Oracle Advanced Supply Chain Planning and Oracle Global ATP Server Implementation Manual

Release 11i

February 2000

Part No. A81009-01

ORACLE

Oracle ASCP and Oracle Global ATP Server Implementation Manual, Release 11i

Part No. A81009-01

Primary Author: Daniel Weir

Contributing Authors: Bahram Ghajarrahimi, Roger Goossens, Raju Goteti, Swati Joshi, Shailesh Kumar, Sridhar Lakshminarayanan, Nile Leach, Moshin Lee, Sophie Lee, Scott Malcolm, Jim Rogers, James Siri, Nadeem Syed, Mark Wells.

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- Did you find any errors?
- Is the information clearly presented?
- Do you need more information? If so, where?
- Are the examples correct? Do you need more examples?
- What features did you like most about this manual?

If you find any errors or have any other suggestions for improvement, please indicate the chapter, section, and page number (if available). You can send comments to us in the following ways:

Oracle Advanced Planning and Scheduling Documentation
Oracle Corporation
Attention: Scott Malcolm
300 Oracle Parkway, M/S 3OP10
Redwood Shores, CA 94065
Phone: (650) 506-7000 Fax: (650) 506-7200 Email: smalcolm@us.oracle.com

If you would like a reply, please give your name, address, and telephone number below.

If you have problems with the software, please contact your local Oracle Support Services.

Preface

Audience for This Guide

Welcome to Release 11*i* of the *Oracle® Advanced Supply Chain Planning and Oracle® Global ATP Server Implementation Manual*.

This manual is intended for administrators who will implement Oracle Advanced Supply Chain Planning (ASCP) and Oracle Global ATP Server. In contrast to the *Oracle Advanced Planning and Scheduling User's Guide*, which focuses on *how* to perform common tasks using Oracle ASCP and Oracle Global ATP Server, it discusses high-level conceptual issues and *why* they must be resolved in certain ways.

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

- The principles and customary practices of your business area.
- Oracle ASCP and Oracle Global ATP Server

  If you have never used Oracle ASCP and Oracle Global ATP Server, we suggest you attend one or more training class for the product available through Oracle University.
- The Oracle Applications graphical user interface.

  To learn more about the Oracle Applications graphical user interface, read the *Oracle Applications User Guide.*

See Other Information Sources for more information about Oracle Applications product information.

How To Use This Guide

This guide contains the information you need to understand and use Oracle ASCP and Oracle Global ATP Server.

This preface explains how this document is organized and introduces other sources of information that can help you. This guide contains the following chapters:

- Chapter 1 gives an overview of Oracle ASCP and describes new features in this release.
- Chapter 2 instructs you how to set up Oracle ASCP.
- Chapter 3 describes various issues to consider when setting up a plan including: deciding whether to run a subset plan, choosing a plan type, choosing a level of optimization, choosing an objective function, and choosing aggregation levels.
- Chapter 4 discusses process design issues including computational burden considerations, the Planner Workbench, and Oracle ASCP's performance management capabilities.
- Chapter 5 describes Oracle ASCP's support for mixed mode manufacturing which lets you plan distribution and manufacturing operations for hