventory Plan > Names

   The Inventory Names window appears.

2. Click the Constraints tab.

3. In the Plan Level Defaults region, set the default lead time variability percentages for the plan.

4. (Optional) To ensure that these default values override any other specification or setting that may occur at a more detailed level, select the Enforce Plan Level Defaults check box.

5. Save your work.

Setting Up Manufacturing Lead Time Variability for a Plan

Manufacturing lead time variability for a plan is set in the Items window accessed from the Collections Workbench.

Steps:

1. From the Inventory Planner responsibility, navigate to Inventory Planner > Collections >View Collected Data.

   The Navigator window opens.

2. On the Plans tab of the Navigator, select View by Organization.

3. In the Navigation window, drill down to Plan Name: : Plans>Collection>Plan Name.

4. Drill down to the item for which you want to set manufacturing lead time variability.

5. Access the Items form: Right click the item and then choose Items from the menu.

6. Click the Item field and then select the item for which you want to set the manufacturing lead time variability from the menu.

7. Set the manufacturing lead time variability, in percent.

8. Save your work.

Setting Up Manufacturing Lead Time Variability for an Item

Manufacturing lead time variability for an item is set in the Item Attributes Mass Maintenance window, which is accessed from the Workbench.

Steps:

1. From the Inventory Planner responsibility, navigate to Inventory Planner>Setup>Item Attributes Mass Maintenance.

   The Item Attributes Mass Maintenance window opens.

2. In the Item Simulation Set window, enter the name of the Item Simulation Set.

3. Click the Item field and select the item from the drop-down menu and click OK. If necessary, enter a partial name in the Find field to locate the item and them click

OK.

4. Click the Org field and select the organization that contains the item from the drop-down menu and click OK. If necessary, enter a partial name in the Find field to locate the organization and them click OK.

5. Click the Select checkbox to the left of the Item and Org.

6. In the Item attributes available for update section at the bottom of the window, click the Attribute Name field.

   The Item Attributes window opens.

7. In Item Attributes window, select Manufacturing LT Variability and click OK.

8. Click the Condition field.

   A window opens with a list of all the possible conditions.

9. Select the desired condition.

10. Click the Attribute Value field and enter the desired value.

11. Click Apply.

12. Save you work.

Setting Up In-Transit Lead Time Variability

You use the transit times entity to set transit times.

You can specify this entity in either of the following ways:

- Forms window
- ADF page

The name of the Forms window is Transit Times.

In-transit lead time variability is set up in the Transit Times form accessed from the Navigator. In addition to specifying the in-transit time, you can specify the variability of the transit time. This variability is expressed as a percent (%) variance for each ship method between a source and a destination organization.

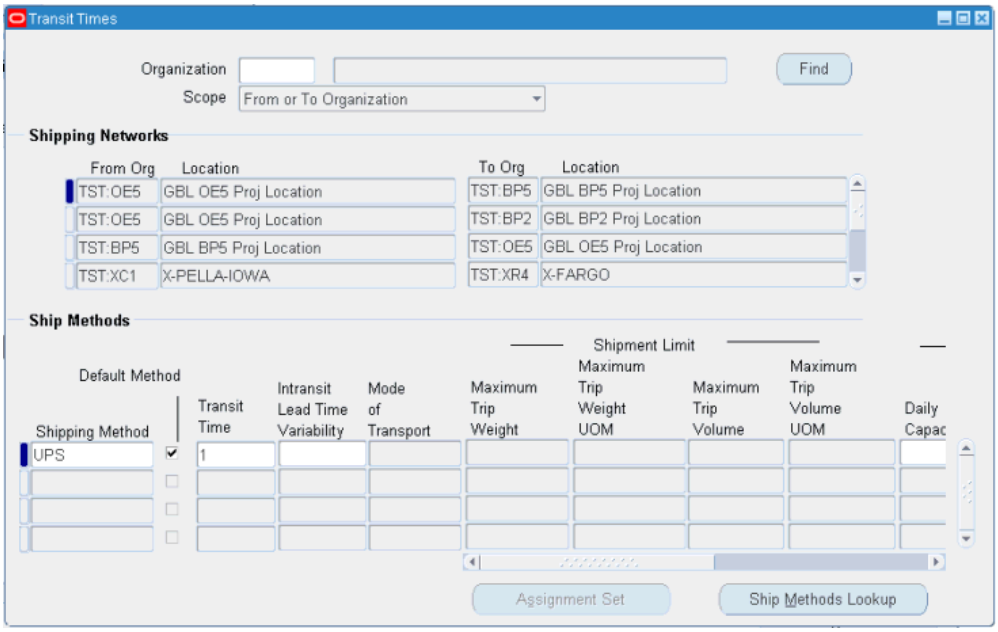
> **Note:** This form should be accessed only in the planning instance and not from the source (ERP) instance. The same form in the source instance does not allow setting of in-transit lead time variability.

To set transit times in the Forms window:

1. From the Inventory Planner responsibility, navigate to the Transit Times window.

   Inventory Planner > Setup > Transit Times

   The Transit Times window appears.



2. In the Shipping Networks region, select the row for the from - to organization combination for which you want to specify in-transit lead time variability.

   The Ship Methods region populates with established shipment methods between the source and destination organizations.

3. In the Ship Methods region, set up the Transit Time and the In-transit Lead Time Variability as a percentage of the Transit Time.

4. Save your work.

The name of the ADF page is Manage Transit Times (ADF).

You see information about this page in *Oracle Advanced Supply Chain Planning Implementation and User's Guide* > chapter Supply Planning Work Area > Plan Input Links.

Setting Up Supplier Lead Time Variability

Supplier lead time variability represents the uncertainty in the availability of supplies. You need to set this up for the inventory planning engine to factor in this uncertainty when it calculates the safety stock levels.

You can specify supplier lead time variability either at the item-supplier level or at the

supplier level. The inventory planning engine uses the information specified at the supplier level if you have not specified it at the item-supplier level.

Supplier lead time variability is set in the Suppliers window accessed from the Collections Workbench. Supplier variability can be specified either as a discrete distribution or as a percent (%) variance for a normal distribution.

> **Note:** You can specify supplier lead time variability information only in the planning server.

To set supplier lead time variability

Steps:

1. From the Inventory Planner responsibility, navigate to the Collections Workbench.

   Inventory Planner > Collections > View Collected Data

   The Navigator window opens.

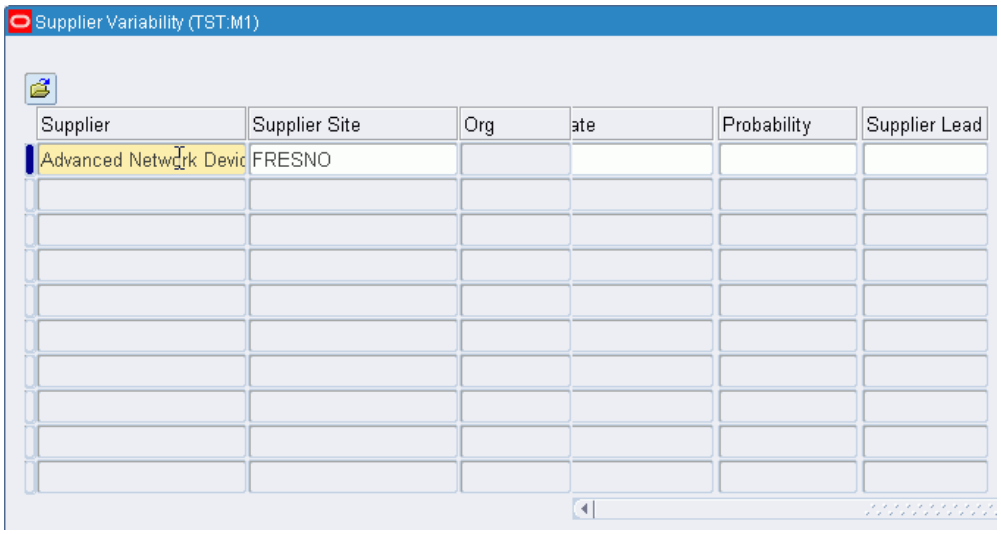
2. On the Plans tab of the Navigator, select: View by Items.

3. Drill down to the item for which supplier lead time variability has to be associated.

   > **Note:** To assign supplier variability independent of a specific item, select the supplier in the Navigator. If an item does not have supplier-specific variability, the inventory planning engine defaults to the supplier level.

4. Right click the supplier and select Supplier Variability from the drop-down menu.

   The Supplier Variability window appears.



5. Specify either the normal distribution Supplier Lead Time Variability percent, or use the Dates Late and Probability columns to define a discrete probability distribution representing supplier lead time variability.

> **Note:** Supplier variability prior to Release 12.0 was modeled as a set of discrete probabilities. In the Dates Late and Probability columns, users set up the number of days that the supplier was expected to be late, along with an associated discrete probability for the occurrence. With Release 12.0, the user can specify a percent (%) variance in the Supplier Lead Time Variability column. Users can specify variance using one or the other methods, but not both.

Fields	Description
Supplier	Supplier name
Supplier Site	Supplier site name
Org	Organization
Days Late	The number of days by which the item has been delivered late. You can enter only whole numbers. You can enter a negative whole number to indicate early delivery.

Fields	Description
Probability	Specify a number between 0 and 1 corresponding to each estimation of days late for the item. The probabilities should sum to 1.
Supplier Lead Time Variability	Specify a percentage. See Setting Plan-Level Lead Time Variability Default Values, page 4-22.

6. Save your work.

Setting Penalty Costs

Penalty costs are what you think will be the costs for violating such things as supplier capacity and resource capacity. You set this up to indicate to the inventory planning engine how much it is going to cost when you exceed the capacities. For example, you can set up the cost of overloading your suppliers and the cost of overworking your production team.

You can set the penalty costs at either the plan options level or at the profile options level. The penalty costs at the plan options level takes precedence over the penalty costs set up at the profile options level.

The inventory planning engine uses the penalty costs or the service level or both in calculating safety stock quantities as shown in the following table:

Plan Level Defaults	Enforce Service Level	Enforce Capacity
Service Level	Used	Used only for target safety stock calculation
Resource Penalty Costs	Used	Used only for target safety stock calculation.
Material Penalty Costs	Used	Used only for target safety stock calculation
Late Demand Penalty Costs	Not used	Used

When you enforce service level constraints, the inventory planning engine calculates

safety stock quantities for the specified service levels while minimizing penalty costs for exceeding material capacity, exceeding resource capacity, and exceeding transportation capacity.

Penalty costs for late demand is used only when you enforce capacity constraints.

> **Note:** You can specify either input service level or input penalty costs for late demand.

Setting Item Purchase Price by Supplier

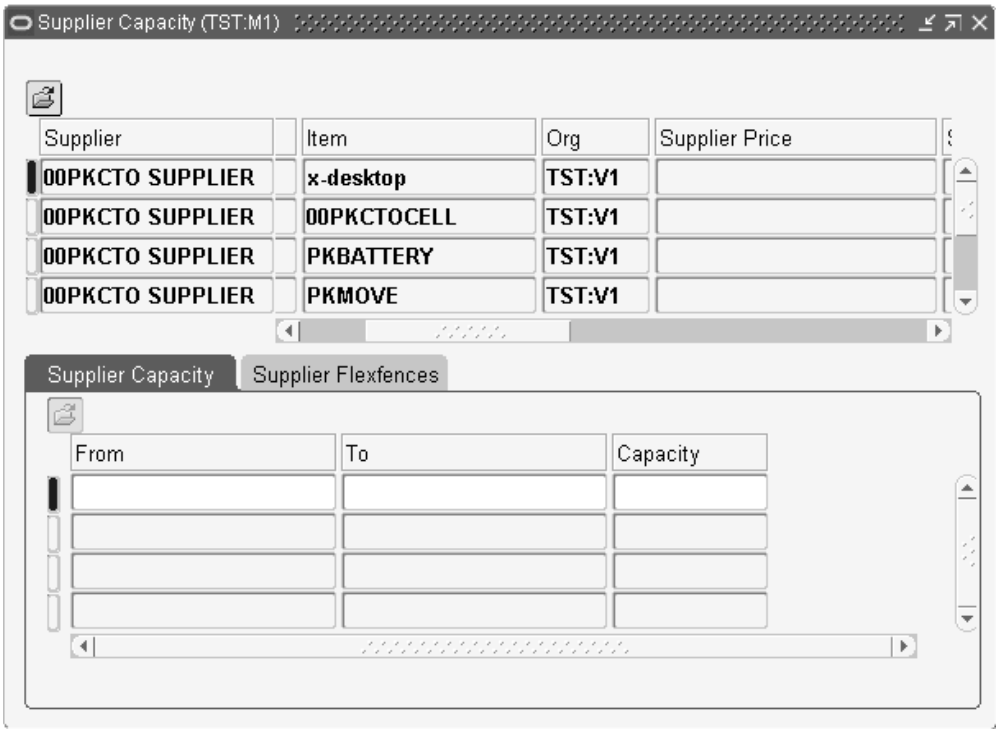
During the collections process, Oracle Inventory Optimization captures the item purchase price by supplier and supplier site by taking the unit price from the most recent purchase order for each item. Oracle Inventory Optimization uses the item purchase price to calculate the purchasing cost for an item. You can view the item purchase price in the Supplier Capacity window. You can navigate to this window from both the Collections Workbench and the Planner Workbench.

To view item price by supplier:

Steps:

1. Navigate to the Collections Workbench (Collections > View Collected Data) or Planner Workbench (Inventory Plan > Workbench).
2. View by Suppliers.
3. In the Navigator, drill down and select an item underneath a supplier.
4. Select Supplier Information from the right-click popup menu. The Supplier Capacity window appears.

Supplier Capacity window



5. Scroll to the right to view the Supplier Price field.

Setting Performance Indicators

You can compare inventory plan output to the following performance indicators:

- Inventory turns
- Service level
- Planned utilization
- Margin
- Margin percentage
- Cost breakdown
- Inventory value

Note: You can set targets for all Performance Indicators except margin

and cost breakdown.

For information on setting performance indicator targets, see the *Oracle Business Intelligence System Implementation Guide.*

The Constraints Tabbed Region, page 3-19

Reviewing Exception Messages, page 5-16

Overview of Analysis Workbench, page 6-1

User-Specified Safety Stock, page 7-5

Setting Intermittent Demand

Oracle Inventory Optimization explicitly supports the computation of Safety Stock and service level calculations for Intermittent demands. Sparse or sporadic demands fed into Oracle Inventory Optimization from Service Parts Planning have been generated using a statistical method designated as being for intermittent demands, or forecasts that are designated via plan options to be of the intermittent demand variety, will now be assumed by Oracle Inventory Optimization to have a more appropriate Poisson distribution.

To define intermittent demand

1. Log on to Oracle Inventory Optimization.
2. From the Navigator, choose Inventory Planner> Item Attribute Mass Maintenance.

   The Item Attribute Mass Maintenance table appears.
3. Populate the Item Attribute Mass Maintenance table as shown in the table below.

Field	Values	Description

Intermittent Demand	Yes, No	Enter values at level ITEM-ORGANIZATION, ITEM-ZONE. If set to YES, safety stock for the Item-Organization or Item-Zone is computed using POISSON distribution. If set to NO, Safety stock for the Item-Organization or Item-Zone is computed using NORMAL distribution.
Mean Inter Arrival		Enter the mean inter arrival in days.

Example

Example of Intermittent Demand

This example illustrates item-organizations with sporadic or intermittent demands.

Item	Intermittent Demand	Mean Inter Arrival (time in days)	Forecast Rule for Demands
RMR_IO_B	Yes	10	
RMR_IO_C	No	4	St-1
RMR_IO_D	No	4	St-1

In the above table, the safety stock for Item RMR_IO_B is computed using Poisson distribution because Intermittent Demand is set to Yes. For Items RMR_IO_C and RMR_IO_D, safety stock is computed using Normal distribution.

Safety Stock Calculations for Item: RMR_IO_B (Poisson distribution)

Item: RMR_IO_B; Since Intermittent Demand is set to YES; it is modeled as Poisson

Item Lead Time (L) = 5 days

Demand Rate (Lambda) = 1/(Mean Inter Arrival Time) = 1/10 = 0.1

Service Level (SL) = 90%

5

Viewing Output

This chapter details how to view the output after you run an inventory plan.

This chapter covers the following topics:

- Overview of Viewing Output
- Queries
- Creating Queries
- Editing and Maintaining Queries
- Executing Queries
- Setting Queries Preferences
- Performance Indicators
- Time-phased Supply and Demand
- Visibility to Forecast Variability
- Viewing the Demand Fulfillment Lead Time
- Safety Stock and Target Safety Stock
- Safety Stock Analysis - Viewing the Plan
- Resource Requirements
- Material/Resource Availability
- Reviewing Exception Messages

Overview of Viewing Output

You can view the output of your inventory plans using the Planner Workbench as well as the Analysis Workbench. The Analysis Workbench enables you to view and analyze the output both at the aggregate level and the detailed level. The Planner Workbench enables you to do a detailed analysis of the output.

For more information on the Analysis Workbench, see Overview of Analysis Workbench, page 6-1

This chapter explains how you can view the output through Planner Workbench using the following:

- Horizontal plan
- Vertical Plan
- Performance Indicators
- Time-phased Supply and Demand
- Constrained and Unconstrained Safety Stocks

For information on the Horizontal Plan window and the Vertical Plan window, see *Oracle Advanced Planning Implementation and User's Guide.*

Queries

Inventory Optimization supports personal queries for orders. This allows planners to retrieve key demand and supply orders such as: forecasts for all items with service level violations. Queries can be specified as Public, and then shared with other planners.

In addition to retrieving orders on the basis of supply/demand attributes such as quantity, due date, planner code, and order type, planners can retrieve orders related to Inventory Optimization exceptions. The Match All and Match Any features are available for query criteria. Match All is similar to the 'and' logic condition, and Match Any is similar to the 'or' logic condition.

Planners can create multiple queries, with each query addressing a specific set of orders that need to be reviewed. Multiple sub queries can be combined to form a query. When the Order query is executed, all the sub queries within the Order query are executed. Thus, the displayed orders are the result of the union of all executed sub queries. Any of the individual query criteria can be made inactive by deselecting the 'Active' check box. This offers flexibility in restructuring the query.

Planners can selectively execute the queries, review the results directly, and take necessary actions using standard processes. Execution of the query opens the Supply and Demand window directly.

See:

- Queries, page 5-3
- Editing and Maintaining Queries, page 5-5
- Executing Queries, page 5-5

- Setting Queries Preferences, page 5-6

Creating Queries

To create a query:

Steps:

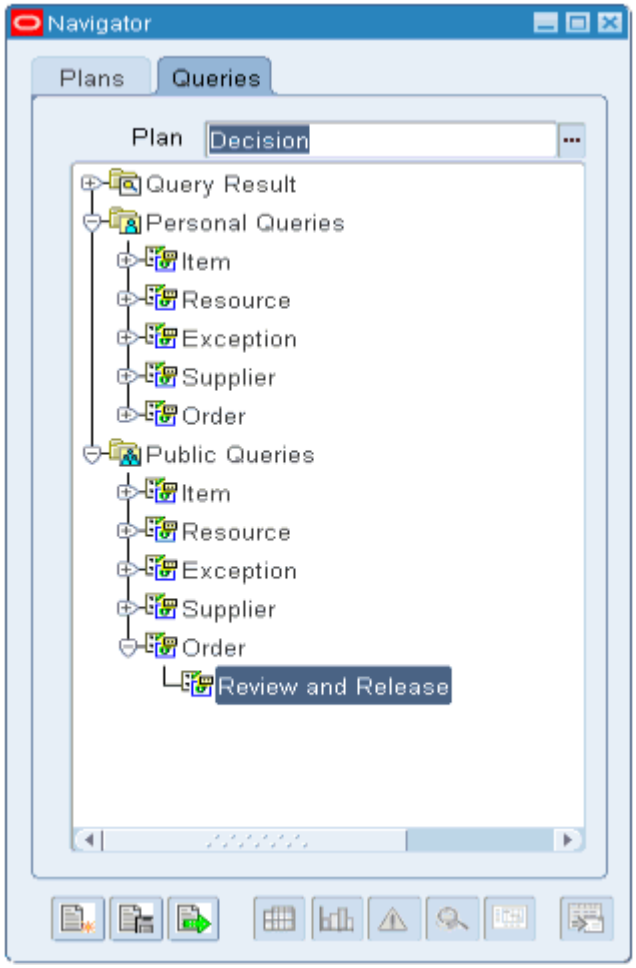
1. Open the Planner Workbench. From the Inventory Planner responsibility, navigate:

   Inventory Plan > Workbench

   The Navigator window appears.

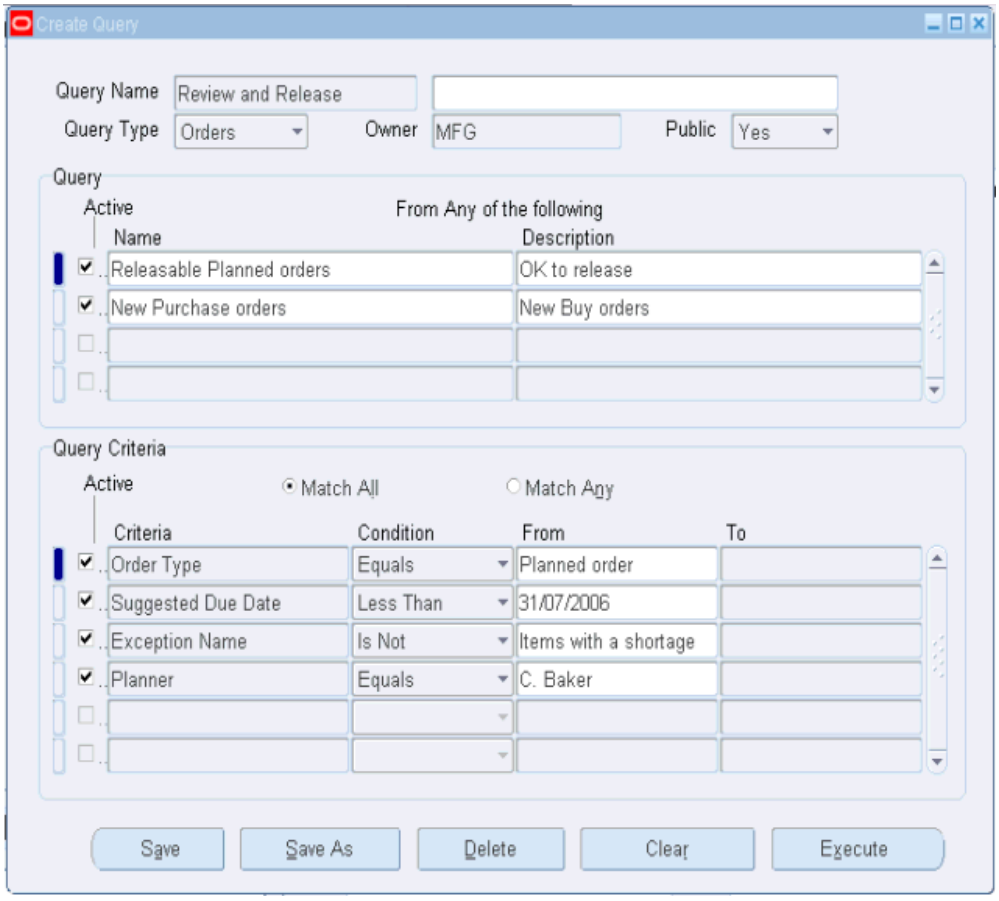
2. Switch to Queries Tab, if it has not been set as the default Tab in the Navigator Pane.

   See Setting Queries Preferences, page 5-6.



3. Select the 'Create Query' icon located at the bottom left of the Navigator Pane.

   The Create Query window appears.



4. Specify a Query Name and Description.

5. Select a Query Type, Owner, and specify whether this query will be available to the public.

6. (Optional) If this query includes existing sub-queries, in the Query region, list the Names of the sub queries.

   Note: Multiple sub-queries can be entered, each with its own criteria Upon execution, all sub-queries will be executed

7. Select the Active check box for sub-queries that you want to be in effect.

8. In the Query Criteria region, enter the query criteria. Multiple criteria can be specified.

- Select the Match All radio button to retrieve the intersection of all criteria.
- Select the Match Any radio button to retrieve the union of all criteria.

9. Click Save.

Editing and Maintaining Queries

To edit a query:

Steps:

1. Open the planner work bench, and then switch to Queries tab if the Queries tab is not the default tab in the Navigator pane.
2. If the query is specified as a non public query, drill down to the query from the Personal Queries node.
3. If the query is specified as a Public query, drill down from the Public Queries node.

   Note: Queries specified as Public can only be edited by the user who created the query. Other users can only view and use them.

4. Drill down to the required Order query from the Order Node. Highlight the required query. Right mouse click the query, and then select View Query from the right-click menu.
5. Edit the query, and then click Save.

Executing Queries

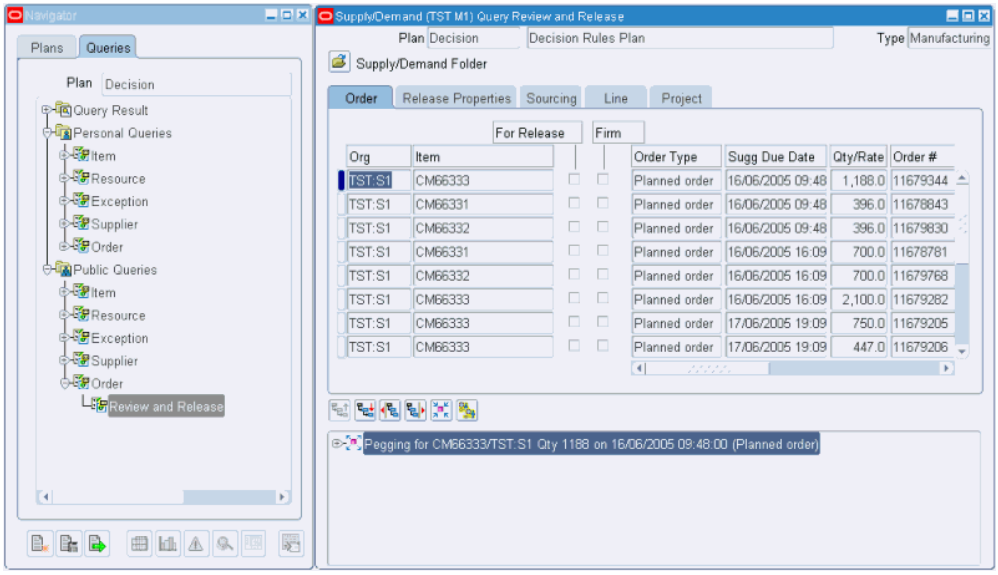
To execute a query:

Steps:

1. Open the planner work bench, and then switch to Queries tab if the Queries tab is not the default tab in the Navigator pane.

   Drill down to the Order Query to be executed, and highlight the query.
2. Specify the Plan name against which the query should be executed.
3. Click the Execute Query icon.

   The Supply/Demand Query Review and Release window appears.



Note: Queries can also be executed using the right mouse menu option of "Execute Query".

Setting Queries Preferences

You can set preferences to:

- Cause the navigator pane to open to the Queries tab instead of the Plans tab.
- Specify the Auto Execute Query. Upon opening the workbench, the Auto Execute Query automatically runs, and results are shown in the Supply/Demand Query Review and Release window.
- Specify the Default Plan. Auto Execute Query executes against the Default Plan.

To set query preferences.

Steps:

1. Open the Planner Workbench. From the Inventory Planner responsibility, navigate:

   Inventory Plan > Workbench

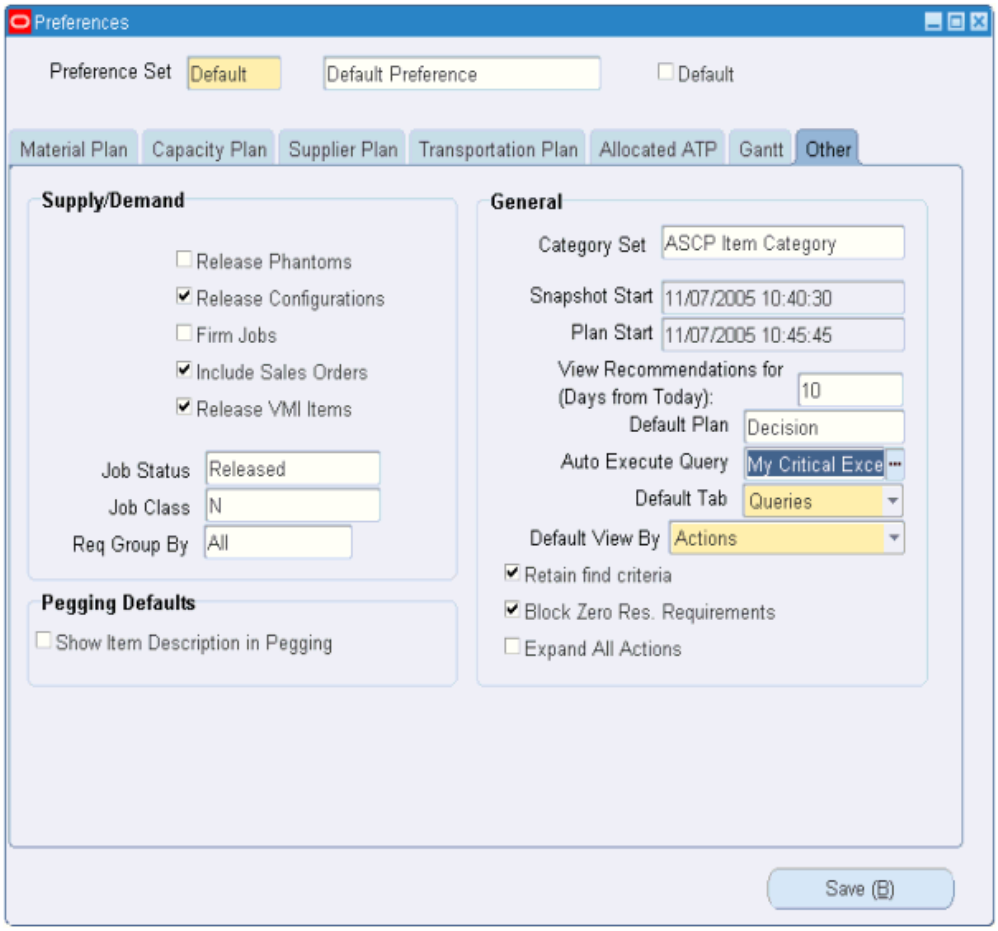
   The Navigator window appears.

2. Navigate to the Preferences window.

   Tools > Preferences

   The Preferences window appears.

3. Select the Other tab.



4. In the Default Tab field, select Queries from the list of values.

5. In the Auto Execute Query field, select the query to automatically execute when the Workbench opens.

6. In the Default Plan field, enter the name of the default plan against which you want the automatic query to execute.

7. Click Save.

Performance Indicators

After you run a plan, you can evaluate its performance by comparing its parameters. For example, you can compare the plan's achievable service level with its target service level. This enables you to select the inventory plan that best meets your organizational objectives that you have defined.

The Key Indicators window is a summary chart that provides a graphical display of an inventory plan's key performance indicators. Using this window, you can see how the inventory plan performs relative to the following measures:

- Inventory turns
- Service level
- Planned utilization
- Margin
- Margin percentage
- Cost breakdown
- Inventory value

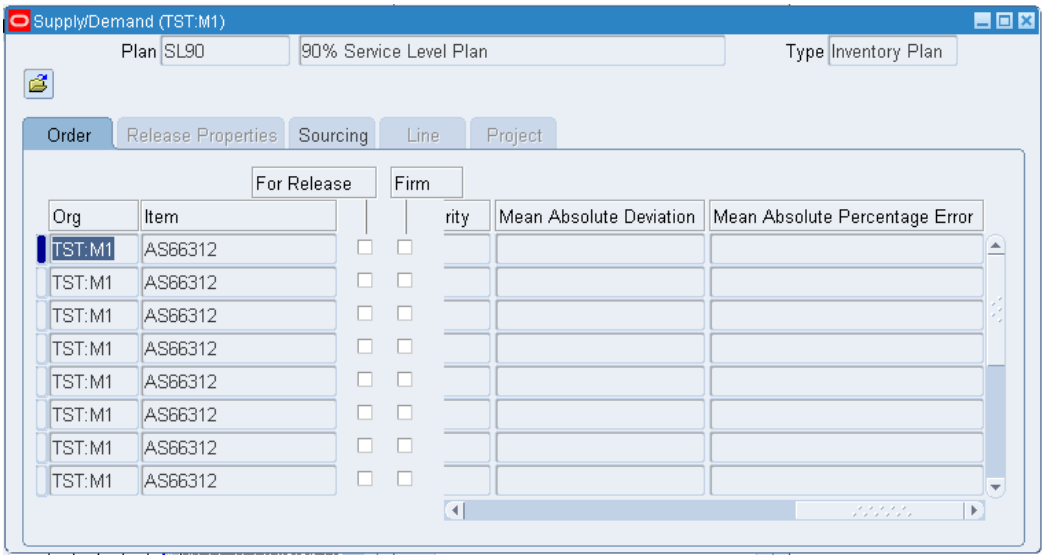
To navigate to the Key Indicators window, select a plan in the Navigator and choose Key Indicators from the right-click popup menu.

For more information on performance indicators, see *Oracle Advanced Planning Implementation and User's Guide.*

Time-phased Supply and Demand

You can view time-phased supply and demand for all the items in your inventory plan using the Supply/Demand window. This enables you to analyze factors regarding supply and demand on a day-by-day or bucket-by-bucket basis. For example, you can find out how demands are met and how supplies are planned over a specify time frame. You can navigate to the Supply/Demand window from various node types such as items, organizations, and plans from the Navigator. In addition to the Navigator, you can also drill down to the Supply/Demand window from other windows such as the Vertical Plan window.

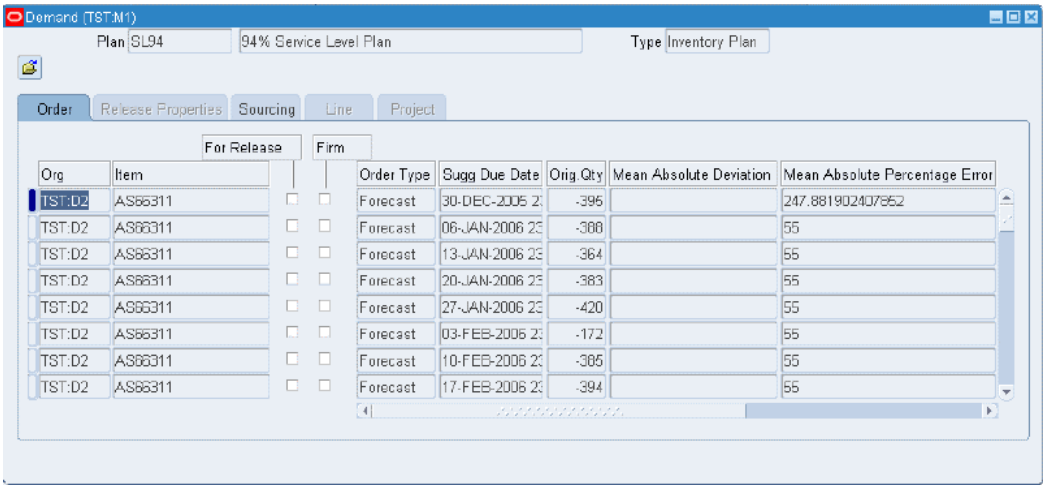
Supply/Demand window



For more information on navigating to the Supply/Demand window and its fields, see *Oracle Advanced Planning Implementation and User's Guide*.

Visibility to Forecast Variability

With Release 12, the mean absolute deviation (MAD) and the mean absolute percentage error (MAPE) metrics for forecasts calculated in Oracle Demand Planning and fed into Oracle Inventory Optimization are now visible in new columns of the Supply/Demand window of the Inventory Optimization Planner Workbench.



Viewing the Demand Fulfillment Lead Time

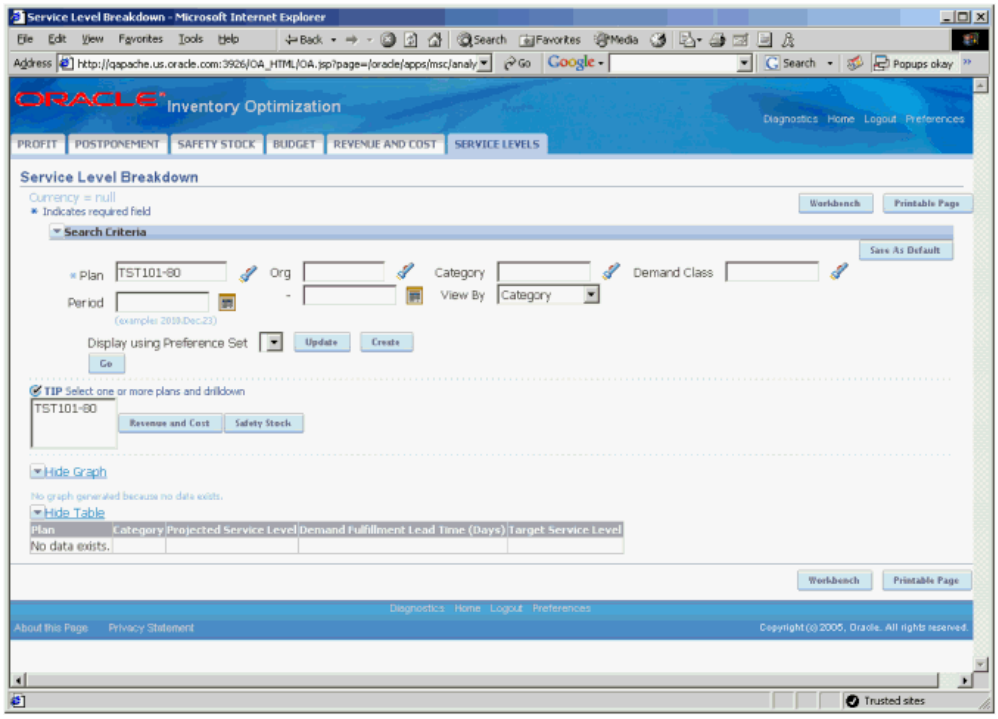
When reviewing a plan, the fulfillment lead time assigned at different levels can be viewed in the service levels folder of the analysis workbench. The fulfillment lead time shown is the value set by the user in the service level set at the particular level of aggregation being viewed. In the case where there is no assignment at the level at which the user is viewing the data, the results of default values, or assignments at more aggregate and less specific levels are not shown.

Steps:

1. Navigate to the Service Level Breakdown page.

   Inventory Analyst > Service Levels Folder

2. Select one or more Plans. Click Go.



   This folder shows the service levels and fulfillment lead times at the level that you are viewing the data.

Safety Stock and Target Safety Stock

Safety stock levels are the stock levels required to provide a specific service level. The plan constraints such as budget and capacity constraints are considered when the safety stock levels are calculated. Target safety stock levels are the safety stock levels without

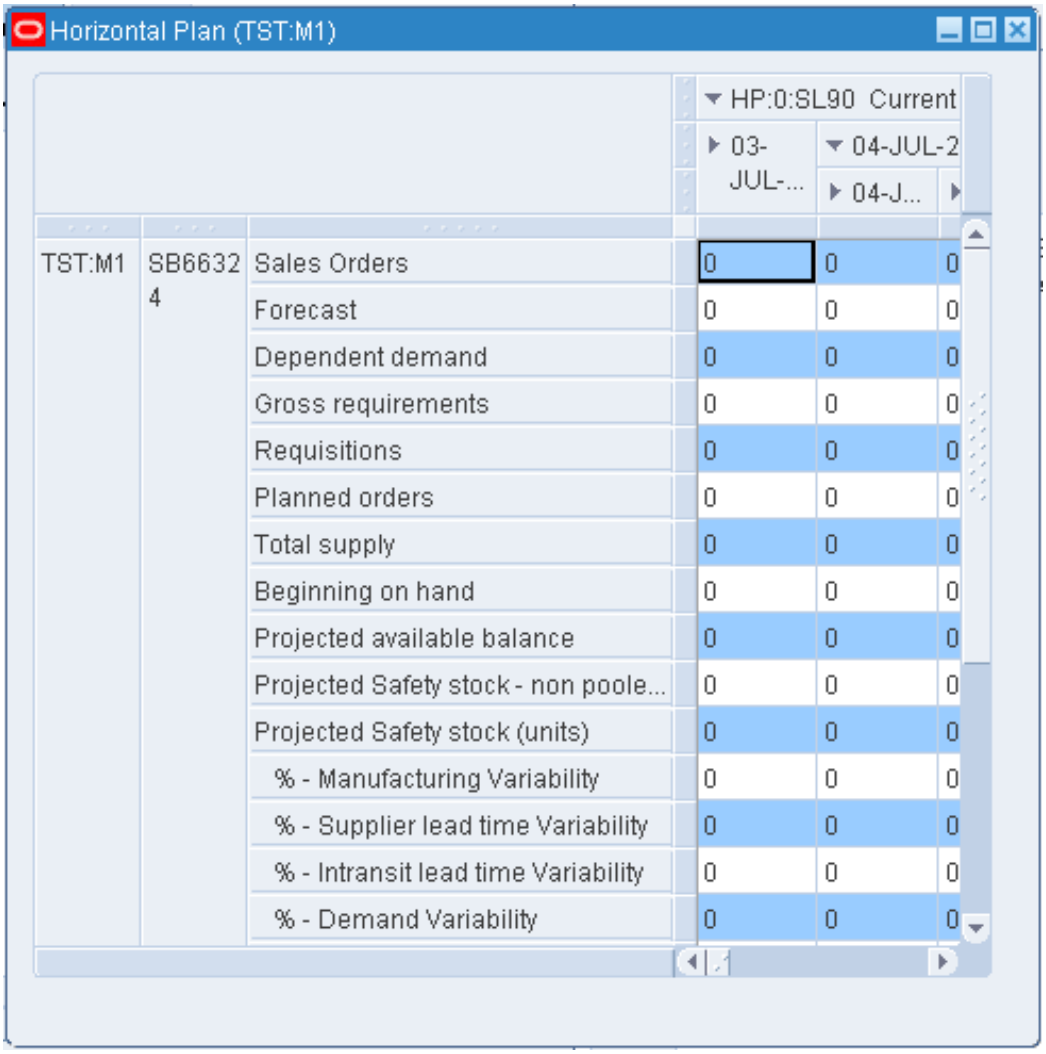
considering the plan constraints.

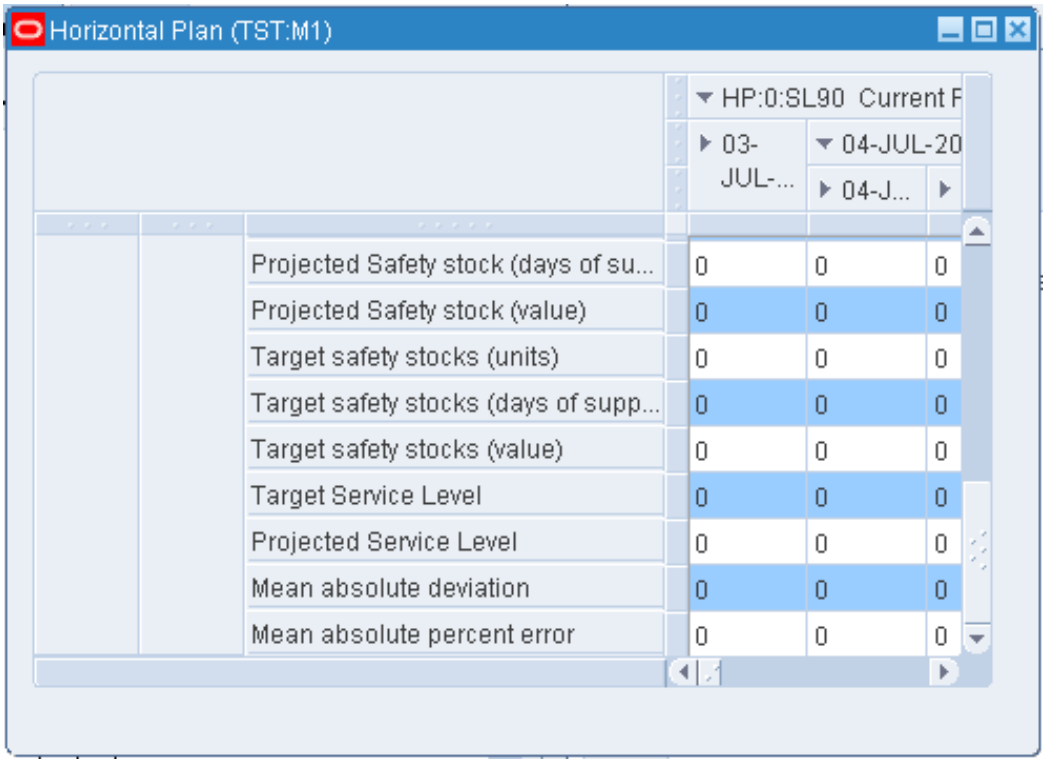
The inventory planning engine calculates and displays both safety stock and target safety stock levels. It calculates the target safety stock based on the target service level that you specify. It calculates the safety stock level after taking the constraints into account. Viewing the target safety stock and safety stock levels helps you find answers to the following questions:

- What service level is achievable?
- What do I need to do in order to achieve the target service level?

You can view the time-phased safety stock quantities for all items in a plan using the Horizontal Plan window. The values for the safety stock displayed in the Horizontal Plan and the Supply/Demand window may vary because the inventory planning engine rounds off the safety stock quantity in the horizontal plan. To access the Horizontal Plan window, click the Horizontal Plan icon in the Planner Workbench.

Horizontal Plan window





With Release 12, the horizontal plan of the Inventory Optimization Planner Workbench can now display the following additional rows:

- Target Service Level, expressed in percent (%)
- Achieved Service Level, expressed in percent (%)
- Mean Absolute Deviation
- Mean Absolute Percent Error
- Safety stock - non pooled (units)
- Safety stock units sub rows that show the percentage of safety stock to be carried to protect against the following types of variability:
  - Manufacturing variability
  - Supplier lead time variability
  - In-transit lead time variability
  - Demand variability

Note: If you want the inventory planning engine to consider an item as a purchased item, ensure that you have a sourcing rule specifying a buy source. If you do not define sourcing details for an item, the inventory planning engine considers the item as a make item. If an item is a buy item, the inventory planning engine considers the preprocessing, processing and postprocessing lead times to calculate the safety stock.

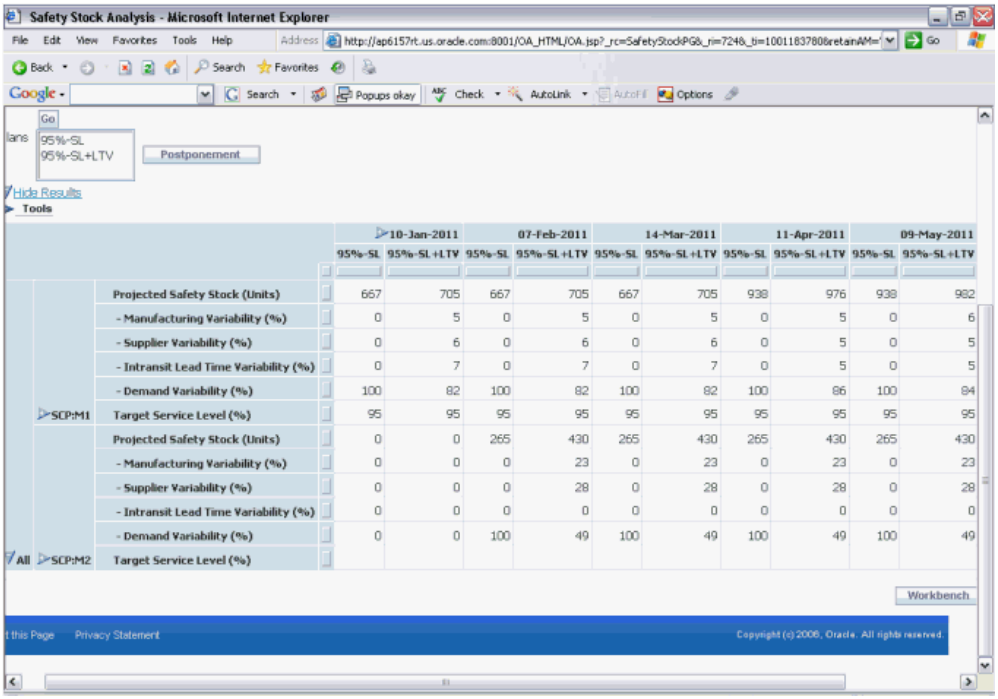
Safety Stock Analysis - Viewing the Plan

Steps:

1. From the Inventory Analyst responsibility, navigate to the Safety Stock folder.

   Click the Safety Stock tab

   The safety stock tab of the Inventory Optimization page opens.



   The Safety Stock folder in the analysis workbench displays the percent (%) contribution to safety stock from each source of variability (demand, manufacturing lead time, in-transit lead time, and supplier lead time variability).

Resource Requirements

Resource requirements are the number of hours for which resources are needed to

process an order. You can view time-phased resource requirements for all resources in your inventory plan using the Resource Requirements window. This enables you to find out the specific resources and the time period for which these resources will be needed for each order. The resource requirements are set up Oracle Bills of Material application using routings.

You can navigate to the Resource Requirements window in one of the following ways:

- From the Resources window, click the Requirements button.
- From the Navigator, select a resource and choose Resource Requirements from the Resources right-click popup menu.

For more information on the Resources Requirements window and its fields, see *Oracle Advanced Planning Implementation and User's Guide.*

> **Note:** You can only view resource requirements using Oracle Inventory Optimization. For information on modifying resource requirements, see *Oracle Bills of Material User's Guide.*

Material/Resource Availability

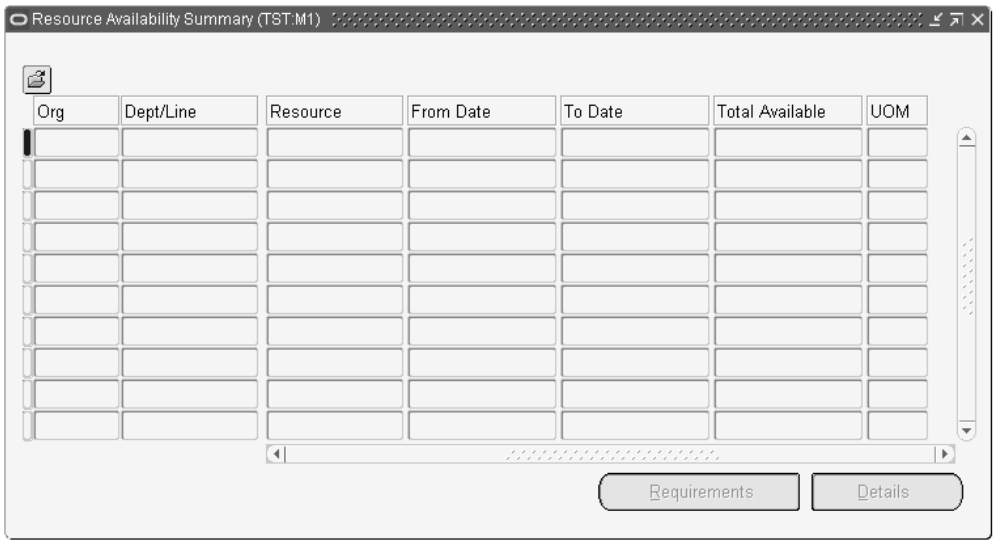
Material availability is the capacity of a supplier site to produce a specific item. This is set up in the Collections Workbench of Oracle Inventory Optimization. Resource availability is the number of hours a resource is available for production. This is set up in Oracle Bills of Material.

By viewing material and resource availability, you can find out how much can be manufactured without having to look at what is currently available. You can make changes to resource availability using the Oracle Bills of Material application and to material availability using the Collections Workbench. You can also make changes to these using the Planner Workbench, but these changes will be visible only in Oracle Advanced Supply Chain Planning and not in Oracle Inventory Optimization.

You can view time-phased material and resource availability for all items and resources in your inventory plan using the Resource Availability Summary window. You can navigate to the Resource Availability Summary window in one of the following ways:

- From the Resources window, click the Availability button.
- From the Navigator, select a resource and choose Resource Availability from the Resources right-click popup menu.

Resource Availability Summary window



For more information on the Resource Availability Summary window and its fields, see *Oracle Advanced Planning Implementation and User's Guide*.

Reviewing Exception Messages

The inventory planning engine generates constraint exception messages to alert you about a specific situation that needs your intervention and also suggests actions to resolve the problem.

The exception messages generated in Inventory Optimization are the same as those available in Oracle Advanced Supply Chain Planning. For information on what exceptions are generated for which type of plans, how exceptions can be viewed and analyzed, and how exception situations potentially can be resolved, see *Oracle Advanced Planning Implementation and User's Guide.*

The following is a list of exceptions for Oracle Inventory Optimization:

- Late Sales Orders and Forecasts
  - Past due transportation resource constraint
  - Past due forecast
- Material and Resource Capacity
  - Material constraint
  - Resource constraint

    - Resource overloaded
    - Supplier capacity overloaded
    - Resource underloaded
- Transportation and Distribution
    - Transportation resource overloaded
    - Transportation resource under loaded
- Shortage and Excess
    - Item with a shortage
    - Item with excess inventory
- Substitutes and Alternates Used
    - Planned order uses alternate BOM
    - Planned order uses alternate routing
    - Planned order uses substitute components
    - Planned order uses alternate resources
    - Order sourced from alternate facility
    - Order sourced from alternate supplier
- Item Exceptions
    - Items with negative starting onhand
    - Items with no activity

> **Note:** The inventory planning engine generates material and resource constraint exception messages only when the Enforce Capacity Constraints check box in the Constraints Tab of the Plan Options window is checked. In this option, the output contains both the target safety stock and the safety stock levels.

6

Analysis Workbench

This chapter describes the Analysis Workbench and how you can use it to analyze your inventory plans.

This chapter covers the following topics:

- Overview of Analysis Workbench
- Analyzing Inventory Plans
- Using the Analysis Workbench
- Creating and Editing Preference Sets
- Analyzing Service Level Versus Profit
- Analyzing Postponement
- Analyzing Safety Stocks
- Analyzing Inventory Budgets
- Analyzing Revenue and Cost Breakdown
- Analyzing Service Level Breakdown

Overview of Analysis Workbench

You create and run several inventory plans to evaluate different scenarios. You compare and analyze these plans to determine the most optimal one. Analysis Workbench enables you to compare and analyze multiple inventory plans by providing graphical and tabular comparison.

You can analyze the output from your inventory plans at both aggregate and detail levels. The Analysis Workbench provides context-sensitive drill down that enables root-cause analysis. For example, if achieving a specific service level costs an excessive amount of money, you can drill down to cost analysis for a break down of costs and identify the categories or items that contribute to the high costs.

You can use the Analysis Workbench to view and analyze factors such as budgets,

inventory levels, and costs. In addition, you can use the Analysis Workbench to determine target service level. The following are some of the questions for which you can find answers using the Analysis Workbench:

- What is my most profitable service level?
- Have I achieved my target service levels?
- How much inventory do I have to carry for a target service level?
- Where should I position my inventories?
- How is my inventory budget allocated?
- What is my cost breakdown?

> **Note:** The Analysis Workbench is displayed in a Web browser. For information on the Web browsers that you need for Analysis Workbench, see *OA Framework Documentation.*

Analyzing Inventory Plans

You can use the analysis pages to analyze the output of your inventory plans. The following analysis pages are available in the Analysis Workbench:

- Service Level versus Profit Analysis

  This page enables you to determine the estimated profit for a specific service level. You can use this page to analyze multiple plans corresponding to different service levels and identify the plan with the most profitable service level.

- Postponement Analysis

  This page enables you to view the effect of postponement on safety stock carrying cost and inventory value.

- Safety Stock Analysis

  This page enables you to analyze the safety stock levels. You can use this page to analyze the safety stock details for a specific service level.

- Inventory Budget Analysis

  This page enables you to analyze inventory budgets. You can analyze the budget value and the corresponding inventory value and service level details. You can use this page to determine the budget required to meet a specific service level.

- Revenue and Cost Breakdown

This page enables you to view revenue and cost breakdown details such as production cost, carrying cost, and purchasing cost.

- Service Level Breakdown

  This page enables you to view the achievable service levels at various levels of aggregation.

You can view information related to a specific aspect of your inventory plan in an analysis page. For example, you can view the cost-related information such as planned production cost and planned purchasing cost in the Revenue and Cost Breakdown page. For a complete analysis of your inventory plans, you may need to use multiple analysis pages along with Planner Workbench.

The following is an example of how you may want to use the analysis pages for analyzing your inventory plans:

After you create and run plans with various target service levels, you may determine the most profitable service level using the Planned Service Level Vs Profit page.

1. You may then use the Inventory Budget Analysis page to find out the budget required to achieve the most profitable service level.

2. You may then determine the safety stock levels for the most profitable service level using the Safety Stock Analysis page.

3. You can then access the Planner Workbench for more information on factors such as item level supply and demand, the BOM structure, and sourcing.

Using the Analysis Workbench

The following are the steps involved in using the Analysis Workbench.

1. Run your inventory plans.

   You need to run the plans that you want to analyze before you use the Analysis Workbench. For information on running inventory plans, see Running an Inventory Plan, page 2-1.

2. Select the category set in the Preferences window of the Planner Workbench.

   To use the Analysis Workbench, you need to select the category set of the items that are to be displayed in the Analysis Workbench. You can specify the category set in the Category Set field of the Other tabbed region in the Preferences window. For more information on the Preferences window, see *Oracle Advanced Planning Implementation and User's Guide*. You can analyze only those categories and items belonging to the category set that you select in the Preferences window.

Note: You can analyze items and categories belonging to one category set at a time. The items and categories that appear in the analysis pages belong to an item category set defined in the Inventory Optimization Workbench preferences, Others tab.

3. Specify the number of decimal places in the Preferences window of the Planner Workbench.

   Optionally, you can specify the required number of decimal places for the numerical data displayed in the Analysis Workbench. You can specify this in the Decimal Places field of the Material Plan tabbed region in the Preferences window. After you set the decimal places, numerical data is displayed with the specified number of decimal places in all the analysis pages. For more information on the Preferences window, see *Oracle Advanced Planning Implementation and User's Guide.*

4. Create your preference sets.

   Optionally, you can create preference sets. Preference sets enable you to customize how information is displayed in an analysis page. For example, you can choose to hide or display the graphical display in an analysis page. For more information, see the section on creating and editing preference sets.

5. Navigate to the Analysis Workbench from the Navigator.

6. Select an analysis page based on your needs.

7. Search and select one or more plans for analysis.

   You can select specific plans and navigate to other analysis pages for a complete analysis of the plans.

   Note: You can analyze only plans that have matching start dates, weekly buckets, and period buckets.

   The Search Criteria area in the analysis pages enables you to analyze specific elements of your inventory plans. For example, you can analyze the details of a specific organization in the plan. After you select the plans for analysis, you can search based on the following:

   - Organization
   - Category
   - Demand class
   - Period

- Item
- Customer
- Customer class
- ABC classification

  The availability of fields for searching these parameters depends on the analysis page that you select. You can save a specific search criteria as the default for an analysis page by clicking Save As Default in the analysis page. The selected search criteria appear automatically every time you navigate to the analysis page.

8. Use the View By field to specify your view by preference. For example, you can view by period for a month-wise display of the details. The availability of this field depends on the analysis page that you select.

Creating and Editing Preference Sets

A preference set is a group of options that you specify for viewing information in the analysis pages. Preference sets enable you to specify how and what information you want to be displayed in an analysis page. For example, you can specify the row headings for the tabular display in the Inventory Budget Analysis page. You can create and edit preference sets using the Preferences pages.

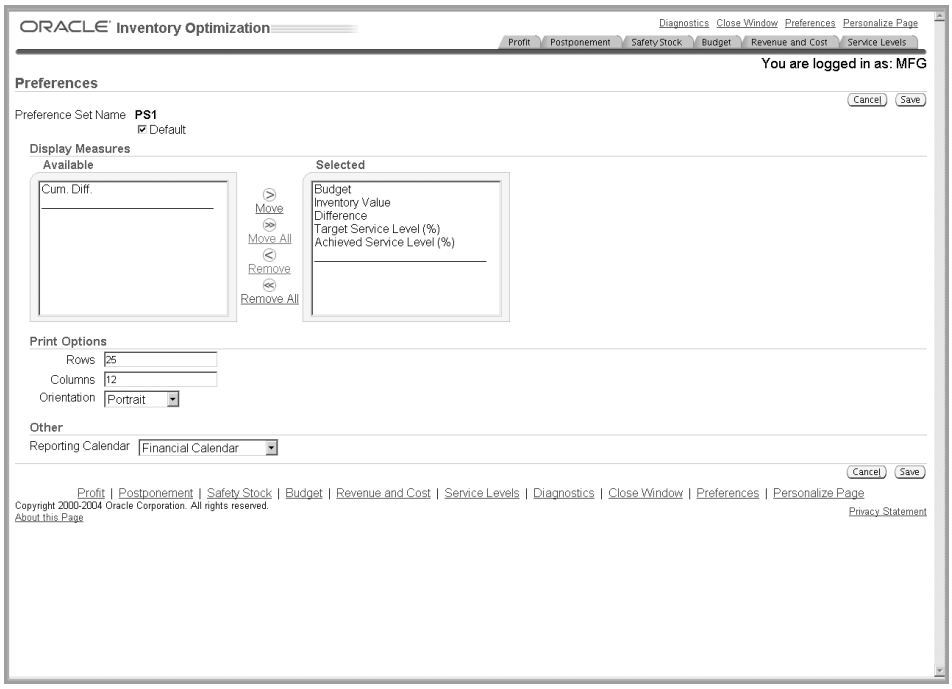
You can create multiple preference sets for an analysis page. You can also make a preference set as the default for an analysis page so that the preference set is chosen automatically every time you navigate to that analysis page. The preference sets that you create for an analysis page are exclusive to that page. Depending on the analysis page, preference sets enable you to specify options such as the number of rows and columns for printing and the type of calendar for viewing information by period or week.

To create and edit preference sets

Steps:

1. To create a preference set, click Click/Edit from an analysis page. To edit a preference set, select the preference set from the list in the Display using Preference Set field in the analysis page and click Click/Edit.
   - The corresponding Preferences page appears. The Preferences page of Inventory Budget Analysis is shown as an example.

Preferences page of Inventory Budget Analysis



2. Use the information in the following table to complete the fields in the Preferences pages.

Field	Description
Preference Set Name	Enter a name for the preference set.
Default	Select this check box to make a preference set as the default for the analysis page. The settings are automatically applied when you navigate to this analysis page.
Available	This column displays the available row headings for the tabular display in the Safety Stock Analysis page or the Inventory Budget Analysis page. Select items in the list and move them to the Selected column to include them in the analysis page.
Selected	This column displays the selected row headings for the tabular display in the Safety Stock Analysis page or the Inventory Budget Analysis page. Select items in the list and move them to the Available column to remove them from the analysis page.

Field	Description
Rows	Specify the number of rows if you are printing the information in the analysis page.
Columns	Specify the number of columns if you are printing the information in the analysis page.
Orientation	Specify the page orientation if you are printing the information in the analysis page.
Graphing Options	You can choose to hide or display the graphical display in the analysis page. This is available for the following analysis pages: Service Level versus Profit Analysis Postponement Analysis Safety Stock Analysis Inventory Budget Analysis Revenue and Cost Breakdown Service Level Breakdown
Reporting Calendar	You can select the type of calendar for viewing by period or week. To view by week, you need to select manufacturing calendar from the list.

3. Click Save to save the preference set.

Analyzing Service Level Versus Profit

Service level is one of the factors that can affect your profit. Typically profits increase as you increase the service level, but increased service level beyond a certain point may not increase the profits because of the relative increase in inventory costs. To determine the most profitable service level, you can create and run multiple plans depicting different service levels. You can then analyze these plans using the Service Level versus Profit Analysis page of the Analysis Workbench to determine the most profitable service level.

You can also widen the scope of your analysis by navigating to other related analysis pages from the Service Level versus Profit Analysis page. You can navigate to other analysis pages the same search criteria specified in the Service Level versus Profit Analysis page. You can select the plans from the list and navigate to the following analysis pages from the Service Level versus Profit Analysis page:

- Revenue and Cost Breakdown
- Postponement Analysis
- Inventory Budget Analysis
- Service Level Breakdown
- Safety Stock Analysis

Navigating to Other Related Analysis Pages

You can view service level versus profit details in both tabular and graphical formats. The Service Level versus Profit Analysis page provides two graphs, the Plan Gross Profit Breakdown graph and the Plan Gross Profit Percent graph. The Plan Gross Profit Breakdown graph shows the planned total cost, planned revenue, and planned gross profit against the service level for the selected inventory plans. The planned gross profit percent shows the planned gross profit percentage against the service level for the selected inventory plans.

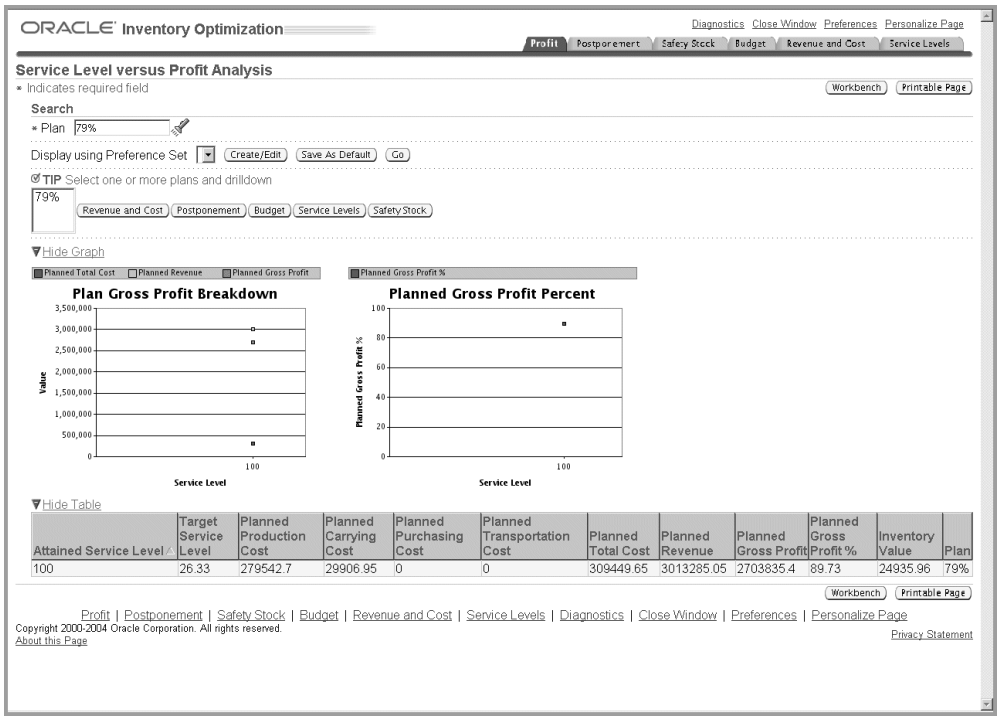
To analyze service level versus profit

Steps:

1. From the Navigator, choose Analysis Workbench.

   The Service Level versus Profit Analysis page appears.

Service Level versus Profit Analysis page



2. Use the information in the following table to complete the fields in the Service Level versus Profit Analysis page.

Field	Description
Plan	Select the inventory plans that you want to analyze. To set the selected plans as the default plans to be analyzed in this page, click Save As Default. The selected plans appear automatically every time you navigate to this analysis page.
Display using Preference Set	Optionally, select a preference set from the list. For more information, see the section on creating and editing preference sets under Analyzing Inventory Plans, page 6-2.

3. Click Go to analyze the selected inventory plans.

   The inventory planning engine displays the service level versus profit details for the

selected plans. The following table describes the column headings of the tabular display in the Service Level versus Profit Analysis page:

Column Heading	Description
Attained Service Level	The achievable service level for a plan. The inventory planning engine calculates the attained service level based on the inputs for the plan.
Target Service Level	The target service level that you have set up. You can set the target service level for a plan in the Constraints tabbed region of the Plan Options window. For more information on setting target service levels, see Setting Target Service Levels, page 4-2 .
Planned Production Cost	The estimated cost of producing the planned items. The inventory planning engine calculates the production cost for each item in the plan and aggregates the cost at the plan level. The inventory planning engine calculates the planned production cost for an item by multiplying the resource unit cost and the required hours. The resource unit cost and required hours for items are specified in Oracle Bills of Material. For more information, see the *Oracle Bills of Material User's Guide.*
Planned Carrying Cost	The estimated cost of stocking the planned items. The inventory planning engine calculates the carrying cost for each item in the plan and aggregates the cost at the plan level. The inventory planning engine calculates the carrying cost based on the carrying cost percentage. Carrying cost percentage can be set up at the item level using Oracle Inventory or at the profile option level. The carrying cost percentage set up at the item level takes precedence over the carrying cost percentage set up at the profile option level. For information on setting up carrying cost percentage at the item level, see *Oracle Inventory User's Guide.*

Column Heading	Description
Planned Purchasing Cost	The estimated purchasing cost for the planned items. The inventory planning engine calculates the purchasing cost for each item in the plan and aggregates the cost at the plan level. The inventory planning engine calculates the purchasing cost for an item based on its standard cost. The standard costs for items are specified in purchase orders of type blanket purchase agreement. These purchase orders are created in the Oracle Purchasing application. For more information, see *Oracle Purchasing User's Guide.* The standard costs for items can also be specified in the Oracle Cost Management application. For more information, see *Oracle Cost Management User's Guide.* The standard costs specified in Oracle Purchasing takes precedence over the standard costs specified in Oracle Cost Management.

Column Heading	Description
Planned Transportation Cost	The estimated cost for transporting the planned items from an organization to another. The inventory planning engine calculates the transportation cost for each item in the plan and aggregates the cost at the plan level. The inventory planning engine calculates the transportation cost for an item by multiplying the number of unit items supplied, unit weight or unit volume, and transportation cost per unit weight or unit volume. The inventory planning engine calculates the number of units supplied based on the item's demand schedule. It takes the organization name from which the item is sourced and the organization name to which the item is supplied from the item's sourcing rule. It also takes the shipment method from the sourcing rule. The inventory planning engine takes the unit weight or unit volume for the item and the cost of transporting an unit weight or unit volume of the item between the two organizations by the specified shipping method from Oracle Inventory. Unit weight or unit volume for an item is specified in the Physical Attributes tabbed region of Master Items window or Organization Items window of Oracle Inventory. The cost of transporting a unit weight or unit volume between two organization using a specific shipping method is specified in the Transit window of Oracle Inventory. For information on demand schedule, see the section on demand schedules in The Organizations Tabbed Region, page 3-9. For information on sourcing rules, see *Oracle Advanced Planning Implementation and User's Guide.* For information on transportation cost per unit weight or unit volume of an item, see *Oracle Inventory User's Guide.*
Planned Total Cost	The sum of planned production cost, planned carrying cost, planned purchasing cost, and planned transportation cost.

Column Heading	Description
Planned Revenue	The estimated gross income for the plan from the sales of items that have an independent demand. The inventory planning engine calculates the revenue for each planned item that has an independent demand and aggregates the revenue at the plan level. The inventory planning engine calculates the revenue for an item by multiplying its selling price and the number of unit items supplied. The selling price for an item is specified in the List Lines tabbed region in the Price Lists window of Oracle Order Management. For more information, see *Oracle Order Management User's Guide.* The inventory planning engine calculates the number of units supplied based on the item's demand schedule. The demand schedule for an item is defined in the Organization tabbed region of the Plan Options window of Oracle Optimization. For information on demand schedule, see the section on demand schedules in The Organizations , page 3-9Tabbed Region.
Planned Gross Profit	The difference between the planned total cost and planned revenue for the plan.
Planned Gross Profit%	Planned gross profit divided by planned revenue and then multiplied by 100.
Inventory Value	The estimated value of inventory at the end of the planning horizon. The inventory planning engine calculates the inventory value for each item in the plan and aggregates the value at the plan level. The inventory planning engine calculates the inventory value for an item by multiplying its projected available balance and its standard cost. You can view the projected available balance for items in the Horizontal Plan in Oracle Inventory Optimization. For more information see, *Oracle Advanced Planning Implementation and User's Guide.* The standard costs for items are specified in the Oracle Cost Management application. For more information, see *Oracle Cost Management User's Guide.*
Plan	The name of the plans that you have selected for analysis.

Analyzing Postponement

Postponement is the positioning of materials across the supply chain. When you implement postponement, the level of completion of products gets delayed until you have a firm order. This delays the value addition to the materials and thus reduces the cost of the inventory and the carrying cost.

The inventory planning engine determines postponement based on the costs and lead times. However, the maximum level of postponement in the supply chain BOM is based on the value you enter for Profile Options MSR: Postponement factor. For more information on this profile option, see MSR Profile Options, page A-2. Set the value at 0 if you do not want to postpone.

You can analyze the effects of postponement using the Postponement Analysis page. You can view the carrying cost and inventory value with and without postponement in both graphical and tabular formats. You can also view the savings made in carrying cost and inventory investment. The details displayed in the graphical and tabular formats are based on your search criteria. You can further drill down using the View By feature.

You can also select plans and navigate to the Safety Stock Analysis page to analyze the safety stock details. This provides an insight into how much of the planned items are stored in the finished goods stage. You can navigate to the Safety Stock Analysis page from the Postponement Analysis page to analyze the safety stock details for the same search criteria.

You can also navigate to the Planner Workbench from the Postponement Analysis page to review supply and demand records for specific items. You can also look up the BOM and sourcing to figure out such things as parent items and related items and further analyze safety stocks.

To analyze postponement implementation:

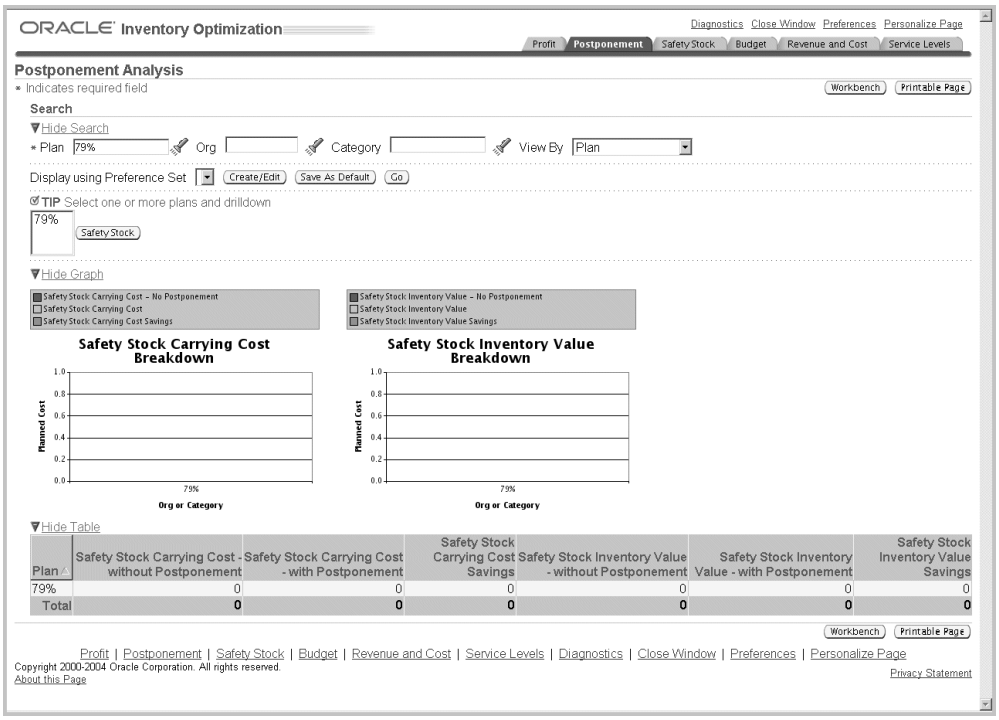
Navigating to the Postponement Analysis page

Steps:

1. From the Analysis Workbench, click Postponement.

   The Postponement Analysis page appears.

Postponement Analysis page



2. Use the information in the following table to complete the fields in the Postponement Analysis page:

Field	Description
Plan	Search and select the inventory plans that you want to analyze. Click Save As Default to make the details selected in the Search Criteria as default in this page. The selected search criteria appear automatically every time you navigate to this analysis page.
Org	Optionally, search and select an organization to analyze its postponement details.
Category	Optionally, search and select a category to analyze its postponement details.

Field	Description
View By	Select a view by to drill down. You can view by plan, organization, category, period, week, and plan-organization-category. You can view month-wise postponement details for either the manufacturing calendar or financial calendar by selecting period from the list. You can view week-wise postponement details only for the manufacturing calendar. You can select the type of calendar in the preference set created for the Postponement Analysis page. For more information, see the section on creating and editing preference sets in Analyzing Inventory Plans, page 6-2.
Display using Preference Set	Optionally, select a preference set from the list. For more information, see the section on creating and editing preference sets in Analyzing Inventory Plans, page 6-2.

3. Click Go to analyze the postponement implementation for the selected plans.

The inventory planning engine displays the postponement details for the selected plans. The following table describes the column headings of the tabular display in the Postponement Analysis page:

Column Heading	Description
Plan	The name of the plans that you have selected for analysis.
Org	The organizations in the selected plans whose postponement details are displayed. This column appears if you are viewing by organization or plan-organization-category.
Category	The categories in the selected plans whose postponement details are displayed. This column appears if you are viewing by category or plan-organization-category.
Time	The bucket for which the postponement details are displayed. This column appears if you are viewing by period or week.

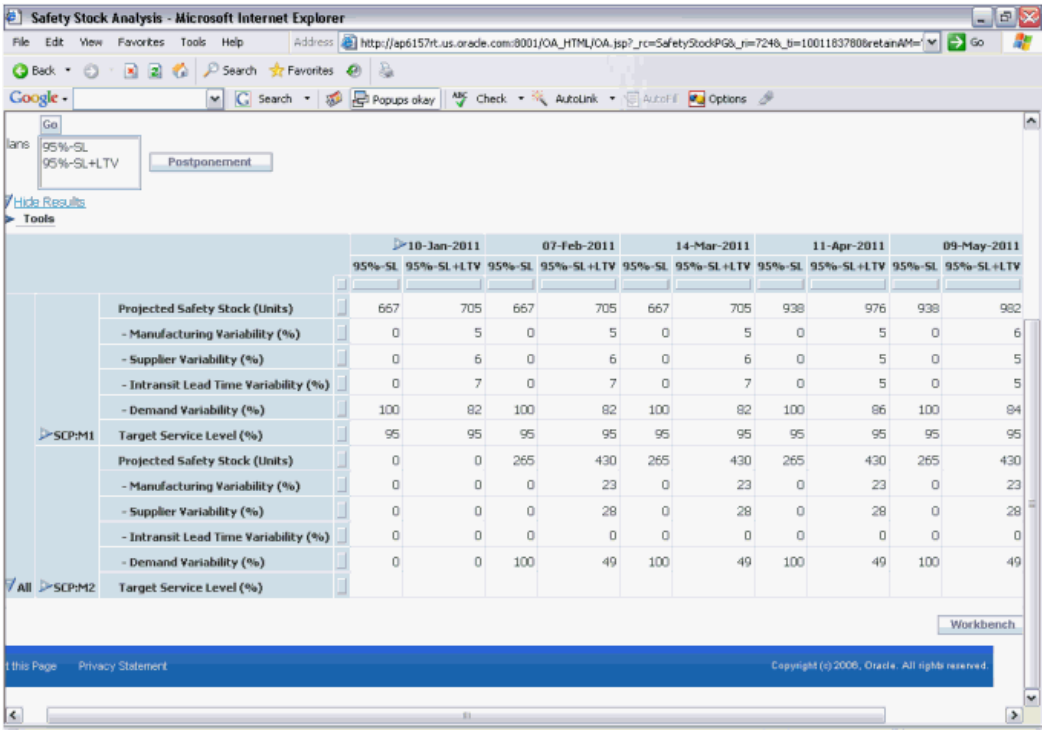
Column Heading	Description
Safety Stock Carrying Cost - without Postponement	The carrying cost for the safety stock without considering postponement. The inventory planning engine calculates the carrying cost based on the carrying cost percentage. You can set the carrying cost percentage at the item level or using a profile option. The carrying cost percentage set at the item level takes precedence over the carrying cost set using profile option. For more information on setting carrying cost percentage at the item level, see *Oracle Inventory User's Guide.*
Safety Stock Carrying Cost - with Postponement	The carrying cost for the safety stock considering postponement.
Safety Stock Carrying Cost Savings	The amount of money saved in carrying cost by implementing postponement. The inventory planning engine calculates this by subtracting the safety stock carrying cost with postponement from safety stock carrying cost without postponement.
Safety Stock Inventory Value-without Postponement	The value of the safety stock without postponement. The inventory planning engine calculates the value of safety stock for an item by multiplying the item's projected available balance and standard cost. You can view the projected available balance for items in the Horizontal Plan in Oracle Inventory Optimization. For more information see, *Oracle Advanced Planning Implementation and User's Guide.* The standard costs for items are specified in the Oracle Cost Management application. For more information, see *Oracle Cost Management User's Guide.*
Safety Stock Inventory Value-with Postponement	The value of the safety stock considering postponement.
Safety Stock Inventory Value Savings	The amount of money that can be saved by implementing postponement. The inventory planning engine calculates this by subtracting the safety stock inventory value with postponement from the safety stock inventory value without postponement.

Analyzing Safety Stocks

Safety stocks act as a buffer against unforeseen fluctuations in demand. The inventory planning engine calculates the achievable and target safety stocks for an inventory plan based on the plan inputs. You can use the Analysis Workbench to analyze and view the safety stocks at the aggregate and detail levels. Analysis of safety stocks helps you verify if specific items, item categories, and customers are adequately buffered against uncertainty in demand and supply.

You can analyze the safety stocks of multiple plans using the Safety Stock Analysis page. You can view the achievable, target, and user-specified safety stocks in units, value, and days of supply. The Safety Stock Analysis page also enables you to analyze the corresponding target and achievable service levels. This provides an insight into the effect of service levels on safety stock levels.

The Safety Stock folder in the analysis workbench displays the percent (%) contribution from each source of variability (demand, manufacturing lead time, in-transit lead time and supplier lead time variability) to the safety stock.



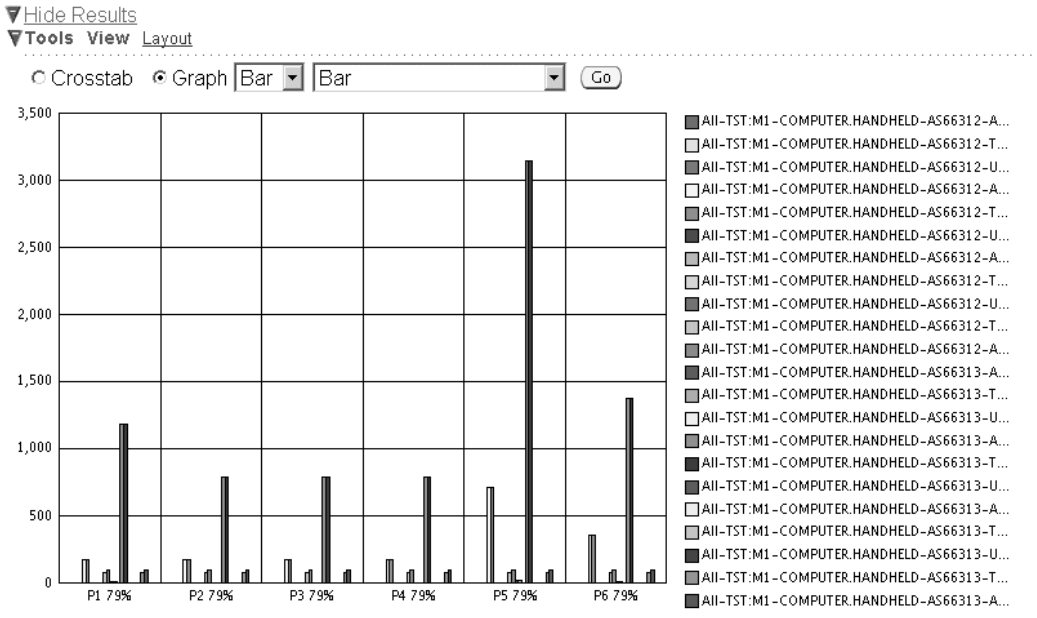
The inventory planning engine can suggest postponement for your plans so that the safety stocks are stored at lower levels of the supply chain BOM. You can navigate to the Postponement Analysis page from the Safety Stock Analysis page to analyze the postponement details for the same search criteria. To analyze the postponement details for the same search criteria specified in the Safety Stock Analysis page, select the inventory plans from the list and click Postponement.

Navigating to the Safety Stock Analysis page

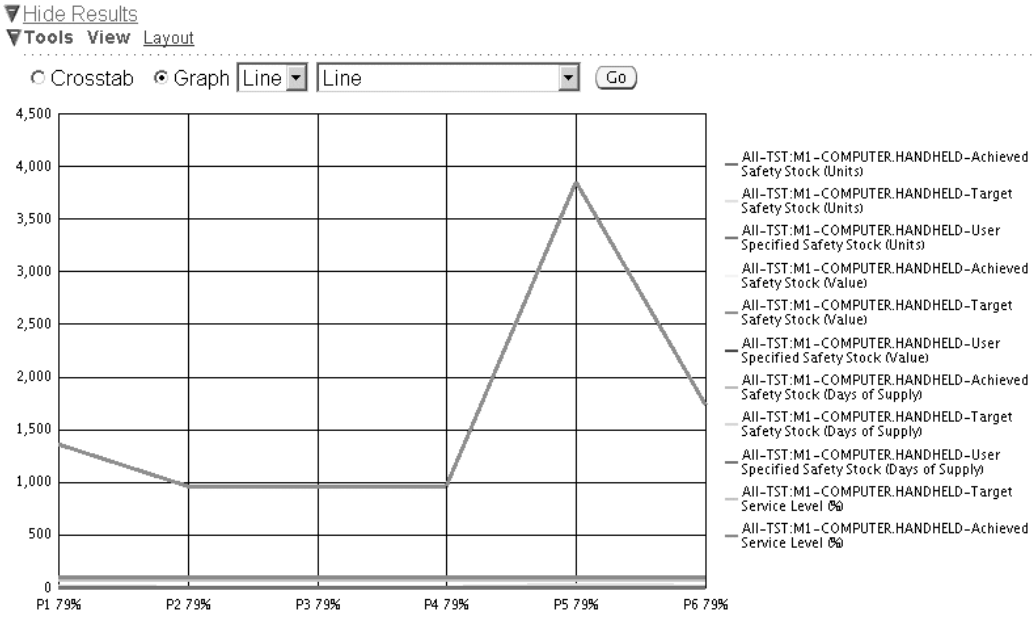
You can view time-phased safety stock and service level details of your inventory plans in both tabular and graphical formats in the Safety Stock Analysis page. You can specify the details that you want to be displayed in this page using the preference sets that you have created for the Safety Stock Analysis page. You can specify these details under Display Measures in the Preferences page of the Analysis Workbench. For more information, see the section on creating and editing preference sets in Analyzing Inventory Plans, page 6-2. The details displayed in the tabular and graphical formats are also based on your search criteria. You can further drill down using the View By feature.

The inventory planning engine displays the safety stock and service level details in bar graph format and in the line graph format. You can also choose the type of bar or line graph such as dual-Y, split dual-Y, and stack.

Safety stock analysis in the bar graph format

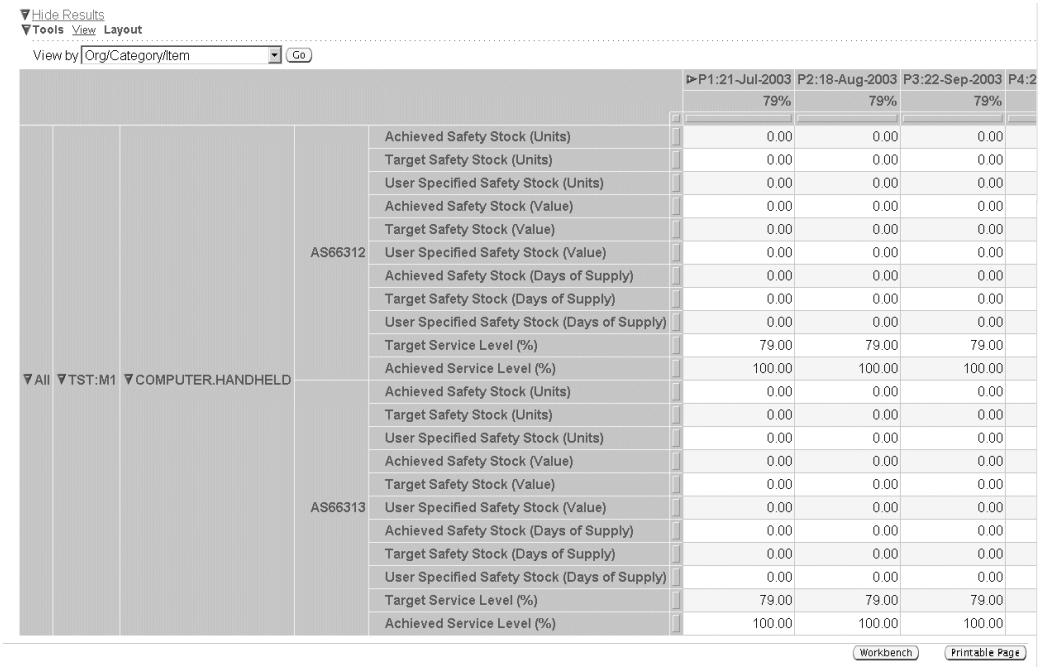


Safety stock analysis in the line graph format



You can use the Layout link and the View By field for drilling down in the tabular display. For example if you choose Org/Category/Item in the View By field, then you can drill down from the organization level to the category level and then to the item level as shown in the following figure.

Drilling down in the tabular display


Hide Results
Tools View Layout
View by Org/Category/Item Go

					P1:21-Jul-2003	P2:18-Aug-2003	P3:22-Sep-2003	P4:2
					79%	79%	79%	
All	TST:M1	COMPUTER.HANDHELD	AS66312	Achieved Safety Stock (Units)	0.00	0.00	0.00	
				Target Safety Stock (Units)	0.00	0.00	0.00	
				User Specified Safety Stock (Units)	0.00	0.00	0.00	
				Achieved Safety Stock (Value)	0.00	0.00	0.00	
				Target Safety Stock (Value)	0.00	0.00	0.00	
				User Specified Safety Stock (Value)	0.00	0.00	0.00	
				Achieved Safety Stock (Days of Supply)	0.00	0.00	0.00	
				Target Safety Stock (Days of Supply)	0.00	0.00	0.00	
				User Specified Safety Stock (Days of Supply)	0.00	0.00	0.00	
				Target Service Level (%)	79.00	79.00	79.00	
				Achieved Service Level (%)	100.00	100.00	100.00	
			AS66313	Achieved Safety Stock (Units)	0.00	0.00	0.00	
				Target Safety Stock (Units)	0.00	0.00	0.00	
				User Specified Safety Stock (Units)	0.00	0.00	0.00	
				Achieved Safety Stock (Value)	0.00	0.00	0.00	
				Target Safety Stock (Value)	0.00	0.00	0.00	
				User Specified Safety Stock (Value)	0.00	0.00	0.00	
				Achieved Safety Stock (Days of Supply)	0.00	0.00	0.00	
				Target Safety Stock (Days of Supply)	0.00	0.00	0.00	
				User Specified Safety Stock (Days of Supply)	0.00	0.00	0.00	
				Target Service Level (%)	79.00	79.00	79.00	
				Achieved Service Level (%)	100.00	100.00	100.00	

Workbench Printable Page

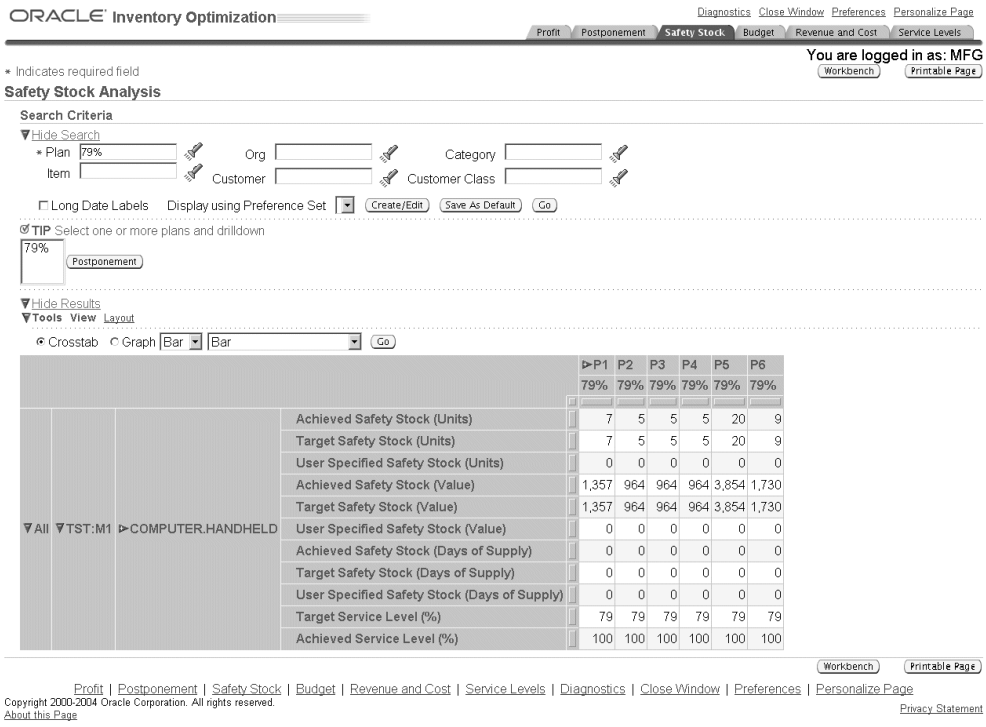
To analyze safety stocks:

Steps:

1. From the Analysis Workbench, click Safety Stock.

   The Safety Stock Analysis page appears.

Safety Stock Analysis page



2. Use the information in the following table to complete the fields in the Safety Stock Analysis page:

Field	Description
Plan	Search and select the inventory plans that you want to analyze. Click Save As Default to make the details selected in the Search Criteria as default in this page. The selected search criteria appear automatically every time you navigate to this analysis page.
Org	Optionally, search and select an organization to analyze its safety stocks.
Category	Optionally, search and select a category to analyze its safety stocks.

Field	Description
Item	Optionally, search and select an item to analyze its safety stocks.
Customer	Optionally, search and select a customer to analyze the customer's safety stocks.
Customer Class	Optionally, search and select a customer class to analyze its safety stocks.
Long Date Labels	Select this check box to the display the starting date of the periods in the tabular and graphical displays.
Display using Preference Set	Optionally, select a preference set from the list. For more information, see the section on creating and editing preference sets in Analyzing Inventory Plans, page 6-2. You can specify the safety stock and service level details that you want to view when you create the preference sets for Safety Stock Analysis page.
Crosstab	To view this option, click the View link. Select this option to view the safety stock details in the tabular format.
Graph	To view this option, click the View link. Select this option to view the safety stock details in the graphical format. You can also specify the type of graph.
View By	To view this field, click the Layout link. Select a view by from the list to drill down in the tabular format.

3. Click Go to analyze the safety stocks for the selected plans.

The inventory planning engine displays the safety stock details for the selected plans in the tabular or graphical format based on your selection. The following table describes the row headings of the tabular display in the Safety Stock Analysis page:

Row Heading	Description
Achieved Safety Stocks (Units)	The achievable safety stock level in number of units calculated by the inventory planning engine. The inventory planning engine calculates this value based on the plan inputs.

Row Heading	Description
Target Safety Stocks (Units)	The safety stock level in number of units recommended by the inventory planning engine to meet a specific service level. For more information on target safety stocks, see Safety Stock and Target Safety Stock, page 5-10.
User Specified Safety Stock (Units)	The safety stock level in number of units specified by you. The user specified safety stock level overrides the target safety stock level. You can specify this value in Safety Stock window in the Planner Workbench. For more information, see User-Specified Safety Stock, page 7-5.
Achieved Safety Stocks (Value)	The currency value of the achievable safety stock level. The inventory planning engine calculates this value by multiplying the number of unit items in the achievable safety stock and the standard cost of an item. The standard costs for items are specified in the Oracle Cost Management application. For more information, see *Oracle Cost Management User's Guide.*
Target Safety Stocks (Value)	The currency value of the target safety stock level. The inventory planning engine calculates this value by multiplying the number of unit items in the target safety stock and the standard cost of an item. The standard costs for items are specified in the Oracle Cost Management application. For more information, see *Oracle Cost Management User's Guide.*
User Specified Safety Stock (Value)	The currency value of the user specified safety stock level. The inventory planning engine calculates this value by multiplying the number of unit items in the user specified safety stock and the standard cost of an item. The standard costs for items are specified in the Oracle Cost Management application. For more information, see *Oracle Cost Management User's Guide.*
Achieved Safety Stocks (Days of Supply)	The number of days for which the achievable safety stock level can meet the demand. For information how the inventory planning engine calculates the days of supply, see Safety Stock Level Days of Supply, page 7-4.

Row Heading	Description
Target Safety Stocks (Days of Supply)	The number of days for which the target safety stock level can meet the demand. For information on how the inventory planning engine calculates the days of supply, see Safety Stock Level Days of Supply, page 7-4.
User Specified Safety Stock (Days of Supply)	The number of days for which the user specified safety stock level can meet the demand. For information how the inventory planning engine calculates the days of supply, see Safety Stock Level Days of Supply, page 7-4.
Achieved Service Level (%)	The achievable service level for a plan. The inventory planning engine calculates the attained service level based on the inputs for the plan.
Target Service Level (%)	The target service level that you have set. You can set the target service level at various levels such as plan, organization, and item. For more information on setting target service levels, see Setting Target Service Levels, page 4-2.

Analyzing Inventory Budgets

Inventory budget is the maximum amount to be spent on inventory during a planning period. You can analyze your inventory plans to ensure that the budget has been allocated in the best way possible to achieve the desired service levels and profits. You can also verify if adequate budgets have been allocated to specific organizations and item categories. Analysis of your inventory budgets also enables you to know the corresponding inventory value for a budget amount.

> **Note:** You can use the Planner Workbench to analyze budgets at the item level.

You can analyze the budgets and the corresponding inventory value and service level details of multiple plans using the Inventory Budget Analysis page. You can view these details in a time-phased format both on a monthly and weekly basis.

You can also widen the scope of your budget analysis by navigating to other related pages from the Inventory Budget Analysis page. This enables you to analyze the selected plans with the same search criteria specified in the Inventory Budget Analysis page. You can select the plans from the list and navigate to the following analysis pages from the Inventory Budget Analysis page:

- Revenue and Cost Breakdown
- Service Level Breakdown
- Service Level versus Profit Analysis
- Safety Stock Analysis

Navigating to other related analysis pages

You can view time-phased inventory budget details of your inventory plans in both tabular and graphical formats. You can specify the details that you want to be displayed using the preference sets that you have created for the Inventory Budget Analysis page. You can specify these details under Display Measures in the Preferences page of the Inventory Budget Analysis page. You can also choose the type of calendar, manufacturing or financial, in the preferences set. For more information, see the section on creating and editing preference sets in Analyzing Inventory Plans, page 6-2. The details displayed in the tabular and graphical formats are also based on your search criteria. You can further drill down using the View By feature.

The inventory planning engine displays the budget details in the bar graph format and in the line graph format. You can also choose the type of bar or line graph such as dual-Y, split dual-Y, and stack.

You can use the View By field for drilling down in the tabular display. For example if you choose Category/Org/Plan in the View By field, then you can drill down from the category level to the organization level and then to the plan level.

To analyze inventory budgets:

Steps:

1. From the Analysis Workbench, click Budget.

   The Inventory Budget Analysis page appears.

2. Use the information in the following table to complete the fields in the Inventory Budget Analysis page:

Field	Description
Plan	Search and select the inventory plans that you want to analyze. Click Save As Default to make the details selected in the Search Criteria as default in this page. The selected search criteria appear automatically every time you navigate to this analysis page.
Org	Optionally, search and select an organization to analyze its inventory budget.
Category	Optionally, search and select a category to analyze its inventory budget.
Item	Optionally, search and select an item to analyze its inventory budget.
ABC Class	Optionally, search and select an ABC Class to analyze its inventory budget.
Long Date Labels	Select this check box to the display the starting date of the periods in the tabular and graphical displays.
Display using Preference Set	Optionally, select a preference set from the list. For more information, see the section on creating and editing preference sets in Analyzing Inventory Plans, page 6-2. You can specify the budget details that you want to be displayed using the preference sets. You can also choose the type of calendar for the tabular and graphical displays using the preference sets.
Crosstab	To view this option, click the View link. Select this option to view the safety stock details in the tabular format.
Graph	To view this option, click the View link. Select this option to view the safety stock details in the graphical format. You can also specify the type of graph.
View By	To view this field, click the Layout link. Select a view by to drill down in the tabular format.

3. Click Go to analyze the inventory budgets for the selected plans.

The inventory planning engine displays the budget details for the selected plans in the tabular or graphical format based on your selection.

The following table describes the row headings of the tabular display:

Row Heading	Description
Budget	The allocated budget for a plan. The budget value can be specified in the Constraints tabbed region of Plan Options window or in the Specify Budget window. For more information on budgets, see Defining Budgets, page 4-18.
Inventory Value	The estimated value of inventory at the end of each planned bucket. The inventory planning engine calculates the inventory value for each item in the plan and aggregates the value at the category, organization, and plan level. The inventory planning engine calculates the inventory value for an item by multiplying its projected available balance and its standard cost. You can view the projected available balance for items in the Horizontal Plan in Oracle Inventory Optimization. For more information see, *Oracle Advanced Planning Implementation and User's Guide.* The standard costs for items are specified in the Oracle Cost Management application. For more information, see *Oracle Cost Management User's Guide.*
Difference	The difference between the budget amount and the inventory value amount. The inventory planning engine calculates this difference by subtracting the inventory value from the budget.
Cum. Diff.	The collective difference between the budget amount and the inventory value. The inventory planning engine calculates the cumulative difference by adding the difference amount from the previous columns in the tabular display.
Target Service Level (%)	The target service level that you have set for a plan. You can set the target service level for a plan in the Constraints tabbed region of the Plan Options window. For more information on setting target service levels, see Setting Target Service Levels, page 4-2.
Achieved Service Level (%)	The achievable service level for a plan. The inventory planning engine calculates the achieved service level based on the inputs for the plan.

Analyzing Revenue and Cost Breakdown

There is a cost involved in achieving the service levels and safety stocks that you specify in your inventory plans. To determine the most profitable inventory plan, you need to know the cost that can be incurred and the revenue that can be generated by implementing a plan. You can analyze the cost and revenue details of your inventory plans using the Revenue and Cost Breakdown page. This analysis helps you identify how the allocated budget will be spent and how much revenue can be generated by implementing an inventory plan. This analysis helps you identify the most profitable organizations, item categories, and items in your inventory plan. This analysis also enables root cause analysis. For example, if achieving a specific service level costs an excessive amount of money, you can drill down to the categories or items contributing to the high costs using the Revenue and Cost Breakdown page.

The Revenue and Cost Breakdown page enables you to view the revenue and cost breakdown in both the tabular and graphical formats. The details displayed in these formats are based on your search criteria. You can further drill down using the View By feature. The graphical format shows the planned cost against an organization, category, or item in the plan.

You can also widen the scope of your analysis by navigating to other related pages from the Revenue and Cost Breakdown page. This enables you to analyze the selected plans with the same search criteria specified in the Inventory Budget Analysis page. You can select the plans from the list and navigate to the following analysis pages from the Revenue and Cost Breakdown page:

- Inventory Budget Analysis
- Safety Stock Analysis

Navigating to other related analysis pages

You can also navigate to the Planner Workbench from the Revenue and Cost Breakdown page by clicking Workbench to view supply and demand information along with sourcing and BOM information.

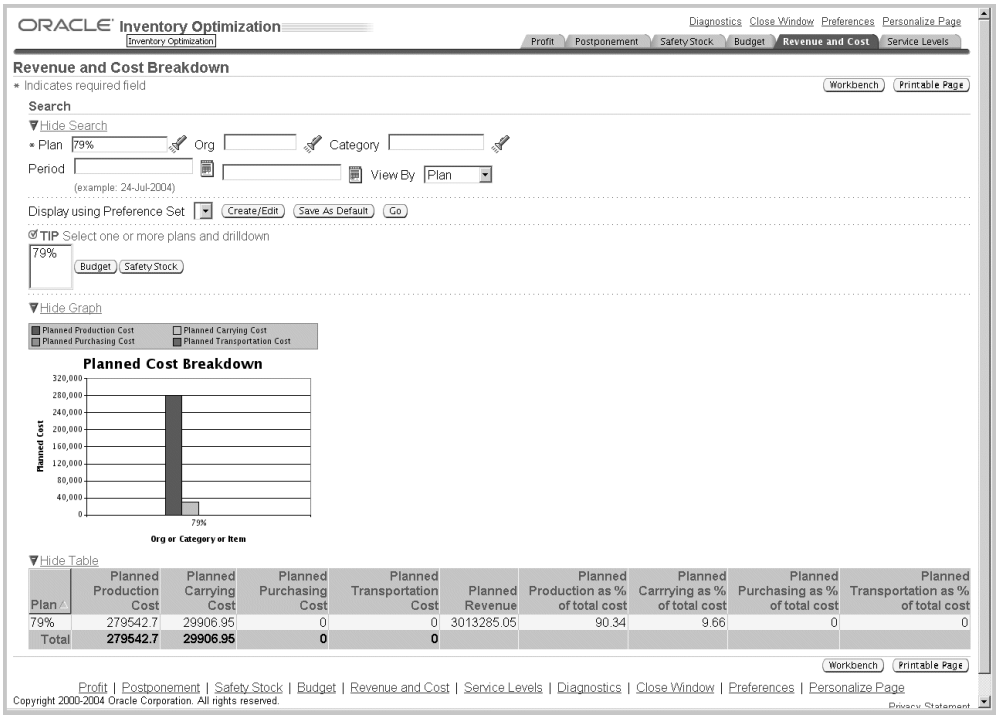
To analyze revenue and cost breakdown

Steps:

1. From the Analysis Workbench, click Revenue and Cost.

   The Revenue and Cost Breakdown page appears.

Revenue and Cost Breakdown page



2. Use the information in the following table to complete the fields in the Revenue and Cost Breakdown page.

Field	Description
Plan	Search and select the inventory plans that you want to analyze. Click Save As Default to make the details selected in the Search Criteria as default in this page. The selected search criteria appear automatically every time you navigate to this analysis page.
Org	Optionally, search and select an organization to analyze its revenue and cost breakdown.
Category	Optionally, search and select a category to analyze its revenue and cost breakdown.

Field	Description
Period	Optionally, specify the period for which you want to analyze the revenue and cost breakdown. You can select the start and end dates from the date editor.
View By	Select a view by to drill down. You can view by plan, category, item, period, or week. You can view month-wise revenue and cost breakdown detail for either the manufacturing or financial calendar by selecting period from the list. You can view week-wise details only for the manufacturing calendar. You can select the type of calendar in the preference set created for Revenue and Cost Breakdown page. For more information, see the section on creating and editing preference sets in Analyzing , page 6-2Inventory Plans.
Display using Preference Set	Optionally, select a preference set from the list. For more information, see the section on creating and editing preference sets in Analyzing Inventory Plans, page 6-2.

3. Click Go to analyze the selected inventory plans.

The inventory planning engine displays the revenue and cost breakdown details for the selected plans.

The following table describes the column headings of the tabular display in Revenue and Cost Breakdown page:

Column Heading	Description
Plan	The name of the plan that you have selected for analysis.
Category	The categories in the selected plans whose revenue and cost breakdown details are displayed. This column appears if you are viewing by category.
Item	The items in the selected plans whose revenue and cost breakdown details are displayed. This column appears if you are viewing by item.

Column Heading	Description
Time	The bucket for which the revenue and cost breakdown details are displayed. This column appears if you are viewing by period or week.
Planned Production Cost	The estimated cost of producing the planned items. The inventory planning engine calculates the production cost for each item in the plan and aggregates the cost at the plan level. The inventory planning engine calculates the planned production cost for an item by multiplying the resource unit cost and the required hour. The resource unit cost and required hour for items are specified in Oracle Bills of Material. For more information, see the *Oracle Bills of Material User's Guide.*
Planned Carrying Cost	The estimated cost of stocking the planned items. The inventory planning engine calculates the carrying cost for each item in the plan and aggregates the cost at the plan level. The inventory planning engine calculates the carrying cost based on the carrying cost percentage. Carrying cost percentage can be set up at the item level using Oracle Inventory or at the profile option level. The carrying cost percentage set up at the item level takes precedence over the carrying cost percentage set up at the profile option level. For information on setting up carrying cost percentage at the item level, see *Oracle Inventory User's Guide.*

Column Heading	Description
Planned Purchasing Cost	The estimated purchasing cost for the planned items. The inventory planning engine calculates the purchasing cost for each item in the plan and aggregates the cost at the plan level. The inventory planning engine calculates the purchasing cost for an item based on its standard cost. The standard costs for items are specified in blanket purchase order agreement. These purchase orders are created in the Oracle Purchasing application. For more information, see *Oracle Purchasing User's Guide.* The standard costs for items can also be specified in the Oracle Cost Management application. For more information, see *Oracle Cost Management User's Guide.* The standard costs specified in Oracle Purchasing takes precedence over the standard costs specified in Oracle Cost Management.

Column Heading	Description
Planned Transportation Cost	The estimated cost for transporting the planned items from an organization to another. The inventory planning engine calculates the transportation cost for each item in the plan and aggregates the cost at the plan level. The inventory planning engine calculates the transportation cost for an item by multiplying the number of unit items supplied, unit weight or unit volume, and transportation cost per unit weight or unit volume. The inventory planning engine calculates the number of units supplied based on the item's demand schedule. It takes the organization name from which the item is sourced and the organization name to which the item is supplied from the item's sourcing rule. It also takes the shipment method from the sourcing rule. The inventory planning engine takes the unit weight or unit volume for the item and the cost of transporting an unit weight or unit volume of the item between the two organizations by the specified shipping method from Oracle Inventory. Unit weight or unit volume for an item is specified in the Physical Attributes tabbed region of Master Items window or Organization Items window of Oracle Inventory. The cost of transporting a unit weight or unit volume between two organization using a specific shipping method is specified in the Transit window of Oracle Inventory. For information on demand schedule, see the section on demand schedules in The Organizations Tabbed Region, page 3-9. For information on sourcing rules, see *Oracle Advanced Planning Implementation and User's Guide.* For information on transportation cost per unit weight or unit volume of an item, see *Oracle Inventory User's Guide.*

Column Heading	Description
Planned Revenue	The estimated gross income for the plan from the sales of items that have an independent demand. The inventory planning engine calculates the revenue for each planned item that has an independent demand and aggregates the revenue at the plan level. The inventory planning engine calculates the revenue for an item by multiplying its selling price and the number of unit items supplied. The selling price for an item is specified in the List Lines tabbed region in the Price Lists window of Oracle Order Management. For more information, see *Oracle Order Management User's Guide.* The inventory planning engine calculates the number of units supplied based on the item's demand schedule. The demand schedule for an item is defined in the Organization tabbed region of the Plan Options window of Oracle Optimization. For information on demand schedules, see the section on demand schedules in The Organizations , page 3-9 Tabbed Region.
Planned Production as % of total cost	The percentage of the production cost in the total cost. The inventory planning engine calculates this value by dividing the planned production cost by the total cost and then multiplying the result by 100. The total cost is the sum of the planned production cost, planned carrying cost, planned purchasing cost, and planned transportation cost.
Planned Carrying as % of total cost	The percentage of the carrying cost in the total cost. The inventory planning engine calculates this value by dividing the planned carrying cost by the total cost and then multiplying the result by 100. The total cost is the sum of the planned production cost, planned carrying cost, planned purchasing cost, and planned transportation cost.
Planned Purchasing as % of total cost	The percentage of the purchasing cost in the total cost. The inventory planning engine calculates this value by dividing the planned purchasing cost by the total cost and then multiplying the result by 100. The total cost is the sum of the planned production cost, planned carrying cost, planned purchasing cost, and planned transportation cost.

Column Heading	Description
Planned Transportation as % of total cost	The percentage of the transportation cost in the total cost. The inventory planning engine calculates this value by dividing the planned transportation cost by the total cost and then multiplying the result by 100. The total cost is the sum of the planned production cost, planned carrying cost, planned purchasing cost, and planned transportation cost.

Analyzing Service Level Breakdown

Service level is the percentage of meeting your customers' requirements through your finished-goods inventory. Inventory Optimization enables you to specify service levels at various levels such as plan, demand class, organization, and item. The inventory planning engine calculates the achievable service levels based on the plan inputs.

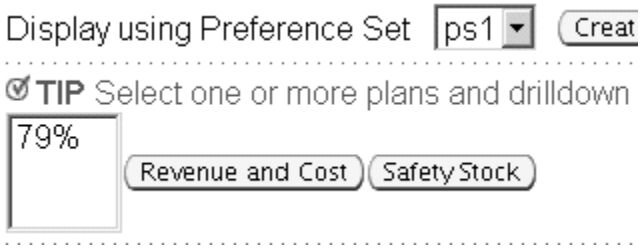
You can analyze the service level breakdown of your inventory plans using the Service Level Breakdown page. This analysis helps you view the achievable service levels at the various levels for an inventory plan. This enables you to view the achievable service levels for your most profitable organization, demand class, item, and item categories. This analysis also enables root cause analysis. For example, if there is a service level violation, you can drill down to the items for which the achievable service level is lower than the targeted service level. Further you can navigate to the Safety Stock Analysis page to find out if the user-specified safety stocks or the calculated safety stock values are causing service level violation.

The Service Level Breakdown page enables you to view the service level breakdown details in both the tabular and graphical formats. The details displayed in these formats are based on your search criteria. You can further drill down using the View By feature. The graphical format shows the planned service level against an item, category, or organization.

You can also widen the scope of your analysis by navigating to other related pages from the Service Level Breakdown page. This enables you to analyze the selected plans with the same search criteria specified in the Service Level Breakdown page. You can select the plans from the list and navigate to the following analysis pages from the Service Level Breakdown page:

- Revenue and Cost Breakdown
- Safety Stock Analysis

Navigating to other related analysis pages



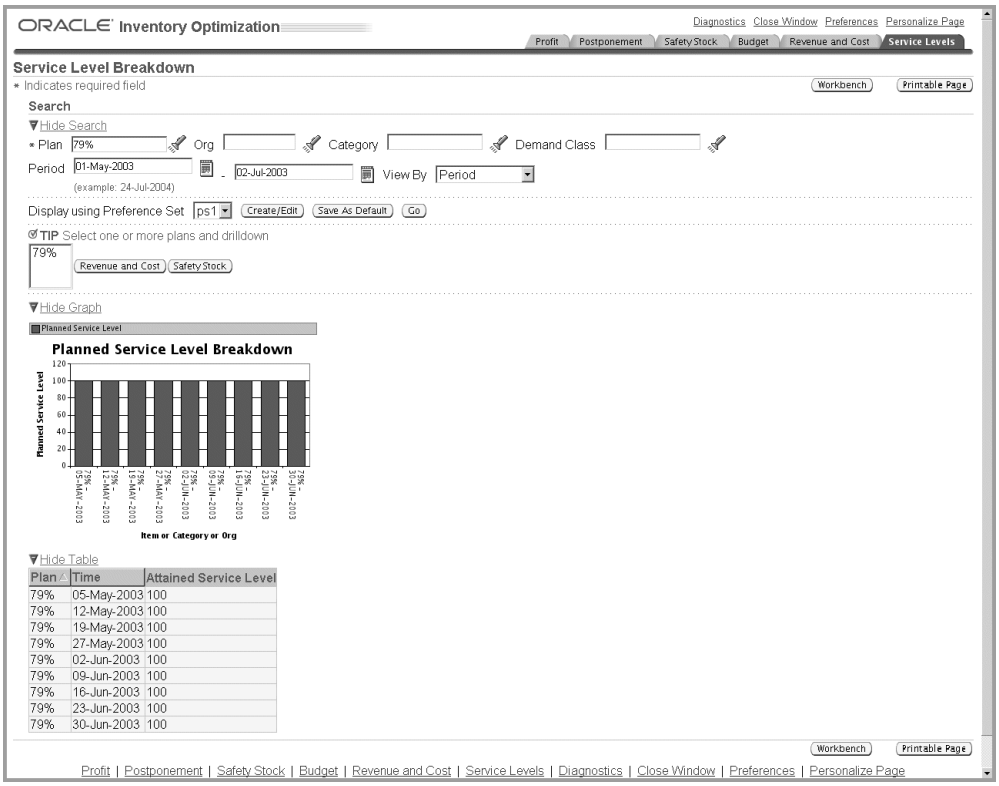
To analyze service level breakdown

Steps:

1. From the Analysis Workbench, click Service Levels.

   The Service Level Breakdown page appears.

Service Level Breakdown page



2. Use the information in the following table to complete the fields in the Service Level Breakdown page.

Field	Description
Plan	Search and select the inventory plans that you want to analyze. Click Save As Default to make the details selected in the Search Criteria as default in this page. The selected search criteria appear automatically every time you navigate to this analysis page.
Org	Optionally, search and select an organization to analyze its service level breakdown.
Category	Optionally, search and select a category to analyze its service level breakdown.

Field	Description
Demand Class	Optionally, search and select a demand class to analyze its service level breakdown.
Period	Optionally, specify the period for which you want to analyze the service level breakdown. You can select the start and end dates from the date editor.
View By	Select a view by to drill down. You can view by plan, category, item, period, week, or demand class.
Display using Preference Set	Optionally, select a preference set from the list. For more information, see the section on creating and editing preference sets in Analyzing Inventory Plans, page 6-2.

3. Click Go to analyze the selected inventory plans.

   The inventory planning engine displays the service level breakdown details for the selected plans.

   The following table describes the column headings of the tabular display in Service Level Breakdown page:

Column Heading	Description
Plan	The name of the plan that you have selected for analysis.
Category	The categories in the selected plans whose service level details are displayed. This column appears if you are viewing by category.
Item	The items in the selected plans whose service level details are displayed. This column appears if you are viewing by item.
Time	The bucket for which the service level details are displayed. This column appears if you are viewing by period or week.
Demand Class	The demand class in the selected plans whose service level details are displayed. This column appears if you are viewing by demand class.

Column Heading	Description
Attained Service Level	The achievable service level for a plan. The inventory planning engine calculates the attained service level based on the inputs for the plan.

7

Managing Inventory and Safety Stock

This chapter documents procedures for planning safety stock inventory.

This chapter covers the following topics:

- Planning Safety Stock for Components and Co-products
- Defining and Generating Safety Stock Levels
- Safety Stock Inflation
- Safety Stock Smoothing
- Safety Stock Level Days of Supply
- User-Specified Safety Stock

Planning Safety Stock for Components and Co-products

You can get multiple assemblies when processing a component. Oracle Inventory Optimization considers the combined variability of such end items to calculate safety stock quantities for common components. This reduces the required safety stock levels.

You can specify the time-phased split for product ratios (co-products).

Oracle Inventory Optimization also calculates safety stock quantities based on statistically calculated demand variability for all nodes across the supply chain bill. Based on the independent demand probability distributions across the bill of distribution, the inventory planning engine generates appropriate levels of safety stock at different levels of supply chain bill.

Defining and Generating Safety Stock Levels

The following steps indicate the process of defining and generating safety stock levels for common components of independent end items along with their components across the supply chain bill:

- Define the bills of material in the Bills of Material form.
- In the case of multiple components, define the bill of materials for the item and the multiple components.
- Define the co-product and the split percentage in the Define Co-products form.
- Define the alternate split percentages for different time periods in the Define Co-product form.
- Collect the co-products definition to Oracle Advanced Supply Chain Planning.
- Plan safety stock levels for all eligible items.

Safety Stock Inflation

You might see varying safety stock requirements across the planning horizon owing to the following reasons:

- Compressed lead time: The demands in the beginning of the horizon have less lead time as compared to demands later in the horizon. As a result, you may see differing safety stocks across the horizon.
- Existing supply: If you have enough existing supply, you do not need safety stocks to cover uncertainty. As you start to consume existing supply, you need safety stocks later in the horizon. As a result, you may view varying safety stocks across the horizon.

Safety Stock Smoothing

Oracle Inventory Optimization calculates time phased safety stock values across the planning horizon. However, there may be frequent changes to the safety stock if the demand variability is high. You may prefer estimating safety stock that is stable across the planning horizon. Oracle Inventory Optimization enables you to hold a constant safety stock for a specified time in the planning horizon. If you do not want the inventory planning engine to recommend any change in the safety stock for a specific duration, you can indicate the number of days. Oracle Inventory Optimization ignores the negative on-hand when it calculates the safety stock. The inventory planning engine considers the negative on-hand as an independent demand due in the first bucket.

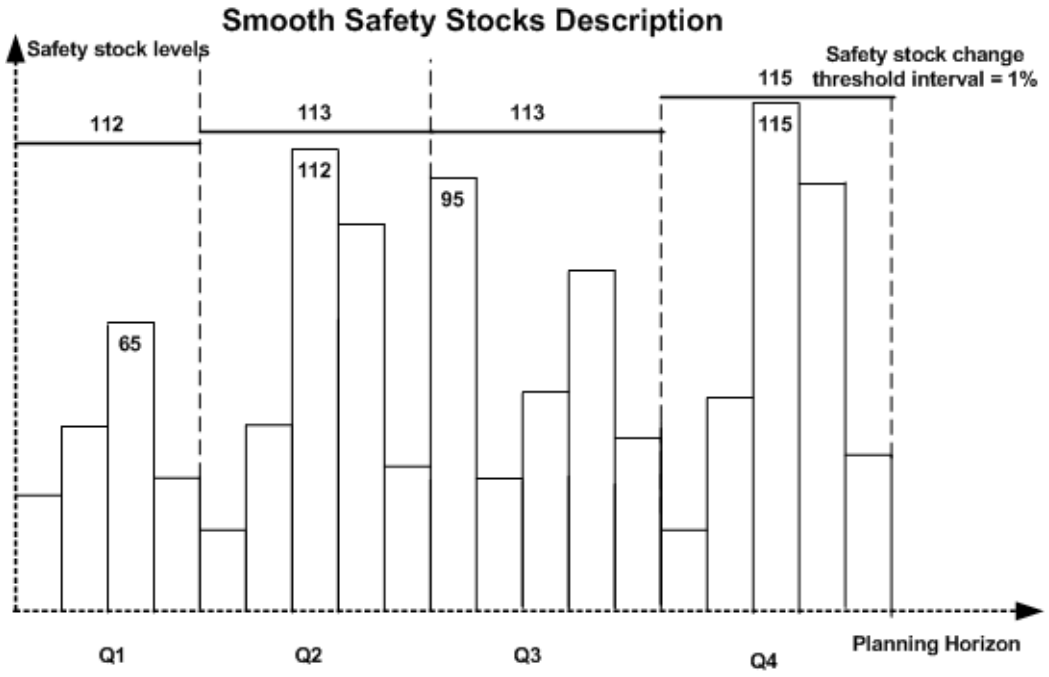
You can use the following plan level options in the Plan Options window to control the stability of the safety stock:

- Safety stock change interval (days)
- Safety stock change threshold interval (%)

For more information on these plan level options, see Plan Options Overview, page 3-2.

Consider an example. In the following illustration, the vertical axis represents the safety stock level while the horizontal axis represents the planning horizon. In this example, planning horizon is split into 4 quarters. The safety stock change threshold interval is set to 1%.

Safety Stock Change Threshold



The highest level of safety stock is indicated in the last change interval (Q4) at 115. The safety stock requirement in the adjacent interval is 95, which is lower than the requirement in Q4. This indicates that the safety stock quantity for Q3 needs to be reduced. As the safety stock change threshold interval is set to 1%, the inventory planning engine changes the safety stock levels at 113. The inventory planning engine reduces the stock from Q4 by a maximum of 1%. This amounts to 1.5, which leads to a reduction of 2 units. The inventory planning engine compares the safety stock requirements between the next adjacent quarters subsequently. In Q2, the safety stock required is 112. As 112 is within 1% of 113, the inventory planning engine does not change the safety stock levels. In Q1, the inventory planning engine recommends a reduction in the safety stock level by 1% of 112 (Q2).

Follow the steps provided to smoothen the safety stock:

- Review your inventory policy to determine the change interval.
- Divide the planning horizon into several equal sizes of change interval.
- Set the safety stock change interval in the Plan Options form.

- Determine the safety stock change threshold and specify the value in the Plan Options form.
- Run the plan and analyze the results.

Safety Stock Level Days of Supply

You can calculate your safety stock in terms of either absolute quantity or the days of supply. The days of supply refers to the number of days of demand that your safety stock can service. If you indicate the safety stock in terms of days of supply, you can compare inventory strategies across items (including groups of items) and plan accordingly.

The days of supply may include the inventory held to satisfy certain and uncertain demands. To calculate the days of supply, the inventory planning engine projects the safety stock value to the mean demand anticipated in future.

The following table displays buckets, the mean demand, and safety stock. Based on these values, the inventory optimization calculates the days of supply.

Bucket	Mean Demand	Safety Stock	Days of Supply
1	50	85	1.58
2	60	85	1.33
3	75	90	1.18
4	80	90	1.1
5	100	95	0.95

For example, on day 3, safety stock of 90 units is available. However, the mean demand is 75. The safety stock that remains after satisfying the mean demand is 15. This is used up against the mean demand on day 4. However, the mean demand on day 4 is 80. The inventory planning engine calculates the days of supply on day 3 as 1 + 15/80. This equals 1.18.

If you plan in weekly or monthly buckets, the inventory planning engine calculates the days of supply in terms of days.

You can view the days of supply for safety stock, target safety stock, and user-specified safety stock in the horizontal plan. When you view your horizontal material plan, you can review the days of supply. You can change the safety stock value in the Material horizontal plan. However, you cannot change the days of supply in the horizontal plan. You can increase the safety stock quantity to avoid stockouts. You can use the updated

safety stock values in the supply plan to create supplies. For more information on the horizontal plan, see Overview of Viewing Output, page 5-1.

User-Specified Safety Stock

Several factors may influence your decision related to the level of safety stock that you need to maintain. These include:

- Contractual obligations
- Vendor-managed inventory
- Policies regarding service levels
- Subjective experience

The inventory planning engine recommends optimal levels of safety stock. However, you can override the recommendations that the inventory planning engine generates with your specific inputs.

You can use Oracle Inventory Optimization to specify a definite quantity for the safety stock in a time phased manner. Alternatively, you can specify the safety stock quantity in terms of days of supply. If you are uncertain about the definite safety stock quantity, you can specify the levels of inventory you want to maintain. The inventory planning engine validates the projected available balance against the inventory level that you specify.

If you enforce the level of safety stock based on your inputs, the inventory planning engine may need to violate constraints and other factors such as:

- Service levels
- Inventory postponement
- Budget and capacity

For example, you may have specified a budget constraint. If you enforce a certain level of safety stock that exceeds the budget limit, the inventory planning engine violates the budget constraint. Based on your specific safety stock requirements, you can estimate your budget and capacity requirements. In addition, you can calculate the planned service levels.

If you enforce user-specified safety stock, the inventory planning engine honors the user input and recommends the user-specified value rather than determining the optimal safety stock levels. To know the optimal safety stock levels, you can run a separate plan without enforcing user specified safety stock.

The user defined safety stock may violate the postponement suggestions that Oracle Inventory Optimization generates. Optimal inventory to be carried may be higher or lower than what the user would like to carry in some circumstances. In such a case,

safety stock values with and without postponement may not follow any logic as they may be affected by the user-specified safety stocks. Any associated costs will also be skewed based on safety stock numbers. In addition, the inventory optimization planning engine can ignore the safety stock smoothing, and the minimum and maximum levels of inventory if you enforce the user-defined safety stock.

You can set the postponement factor profile option (MSR: Postponement Factor) to control the safety stock levels in a supply chain. The value you set for postponement factor might conflict with the user-specified safety stock. For example, you may input a safety stock value for an item four levels down in the supply chain and set postponement factor to be two. This will be considered an invalid setup. If you define both, the postponement factor and the user-defined safety stock, the inventory planning engine ignores the user-defined safety stock and enforces the postponement factor.

Using User-Specified Safety Stock

Follow these steps to specify the safety stock level you want the inventory planning engine to use:

- Determine the items for which you need to specify the safety stock.

  You can run collections to collect the safety stock from the source instance. In Collections Workbench, you can view and change the safety stock in the Safety Stock window (drill down from the Items window).

  After running a plan, review the safety stock for the items in the Planner Workbench. You can view safety stock in the Safety Stock window (drill down from the Items window) or in the Horizontal Plan window.

- Override the existing safety stock value with the value you want in the Planner Workbench Horizontal Plan window. You can enter either an absolute quantity for the safety stock or the days of supply. If you enter the user-specified safety stock in terms of days of supply, the inventory planning engine converts the days of supply to a quantity based on the average demand quantity. When you enforce the user-specified safety stock, the inventory planning engine enforces the quantity calculated based on the average demand quantity. The enforced safety stock quantity may be different from the safety stock expressed in terms of the days of supply. Days of supply can be input to or output from the inventory planning engine. It is an input when you, as a user, specify the number of days you want the inventory to last. It is an output when the inventory planning engine expresses the optimal safety stock value in terms of days of supply. The input quantity specified as part of user specified safety stocks may not match the days of supply specified by the engine as the days of supply calculation is based on different statement of demands.

- You can view the user-specified safety stock in the Planner Workbench Horizontal Plan. User-specified safety stocks are expressed in terms of units, days of supply, and value. If you specified the minimum or maximum inventory levels, the

horizontal plan displays the values for the same.

For more information on viewing safety stock levels, see Safety Stock and Target Safety Stock, page 5-10.

- Alternatively, you can set up the minimum or maximum inventory levels in the Inventory Levels window. If you provide an absolute quantity and the inventory level, the inventory planning engine considers the absolute quantity.

- Enforce the target safety stock by selecting the Enforce Target Safety Stocks check box in the Plan Options window.

- You can use the Analysis Workbench to analyze the impact of user-specified safety stock values on the existing budget, capacity, and inventory postponement. For more information on the analysis views, see Analyzing Inventory Plans, page 6-2.

8

Oracle Inventory Optimization Policy Planning

Introduction to Policy Planning

Policy based planning allows you to plan spare items based on policy setups.

Policy Parameters are calculated in an IO Plan based on user inputs. The IO plan is then referenced in Oracle Service Parts Planning Plan Options as a Demand Schedule. These policy parameters could be overridden either automatically by SPP or manually.

Policy based planning is based on policy setups. The general overall flow of information is as follows:

- Specify policy based planning attributes within a Policy Parameters Set at the Category level or Item Attribute Simulation Set at the item-org level.
- Launch the IO Policy Plan to calculate Policy parameters.
- View the calculated Policy Parameters within a new screen in IO called Material Plan – ADF.

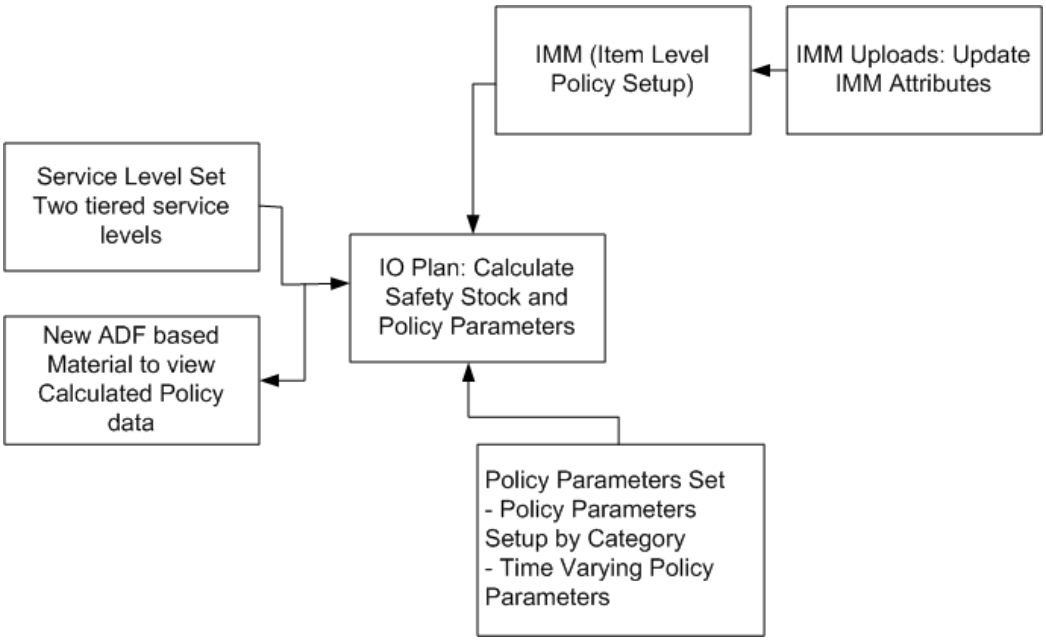
Within IO, a Policy Parameters Set helps you specify Policy Parameters by Category. Other enhancements to IO include the ability to consider two tiered service levels and an ability calculate safety stock using a loss function based approach.

The existing Items Classification functionality is utilized throughout the Policy Planning solution to set up Category specific behavior. This functionality has been enhanced to enable the creation of Category Sets and Categories within Planning, without requiring them to be created in Inventory.

You can also specify Policy Parameters externally at the item level and uploaded to IMM using the OA template. These parameters override the Category level parameters, however, they are not time varying.

Functional IO Components

The following map illustrates the functional components of the IO portion of Policy Planning..



For information on Policy Parameters for SPP, refer to the *Oracle Service Parts Planning Implementation and User's Guide.*

For information on Policy Parameters for APCC, refer to the *Oracle Advanced Planning Command Center User's Guide*.

Publishing Parts Classification

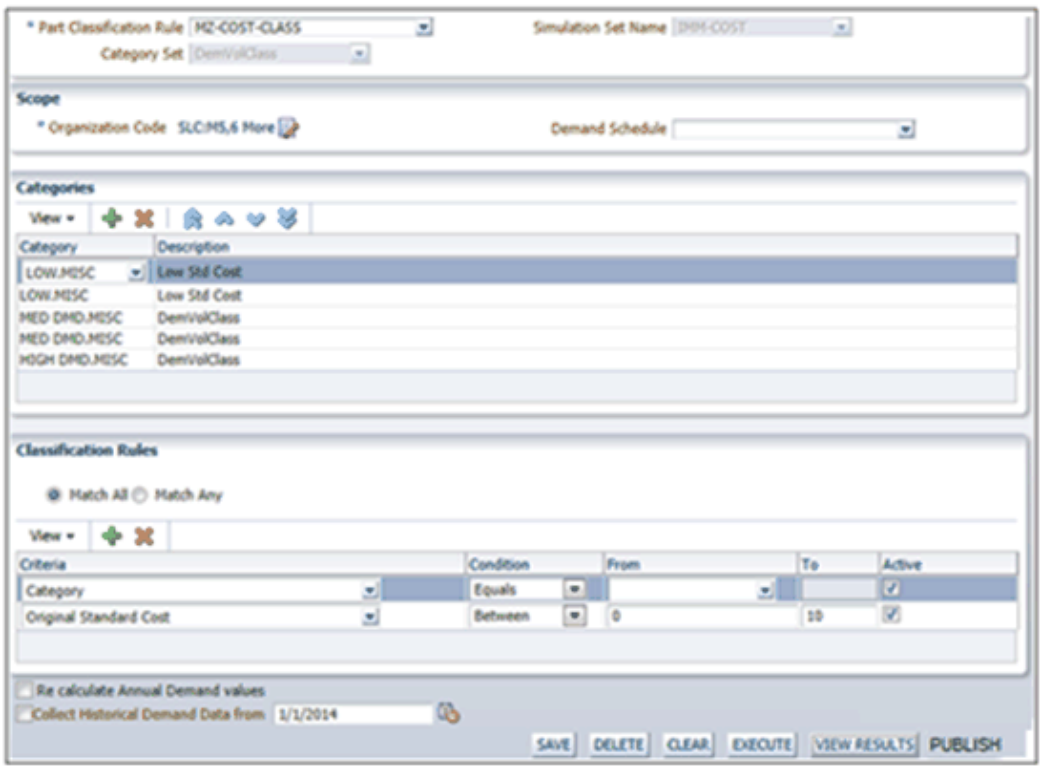
As Items are classified into categories on the destination using the Parts Classification functionality, the categorization must be used throughout the Policy Planning solution.

After you have completed the Parts Classification to your satisfaction, you publish the classification.

To publish your classification, click PUBLISH at the bottom of the Parts Classification Rule screen. The action of publishing invokes a concurrent request that copies the classification data from the simulation set in which it resides into an area where Planning engines can read the classification, and where subsequent collections will not override it.

In the Parts Classification screen, the Categories that you can select depend on the Category Set that you choose. In the event that you choose a Category Set that was specified on the source, then only those Categories that correspond to the Category set

that was specified in the source can be selected. If you choose a Category Set that was created on the destination, then only those categories created on the destination can be selected. Collected categories are not visible.



Different aspects in the Policy Planning solution now use the published categorization by referring to the Policy Parameter Set that holds the classification, with the following stipulations:

- When specifying Policy Parameters through the Policy Parameters Set, you must choose the Category Set within the Policy Parameters Set that holds the correct Parts Classification.
- Profile options that govern how IO and SPP plans display Categories must be updated to the same Category Set.
- A single Categorization only is used to drive Category-Item association, across regular and policy planning scenarios in IO and SPP. Scenarios in which a Policy Plan in either IO or SPP refers to one Category Set for while, and then a regular IO/SPP plan refers to another Category Set is not supported.

Creating New Categories and Category Sets

The Policy Planning feature allows you to create a new Category Set and new Categories directly on the destination. When you select the Category Set through the

drop-down in the Part Classification Rule screen, you can see all the Category Sets that are available. A link, New, enables you to specify the name of a new Category Set. You are guided to a window in which you can create a new Category or Category Set.

In the Parts Classification screen, the Categories that are enabled depend on the Category Set that is chosen. If you choose a Category Set that was specified on the source, then only the Categories corresponding to that Category Set can be selected. If you create a Category Set on the destination, then only those categories created on the destination are accessible. Collected categories are visible.

To create a new Category set, click New from the drop-down menu.

Different aspects in the Policy Planning solution use the published Categorization, by referring to the Policy Parameter Set that holds the classification.

> **Note:** Be sure to choose the Category Set within the Policy Parameters Set that holds the correct Parts Classification

Setting Up Policy Parameters

IO introduces a Policy Parameters Set that allows you to specify Category Specific Policy Parameters, in which you can set out time varying policy parameters. In the time varying parameters, you can specify a time varying value of Target Service Level %. This value influences the Safety Stock calculation and therefore, the Min.

> **Note:** You can specify either the Target Service Level % or the Min and Max, but not both

You can choose whether you want you plan to be a Policy Planning or a regular plan, but it can only be one at a time. If you choose Policy Planning, it references an existing a Policy Parameters Set.

Policy Planning calculates Inventory Parameters only at specific organizations. There are no forecast values propagated automatically to upstream organizations to calculate safety stock. Forecast values must be calculated independently to calculate safety stock.

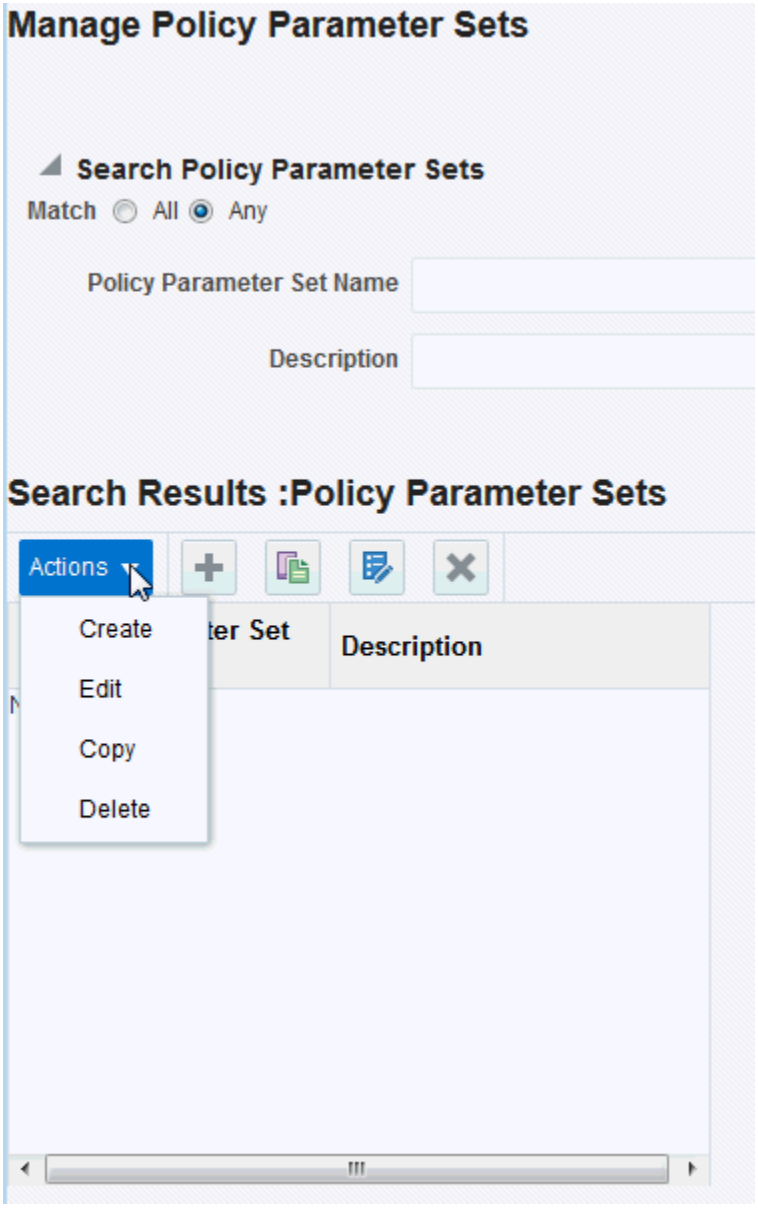
If you wish to specify policy values at the Item-Org lever, you must specify them externally and upload them to the IMM using the OA template.

Managing Policy Parameter Sets

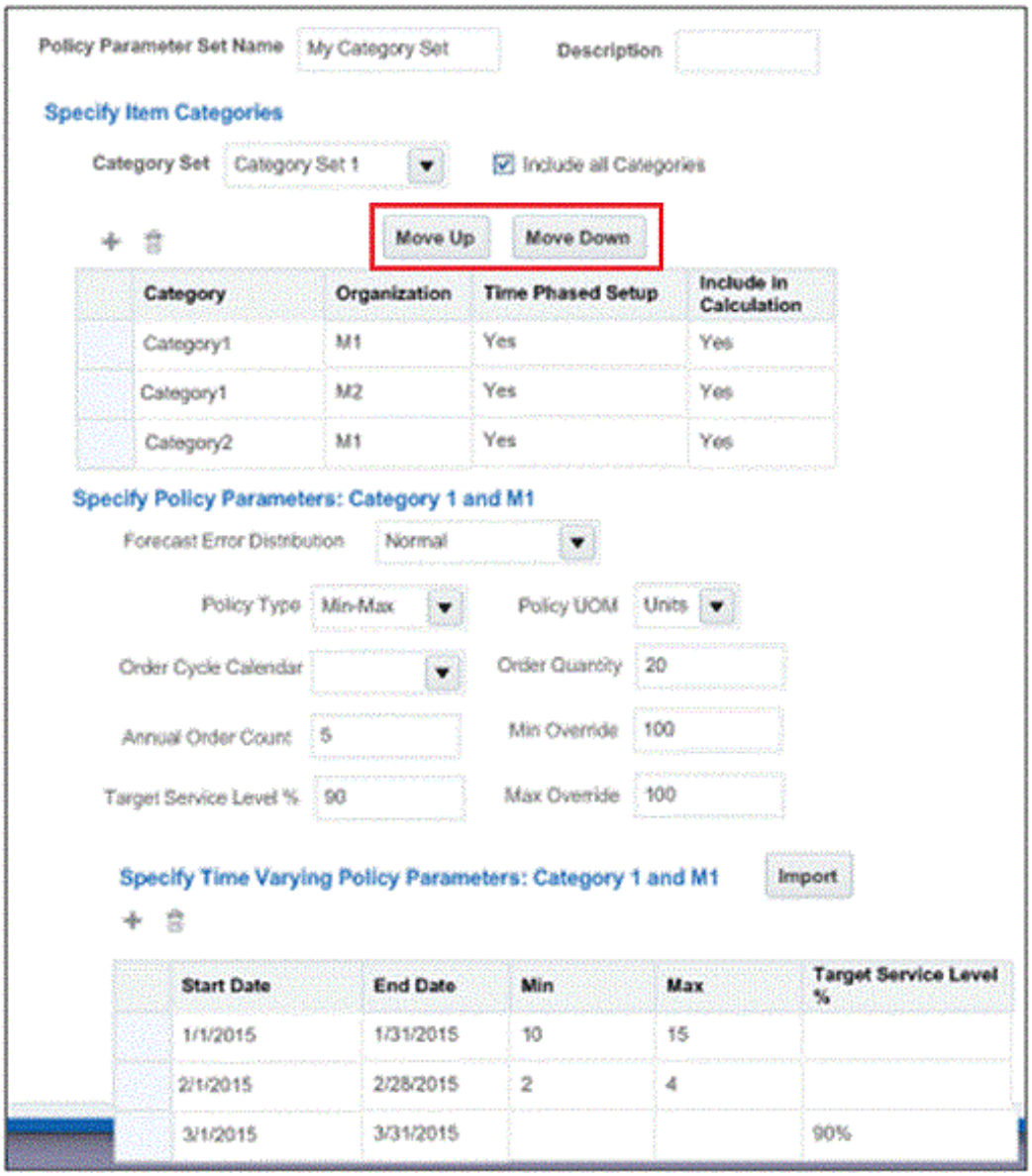
You manage Policy Parameters Sets in the IO workbench.

To manage Policy Parameters Set:

1. Log on to IO as Inventory Planner responsibility.
2. Expand Setup and then click Manage Policy Parameters sets.



The Manage Policy Parameters Sets screen comes up.



The sequence of Categories specified in the Manage Policy Parameters Sets screen is significant. If an item is assigned to two Categories, the first category that is listed is the one that provides the policy parameters. You can change the order of the Categories in the list to specify in which order they will be evaluated by using the Move Up and Move Down buttons.

If the Policy Parameters are enabled for Time Phased Setup, the section Specify Policy Date Ranges area of the screen becomes editable. The Policy Date Ranges can be specified per Category. You can then specify the values Min (Override), Max (Override) and Target Service Level % for each date range across time.

Note: You can specify the Policy Parameters at the Category AND

Organization.

Specifying Policy Details in the Policy Parameters Set

The detailed attributes of the Policy Parameters Set are:

Section	Values	Comments
Header	Policy Parameter Set Name	User specified
	Description	User specified
Specify Item Categories	Category Set	Category Set, which holds Items Classification Categories, required field
	Category	Drop-down menu to select the Categories associated with the above Category Set.
	Organization	Organization for which the Policy Parameters are applicable
	Time Phased Setup	Valid Values are: • Yes • No The default is No.
	Include in Calculations	Specifies whether or not the policy values for this Category must be recalculated. If it is not recalculated, the existing Policy Parameters must be retained in the IO Plan Output.
Per Selected Category Policy Attributes	N/A	N/A

	Forecast Error Distribution	This would be an LOV for the planner to specify the kind of distribution that IO should assume while calculating safety stock. If this is set to Item Level Specification, IO looks at the Intermittent Demand item-attribute in the IMM, as referenced in the IO Plan Option. If this is set to No, IO assumes a Normal distribution. If this is set to Yes, IO looks at the profile MSR: Variance to Mean Threshold for Use of Negative Binomial Distribution and based on that, assumes either a Poisson or Negative Binomial distribution
Per Selected Category / Policy Parameters	Policy Type	One of: • Min-Max • ROP-EOQ • ROP-OQ • FOC-Max
	Policy UOM	Either Units or Days"
	Annual Order Count	This is relevant and must be editable only for the policy = ROP-OQ. This is a specification that is used to derive the Order Quantity by dividing the total demand over the last year by this number

	Order Cycle Calendar	This is reference to a Calendar which determines when orders can be placed. This is only relevant and must be editable only for the "FOC-Max" Policy
	Fixed Order Quantity	Either used as EOQ for the Items where EOQ cannot be calculated, or as the Order Quantity for the ROP-OP policy if specified. Editable only for ROP-EOQ and ROP-OQ type of policies.
	Min Override Max Override	Manually specified overrides to Policy Parameters. Iin case these are specified, they are considered, and IO will not calculate any Min-Max values.
Per Selected Items Class/Time Phased Policy Overrides		Ability to specify time varying Min, Max and Target Levels by Category

Importing Time Varying Policy Parameter Values

You can import policy parameters defined in a .csv file. The .csv template enable the import of Time Phased Policy Planning Parameters into the IO Plan Options.

When you choose to import, you are directed to the Load Data Files screen, where you can import time Policy Parameter data into the IO Plan Options through a .csv.

You can specify the following information:

Policy Parameter Set	Category	Organization	Start Date	End Date	Min	Max	Target Service Level (%)
Set1	Category1	M1	1/1/2015	1/31/2015	100	200	70

Set1	Category1	M1	2/1/2015	2/28/2015	50	100	80
Set1	Category1	M1	3/1/2015	3/31/2015	200	300	90
Set1	Category1	M2	1/1/2015	1/31/2015	10	20	65
Set1	Category1	M2	2/1/2015	2/28/2015	5	15	55
Set1	Category1	M2	3/1/2015	3/31/2015	10	15	80

The Min and Max values specified are interpreted in the UOM format of the Policy. If the Policy UOM is Days, it is interpreted in Days. If the Policy UOM is Units, it is interpreted in Units.

> **Note:** You can specify either Target Service Level % OR Min., not both. This is because the Target Service Level % influences the Safety Stock calculation, which in turn, impacts the calculation of Min.

Loss Function Based Safety Stock Calculation Profile

A site level profile, MSC: Enable Loss Function Based Safety Stock Calculation, determines whether the safety stock calculation uses a loss function based approach or a regular approach.

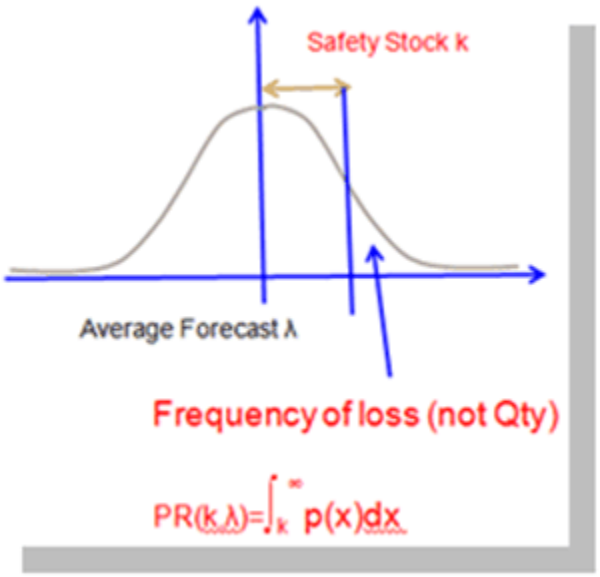
The Loss Function Based Calculation

There are two different approaches to calculating the safety stock in IO. Currently, IO supports only the Service Level approach. With the introduction of Policy Planning, it now also supports consideration of the loss function while calculating safety stock. Determining whether to use the service level approach or the quantity weighted approach is determined by the setting of the profile option MSC: Enable Loss Function Based Calculation

> **Note:** Loss Function based approach is only relevant for Policy Plans, not for regular IO.

Service Level Approach

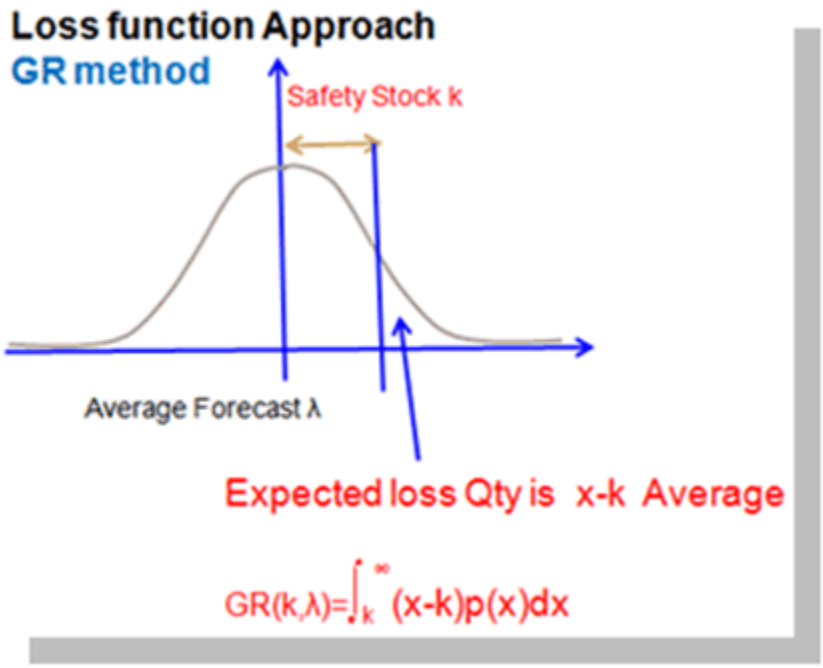
IO determines the safety stock required to meet a certain Service Level by calculating the frequency of loss. This calculation determines what the probability is of not meeting the demand with the calculated safety stock, as shown in the following diagram:



If there is a regular demand, this method then calculates the value of 'k' from the Normal Distribution tables, and uses the 'k' value to determine the safety stock.

New Calculation: Loss Function Approach

An alternate approach to the calculation of safety stock weighs the probability of not meeting the demand with a certain stock, with the quantity by which demand exceeds the stock, and uses that to determine the safety stock



Again, in case of regular demand, this method determines the value of 'k' for service level from the Loss Function tables, and then uses that value of 'k' to determine the safety stock. Similarly in the case of intermittent demand, the probability of not meeting the demand is weighed by the quantity by which demands exceed stock, and that can be used to determine the optimal safety stock. This method of weighing the probability with the quantity is referred to the as Loss Function approach

IMM Inputs to Policy Planning

IMM supports Policy Planning where the Policy Parameters are specified externally and loaded into the IMM. To accomplish this, IMM has added additional fields to support Policy Planning.

Attribute	Existing/New	Possible Values
Inventory Policy	New	• Min-Max • ROP-EOQ • ROP-OQ (Annual Order Count) • FOC-Max

Policy UOM	New	Units / Days
Min (units)	New	N/A
Max (units)	New	N/A
Min (days)	New	N/A
Max (days)	New	N/A
Safety Stock (units)	Existing	A single value of safety stock can be specified as input
Safety Stock (days)	New	A single value of safety stock can be specified as input
Annual Order Count	New	Indicates number of orders to be placed per year. Used in ROP-OQ policies
Fixed Order Quantity	Existing	Used as the Order Quantity or EOQ for ROP-OQ or ROP-EOQ policies. If specified, this must be respected
Order Cycle Calendar	New	Relevant only in FOC-Max policies
Average Daily Demand	New	Required for converting Quantity to Days in the various policies
Fixed Cost per order	New	Required for EOQ calculations
Annual Carrying Cost per Unit	New	Required for EOQ calculations
Target Service Level %	Existing	Used to determine the safety stock

Policy Parameters Calculated by IO

Policy Parameters are saved within the IO Plan as additional measures when the IO plan is complete. No policy parameters are saved to the IMM or to the Policy Parameters Set.

The IO Plan saves the Policy Parameters as either Item attributes within the Plan, or as measures at the Item-Org level as outlined in the following table:

Attribute	Existing/ New	Possible Values	Description
Inventory Policy	New Item Attribute	• Min-Max • ROP-EOQ • ROP-OQ (Annual Order Count) • FOC-Max	Saved as an Item Attribute within the Plan. (This is required to have APCC and other UI's read the Inventory Policy.)
Policy UOM	New Item Attribute	Units/Days	Saved as an Item Attribute
Min (units)	New Measure	As calculated by IO	New Measure: Time varying Min and Max values are saved by day.
Max (units)	New Measure	As calculated by IO	New Measure: Time varying Min and Max values are saved by day.
Min (days)	New Measure	As calculated by IO	New Measure: Time varying Min and Max values are saved by day.
Max (days)	New Measure	As calculated by IO	New Measure: Time varying Min and Max values are saved by day.

Target Service Level %	Existing Measure	This is either specified as Target Service Level 1% in the Service Level Set, or it is specified in the Policy Parameters Set (either a single or time varying value)	Target Service Level % specified through the Service Level set overrides the value specified value within the Policy Parameters Set. **Note:** In case the Min (Override) and Max (Override) is specified, the Safety Stock must be calculated from the Min value, and the Target Service Level % must hence be calculated/derived by SPP.
Safety Stock (units)	Existing Measure	Calculated Safety Stock value by IO	This is the output of the IO calculation, saved to the IO plan into the existing measure.
Safety Stock (days)	Existing Measure	Calculated Safety Stock value by IO	N/A
Annual Order Count	New Item Attribute	Indicates number of orders to be placed per year.	This is specified at the Category Level using the Policy Parameters Set.

Order Quantity	New	Calculated based on the Annual Order Count, or specified directly in the Policy Parameter Set, or specified in the IMM using the Fixed Order Quantity field.	IO must determine the appropriate Order Quantity applicable. For ROP-OQ, IO must use: • The Item Attribute in the IMM for Fixed Order Quantity if specified (highest priority) • Order Quantity if specified on the Policy Parameter Set (lower priority) • Order Quantity derived using the Annual Order Count specified on the Policy Parameter Set and using this value to derive the Annual Order Quantity using the Annual Shipment Count, determined by the Calculate Annual Demand concurrent program (lowest priority) For ROP-EOQ, IO must use: • The Item Attribute in the IMM for "Fixed Order Quantity" if specified (highest priority)

			• Order Quantity if specified on the Policy Parameter Set (lower priority) • Order Quantity derived using the formula based on the carrying cost, Annual Demand Quantity (determined by the Calculate Annual Demand concurrent request, and Fixed Cost per order (specified as an item attribute in the IMM).
Order Cycle Calendar	New Item Attribute	As specified manually within the Policy Parameters Set	Relevant for only the FOC-Max Policy Type. IO must read the Order Cycle calendar from the Policy Parameters Set and populate the Item Attribute for every Item-Org
Average Daily Demand	New Item Attribute	Calculated, based on forecast data (total forecast quantity) / (number of horizon days)	Calculated for every Item based on the forecast value (highest priority) OR Read in from the new IMM attribute called Average Daily Demand.

Calculating Policy Parameters

IO bases the calculations for Policy Parameters on how you have set your policy parameters. Policy parameters are specified at the Category level only, however, the required data for calculating safety stock, such as forecast, variance, and so on, is calculated at the Item-Org level.

General Overview of Policy Parameter Calculations

This section provides an overview of how IO calculates policy parameters.

1. If the Policy Parameters for an item that was defined within the Policy Parameters Set for its Category, is NOT time varying, as defined by the Time Phased Setup parameter in the Policy Parameters Set, then safety stock calculations are driven by data setup in the Service Level Set, IMM, and the demand schedule is referenced in the IO:

   - If some parameters, such as the service levels, are not specified within the Service Level Set, the Policy Parameters are used to determine the Target Service Level %.

     Note: Service Level Set values always override the Policy Parameter values that are defined at the Category level.

   - The Policy Parameters Set can also specify the Forecast Error Distribution. If this is set to Normal, Poisson or Negative Binomial in the Policy Parameter Set for the entire Category, then this value must be used regardless of any item level distribution that may be specified in the IMM. However, if this is specified as Item Level Specification, then this value at the Item level is used.

   - IO uses its normal calculations and may calculate time-varying Safety Stock values even if the Policy Parameters are defined as non time varying. This influences the Policy Parameter calculations since the Min and Max are linked to Safety Stock, and as such, will also vary over time.

     However, if Min and Max are explicitly specified within the Policy Parameters, then these override calculated Min/Max parameters at the Item level

2. If the Policy Parameters for an item that was defined within the Policy Parameters Set for its Category, ARE specified as time varying then the Target Service Level % values are determined by referencing the time varying Target Service Level % values specified in the Policy Parameters Set:

   - The Safety Stock calculations can vary with the varying Target Service Level % per day.

- As the Safety Stock varies per day, the Min and Max values will also vary by day.

- If the Min is specified in the Policy Parameters, then it must be respected. The Safety Stock value, and hence the Target Service Level % is then calculated by IO.

Calculating Safety Stock

Many parameters influence the calculation of safety stock, which serves as the input for several Policy Parameter calculations:

- Forecast: The Forecast is specified through the Demand Schedule, which is an input to the IO plan.

- Forecast Distribution: Forecast Distribution is specified either directly in the Policy Parameters Set at the Category level or it is set to Item Level Specification. When it is set to the Item Level Specification, IO looks at the Intermittent Demand item-attribute in the IMM, as referenced in the IO Plan Option. If this is set to No, IO assumes a Normal distribution. If it is set to Yes, it looks at the profile MSR: Variance to Mean Threshold for Use of Negative Binomial Distribution and assumes either a Poisson or Negative Binomial distribution.

- Service Level: The Service Level is specified through the Service Level Set, which can either have only service level and DFLT value (existing behavior) or two values in a two tiered service level. For example:

  - Service Level 1, DFLT1

  - Service Level 2, DFLT2

  where, DFLT is the Demand Fulfillment Lead Time. The default service level is Service Level 1, DFLT1.

- The Service Level can also be specified through the Target Service Level % parameter.

The method adopted by IO depends upon two options/attributes, Forecast Error Distribution and Safety Stock Calculation method. Both of these can be set at either the category level or at an individual item level. IO determines the setting that is applicable.

Two-Tiered Service Levels

Safety Stock for Policy Planned items is normally calculated at a single echelon, that is, for a specific Org, based on the forecast error distribution and calculation method specified at a specific organization.

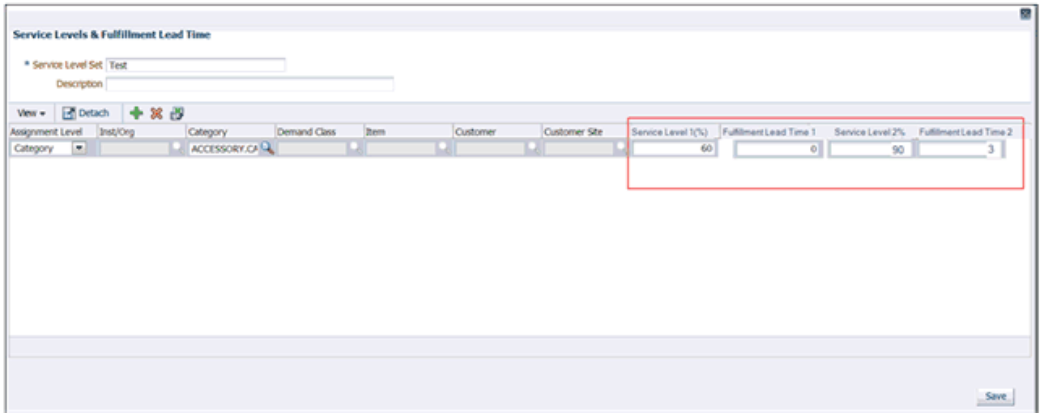
The only exception to this is when the two tiered service levels attribute is enabled and

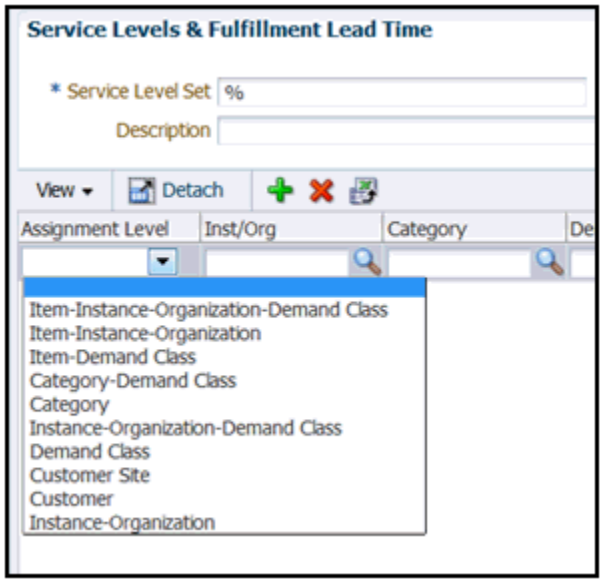
the Service Level set has two tiered definitions for an item. Often, the lead time associated with fulfilling a demand, the DFLT, is larger than the amount of time required to transfer a Item from an upstream Organization to the Organization satisfying the demand. In such scenarios, it becomes feasible to hold Items at upstream organizations and still meet the required service levels.

However, at times it is advantageous to hold a minimum number of Items at the most downstream locations. To support this scenario, IO supports two Service Levels and DFLTs.

The Service Level Set form is enhanced to allow specifying two sets of Service Levels (SL1, SL2) and DFLTs (DFLT1, DFLT2). This is set in the Service Levels & Fulfillment Lead Time form.

> **Note:** Two-tiered service levels are specified through the Service Level Set, and therefore cannot vary by time.





The previous Service Level and Fulfillment Lead Time fields are replaced by the Service Level 1 % and Fulfillment Lead Time 1 fields. Additionally, two fields Service Level 2 % and Fulfillment Lead Time 2 are added to the form.

To process the two tiered service levels, IO does an initial run, considering SL1, DFLT1 and calculates the stock required to meet this service level. IO then does a second run, considering SL2, DFLT2, but in this case, it ensures that the safety stock quantity as calculated in the first run is maintained at a minimum at each location. In this way, you can ensure that a certain (lower) level of service level (SL1) is maintained through stock at the most downstream location, by setting the DFLT1 to 0.

Calculating Policy Parameter Details

The Safety Stock is an essential Item of the Policy Parameter Calculation. The key parameters for Policy Planning are explained below.

Calculation of Min or Re-Order Point (ROP)

The Min is used in the Min-Max policy, and is calculated as Days or Units, depending on the Policy Type. The Min is calculated for every day of the Plan Horizon. Its value can vary by day.

In the ROP-OQ, or ROP-EOQ policies, the ROP calculation is similar to the Min calculation. The ROP or Min, is calculated as:

- Min (units) = Safety Stock (units) + [Average Daily Demand]* Lead Time (Lead Time = sum of Pre-Processing, Processing and Post Processing lead time)
- Min (Days) = Safety Stock (Days) + Lead Time

  where,

  - Safety Stock (Units) is the safety stock calculated by IO, which can vary by time.
  - Safety Stock (Days) is the Safety Stock expressed in Days. It can be calculated either in Days, based on Safety Stock calculations as existing in IO, or, if it is calculated as Units, it is converted to Days using the Average Daily Demand.

    Note: If you have manually input the Min and Max fields in the Policy Parameters, your preset values override any calculations performed by IO.

Calculation of Max

The Max determines the upper inventory threshold. It is required in Min-Max and FOC-Max policies. The Max is calculated every day and its value can vary by day.

For Min-Max and ROP policies:

- Max (units) = Min (Units) + Order Quantity
- Max (days) = Min (Days) + Order Quantity (expressed in days)

The Order Quantity can be specified on:

- Policy Parameters Set
- At the Item level in the IMM in the field Fixed Order Quantity. If this is specified, it overrides the Category level specification within the Policy Parameters Set.
- For Days type of Policy, the Order Quantity is divided by the Average Daily Demand that is calculated or is available for each Item-Org .
- The Average Daily Demand can be either loaded into the IMM in the field Average Daily Demand or calculated as:

  [Sum of Forecast]/[No of working days in the Plan Horizon]

  If specified in the IMM, the value is used and does not need to be calculated.

Calculation of Order Quantity and Economic Order Quantity (EOQ)

Order Quantity

The Order Quantity (OQ) is used in the ROP-OQ. The EOQ is used in the ROP-EOQ. The Quantity is always expressed in Units, not Days. For Policy type of Days, it is converted to Days by dividing it with the Average Daily Demand.

When the policy is set to ROP-OQ, the Order Quantity is specified in:

- The Policy Parameters Set at the Category level
- The IMM Policy Parameter, Fixed Order Quantity

The IMM value is always preferred over the Policy Parameters Set value.

Economic Order Quantity

The Economic Order Quantity or EOQ is calculated using the formula below:

$$Q^* = \sqrt{\frac{2CD}{H}}$$

where,

- Q * = Economic Order Quantity

- D = Annual Demand Quantity of the product
- C = fixed cost per order (not per unit, in addition to unit cost)
- H = annual carrying cost per unit

The Annual Demand Quantity is derived from the IMM attribute Annual Sales – Quantity, which is populated when the concurrent request Calculate Annual Demand launches. The Fixed Cost per Unit and Annual Carrying Cost per Unit are new item attributes in the IMM.

If the EOQ is specified using the field Order Quantity in the Policy Parameters set, it must be used for all items where all the above data is not available in the IMM. However, if there is data available at the Item-Org level to calculate the EOQ, then IO calculates the EOQ for that Item-Organization.

Examples of Calculating Policy Parameter Details

Example: Min-Max (Units)

In this example:

- The Safety Stock varies across time, and increases with Target Service Level % in the above example
- The Max is calculated as Min+ Order Quantity

Min (units) = Safety Stock (units) + Average Daily Demand * Lead Time

		Day1	Day2	Day3	Day4	Day5	Day6	Day7	Day8	Day9	Day10	Day11	Day12	Day13	Day14	Day15	Day16	Day17	Day18	Day19	Day20
Forecast		31	42	32	21	34	50	44	41	30	26	37	49	25	24	24	40	23	34	31	28
Average Daily Demand	33																				
Lead Time	4																				
Target Service Level (%)		90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%
Safety Stock		46	46	47	46	48	46	47	46	46	46	53	55	53	54	53	53	53	53	55	53
Min		172	175	184	195	217	211	188	180	188	183	188	177	166	165	174	181	169	146	114	81
Order Quantity	100																				
Max		272	175	184	195	217	211	188	180	188	183	188	177	166	165	174	181	169	146	114	81

Example: ROP-OQ and ROP-EOQ (Units)

From the above section:

- Min (units) = Safety Stock (units) + Average Daily Demand * Lead Time – note that ROP = Min, hence the calculation for ROP is identical to that for Min

Min - Max (Days)																				
		Day1	Day2	Day3	Day4	Day5	Day6	Day7	Day8	Day9	Day10	Day11	Day12	Day13	Day14	Day15	Day16	Day17	Day18	Day19	Day20
Forecast		31	42	32	21	34	50	44	41	30	26	37	49	25	24	24	40	23	34	31	28
Average Daily Demand	33																				
Lead Time	4																				
Target Service Level (%)		90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%
Safety Stock		46	46	47	46	48	46	47	46	46	46	53	55	53	54	53	53	53	53	55	53
Safety Stock (Days)		1.38	1.38	1.41	1.38	1.44	1.38	1.41	1.38	1.38	1.38	1.59	1.65	1.59	1.62	1.59	1.59	1.59	1.59	1.65	1.59
Min (Days)		5.38	5.38	5.41	5.38	5.44	5.38	5.41	5.38	5.38	5.38	5.59	5.65	5.59	5.62	5.59	5.59	5.59	5.59	5.65	5.59
Order Quantity	100																				
Max (Days)		8.38	8.38	8.41	8.38	8.44	8.38	8.41	8.38	8.38	8.38	8.59	8.65	8.59	8.62	8.59	8.59	8.59	8.59	8.65	8.59

Example: ROP-OQ and ROP-EOQ (Days)

This is similar to the Min (Days) calculation in the Min-Max (Days) policy.

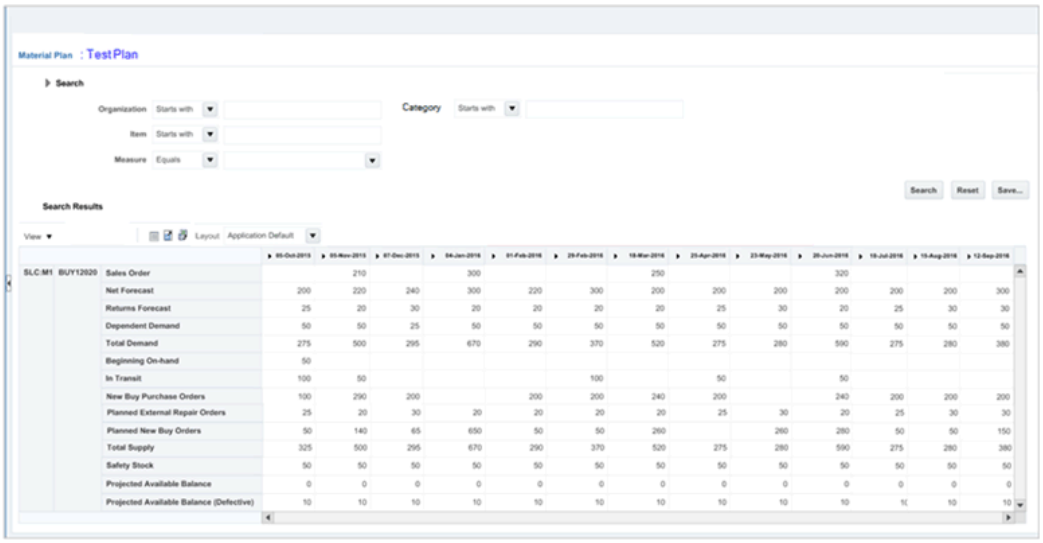
Note: ROP = Min, as calculated earlier

ROP-OQ (Days)																				
		Day1	Day2	Day3	Day4	Day5	Day6	Day7	Day8	Day9	Day10	Day11	Day12	Day13	Day14	Day15	Day16	Day17	Day18	Day19	Day20
Forecast		31	42	32	21	34	50	44	41	30	26	37	49	25	24	24	40	23	34	31	28
Average Daily Demand	33																				
Lead Time	4																				
Target Service Level (%)		90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%
Safety Stock		46	46	47	46	48	46	47	46	46	46	53	55	53	54	53	53	53	53	55	53
Safety Stock (Days)		1.38	1.38	1.41	1.38	1.44	1.38	1.41	1.38	1.38	1.38	1.59	1.65	1.59	1.62	1.59	1.59	1.59	1.59	1.65	1.59
Min (=ROP)		5.38	5.38	5.41	5.38	5.44	5.38	5.41	5.38	5.38	5.38	5.59	5.65	5.59	5.62	5.59	5.59	5.59	5.59	5.65	5.59
Order Quantity	100																				

Viewing Calculated Policy Parameters in Material Plan

You are able to see the detailed policy parameters in IO in a new ADF based Material Plan

To access the Material Plan through the IO navigator, click Material Plan – ADF. You can also access the Material Plan from the APCC Policy Planning screen.



The Material Plan supports the following measures:

Measure	Relevant for Regular IO Plans	Relevant for Policy IO Plans
Sales Orders	Yes	No
Forecast	Yes	No
Dependent Demand	Yes	No
Gross Requirements	Yes	No
Requisitions	Yes	No
Planned Orders	Yes	No
Total Supply	Yes	No
Beginning On Hand	Yes	No
Projected Available Balance	Yes	No
Projected Safety Stock (non pooled)	Yes	No
Projected Safety Stock – Units	Yes	No

- % Manufacturing Variability	Yes	No
- % Supplier Lead Time Variability	Yes	No
- % In-Transit Lead Time Variability	Yes	No
- % Demand Variability	Yes	No
Projected Safety Stock – Days of Supply	Yes	No
Projected Safety Stock – Value	Yes	No
Target Safety Stock (Units)	Yes	Yes
Target Safety Stock (Days of Supply)	Yes	No
Target Service Level (%)	Yes	Yes
Projected Service Level (%)	Yes	No
Mean Absolute Deviation	Yes	No
Mean Absolute Percent Error	Yes	No
Safety Stock – Non Pooled	Yes	No
- Manufacturing Variability	Yes	No
- Supplier Lead Time Variability	Yes	No
- In-Transit Lead Time Variability	Yes	No
- Demand Variability	Yes	No
Policy Type	No	New

9

Oracle Inventory Optimization and Asset Intensive Planning

Introduction to Asset Intensive Planning

The purpose of this functionality is to plan asset intensive maintenance to enable Oracle Inventory Optimization (IO) to compute safety stock for consumables and rebuildables that will be required for maintenance in an asset intensive industry.

Oracle Inventory Optimization (IO) sets safety stock levels that understand the holistic supply chain, including planning for maintenance of assets. The planning of maintenance of assets includes rebuilding defective items into a usable state to fulfill maintenance component demands. A complex asset, such as an aircraft, a vehicle, or manufacturing equipment contains components that are considered repairable or rebuildable.

IO provides an inventory postponement optimization solution that leads to a much more efficient supply chain, characterized by lower levels of inventory and better delivery performance to customers.

In order to support postponement and to accomplish the rebuild of defective items into a usable state, IO will rebuild activity bill of material and routing.

Understanding the Asset Intensive Planning Process

Rebuild activity, as defined in Oracle eAM, is recognized in IO. IO uses the bill of material and routing that is associated with this rebuild activity to understand which materials and resources are used in the repair process. This helps IO to compute safety stock for components used in the repair process, in addition to the repair item itself.

IO supports the definition of a "rebuild" activity, which is used to calculate the points of postponement. This activity is collected to support ASCP planning of maintenance requirements.

Rebuildable items (rebuildables) are assets that you install, remove, overhaul, and

reinstall, for example, engines, control boxes, and computer boards. Other components that you remove, discard, or replace are consumables.

Maintenance activities, such as, inspections, overhauls, lubrications, repairs, servicing, and cleanings, are the templates of work orders. The activities have an activity structure—the material requirements (maintenance bill of material) and operations and resource requirements (activity routing) that you need to perform the maintenance. You associate the activities with assets.

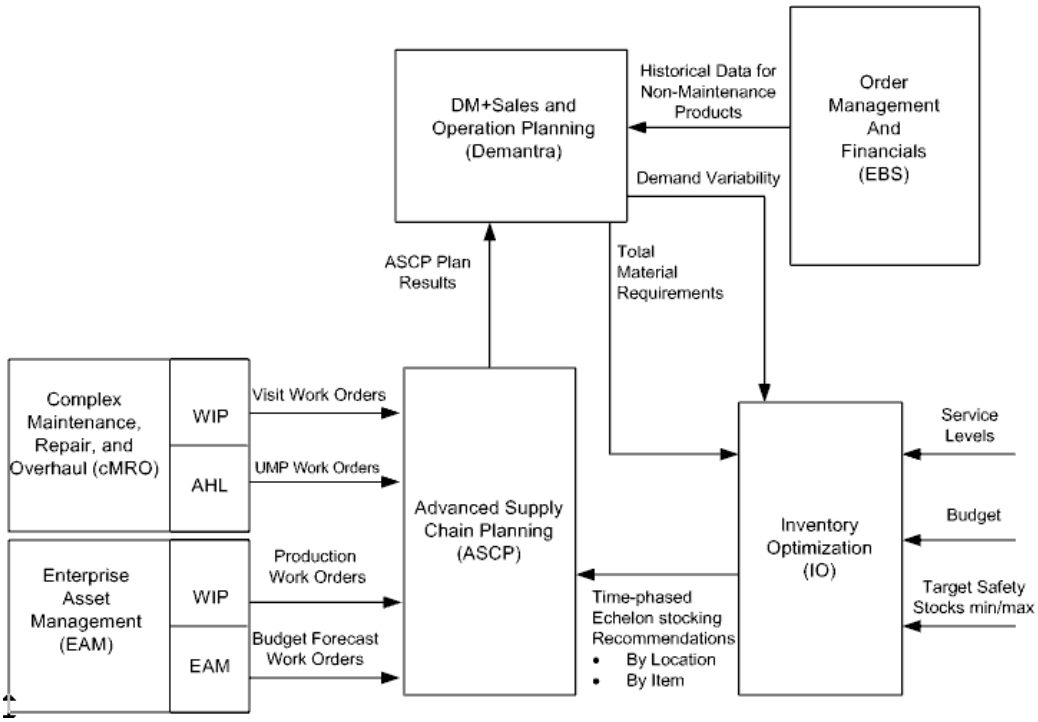
The rebuild activity tells IO which maintenance of asset and routing will be used for the maintenance of the asset. IO gets the repair lead times from the Item Attribute and respects it. In case no rebuild activity is specified for a component that has a repair sourcing rule specified, the repair lead time that is specified on the item attribute must be respected. This being the case where no Rebuild Activity has been specified, IO assumes that there are no additional components required to rebuild the defective part. The treatment here is identical to that of ASCP. For more details, refer to *Oracle Advanced Supply Chain Planning Implementation and User's Guide Supplement*.

The fact that items are being repaired or rebuilt implies that there are defective items in the supply chain. Inventory optimization will plan safety stocks only for usable items.

Computing Total Demand

Both eAM and cMRO maintenance applications produce a set of forecasted Maintenance Work Orders. These are collected into ASCP as a statement of forecasted maintenance activities and the associated material and resources requirements. These forecasted work orders are created based on the known condition and expected preventative maintenance schedule of each asset, such as aircraft, truck, metal press.

ASCP then produces a supply chain plan for these work orders that will be used by the Demantra Sales & Operations Planning (S&OP) process and combined with Demantra's traditional demand forecast for independent demand, based on historical sales orders. Demantra combines its sales order based forecast and with the forecasted work orders to create a single statement of total demand each item. This one number demand forecast is compared to actual historical demands to calculate the forecast accuracy, as shown in the diagram below:



Calculating Total Demand

Contained in the supply plan that is calculated by ASCP, there are two distinct maintenance supply order types:

- Maintenance Work Orders
- Planned Repair Work Orders

Maintenance Work Orders

Maintenance Work Orders contain the collected work orders from eAM and cMRO maintenance applications. The collected Maintenance Work Orders represent both near term scheduled work as well as future forecasted maintenance work. They include CMRO Visit Work Orders, CMRO Unit Maintenance Plan Repair Work Orders, eAM Work Orders and eAM Budget Forecast Work Orders. In addition Maintenance Work orders represent both maintenance (will have Produce to Stock of No) as well as repair (will have Product to Stock of Yes) These Maintenance Work Orders contain material requirements for both consumable and repairable components.

Planned Repair Work Orders

ASCP may recommend Planned Repair Orders to satisfy component demands, depending on the available or expected defective supply and other constraints.

Demantra will exclude the demands associated with Planned Repair Work Order since these will be accounted for by IO, which determines its postponement strategy:

1. Demantra will calculate "Total Demand" as the sum of:
    - Consensus Forecasted This is the forecast for non-maintenance products.
    - Maintenance Work Order Demand
2. Demantra will calculate Demand Variability by comparing the total demand" to actual demands

Demantra will send a statement of Total Demand and Demand Variability to IO, which will then use this information to calculate optimized safety stocks, based on user input of service level targets and budget.

Modeling Repair Operations

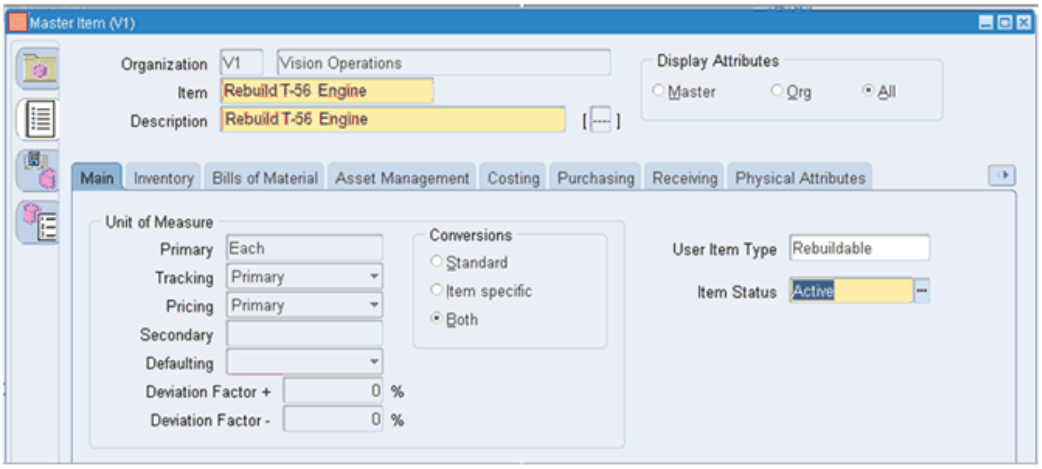
As part of the enhancements, ASCP can now model repair operations. Each maintenance application (eAM and cMRO) supports a repair or rebuild process to transform a defective item into a usable item to satisfy maintenance demands. Contained in each set of Work Orders are component requirements for Rebuildable items ASCP will recommend "supplies to satisfy"

To support its postponement functionality, IO must be cognizant of the "Rebuildable" BOM and Route utilized in these rebuild activities. Inventory Optimization recognizes the Repair-at sourcing rule.

For more information on Asset Intensive Planning and the role of ASCP, refer to *Oracle Advanced Supply Chain Planning Implementation and User's Guide Supplement*.

eAM Activity Definition

The activity shown below, Rebuild T56-Engine, is the process of transforming a defective T56-Engine in to a usable T56-Engine. The BOM and Routing associated with the item define the process. This example uses the T56 Engine to illustrate the modeling setups.



Rebuilding the T56 Engine Activity

The activity "Rebuild T56-Engine" Maintenance BOM and Maintenance Routing are defined with the following values as part of standard eAM setup:

Bill of Materials

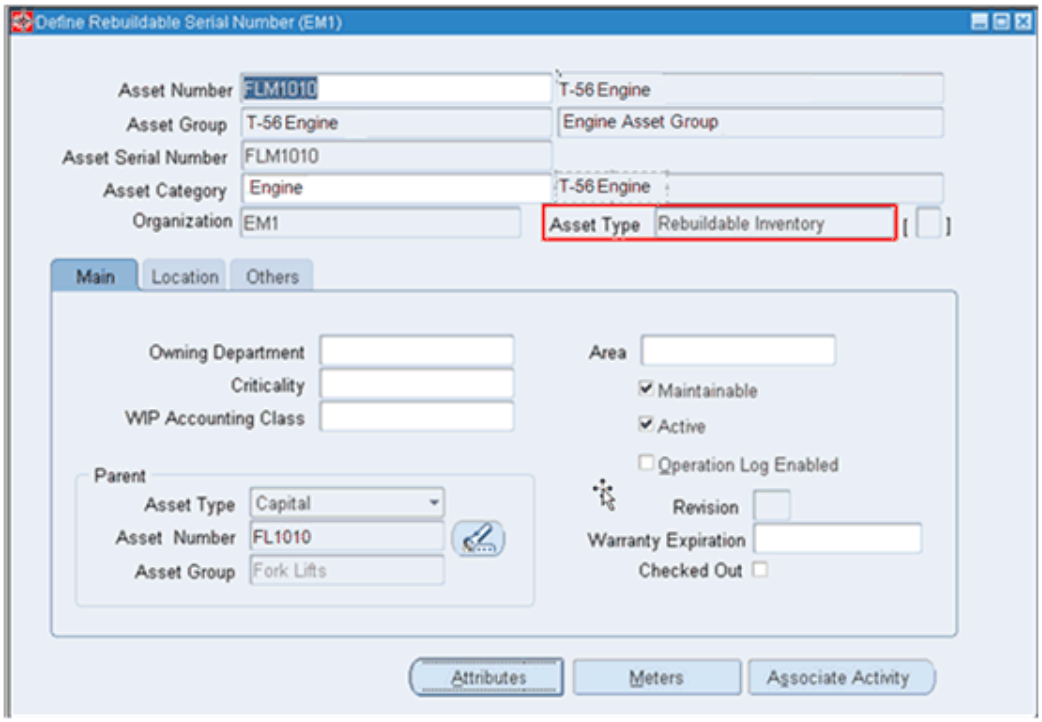
Item	Item Sequence	UOM	Quantity
Fuel Enrichment Valve	10	EA	1
Anti-Ice Valves	10	EA	0.5
Fuel Pump	20	EA	1
Compressor Bleed Valves	10	EA	1

Routing

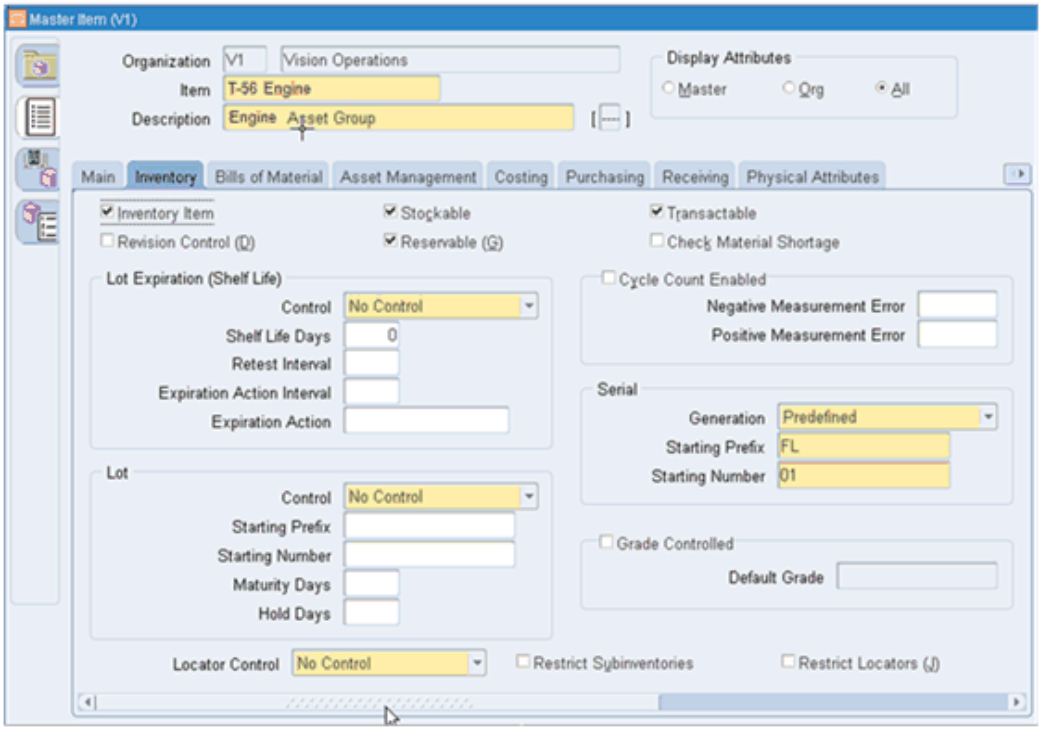
Sequence	Description	Resource	UOM	Quantity
10	Rebuild Engine	Advanced A&P	Hour	32
20	Test Engine	Inspector	Hour	4

Item and Activity Identification

The Asset type of Rebuildable Inventory identifies the asset as a rebuildable asset. For rebuildable assets the Asset Group is synonymous with the Rebuildable Item.



The Asset Group is setup as an inventory transactable item of the item type of Asset Group. The Asset Group is synonymous to an inventory item and is the item that is planned by ASCP.



Activity Types describe the type of maintenance work that is performed on an asset, such as, inspections, lubrications, overhauls, calibration, and repetitive work. The "Rebuild – Rebuild Spare" activity determines which activity that is associated with a rebuildable item should be used by ASCP to plan for the rebuild or repair of the rebuildable item. Activity types of Rebuild are those collected over into ASCP for use in generating planned repair work orders.

> **Note:** eAM does not enforce the assignment of one and only one Rebuild Activity type for each rebuildable asset group. Since ASCP needs to identify a specific rebuild activity to use in planning purposes, there is an attribute set on the destination that specifies which of these multiple rebuild activities is used for planning. It is an implementation task and business rule to enforce to assignment of Rebuild activities to rebuildable asset groups. For example:

Activity Type	Description
Calibration	Calibration
Construction	Construction

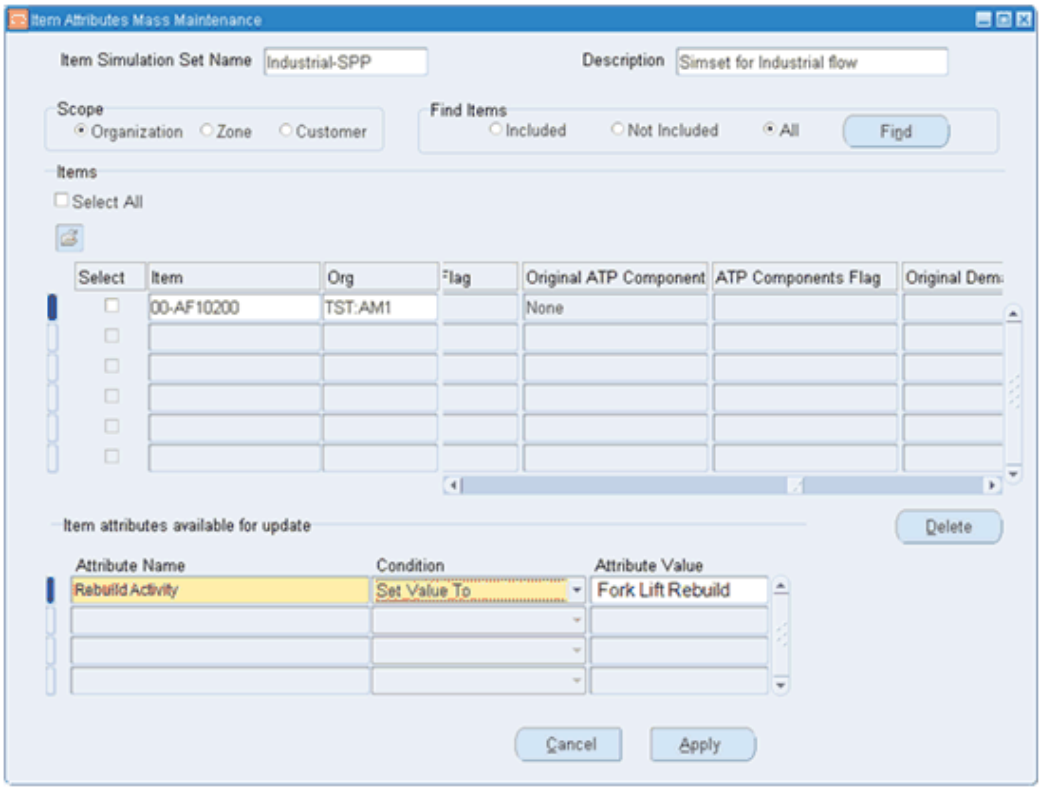
Contracted	Contracted Services
Inspection	Inspection
Installation	Installation
Janitorial	Janitorial
Lubrication	Lubrication
Maintenance	Maintenance
Rebuild	Rebuild Spare
Reformat	Department Reformat
Reformat	Reformat
Repetitive	Repetitive
Replacement	Replacement
Service	Service

Repair Lead Time

The Repair lead time for the rebuild of each item must be specified as an item attribute or in the simulation set. Inventory Optimization reads in the repair lead time and considers the time that is required to rebuild the item.

IMM Rebuild Activity

The 'Rebuild Activity" is a new item attribute, but it is not available in ERP. It is a destination-only attribute and will be added to the Item Attribute Mass Maintenance (IMM) form. This attribute is populated with the Rebuild Activity setup in eAM as the Maintenance BOM and Routes that will be used to plan for the items rebuild process. This new IMM attribute needs to be set for each organization that is used in creating Planned Repair Work Orders as well as during the release process of these work Orders. IO looks at the rebuild activity to determine a rebuild BOM and routing.



Note: Oracle Inventory Optimization assumes that there are no additional components required to rebuild the defective part. The treatment here is identical to ASCP.

Note: Oracle Inventory Optimization will not use the existing Maintenance Work Orders and External Repair Orders as sources of supply computing safety stock

Note: Oracle Inventory Optimization will not have the dummy work order construct used in ASCP to model shut-down of eAM resources while they are being maintained since the impact on the safety stock calculation will be fairly limited.

10

Managing Oracle Inventory Optimization Plans from Oracle Advanced Planning Command Center

Introduction to Managing Plans in Advanced Planning Command Center

The integration between Oracle Inventory Optimization and Oracle Advanced Planning Command Center lets you define multiple IO plans, modify their inputs, compare plans, launch plans, and evaluate their results, from within APCC. You can do this on two levels:

- Quick simulations in which you can change a constraint at the plan level and launch your plans
- Detailed simulations in which you can copy your base plan, modify several different inputs at various levels, and launch any or all of your plans

You can work with your IO plans from the Inventory Analysis page of the Supply Chain Analyst dashboard and the SLA Analysis page of the Service Supply Chain Analyst dashboard.

In APCC you can:

- Run a Quick Simulation by modifying a constraint on the base plan at the plan level
- Copy plans and edit their inputs
- Launch multiple plan runs
- Review and compare plan results

Running a Quick Simulation

Quick Simulations let you evaluate the impact of changing one input on a plan by comparing it to other similar plans. For example, if you want to evaluate the impact on safety stock values for different service levels, demand fulfillment lead time levels, or budget values, you can set up plans that are otherwise similar, change some parameters and launch each plan.

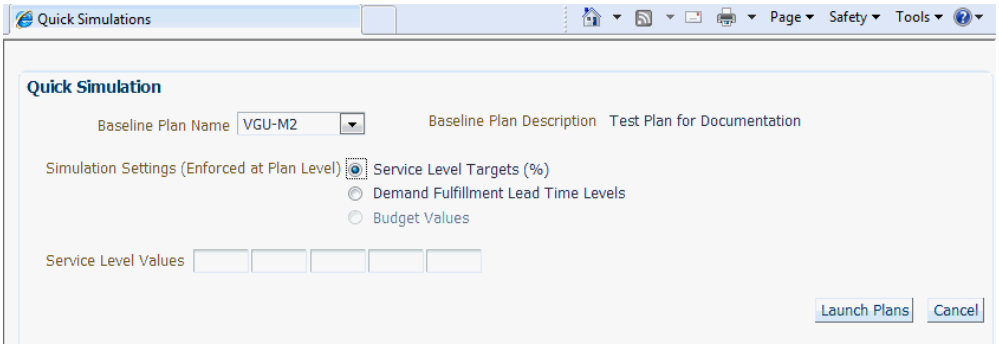
To run a quick simulation:

1. Navigate to the Inventory Analysis page of the Supply Chain Analyst or the SLA Analysis page of the Service Supply Chain Analyst dashboard.

2. From the Baseline Plan field, choose the baseline plan you want to use.

3. Click the Quick Simulations link.

   The Quick Simulation page appears.



4. Click the radio button for the parameter you want to modify in the simulation.

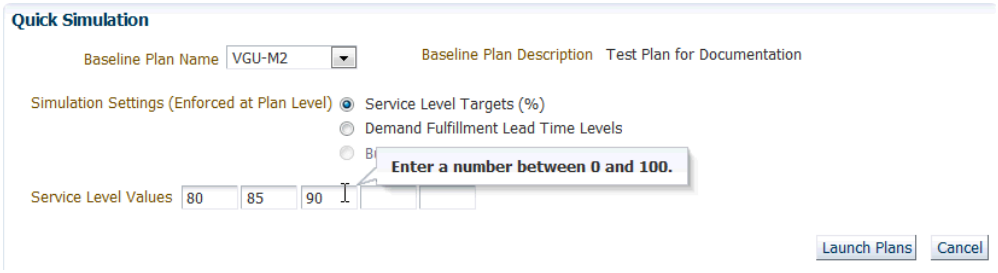
   Enforce Service Level plan enables the Service Level Targets and Demand Fulfillment Lead Time Levels radio buttons. An Enforce Budget plan enables the Budget Values radio button.

   You can change only one parameter at a time.

   Enforce Capacity plans are not supported at this time.

5. Enter the values you wish to use for the simulation.

6. To run more than one quick simulation, enter additional values for the parameter in the values field.



7. Click Launch Plans.

   A confirmation page opens and gives you the ID number for each plan.

8. Click OK to close this page

Copying Plans and Editing Inputs

You can set up and compare plans and modify multiple simulations plans to determine the most efficient stocking strategy. The simulation plans need to have inputs that are similar, but have some differences their plan options to make a meaningful comparison. For example, you may want to:

- Change a supplier lead time to evaluate the impact on budget
- Change a warehouse capacity to evaluate the impact on service levels
- Change service levels to evaluate impact on budgets

Copying a Plan

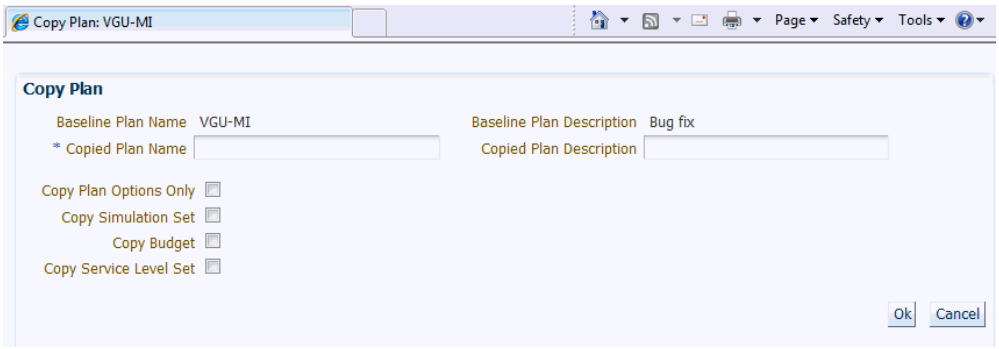
To copy a plan:

1. 1. From the Oracle Applications Home Page Main Menu, navigate to the Inventory Analysis page in the Supply Chain Analyst dashboard or the SLA Analysis page in the Service Supply Chain Analyst dashboard.

   Make sure you select your base plan.

2. Click Copy Plan.

   The Copy Plan page appears.



3. In the Copied Plan Name field, enter a unique name for the new plan.

4. Enter a description for the plan in the Copied Plan Description.

5. Select the remaining options, as required:

   - • Copy Plan Options Only: Copies only the plan options. Check this option if you want to change key inputs and launch the plan with a refresh snapshot.

   - • Copy Simulation Set, Copy Budget, Copy Service Level Set: Copies the data from the base plan of the options you checked.

   - • If the base plan has a set named S1 attached to it, and you named your copied plan Plan2, the new simulation set, budget or service level set is called S1 (Plan2). Select one or more of these options if you plan to modify the data in that set without modifying the values in the base plan.

6. Click OK.

   A confirmation page appears.

7. Click OK.

   The Edit Plan page appears, in which you can edit your copied plan. See the section Editing a Plan in this document.

Editing a Plan

You access the Edit Plans page in one of two ways:

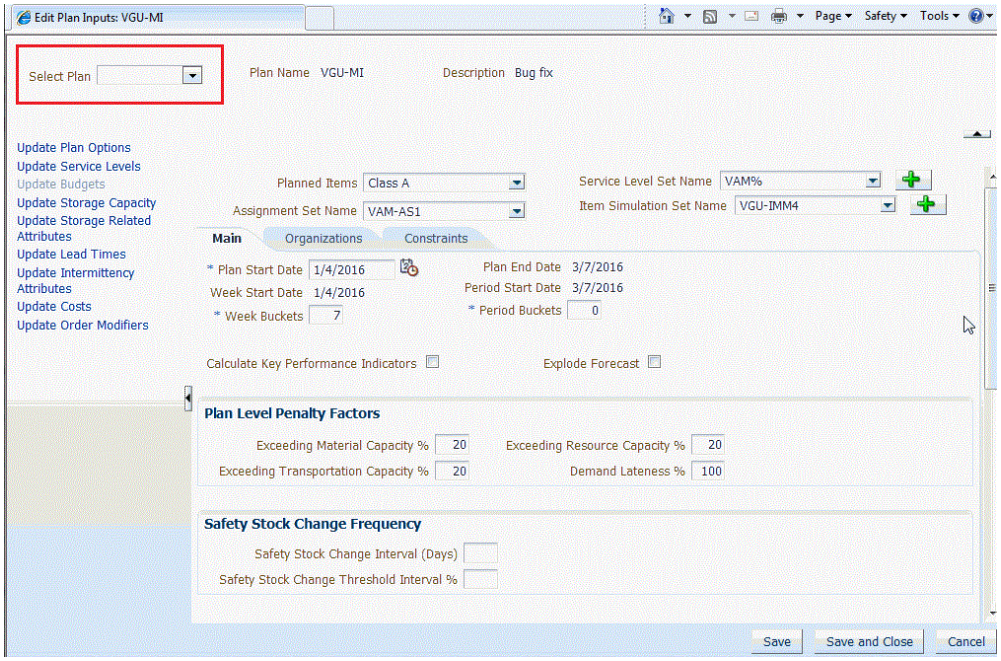
1. If you want to edit your base plan, click Edit Plan Inputs from the Inventory Analysis page in the Supply Chain Analyst dashboard or the SLA Analysis page in the Service Supply Chain Analyst dashboard.

2. If you want to edit the plan that finished copying, continue from the Edit Plans page that opened when you copied your plan.

To edit a plan:

1. On the Edit Plan Inputs page, from the Attribute Group on the left side, select the group of attributes that you wish to edit. For example, to modify Plan Options on the copied plan, click Update Plan Options.

2. You can also click the Organizations tab and the Constraint tab and make changes on the respective pages.



Creating a New Service Level Set or Item Simulation Set

To create a new Service Level Set or Item Simulation Set:

1. From the Oracle Applications Home Page Main Menu, navigate to the Inventory Analysis page in the Supply Chain Analyst dashboard. Alternatively, navigate to the SLA Analysis page in the Service Supply Chain Analyst dashboard.

2. Navigate to the Edit Plan Inputs, then Update Plan Options.

3. Click the Create icon (the plus sign) next to the Service Level Set Name field or the Item Simulation Set Name field.

A form opens in which you enter the information for the new Service Level Set or

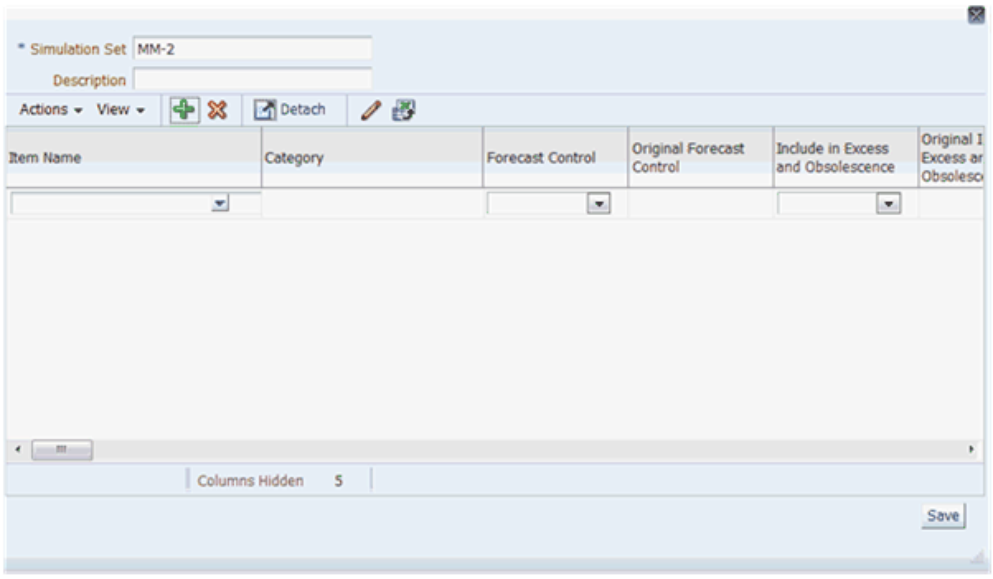
Item Simulation Set.

The procedure for creating a new Service Level Set and an Item Simulation Set is similar. This procedure outlines how to create a new Simulation Set.

The procedure for creating a new Service Level Set and an Item Simulation Set is similar. This procedure outlines how to create a new Simulation Set.

4. On the new form, enter a name for the new set.

5. Optionally, enter a description for the Service Level Set.



6. In the details section of the screen, populate the row with the desired values for the simulation set. Scroll horizontally to access additional values.

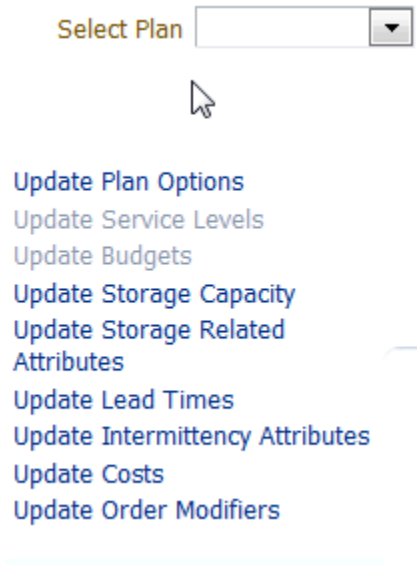
7. Click Save when you have completed populating the fields.

The system updates the new Simulation Set.

Working with Attributes

You can change some of the attributes in your copied plan. Logical attribute groups contain the most commonly used attributes. You access the attributes from the links on the left of your page.

> **Note:** Some attribute groups edit the Plan Options. See the section below on plan options.



There are five screens, one of which will open up on the right hand pane when you select an attribute group:

- Item Simulation Set screen
- Plan Options screen
- Service Level Set screen
- Budget Set screen
- Storage Capacity screen

Item Simulation Set Screen

You can edit and add items to the item simulation set from the Item Simulation Set screen, which you can access from the Supply Chain Analyst Dashboard. The default Item Simulations Set is the set you created when you copied your plan. To edit a different Item Simulation Set, change the search criteria

When you insert a row into the simulation, you can select your Organization/Item combination. When you edit an existing record, you cannot edit the Organization or Item columns.

If you change a value, the row is color coded.

To edit and add items to an item simulation set:

1. On the Inventory Analysis page, click Edit Plan Inputs.

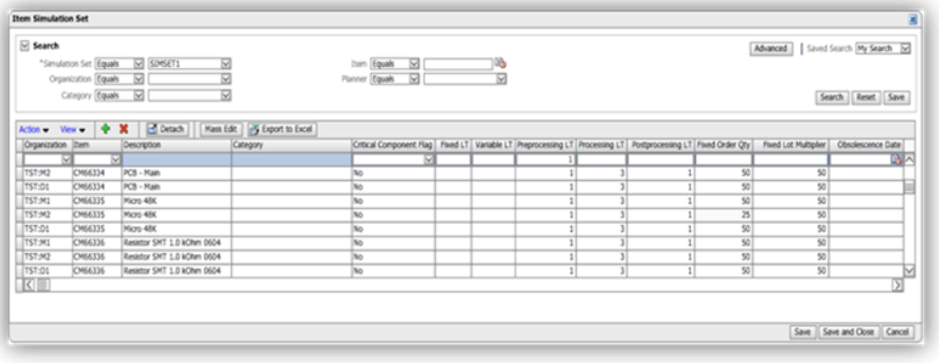
   The Edit Plan Inputs page appears.

2. Select the Attribute Group, based on the attributes you want to update.

The attributes display on the right side of your screen automatically.

3. To add a new row, click the Add icon (the plus sign).

   The system adds a row at the top of the table.



4. Enter or edit information, as required.

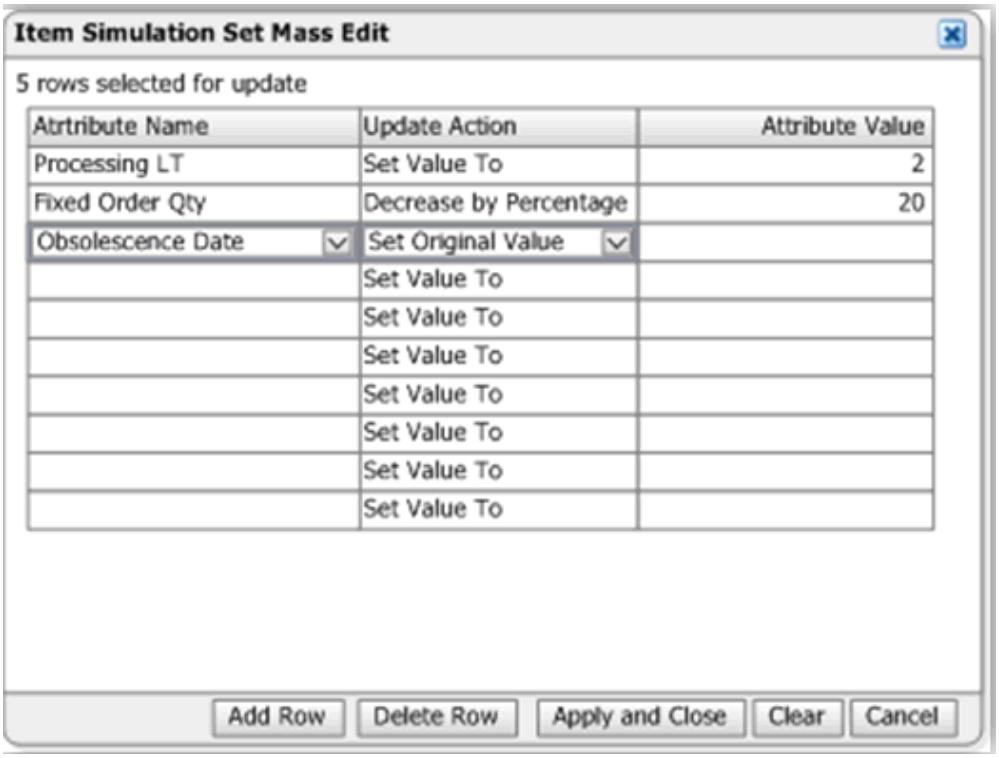
Mass Editing

The simulation set supports mass edit, which lets you edit multiple rows simultaneously.

To mass edit:

1. On the toolbar, click Mass Edit to open the Item Simulation Set Mass Edit screen.

2. In the Item Simulation Mass Edit screen, make your changes and click an action.



The system displays the number of rows you select in the Item Simulation Set Mass Edit dialog. The table below explains the columns of the Mass Edit page:

Name	Description
Attribute Name	You can select any of the item attributes that are editable.

Update Action	For Numeric fields, valid values are: • Set Value To • Increase by Value • Increase by Percentage • Decrease by Percentage • Set Original Value For Date and String fields, valid values are: • Set Value To • Set Original Value
Attribute Value	The new value of the attribute. If you select the Set Original Value, you cannot enter an attribute value.

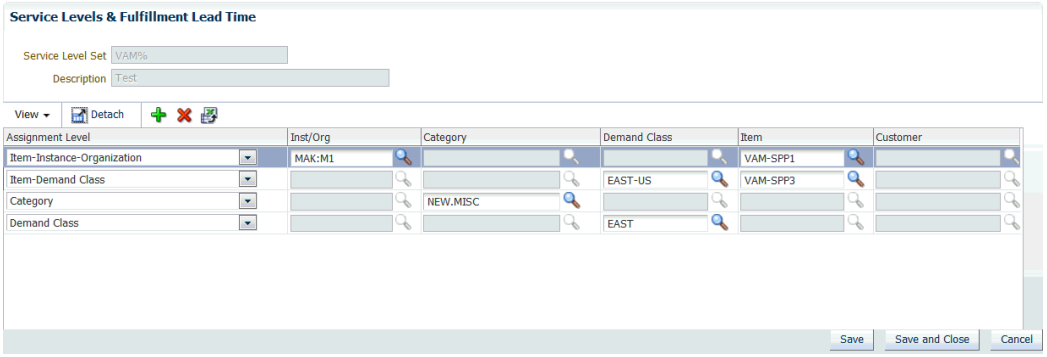
Working with the Plan Options Screen

When you select Update Plan Options, the Plan Options form opens and the Main tab is highlighted.

Changing Records in the Service Level Set Form

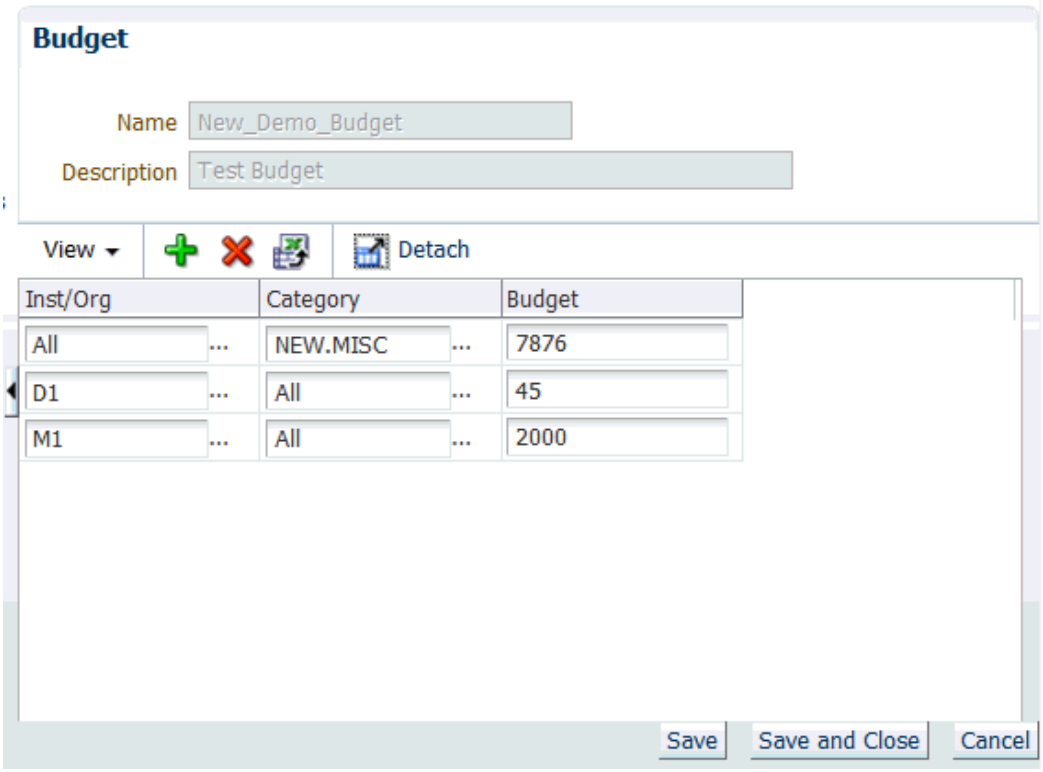
The Service Level Set that is attached to the copied plan opens by default. You can also access the Service Level Set from the Update Service Levels attribute.

Click Create (plus sign) to add and edit records in the Service Level Set.



Updating the Budget

When you select Update Budgets from the attribute groups, the Budgets form opens in the right pane.



1. To add a new row, click the Add icon (the plus sign).

2. Add or edit information, as required.

   Note: When you edit an existing record, only the Budget field is editable.

Using the Storage Capacity Form

Use this page to specify capacities for your storage types.

You set up Warehouse Storage Capacity at either the Organization Level or the Organization– Storage Type level. The profile option: MSO: Warehouse Capacity Granularity, which takes on values Organization Level and Category Organization Level, governs the setup.

If you select:

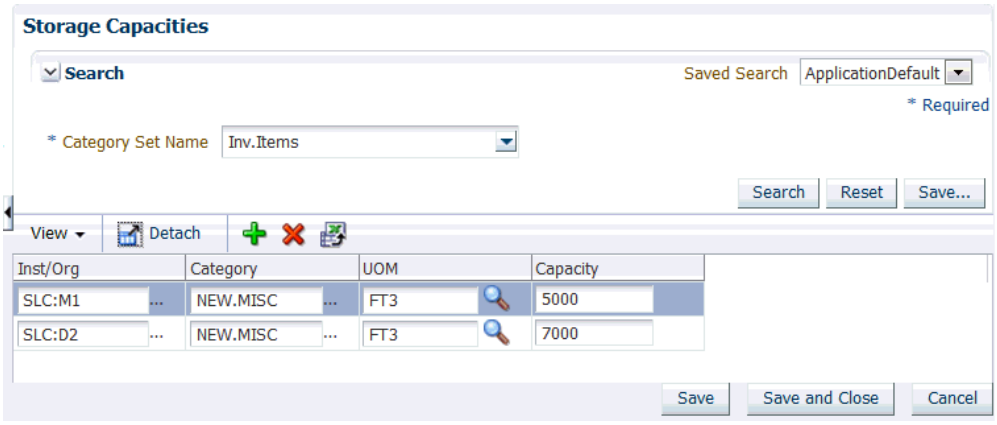
- Organization level: Specify the capacity in EBS and collect it over. Editing it from within APCC is not supported.
- Category Organization level: Specify the capacity in this page. The Storage Capacity form opens for editing only if you have set the profile MSO: Warehouse Capacity Granularity to Category Organization Level.

To access the Storage Capacity form:

1. Click Update Storage Capacity from the attribute groups in the left.

   The Storage Capacity page appears.

2. Add and edit information, as required.



You cannot insert a record if a record already exists for the Organization-Category. If you edit existing records, only the Capacity and UoM fields are editable.

Launching Plans

You can select and launch several IO plans at one time from within APCC. You can also change the launch parameters for each plan.

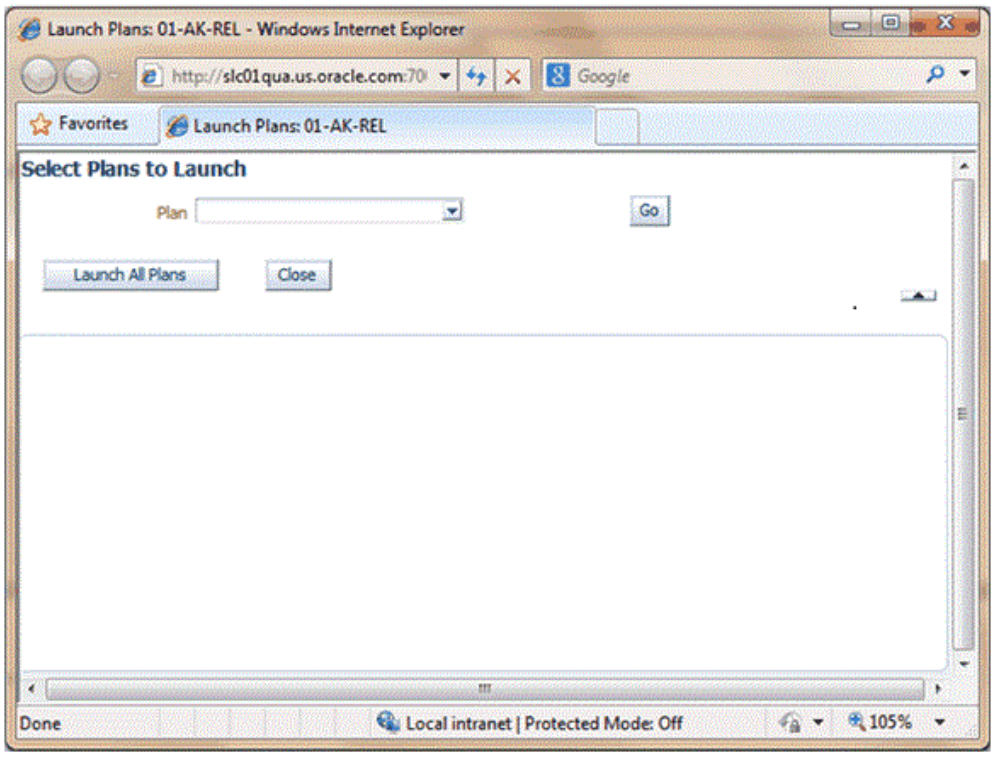
To launch plans:

1. From the Oracle Applications Home Page Main Menu, navigate to the Supply Chain Analyst dashboard.

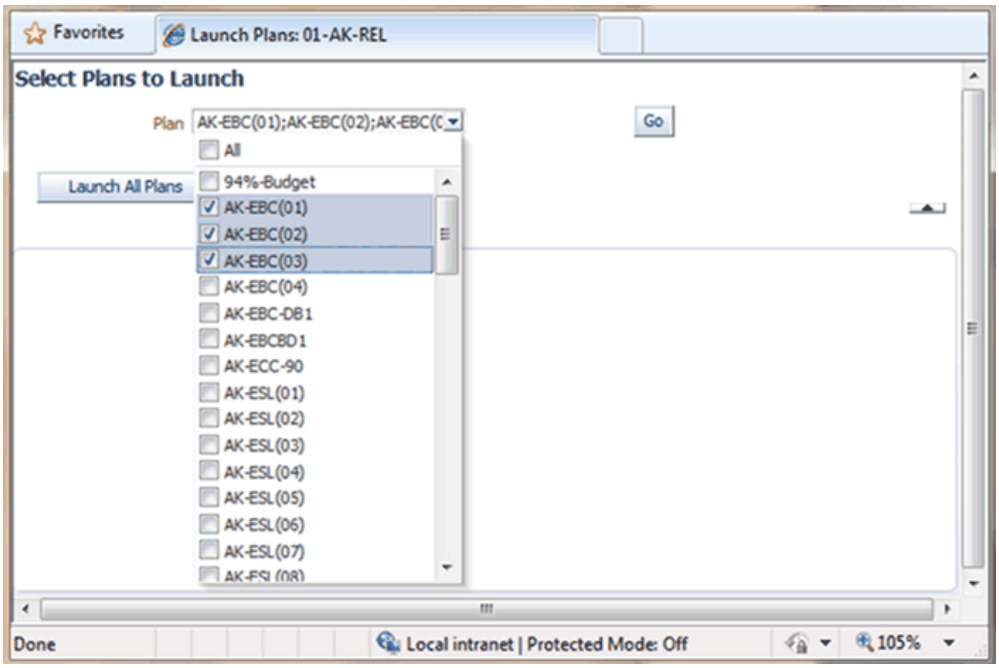
2. Click the Inventory Analysis tab.

3. Click Launch Plans.

   The Select Plans to Launch page appears.

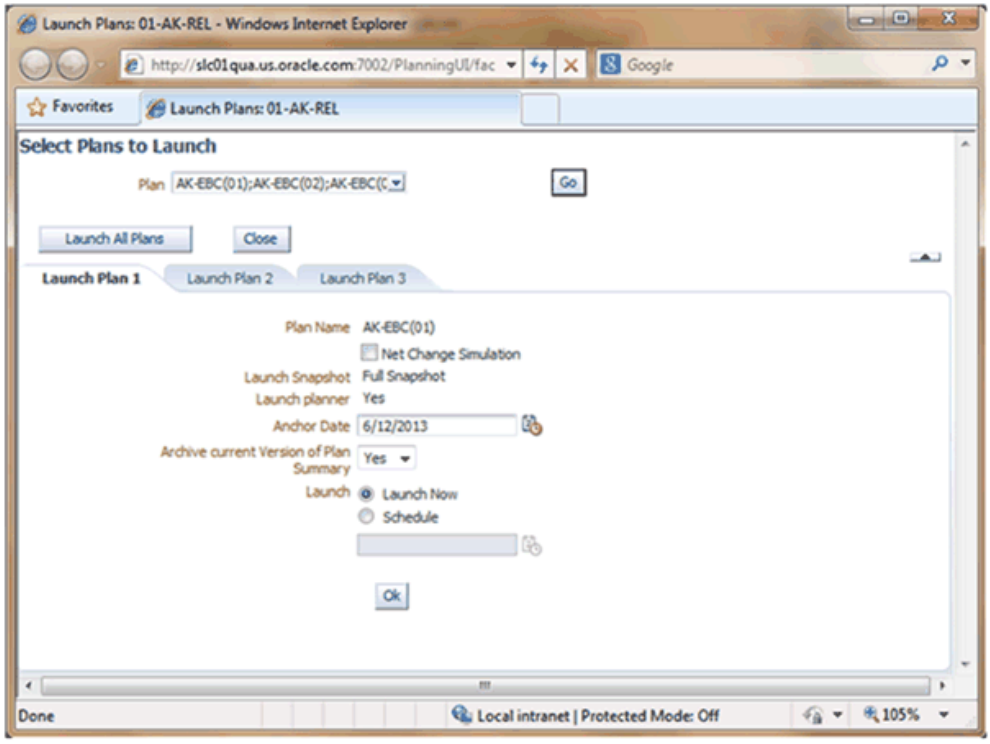


4. In the Plan drop-down field, click the checkbox adjacent to each of the plans you want to launch.



5. Click Go.

   The page refreshes and a Launch Plan tab appears for each plan.



6. Review and change any launch parameters.

7. Click OK in each plan.

Plan Launch Parameters

The table below lists the Plan Launch parameters:

Parameter	Description
Plan Name	Name of the plan being launched (non-editable)

Net Change Simulation	If you check Net Change Simulation, you launch the plan in net-change simulation mode, without snapshot. The added or edited plan inputs that you added after you copied the base plan are updated before launching the optimization engine. This is relevant only if the complete plan was copied (Copy Plan Options only unchecked). If you do not check Net Change Simulation, the system launches the plan as usual with complete snapshot and the optimization engine runs.
Anchor Date	The anchor date for the plan.
Archive current version of Plan Summary	Select yes if you want to review the plan results in APCC.
Launch	*Launch Now*: Launch the plans now.

APCC Measures for Inventory Analysis

While reviewing the plan results, you can look at your plan inputs. For example, while reviewing the recommended safety stock values, you may want to review the lead time variables. To support this analysis, the system archives measures related to inventory planning, makes them available in APCC when it archives the base IO plans, and archives them in APCC when you set up and launch a plan in APCC.

You can see these inventory planning measures associated with each plan:

- Total Demand
- Forecast
- Total Supply
- Planned Orders
- Mean Absolute Deviation
- Minimum Inventory Level
- Maximum Inventory Level

- User Specified Safety Stock
- Demand Fulfillment Lead Time
- Supplier Lead Time Variability (%)
- Manufacturing Lead Time Variability (%)
- Intransit Lead Time Variability (%)
- Required Warehouse Capacity
- Inventory Budget

The following tables explain the measures in detail.

		Conforming Dimensions														Aggregation Rules	
Measures	**Meaning**	**Scenario**	**Plan**	**Organization**	**Item**	**Resource**	**Time**	**Priority**	**Supplier**	**Source**	**Ship Methods**	**Demand Class**	**Order Type**	**Exception Type**	**Project**	**All Dims Except Time**	**Time Dim**
Total Demand	Sum of all Demands Qty	X	X	X	X		X									Sum	Sum
Forecast	Forecast Quantity	X	X	X	X		X	X				X	X			Sum	Sum
Total Supply	Sum of all Supplies Qty	X	X	X	X		X									Sum	Sum
Planned Orders	Planned Orders in IO plan	X	X	X	X		X						X			Sum	Sum
Mean Absolute Percent Error	Mean Absolute Percent Error	X	X	X	X		X					X				avg	avg
Mean Absolute Deviation	Mean Absolute Deviation	X	X	X	X		X					X				avg	avg
Minimum Inventory Level	Minimum Inventory Level	X	X	X	X		X									Sum	Last
Maximum Inventory Level	Maximum Inventory Level	X	X	X	X		X									Sum	Last

		Conforming Dimensions														Aggregation Rules	
Measures	**Meaning**	**Scenario**	**Plan**	**Organization**	**Item**	**Resource**	**Time**	**Priority**	**Supplier**	**Source**	**Ship Methods**	**Demand Class**	**Order Type**	**Exception Type**	**Project**	**All Dims Except Time**	**Time Dim**
User Specified Safety Stock	Mean Absolute Deviation	X	X	X	X		X						X			Sum	Sum
Demand Fulfillment Lead Time	Agreed fulfillment lead time for the item-org-customer	X	X	X	X							X				avg	-
Supplier Lead Time Variability (%)	Variability in supplier Lead Time	X	X	X	X				X							avg	-
Manufacturer Lead Time Variability (%)	Variability in manufacturing Lead Time	X	X	X	X											avg	-
Intransit Lead Time Variability (%)	Variability in Intransit Lead Time	X	X	X	X											avg	-
Required Warehouse Capacity	Required Warehouse Capacity (for all item/ locations in the plan, not just those that have a storage capacity associated with them.	X	X	X			X									Sum	Sum
Inventory Budget	Inventory Budget used in IO plan	X	X	X	X												

11

Oracle Inventory Optimization Warehouse Capacity Constraints and Cycle Inventory Safety Stock

Oracle Inventory Optimization Warehouse Capacity Constraints

Oracle Inventory Optimization has added a new IO constraint set to implement warehouse capacity. These warehouse constraints are considered as hard constraints when combined with budget or capacity constraints. They are considered as soft constraints when combined with service level constraints. These constraints are defined either at the organization level or at the category org. level, depending on the value you specify for the profile option MSR: Warehouse Capacity Granularity.

Organization Level Constraints

The organization level Warehouse Capacity Constraint for an organization and each planning time buckets is calculated by taking into consideration the following criteria:

- The organization
- The item in the organization
- The number of projected available units of the item, as calculate by IO, and includes on hand, firm supplies, safety stock, and planned orders

  Note: The number on had quantity is used if the plan option Net On Hand is implemented. The onhand quantity is not considered by the plan if Net On Hand is in its NULL default state.

- Item volume as specified in the Item Attributes Mass Maintenance window or in the Organization Item window

- Capacity for the organization as specified in the Organization Parameters window or uploaded via the TradingPartner.dat file

- Average Cycle Stock of the item

  The Average Cycle Stock of the item is calculated by taking into account the following:

  - Order quantity of the item, based on the item's demand adjusted for the item order modifiers.

  - Order Period of the item as specified in the Item Attributes Mass Maintenance window.

  - Average Daily Demand for an item during a planning bucket, as determined by summing up the item's demand over Safety Stock Days working days, starting with the planning bucket start date, and then dividing by Safety Stock Days. Safety Stock Days is an item attribute.

  - Inventory Quantity Increment of the item , as determine by the average demand and the number of days represented by the Inventory Days Increment

  - Inventory Days Increment of the item, as specified in the Item Attributes Mass Maintenance window. It may represent the number of days that supply of the item remains on hold for quality testing.

Order Quantity and Effects of Order Modifiers

The IO Planning engine considers the following item order modifiers when calculating Cycle Stock:

- FOQ: Fixed Order Quantity

- MIN: Minimum Order Quantity

- FLM: Fixed Lot Multiplier

If FOQ is defined for an item, then the system ignores the MIN and FLM order modifiers and sets the Order Quantity to FOQ:

Order Quantity = FOQ

If there is no FOQ, then the system calculates the order quantity based on the item's demand with respect to MIN and FLM:

A NULL value for MIN is considered as zero.

A NULL value for FLM is considered as 1.

Accounting for Supply Variability in Warehouse Capacity Constraints

Oracle Inventory Optimization considers the warehouse capacities in conjunction with the safety stock generated, based on the supply lead time variability. IO also considers the safety stock needed for demand variability when determining the final inventory location for the safety stock of an item. That is, the safety stock generated based on the supplier variability also adjusted with respect to warehouse capacity constraints.

Example

Example of Accounting for Supply Variability in Warehouse Capacity Constraints

In this example 17 units of safety stock are pushed down from the Regional Warehouse to the Distribution Warehouses. As a result the IO engine recommends an additional 8 units of safety stock to be stored at the Distribution Warehouse DW1 and 12 units at the Distribution Warehouse DW2 for a total of 20 units.

The Central Product Facility (CPF) sends product to the Regional Warehouse and has a lead time of 10, plus or minus 5. The Regional Warehouse has:

- Safety Stock at RW due to lead time variability =20, **1 unit pushed down = 19 units**.
- Safety Stock Postponement for DW1 = 50, **7 units pushed down** = 43.
- Safety Stock Postponement for DW2 = 50 **- 9 units pushed down** = 51.
- Safety Stock at RW due to demand variability = 40.

The lead time to DW1 = 3

The lead time to DW2 = 4

The result is:

- Safety Stock at DW1 = 10, **plus 8 units as a result of adjustment for warehouse capacity for a total of 18** units.
- Safety Stock at DW2 = 15, **plus 12 units as a result of adjustment for warehouse capacity for a total of 27** units.

Available Capacity = 20,000 cubic feet

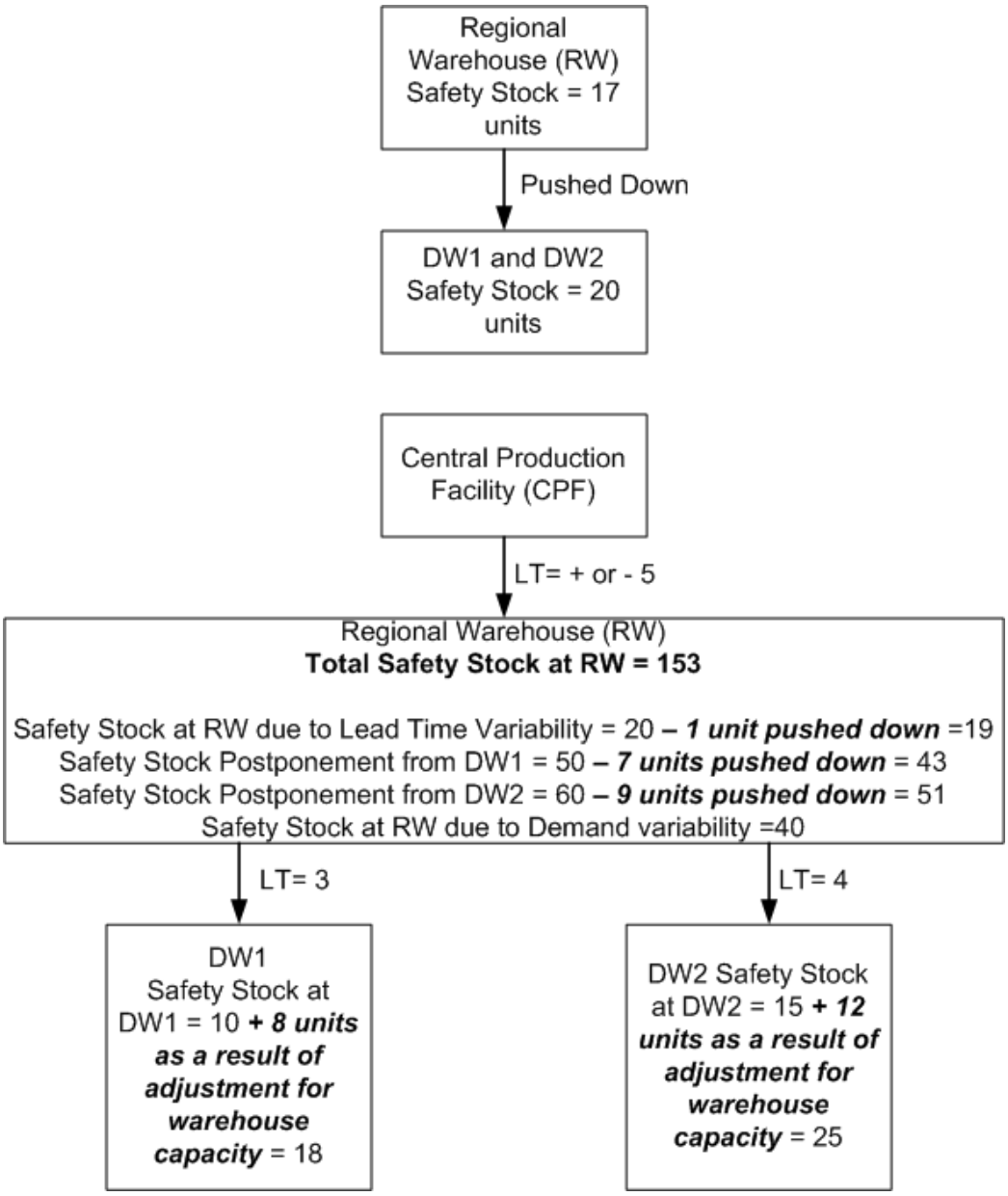
Required Capacity per Unit of Item = 130 cubic feet

Total Warehouse Capacity Requirement = [(the sum of 43, 51, 40, and 19) multiplied by 130] = 19,890 cubic feet, which is less than 20,000 cubic feet.

The warehouse capacity at the Regional Warehouse is respected and considers all inventories stored at this location, including the supplier variability safety stock.

Seventeen units of safety stock are pushed down to the distribution warehouses. The total safety stock, including the safety stock due to lead time variability, respects the warehouse capacity constraints. The 17 units of safety stock that are pushed down is

increased to 20 units for the distribution centers to satisfy the service level requirements.



Safety Stock Push Down to Downstream Locations

The objective of warehouse capacity constraints is to minimize the total system inventory cost. To do this, the IO Postponement algorithm in determines the safety stock levels at downstream warehouses as a result of restricted capacity at their upstream warehouse.

Example:

Consider items A and B at 3 inventory locations:

CP: Central Production Facility (Upstream)

DW1: Distribution Warehouse 1 (Downstream)

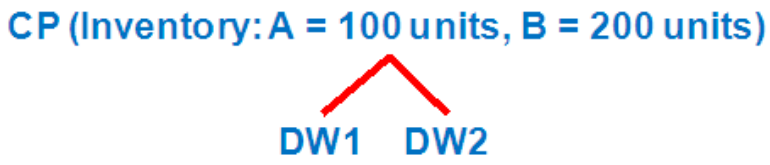
DW2: Distribution Warehouse 2 (Downstream)

Customer demands are satisfied from distribution warehouses.

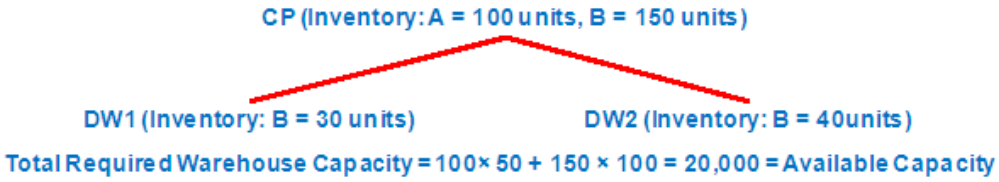
The item costs and unit volumes are:

- Cost: A = $100/Unit, B = $50/Unit
- Volume: A = 50 cu.ft/Unit, A = 100 cu.ft/Unit

Without any warehouse capacity constraints, the optimized inventory levels determined by IO for items A and B at Central Production Facility are:



With a total warehouse capacity of 20,000 cuft for the Central Production Facility (CP), the optimized inventory levels determined by IO for items A and B at each warehouse become:



Based on the warehouse capacity constraints, IO keeps the inventory of higher priced item (A) at the upstream location (CP) to minimize the inventory holding costs.

Item	Inventory Level Without Warehouse Capacity Constraints			Inventory Level With Warehouse Capacity Constraints		
	CP	DW1	DW2	CP	DW1	DW2
A	100	0	0	100	0	0
B	200	0	0	150	30	40

As shown in the above table, some of inventory of the lower priced item B is pushed down to downstream locations due to the warehouse capacity constraint at the upstream location.

The total inventory of item B is increased from 200 to 220 because IO can no longer use a single pool of inventory at CP warehouse to buffer against the uncertainty.

Specifying Warehouse Capacity Level

You can use instruct the system to constrain the IO plan with the total warehouse capacity or the storage capacities of different storage types within the warehouse.

To model the warehouse capacity granularity you can use a new profile option MSR: Warehouse Capacity Granularity. Valid values are:

- Organization Level: This allows you to constrain your plan by the total warehouse capacity of each warehouse. This is the default value.
- Category Organization Level: This allows you to constrain your plan by the storage capacities of different storage types within each warehouse.

Specifying Safety Stock Days

The "Safety Stock Days" is used in calculation of an item Average Daily Demand for each planning bucket, which is subsequently used in calculation of the item Average Cycle Stock.

Average Daily Demand for a Planning Bucket = Sum of item's independent and dependent demands from the start of the planning bucket to the Safety Stock Days working days after the start of the planning bucket, divided by Safety Stock Days.

You specify the Safety Stock Days at the item-org level in the Item Attributes Mass Maintenance window, in the Attribute Name field of the Item attributes available for update field.

> **Note:** The Average Demand (AD) is calculated over the working days based on the Organization Manufacturing Calendar.

You then specify the Simulation Set with the desired values for the Order Modifiers or Safety Stock Days in the Plan Options window. Alternatively, you can define the Safety Stock Bucket Days in the General Planning tab of Oracle Inventory Master Item or Organization Item window.

> **Note:** If you are an E1 user, you can specify this item attribute by populating the following parameter in the Item.dat file and then upload this file by means of the Legacy Collections:
> SAFETY_STOCK_BUCKET_DAYS: This is the item Safety Stock Days.

Defining Item Order Modifiers

Specifying item order modifiers is very similar to specifying Safety Stock Day. Specify the item order modifiers at the item-org level in the Item attribute available for update field of the Item Attributes Mass Maintenance window, under Attribute Name. You then specify the Simulation Set with the desired values for the Order Modifiers or Safety Stock Days in the Plan Options window.

Alternatively, you can define the item order modifiers in the General Planning tab of Oracle Inventory Master Item or Organization Item window.

The IO Planning engine considers the following item order modifiers for calculating the Average Cycle Stock:

- FOQ: Fixed Order Quantity
- MIN: Minimum Order Quantity
- FLM: Fixed Lot Multiplier

If FOQ is defined for an item, then the system ignores the MIN and FLM order modifiers and sets the Order Quantity to FOQ then Order Quantity = FOQ.

If there is no FOQ, then the system calculates the order quantity based on the item's demand with respect to MIN and FLM, then Order Quantity = Smallest Multiple of FLM is larger than or equal to the Maximum (MIN, Demand).

A NULL value for MIN is considered as zero.

A NULL value for FLM is considered as 1.

Note: E1 users can define Fixed Order Quantity and Order Multiplier in E1 source and then upload these attributes to planning server via E1-VCP Integration. Alternatively, E1 users can specify these item order modifiers by populating the following parameters in the Item.dat file and then upload this file via Legacy Collections FIXED_ORDER_QUANTITY (the item Fixed Order Quantity) and FIXED_LOT_MULTIPLIER (the item Fixed Lot Multiplier).

Specifying Order Period

The Order Period is the interval between orders. It is used in the calculation of the Average Cycle Stock as in the section Warehouse Capacity Constraints. The purpose of the Order Period is to allow the specification of an alternate order quantity that may be larger than the item's FOQ, MIN or FLM attributes. This allows the consideration of both production mechanics (e.g., must process 500 pounds = 1 container at a time) (by means of the item's order modifier attributes) and manufacturing operations constraints (e.g., must produce at least 3 week's worth of a product at a time) (by means of the Order Period) in determining an effective order quantity to be used for cycle stock calculation purposes.

You define the Order Period (OP) item attribute at the item-org level in the Item Attributes Mass Maintenance window in the same way as you defined Safety Stock Days and Order Modifiers.

Note: The attribute value for the Order Period is specified in working days based on the Organization Manufacturing Calendar.

Specifying Inventory Days Increment

The Inventory Days Increment is an item attribute, which can represent the number of days that supply of an item remains on hold for quality testing.

You define the Inventory Days Increment (IDI) attribute at the item-org level in the Item Attributes Mass Maintenance window in the same way as you defined Safety Stock Days and Order Modifier

Note: The attribute value for the Inventory Days Increment is specified in working days based on the Organization Manufacturing Calendar.

Defining Warehouse Capacity at the Organization Level

You define the total volume capacity available in a warehouse in the Inventory Parameters tab of the Organization Parameters window

The value of this field represents the warehouse capacity for the organization as specified in the Organization Parameters window or as uploaded by means of the Trading Partner.dat file.

The planning engine constrains the plan with the warehouse capacities at the org level when the profile option MSR: Warehouse Capacity Granularity is set to "Organization Level".

> **Note:** There are no source fields in E1 for warehouse capacity volume and volume unit of measure. E1 users can specify warehouse capacity volume and its unit of measure by populating the following parameters in the TradingPartner.dat file and then upload this file by means of Legacy Collections MAXIMUM VOLUME (the warehouse capacity volume) and . VOLUME_UOM (the capacity volume unit of measure).

Defining Storage Capacity at the Category Level

To set up your system to define storage capacity at the category level, follow the steps below:

1. Define a category set and then define your storage types as categories in this category set. For example:
   - Category set: ABC
   - Category Set: Storage Type
2. Define your storage types as categories in this category set:
   - Category: Frozen
   - Category: Refrigerated
   - Category: Dry
   - Category: Other
3. Define capacities for your storage types, using the category set and categories defined in steps 1 and 2.

You can define the capacities for different storage types in a warehouse in the Storage Capacity window under the Setup menu for the Inventory Planner responsibility.

In the Storage Capacity window, you specify capacities for the categories in the category set defined in Step 1 above

You specify capacities for storage types in multiple warehouses (organizations) in the Storage Capacity window.

Note: You can only define one category set at a time for specifying storage capacity. This means that when you select a category set in the Storage Capacity window and define capacities, selecting another category set will replace the one previously defined.

For example, if you select category set ABC in the Storage Capacity window and define the storage capacity and then alter decide to specify storage capacity in category set DEF, the new definition of capacity in category set DEF replaces the previous definition of capacity in category set ABC. Therefore, there is a maximum of one record associated to the Storage Capacity window.

Note: If you try to save a new definition of capacity in a different category set, the systems alerts you with a pop-up window, which says "This action replaces storage capacities defined in category set <ABC> do you want to continue? You can respond by clicking the Yes or No button.

The planning engine constrains the plan with the warehouse capacities at the category org level when the profile option MSR: Warehouse Capacity Granularity is set to Category Organization Level.

Note: E1 users can utilize a user-configurable category code to define a Category Set for storage types. Each category code that comes over by means of E1-VCP integration becomes a Category Set, and the values that are held in that category code field for various items become the Categories. Subsequently these attributes can be uploaded to planning server via E1-VCP Integration. Alternatively E1 users can specify category sets and categories in the CategorySet.dat and Category.dat files and then upload these files via Legacy Collections.

Defining Item Volume

You specify the item volume and its unit of measure at the item-org level in the Item Attributes Mass Maintenance window. You then specify the Simulation Set with the desired values for the item volume in the Plan Options window.

Alternatively you can define the item volume in the Physical Attributes tab of Oracle Inventory Master Item or Organization Item window.

Note: E1 users can define item volume and item volume unit of measure in E1 source and then upload these attributes to planning server via E1-VCP Integration. Alternatively you can specify item volume and its unit of measure by populating the following parameters in the Item.dat file and then upload this file via Legacy Collections:

UNIT_VOLUME (the item volume and VOLUME_UOM (the item volume unit of measure).

Specifying the Enforce Warehouse Capacity Constraints Plan Option

You enforce warehouse capacity constraints by selecting the plan option Enforce Warehouse Capacity Constraints. The following table summarizes the IO engine behavior when the plan option Enforce Warehouse Capacity Constraints is checked. Note that Enforce Budget Constraints, Enforce Capacity Constraints and Enforce Service Level Constraints are all selected, as shown in italics.

Plan Level Constraints Status	**Engine Behavior**
Enforce Service Level Constraints	Warehouse capacity and budget are hard constraints
Enforce Budget Constraints	Warehouse capacity and budget are hard constraints
Enforce Capacity Constraints	Warehouse capacity and budget are hard constraints
Enforce Service Level Constraints	Warehouse, material, and resource capacities are hard constraints
Enforce Budget Constraints	Warehouse, material, and resource capacities are hard constraints
Enforce Capacity Constraints	Warehouse, material, and resource capacities are hard constraints
Enforce Service Level Constraints	Service levels are hard constraints. Warehouse capacities are soft constraints
Enforce Budget Constraints	Service levels are hard constraints. Warehouse capacities are soft constraints
Enforce Capacity Constraints	Service levels are hard constraints. Warehouse capacities are soft constraints

Warehouse Capacity Exceeded Exception

The warehouse capacity or the warehouse storage type capacities could be exceeded

above the available capacity when the Warehouse Capacity Constraints are considered as soft constraints by the planning engine. This can happen when the plan option Enforce Service Level Constraints is checked:

Plan Level Constraints Status	Engine Behavior
Enforce Service Level Constraints	Service levels are hard constraints. Warehouse capacities are soft constraints.
Enforce Budget Constraints	Service levels are hard constraints. Warehouse capacities are soft constraints.
Enforce Budget Constraints	Service levels are hard constraints. Warehouse capacities are soft constraints.

The generated exception is called Warehouse Capacity Exceeded.

When the plan is constrained by the warehouse capacity at the org level, this exception is generated by organization and planning bucket. When the plan is constrained by the warehouse storage type capacity at the category org level, this exception is generated by organization, category, and planning bucket.

The Exception Details window displays the following fields:

- Exception: Warehouse capacity exceeded
- Organization
- Category: This field is blank if the plan is constrained by the warehouse capacity at the organization level.
- Start Constraint Date
- End Constraint Date
- Available Warehouse Capacity
- Load Ratio: This is the ratio of Required Warehouse Capacity over Available Warehouse Capacity.

> **Note:** The exception is part of the Material and resource capacity exception group.

Pushing Warehouse Capacity Facts to APCC

The Archive Plan Summary concurrent program is enhanced by adding the following

facts and dimensions and pushing them to the APCC repository:

- Required Warehouse Capacity
- Available Warehouse Capacity
- Average Cycle Stock
- Dimensions
- Organization
- Category

Setting Up Warehouse Constraints

To set up IO warehouse constraints, follow the steps below:

1. Set up the profile option MSR: Warehouse Capacity Granularity
   - Organization level
   - Category Organization Level
2. Specify the "Safety Stock Days" at item-org level in the "Item Attributes Mass Maintenance" window (Alternatively you can define this attribute in Oracle Inventory Organization Item window, General Planning tab). This item attribute is used as the time horizon for calculating the Average Demand.
3. Specify item order modifiers at item-org level in the "Item Attributes Mass Maintenance" window (Alternatively you can define item order modifiers in Oracle Inventory Organization Item window, General Planning tab).
4. Specify the "Order Period" at item-org level in the Item Attributes Mass Maintenance window.
5. Specify the "Inventory Days Increment" at item-org level in the Item Attributes Mass Maintenance window.
6. Define the "Warehouse Volume Capacity" in Oracle Inventory (Organization Parameters window, Inventory Parameters tab). This is used if the "Organization Level: is selected in Step 1.
7. Define the storage capacities at the org category level in the "Storage Capacity" window under the Setup menu for the Inventory Planner responsibility. The category level capacities are used if the "Category Organization Level: is selected in Step 1.

8. Define the item's "Unit Volume" and item's "Volume Unit of Measure" at item-org level in the "Item Attributes Mass Maintenance" window (Alternatively you can define these attributes in Oracle Inventory Organization Item window, Physical Attributes tab).

9. Enforce Warehouse Capacity Constraints in the Constraints tab of the Inventory Optimization Plan Options window.

12

Accounting for Cycle Inventory in Safety Stock Calculation

Introduction to Accounting for Cycle Inventory in Safety Stock Calculation

Enabling Cycle Stock Functionality

To enable the ability to calculate safety stock with respect to cycle stock you need to set the profile option MSR: Enable Cycle Stock Adjustment in your personal profile values. Valid values are:

- Yes: Calculate safety stock using cycle stock
- No (default): Do not calculate safety stock using cycle stock

Target Service Level De-rating

Target Service Level can be de-rated for calculating safety stock requirements based on the cycle inventory levels. The safety stock inventory that is calculated, based on the de-rated service level values in conjunction with the cycle inventory, results in the original target service levels

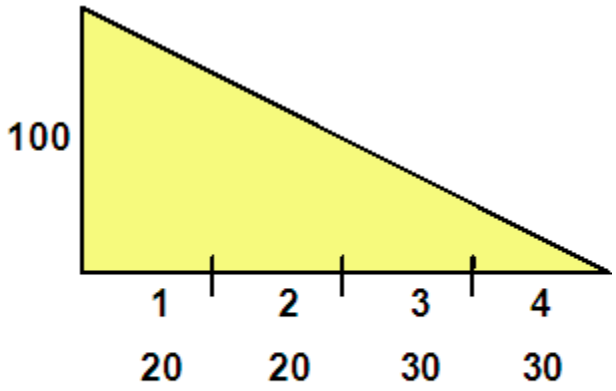
The optimization engine de-rates the target service level based on the cycle inventory levels. It then uses the de-rated target service level to calculate the safety stock. The engine also de-rates the target service level based on how many buckets of demand the order quantity represents. For example,

- Target service level (TSL): 0.99
- Order quantity (OQ): 100

The demands are:

- Week 1: 20
- Week 2: 20
- Week 3: 20
- Week 4: 20

Total demand is 100.



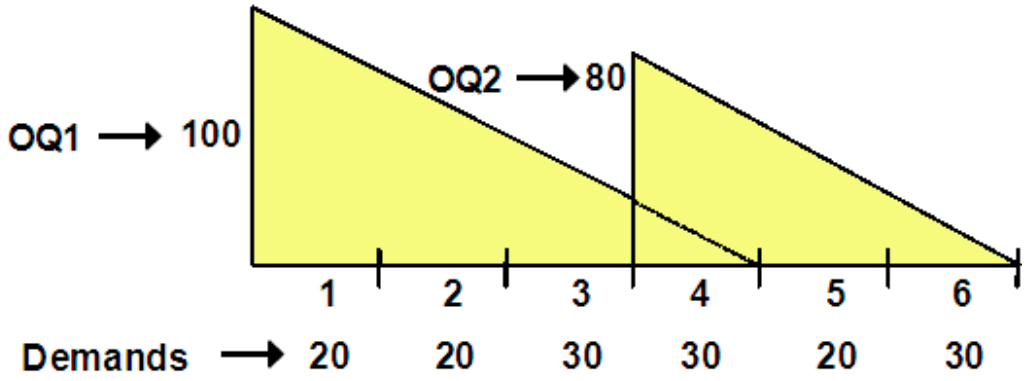
The demands consume the order quantity in four weeks. Thus the total demand of Week 1 through Week 4 is:

20+20+30+30=100 Order Quantity

The de-rated service level is: 0.96 [0.994]

The optimization engine de-rates the target service level for each order of the item.

IO calculates "W" dynamically based on an order quantity and future demands that are covered by that order quantity. For example,



In the example presented by the above diagram, "W1" is calculated based on the first order quantity (OQ1) and the future demands that consume this order quantity. As a result W1 = 4 since the order quantity of 100 is consumed by demands of time buckets 1 through 4:

100 = 20 + 20 + 30 + 30 ◎ W1 = 4

Similarly, "W2" is calculated based on the first order quantity (OQ2) and the future demands that consume this order quantity.

As a result W2 = 3 since the order quantity of 80 is consumed by demands of time buckets 4 through 6:

80 = 30 + 20 + 30 ◎ W2 = 3

De-rating Service Level in a Multi-echelon Case

The calculations for de-rating the service level in a multi echelon case are the same as the single level scenario. The system uses the same calculations after the propagation of the target service levels throughout all supply chain levels.

Requirements Explosion De-rating

During the requirements explosion process, the optimization engine performs the follow tasks:

- Calculates the target service levels of components from the target service levels of their assemblies
- De-rates the target service levels
- Calculates the total assembly safety stock

- Postpones the safety stock to lower levels using the target service levels
- Calculates the de-rated safety stock using the safety stock and the de-rated service levels

Using hypothetical figures for Items A, B, C, D and Target Service Levels, and applying the IO engine, De-rated Safety Stock might look as shown in the table below. Note that the safety stock quantities are lower as a result of de-rating.

Item	Target Service Level	De-rated Service Level	Safety Stock	De-rated Safety Stock
Total Assembly Safety Stock			100	
A	96	94	52	
B	97	95	21	
D	98	96	27	
Total Assembly Safety Stock				80

13

Service Parts Planning

Integration with Oracle Inventory Optimization

Field technicians may carry a very large inventory. Technican warehouses can be planned, especially if you want to constrain your inventory plan with inventory budgets. A major consideration in Oracle Inventory Optimization in planning the service parts business is its support of Poisson's distribution for intermittent demand and demand for small quantities.

When the user specifies the forecast method as one of CROSTON for Intermittent, Regression with Seasonal Causal for Intermittent, Multiplicative Monte Carlo Regression with Seasonal Causal for Intermittent, Inventory Optimization infers the distribution of inter arrival times as Poisson. For all other forecast methods, the distribution of inter-arrival times is assumed to be Normal.

The item mass maintenance has an additional item attributes to setup details around demand characteristics to time between two demands:

- The average demand per day, standard deviation, and coefficient of variation for demand
- The mean of inter-arrival time for demands; standard deviation and coefficient of variation for inter arrival time; the inter-arrival time distribution.

The key parameters that need to be defined are: mean inter-arrival times for demand and Intermittent Demand.

In the case of Poisson's distribution, Oracle Inventory Optimization will only use a Simple Poisson Process to model the intermittent demand pattern, which means that the size of an individual order is a constant. In this case, the demand arrival rate can be obtained directly from the item attribute – average inter-arrival time:

For more information on Intermittent Demand, refer to *Setting Intermittent Demand* in this document.

$\lambda = 1 /$ (average inter-arrival time measured in bucket)

The average order size is then calculated by:

$\mu =$ average order size

$\mu =$ (average demand per bucket)/ λ

In most instances, average order size is 1.

The target inventory level is then calculated as follows:

$$S = \mu \cdot \left(1 + \min_{n} \left\{ n \left| \sum_{k=0}^{n} \frac{(\lambda L)^k}{k!} \exp(-\lambda L) \geq sl, n \text{ is an integer} \right. \right\} \right)$$

$$S = \mu \cdot \left(1 + \min_{n} \left\{ n \left| \sum_{k=0}^{n} \frac{(\lambda L)^k}{k!} \exp(-\lambda L) \geq sl, n \text{ is an integer} \right. \right\} \right)$$

where S is the inventory level, L is the lead time and sl is the target service level.

Average inventory level is often used to calculate the inventory carrying cost. This is particularly important for budget plans. The average inventory level is calculated as:

$\bar{I} =$ average inventory level

$\bar{I} = S - \lambda \cdot \mu \cdot L$

If the demand pattern is not intermittent, it is not necessary to assume Poisson distribution, instead the customary Normal distribution will be used.

Safety Stock Smoothing

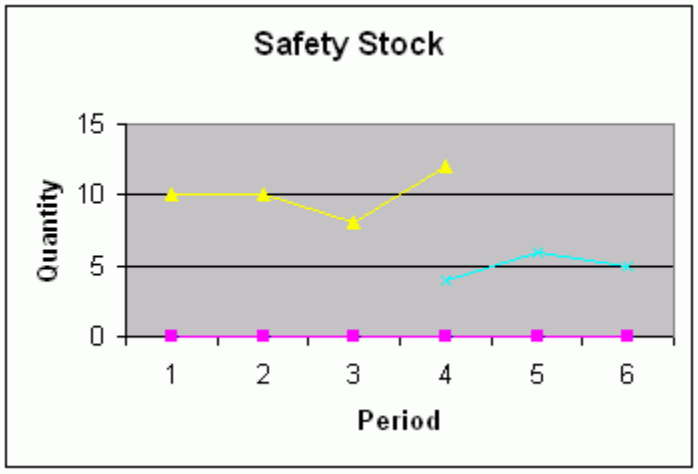
Assuming that the forecast is for the latest revision in the supersession chain, Inventory planning creates safety stock for the latest revision item in a given planning bucket. Inventory planning performs safety stock smoothing across the buckets as long as the item it is planning for is the same. Since Inventory Optimization does not consider the supersession chain, it does not smooth across items in the chain.

Example

If the supersession definition is A to B to C in buckets 1, 2, and 3 and A to B to C to D in buckets 4, 5, and 6, then inventory planning will smooth safety stock for item C across

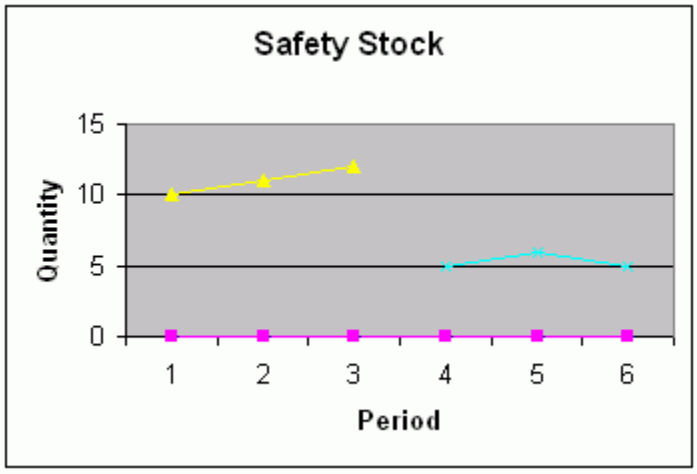
the three buckets and then smooth for D across buckets 4, 5 and 6. But there will be no smoothing between the third and fourth bucket.

	Safety stock values					
Item	P1	P2	P3	P4	P5	P6
A	0	0	0	0	0	0
B	0	0	0	0	0	0
C	10	8	12			
D				4	6	5



After Oracle Inventory Optimization smoothing:

	Safety stock values					
Item	P1	P2	P3	P4	P5	P6
A	0	0	0	0	0	0
B	0	0	0	0	0	0
C	10	11	12			
D				5	6	5



An improved safety stock rounding heuristic is introduced, particularly to handle the case of intermittent demand.

This modifies the safety stock at each level in the chain. The Process is as follows:

1. Round Up the safety stock at the end item level. Compute the difference between the rounded up safety stock value and the actual value.

2. Subtract the difference from the safety stock at the next level in the supply chain. Round Up the resulting safety stock and compute the difference as state in step 1.

3. The process is repeated all the way up the supply chain.

In traversing the supply chain, the logic ensures that the sum total of the safety stock across the echelons is equal to the rounded up integer value of the computed safety stock.

The improved heuristic is controlled by the item attribute ROUND. If this is set to 'Yes', the improved heuristic is invoked. If 'No,' safety stock rounding is based on the older heuristic. The Item-Attribute ROUND is available both in the Item-Org and Item-Zone tabs of the Item Attribute Mass Maintenance window.

For intermittent demand, Inventory Optimization generates a single value of safety stock so that the smoothing parameters do not have a performance impact. However, if there is a user specified safety stock value, it overrides the Inventory Optimization recommended values.

Budget Constraints

Inventory planning currently supports budget constraints when prescribing the echelon stocking recommendations.

The technician organizations for planning, including the inventory plan is not considered. Hence for budget constraints, it is recommended that the budget to be considered in Inventory Optimization should include the inventory budget for the

entire supply chain, except the field technician organizations.

Plan Options Simulation Set

The Inventory planning plan option includes the simulation set. When a simulation set is provided, planning uses the simulation set to determine the item attributes. If the value of the simulation set is 'NULL" then planning uses the collected data.

Evaluation of Multiple Service Levels Specified on Different Forms

Service levels can be specified:

- at the plan level
- in item simulation sets
- in service level sets

Different service levels apply according to the following rules:

1. A service level specified in the Plan Options form (and enforced by checking the Enforce Plan Level defaults check box) overrides any other value. If not enforced, then this service level serves as the default value for items where service level is not set by any other means.

2. If the service level is not enforced through Plan Level defaults, and if the service level for an item-organization combination is specified in the Item Simulation Set, then the value from the Item Simulation Set applies for the plan run.

3. If the service level is not enforced through Plan Level defaults, and no service level is set in the Item Simulation Set, but service levels are set using the Service Level Set, then the service levels from the Service Level Set are used in the plan run.

   There is a specific hierarchy in which service level values default in Oracle Inventory Optimization if entered as part of the 'Service Level Set'. In general, if service level is not provided at a lower level, then the logic checks for service level default values from higher (more general) levels. For example, service level is not provided at the demand class level. Then logic looks in 'category', and then 'item-instance-organization' level, and so on.

4. If service levels are specified at lower levels, then Inventory Optimization logic picks up service level from those lower levels. The only exception to this rule is when you use plan level enforcement. If you specify the service level in plan options (plan level enforcement), Oracle Inventory Optimization logic always uses the service level from plan option, even if service levels are specified at lower levels using a 'Service Level Set.'

The following matrix helps explain the service levels considered by the planning engine as applicable when service levels are enforced (ESL). Note in plans that enforce capacity constraints (ECC), or enforce budget constraints (EBC), the service level achieved is an

outputof the plan rather than an **input**.

Service level entered at plan option (Plan level defaults)	Enforce plan level default	Service levels specified in Item Simulation Set	Service levels entered via service level set	Expected behavior
Yes	Yes	Yes or No	Yes or No	Service level requirement for all the demands is taken from service level that you enter in at plan option.
Yes	No	Yes	Yes or No	Service level requirement is picked up from the Item Simulation Set if specified there or from collected data. If missing then the value set in the Service Level Set is used. If none available then the value set for plan level defaults are used.
Yes	No	No	Yes	Service level you specify in the 'service level set' will be used. If no service level can be inferred for an item then plan level defaults are used.

No (Null)	No	Yes	Yes or No	Service level requirement is inferred from the Item Simulation Set. If no service level can be inferred from the Simulation Set then it is inferred from the Service Level Set. If service levels cannot be inferred from Service Level Set either then a default service level of 50% is assumed. **Tip:** In EBC plans, the main task is to figure out the achievable service levels given a budget. The service level to be achieved is not specified in this case (EBC plans). However, EBC plans require you to provide a target service level that needs to be achieved for all items in a plan, such target service level is entered at

				plan option. The default value for the target is considered to be 50%.
No (Null)	No	No	Yes or No	Service Levels specified in the Service Level Set are used. If none then a default Target Service Level of 50% is assumed.
No (Null)	Yes	Yes	Yes or No	Plan will use the service levels specified in the Item Simulation Set or collected data. If nothing is specified in the Simulation Set, the Service Levels from the Service Level Set are used. If none then a default service level of 50% is assumed.
No (Null	No	No	Yes	Plan will use the service levels specified in the service level set.
No (Null)	No	No	No	Plan will interpret the service level requirement at 50%, in other words, no safety stocks are calculated.

Defaulting Service Levels

As mentioned previously, there is a specific hierarchy in which service levels are defaulted in Oracle Inventory Optimization if entered as part of 'service level set'. In general, if service level is not provided at a lower level, logic checks for defaulting service levels from the higher level. For example, if service level is not provided at demand class level, logic looks for 'category', 'item-instance-organization' level, and so on.

If service levels are specified at lower levels, Oracle Inventory Optimization logic picks up service level from lower levels. The only exception to this rule is when you use plan-level enforcement. If you specify the service level in Plan Option (plan level enforcement), Oracle Inventory Optimization logic always picks up service level from the Plan Options, even if service levels are specified at lower levels using 'service level set'.

14

Cross-Product Integration

This chapter details the integration between Oracle Inventory Optimization and Oracle Demand Planning.

This chapter covers the following topics:

- Integration with Demand Planning
- Oracle Inventory Optimization and Intermittent Demand Attributes from Demand Planning

Integration with Demand Planning

Oracle Inventory Optimization requires inputs such as demand forecast and demand variability from Oracle Demand Planning. This chapter also briefs how the inventory planning engine spreads forecast that it receives from Oracle Demand Planning.

Uncertainty in demand influences inventory optimization decisions. For example, you may increase the level of your safety stock to satisfy demand spikes during a specific time period. You may want to consider the distribution of demand over a time period or an order replenishment lead-time to drive safety stock calculations.

Oracle Inventory Optimization uses the following inputs from Oracle Demand Planning to plan optimal levels of inventory:

- Demand forecast
- Demand variability

Forecast Accuracy Measures

An estimate of demand variability indicates the forecast accuracy, also referred to as the forecast error. Oracle Demand Planning calculates the following to estimate the standard deviation of forecast error:

- Mean absolute deviation

- Mean absolute percentage error

Based on the demand variability information from Oracle Demand Planning, Oracle Inventory Optimization estimates the safety stock required to avoid stock out. Oracle Advanced Supply Chain Planning uses the demand variability information to suggest the optimal quantity that you need to order and the time when you need to place the order. For more information on mean absolute deviation and mean absolute percentage error, see The Organizations Tabbed Region, page 3-9.

You can instruct Inventory Optimization to use the Negative Binomial distribution as the forecast error distribution for items with high variability intermittent demands when calculating safety stock levels. To do this, use the profile option MSR: Variance to Mean Threshold for Use of Negative Binomial Distribution. If a value is specified for this profile option, then Inventory Optimization uses either the Negative Binomial Distribution or the Poisson Distribution for demand variability modeling when the item attribute Intermittent Flag is set to "Yes". The selection of the distribution is based on comparing the ratio of (Variance / Mean) of the demand with the profile option value

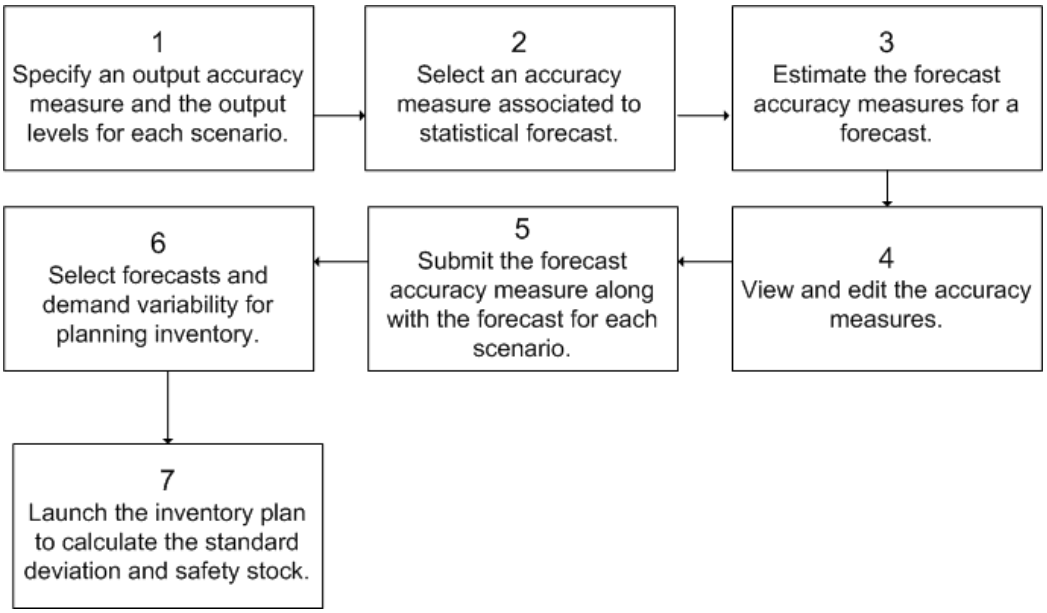
If a value is specified for this profile option, then Inventory Optimization uses either the Negative Binomial Distribution or the Poisson Distribution for demand variability modeling when the item attribute Intermittent Flag is set to Yes. The selection of the distribution is based on comparing the ratio of (Variance / Mean) of the demand with the profile option value. If the Variance/Mean ratio is greater than the profile option value, then IO uses Negative Binomial Distribution. If the variance/Mean ratio is less than or equal to the profile option value, then IO uses Poisson Distribution.

The default value for this profile option is NULL. In this case, IO uses the Poisson Distribution when the item attribute Intermittent Flag is set to Yes.

Business Process Flow

The following illustration represents flow of information between Oracle Demand Planning and Oracle Inventory Optimization.

Business Process Flow



You need to perform steps 1 through 5 using Oracle Demand Planning. Perform steps 6 and 7 using Oracle Inventory Optimization. The following steps summarize the business process flow depicted in the illustration:

- Step 1: In Oracle Demand Planning, you can use the Demand Planning System Administrator responsibility to specify an output accuracy measure (mean absolute deviation or mean absolute percentage error) for each scenario. In addition, you can specify the output levels for each scenario based on your inventory planning requirements.

- Step 2: You can use the Demand Planning System Administrator responsibility, the Demand Planning Manager responsibility, or the Demand Planners responsibility to select an accuracy measure (mean absolute deviation or mean absolute percentage error) that is associated to statistical forecast. Oracle Demand Planning calculates the specified accuracy measure when it generates statistical forecast.

- Step 3: You can select a forecast and the levels at which Oracle Demand Planning needs to calculate the forecast accuracy measure. You can also select a comparison measure to calculate the forecast accuracy measure.

- Step 4: You can view the properties of accuracy methods and scenarios. Oracle Demand Planning compares the demand forecast with historical data to calculate forecast accuracy. However, as the demand forecast is futuristic, it is unlikely to have any common time period to compare against with the historic data. Therefore, you can modify the forecast accuracy measures in Oracle Demand Planning.

- Step 5: Using the Demand Planning Manager and Demand Planner responsibilities, you can submit the forecast accuracy measure and the forecast for each scenario at specific output levels. When you submit the forecast accuracy measure, the Oracle Demand Planning Express pushes the information to Oracle Demand Planning Server. Oracle Demand Planning Server shares this information with Oracle Inventory Optimization. The forecast accuracy measure is identified by a scenario name, a forecast name, and a measure type (mean absolute deviation or mean absolute percentage error). Oracle Inventory Optimization requires forecast accuracy measures at the following levels:
    - Item or product in the Product dimension
    - Organization in the Ship From Location dimension
    - Day, week, or manufacturing in the Time dimension
    - Highest level such as All Geography and All Sales Channel for all other dimensions
- Step 6: In Oracle Inventory Optimization, you can use the Inventory Planners responsibility to select forecasts and demand variability for planning inventory. You can select the demand variability as a plan option in Oracle Inventory Planning. Alternatively, if you want to run simulations of an inventory plan using different percentage demand variability values for different scenario sets, you can specify a default demand variability percentage at the scenario set level. The following are characteristics of a scenario set:
    - You can deploy only one type of demand variability (accuracy metric from Oracle Demand Planning, user-defined probability, or user-defined mean absolute % error) in a scenario set.
    - The list of values for the type of demand variability depends on the forecast you select. For example, Accuracy Metric appears as a type of demand variability only when you select a scenario from Oracle Demand Planning.
    - Oracle Inventory Optimization uses the forecast accuracy information that Oracle Demand Planning provides to calculate the safety stock.
    - If you select a specific type of demand variability for a scenario set, the scenario sets having the same scenario set number acquire the type of demand variability. For example, if you select Accuracy Metric as the type of demand variability for a scenario set, it applies to all scenario sets that have the same scenario set number. In addition, the Mean % Error and Probability fields for the scenario sets become disabled.
- Step 7: You can launch the inventory plan in Oracle Inventory Optimization to determine the standard deviation and the safety stock.

Forecast Spreading

If Oracle Inventory Optimization receives a period level forecast from Oracle Demand Planning, the inventory planning engine spreads the forecast to weekly forecasts of equal sizes. Oracle Inventory Optimization spreads forecasts to prevent safety stock spikes.

Oracle Inventory Optimization and Intermittent Demand Attributes from Demand Planning

Inventory Optimization considers the demand pattern (regular or intermittent) in its safety stock calculation. Currently you can specify an item's demand pattern as intermittent using an attribute called "Intermittent Demand" in the Item Attributes Mass Maintenance (IMM) window. For items that this attribute is not specified by users, IO analyzes and determines their demand patterns as part of the safety stock calculation.

IO now receives the value of the Intermittent Demand attribute (Intermittency Flag) from Oracle Demand Management. This value is used in the safety stock calculation if there is no user-specified value in IMM.

In addition, the following item attributes related to an item demand pattern are now displayed in the Items window in the Planner's Workbench (PWB):

- Intermittent Demand
- Mean Interarrival Time
- Demand Variance
- Average Daily Demand

> **Note:** The Intermittent Demand column is displayed as blank if the demand schedule and Intermittent Demand are at the Item/Zone level.

Understanding Intermittent Demand Attributes from Demand Planning

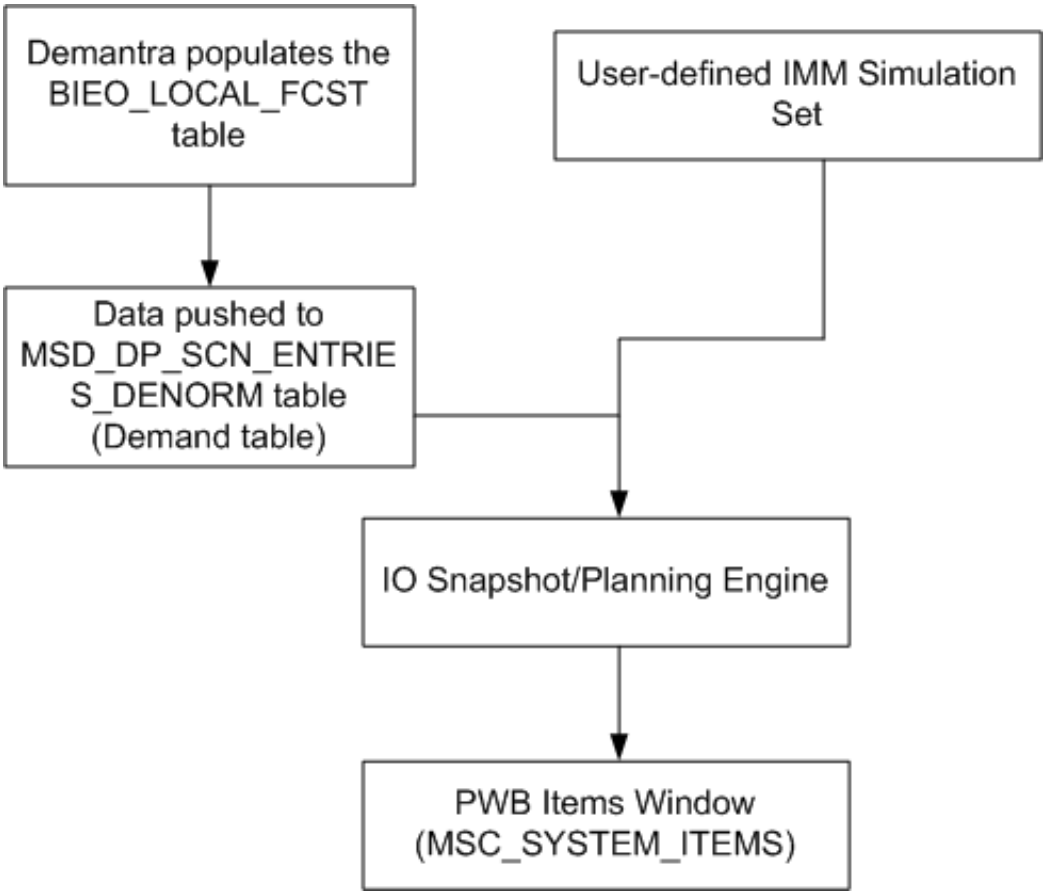
Demand Planning generates and populates the following fields in BIEO_LOCAL_FCST table and pushes these data to MSD_DP_SCN_ENTRIES_DENORM table (Demand Table):

- Intermittent Demand
- Mean Interarrival Time

The IO engine uses the Demantra generated values of Intermittent Demand and Mean Interarrival Time if the user-defined value of Intermittent Demand in the user-defined

IMM Simulation Set is set to NULL or Auto. If the user-defined values of intermittent demand are set to Yes or No, they override the system generated values and the IO engine uses the user-defined values.

IO also calculates the Demand Variance field and the Average Daily Demand field, which are used to compare against the user-specified value of for Profile Option MSR: Variance to Mean Threshold for use of Negative Binomial Distribution.



Receiving the Intermittency Flag from Demand Planning Data Flow

The Planners Workbench (PWB) displays the following item attributes related to an item demand pattern in the Items window:

- Intermittent Demand

  Note: The Intermittent Demand column is blank if the demand schedule and intermittent demand are at the Item/Zone level.

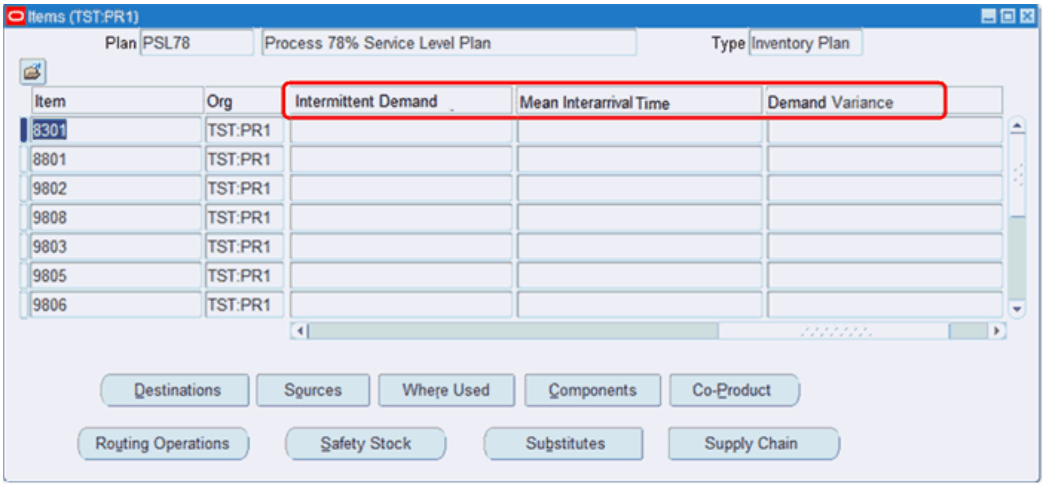
- Mean Interarrive

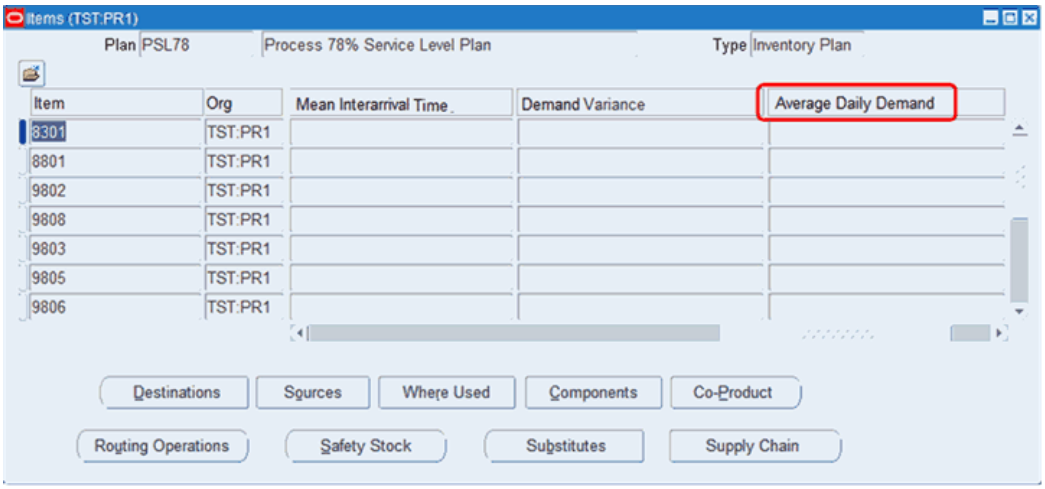
Note: The Mean Inter Arrival attribute in IMM is renamed to Mean Interarrival Time for both Forms and ADF formats

- Demand Variance
- Average Daily Demand

This Intermittent Demand received from Oracle Demand Management is applied only to the item org level. The Intermittent Demand column is displayed as blank in the Items window if the demand schedule and Intermittent Demand are at the Item/Zone level. The Intermittent Demand flag for forecasts at the item zone level is received from Oracle Demand Management and used in IO but not displayed.

Note: The Intermittent Demand flag for forecasts at the item zone level is received from Oracle Demand Management and used in IO but not displayed.





Receiving the Intermittency Flag from Demand Planning Process

The process of receiving the Intermittency Flag from Demantra follows the process outlined below:

1. IO receives the value of the Intermittent Demand Attribute (Intermittency Flag) from Oracle Demantra.

2. You specify the Intermittent demand Attribute Values in the Item Attributes Mass Maintenance (IMM) window. Valid values are:

   - Yes: IO uses the value specified in IMM
   - No: IO uses the value specified in IMM
   - Auto: IO uses the value received from Demantra (Yes or No)
   - NULL (blank): IO uses the value received from Demantra (Yes or No)

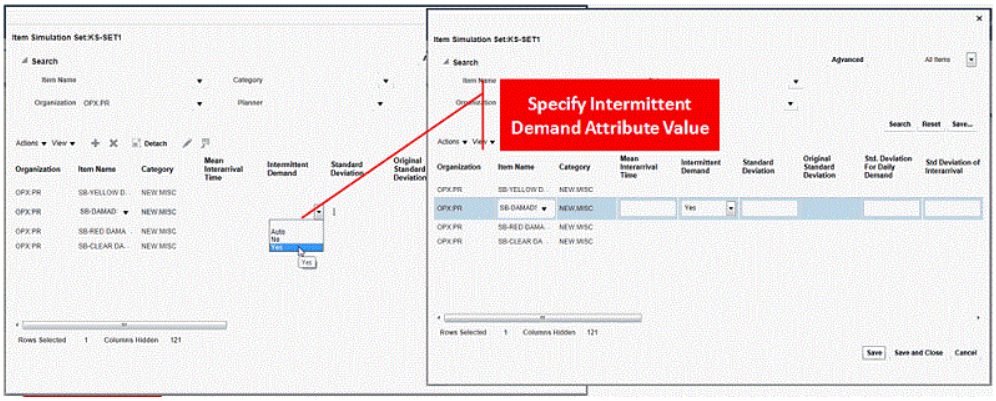
3. Verify the Intermittent Demand values used by the plan in the PWB Items page.

4. Analyze the plan output and verify the effects of Intermittent Demand attribute values on your safety stock levels.

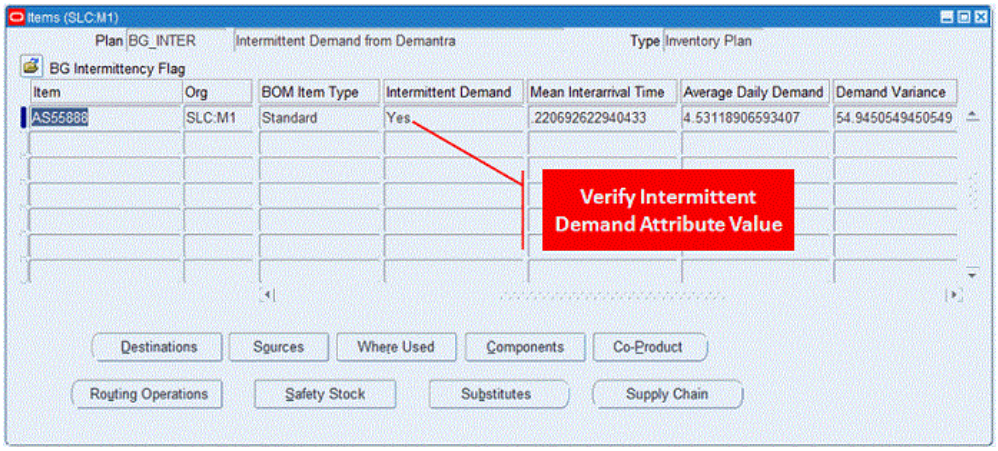
How to Receive the Intermittency Flag from Demand Planning

To receive the Intermittency Flag from Demand Management, follow the procedure below:

1. From the Item Attributes Mass Maintenance (IMM) window, specify Intermittent Demand attribute values.

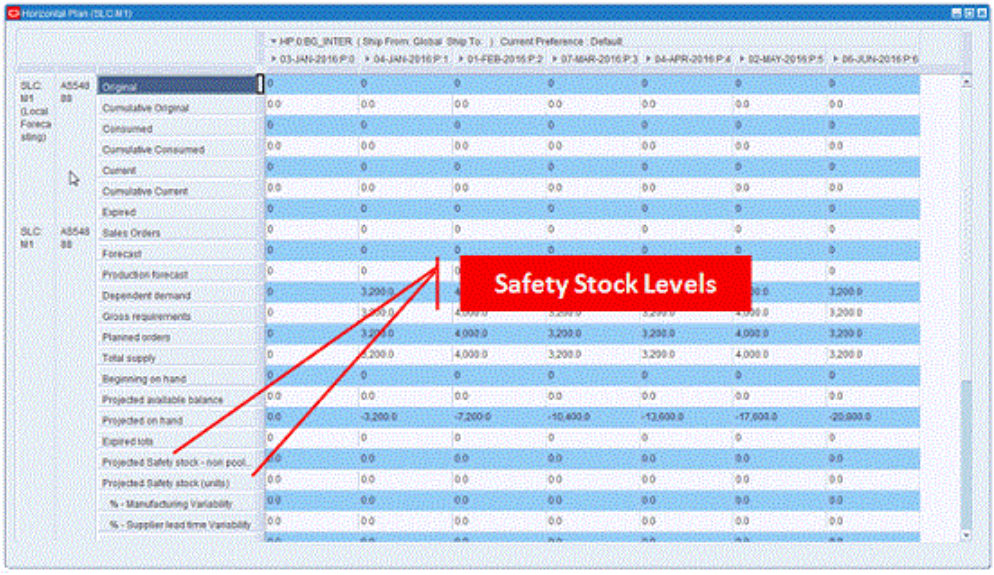


2. Verify the Intermittent Demand values used by the plan in the Planners Workbench (PWB) Items page.



The Intermittent Demand attribute value in the plan Items window is the value specified in IMM when the value is Yes or No If there is no value specified in IMM (NULL) or the specified value is "Auto", the value displayed in the Items page is the value received from Oracle Demand Management.

3. From your Horizontal Plan, analyze the plan output to verify the effects of Intermittent Demand attribute values on the safety stock levels.



For more information on Intermittent Demand, refer to the *Oracle Demantra Demand Management User's Guide*.

A

Profile Options

This appendix covers the following topics:

- Profile Options Introduction
- Special Considerations
- Inventory Optimization Profile Options

Profile Options Introduction

There are different categories of profile options that relate to the Oracle Advanced Planning suite:

- MRP profile options
- MSC profile options
- MSD profile options
- MSO profile options
- MSR profile options
- INV profile options

Oracle Inventory Optimization uses the MSR profile options. In addition, Oracle Inventory Optimization may use MRP, MSC, and MSO profile options. For more information on other profile options, see *Oracle Advanced Supply Chain Planning Implementation and User's Guide.*

The following sections contain tables which describe each profile option.

Special Considerations

Automatic Calculations

When the Default Value of a profile option states that it is automatically calculated, this means that the Planning Engine determines the default value of that particular profile option. These profile options are included in this appendix for information purposes only. If you must change these profile option values, do so only after consulting Oracle Development and Oracle Support.

Flexfield Attributes

Flexfield attribute profile options store the name of the flexfield column that contains the value in the corresponding table. For example, if the Aggregate Resource Name is stored in column ATTRIBUTE1, the profile option MSC: Aggregate Resource Name Flexfield Attribute will contain the value 1.

This setup is performed only during an Oracle Applications installation. Do not modify it unless absolutely necessary.

Floating Point Precision

Certain quantities used by Oracle Advanced Supply Chain Planning have fractional values. For internal processing purposes these quantities must have integer values. To resolve this problem, floating-point precision profile options act as internal multipliers. When a fractional quantity is encountered it is multiplied by the appropriate floating-point precision profile option value, and the resulting integer is processed by the Planning Engine.

There are several floating-point precision profile options. This enables greater flexibility in controlling the precision with which to consider each quantity. It also provides more flexibility to avoid numerical overflow on 32-bit platforms where the each equivalent integer processed by the Planning Engine cannot exceed 2.1 x 109. The floating-point precision profile options are: Floating Point Precision for Usages in Routing, Floating Point Precision, Floating Point Precision for Transportation Capacities (Weight and Volume), Floating Point Precision for Planning Bucket Efficiency.

Inventory Optimization Profile Options

The following table lists and defines the MSR profile options in Oracle Inventory Optimization:

Profile Option Name	Valid Values	Default Value	Description
MSC: IO_UI_PERSETNAME	N/A	N/A	Use this profile option to specify the period set name that is being used if it is any value other than 'Accounting'. The profile value has no validation and the text has to be entered manually.
MSR: Budget Category Set	Null or any category sets	Null	Use this profile option to specify the category set that includes all items that follow a budget. Valid values are: - Null: Budget constraints are not applied to any item in the plan. - Any category set: Specify the category set that contains all items following a budget. Ensure that you have included all items that follow the budget within the category set.
MSR: Enable Cycle Stock Adjustment	Yes/No	No	Use this profile option to enable calculating safety stock with respect to cycle stock. Valid values are: - Yes: Calculate safety stock using cycle stock - No: Do not calculate safety stock using cycle stock
MSR: Postponement Factor	Integers >= 0	10	Specifies maximum depth in the bill of materials and sourcing tree to which uncertainty must be postponed.

Profile Option Name	Valid Values	Default Value	Description
MSR: Safety Stock Holding Strategy	Destination Organization or Source Organization	Source Organization	Specifies where safety stock should be held when the cost is the same for an item in the destination organization and a source organization. Valid values are: - Destination Organization: The safety stock is held at the destination organization. - Source Organization: The safety stock is held at the source organization.
MSR: Probability Distribution Type	Cumulative Probabilities/ Probabilities	Probabilities	Determines probability distribution type associated with forecast sets as input to Oracle Inventory Optimization. Valid Values are: • Probabilities: Demand uncertainty is stated in terms of a (non-cumulative) probability distribution. • Cumulative Probabilities: Demand uncertainty is stated in terms of a cumulative probability distribution.

Glossary

A

...

absolute error

Magnitude of forecast errors, actual less forecast values, without regard to sign.

accuracy measures

In Oracle Demand Planning and Oracle Inventory Optimization, a statistical data element that estimates the accuracy of a comparison between two measures. In Oracle Inventory Optimization, accuracy measures include MAD and MAPE.

See also Mean Absolute Deviation (MAD) and Mean Absolute Percent Error (MAPE).

Analysis Workbench

You can use the Analysis Workbench to analyze inventory plans. You can analyze service levels, profits, most profitable service levels, inventory levels, postponement, and budget. The Analysis Workbench facilitates a graphical and tabular comparison between multiple inventory plans.

API

An Application Programming Interface (API) is a published interface to accomplish a business or scientific function. An API defines a contract to its users by guaranteeing a published interface but hides it's implementation details.

assignment hierarchy

You can assign sourcing rules and bills of distribution to a single item in an inventory organization, all items in an inventory organization, categories of items in an inventory organization, a site, and an organization. These assignments have an order of precedence relative to one another.

assignment set

A group of sourcing rules and/or bills of distribution and a description of the items and/or organizations whose replenishment they control.

B

...

budget

The amount of money allotted for inventory operations for a specific time period. You can define budgets at various levels such as plan, organization, and category.

C

...

constrained forecast

Unconstrained forecasts are generated from historical data or by individuals without regard to limitations. For example, a retailer with no knowledge of manufacturing capability or a manufacturer without knowledge might generate an unconstrained forecast. When an unconstrained forecast is appropriately modified based on knowledge of constraints, it is known as a constrained forecast. See also unconstrained forecast.

D

...

discrete job

Discrete jobs are used to manufacture assemblies using specific materials and resources within a start and end date. (Also known as work order or assembly order).

E

...

end item

Any item that can be ordered or sold.

F

...

forecast

An estimate of future demand on inventory items. A forecast contains information on the confidence factor and any specific customer information. You can assign any number of inventory items to the forecast and use the same item in multiple forecasts. For each inventory item, you can specify any number of forecast entries.

forecast error

Each forecast that Oracle Demand Planning generates includes an estimate of the

forecast error. The types of errors computed are Mean Absolute Percent Error (MAPE) and Mean Absolute Deviation (MAD). See also Mean Absolute Percent Error (MAPE) and Mean Absolute Deviation (MAD).

forecasting methods

Refers to the statistical methods that you can use to generate forecasts in Oracle Demand Planning. These are Linear Regression, Polynomial Regression, Exponential Fit, Logarithmic Fit, Asymptotic fit, Exponential Asymptotic Fit, Single Exponential Smoothing, Double Exponential Smoothing, and Holt-Winters. As an alternative to selecting a specific method, you can allow the system to automatically determine the best-fit method.

I

...

Independent Demand

Demand for an item unrelated to the demand for other items.

M

...

Make Order

An order to manufacture an item. The following Oracle Applications entities are make orders:

- Batches (Oracle Process Manufacturing)

- Discrete jobs (Oracle Work in Process)

- Flow schedules (Oracle Flow Manufacturing)

- Jobs (Oracle Project Manufacturing)

- Jobs (Oracle Shopfloor Management (OSFM))

Mean Absolute Deviation (MAD)

A performance metric for evaluating forecast accuracy. , where N is the total number of observations, the summation is for all N observations, Y represents the observed data at any time, and Z is the corresponding forecast data.

Mean Absolute Percent Error (MAPE)

A performance metric for evaluating forecast accuracy, where N is the total number of observations, the summation is for all N observations, Y represents the observed data at any time, and Z is the corresponding forecast data.

O

...

Optimized Plan

In this plan, you can generate an optimized and executable plan based on plan objectives as well as material, resource, and transportation constraints.

P

...

planned order

A suggested quantity, release date, and due date that satisfies net item requirements.

Planner Workbench

You can use the Planner Workbench in Oracle Advanced Supply Chain Planning to act on recommendations generated by the planning process for a plan. You can implement planned orders as discrete jobs or purchase requisitions, maintain planned orders, reschedule scheduled receipts, and implement repetitive schedules. You can choose all suggestions from an MRP plan, or only those that meet a certain criteria. In Oracle Inventory Optimization, Planner Workbench is used to perform tasks such as setting up item attributes, setting up supply chain BOM, and analyzing time-phased safety stocks.

Planning Exception Set

An item attribute the planning process uses to decide when to raise planning exceptions for the item.

planning horizon

The amount of time a master schedule extends into the future.

planning time bucket

A time period into which the planning engine accumulates time-phased data and nets (performs the gross to net explosion on) that data as a unit. The planning engine plans in planning time buckets of minutes, hours, days, weeks, and periods (months).

You specify the types and number of planning time buckets for each plan when you establish its plan options; typically, you specify smaller buckets closer in and larger buckets farther out.

For example, for a weekly bucket, the planning engine accumulates all of the time-phased data that falls within that week and nets that data such that demand and supply are balanced for the week without attempting to balance for each day, hour, and minute.

The time-phased data included all demands (which are due at the end of the week), all

supplies, and all capacities (material and resource).

A planning time bucket is different from a time bucket used for reporting purposes; you use that type of bucket to specify a number of days of plan data summarized into a display.

probability

The confidence factor for a demand variability forecast to be accurate. If you are 100% confident about a forecast, then its probability is 1. You can choose to specify a probability value if demand variability information is not available from Oracle Demand Planning or when you want to run quick variability simulations.

S

...

safety stock

Quantity of stock planned to have in inventory to protect against fluctuations in demand and/or supply.

Safety Stock (item attribute)

An item attribute the planning process uses to decide whether to use fixed or dynamically calculated safety stock quantities when planning material requirements for the item. A value of MRP-planned percent means the planning process plans to safety stock quantities it calculates dynamically as a user-defined percentage of the average gross requirements for a user-defined number of days.

The user-defined percentage is defined by the value you enter for the Safety Stock Percent attribute for the item. For discretely planned items, the user-defined number of days is defined by the value you enter for the Safety Stock Bucket Days attribute for the item. For repetitively planned items, the planning process uses the repetitive planning period rather than Safety Stock Bucket Days. These safety stock quantities are dynamic in that they vary as a function of the average gross requirements calculated by the planning process for the item. A value of Non-MRP planned means the planning process plans to safety stock quantities calculated and maintained in Inventory. These safety stock quantities are fixed in that the Snapshot loads them from Inventory before the planning process and they do not vary unless they are recalculated in Inventory.

Safety Stock Bucket Days

An item attribute the planning process uses when you set the Safety Stock attribute for the item to MRP-planned percent. The planning process dynamically calculates safety stock quantities for the item by multiplying the average gross requirements for the item, over the time period defined by the value you enter for Safety Stock Bucket Days, by the value you enter for Safety Stock Percent.

Safety Stock Percent

An item attribute the planning process uses when you set the Safety Stock attribute for the item to MRP-planned percent. The planning process dynamically calculates safety stock quantities for the item by multiplying the average gross requirements for the item, over the time period defined by the value you enter for Safety Stock Bucket Days, by the value you enter for Safety Stock Percent.

safety stock quantity

The quantity suggested by MRP as additional supply needed for safety stock. This quantity can change according to an effective date set in Inventory.

sourcing rule

Specifies how to replenish items in an organization, such as purchased items in plants.

T

...

time bucket

A unit of time used for defining and consuming forecasts. A bucket can be one day, one week, or one period.

U

...

unconstrained plan

In this plan, the system performs traditional MRP type planning and assumes infinite material availability and resource capacity. Statements of material availability and resource capacity are used to generate exceptions. Demand priorities are included during the planning run to determine the appropriate pegging relationships between supply and demand.

unconstrained forecasts

Forecast that is generated from historical data or by individuals without regard to limitations. For example, a retailer with no knowledge of manufacturing capability or a manufacturer without knowledge of customer demand might generate an unconstrained forecast. See also constrained forecast.

user-specified safety stock

The safety stock value that you determine based on your requirements, experience, or parameters that the inventory planning engine cannot model. If you have provided the user-specified safety stock value, Oracle Inventory Optimization considers this value as the safety stock for processing.

Index

E

F

G

H

I

K

L

M

O

P

Q

R

S

T

U

V

W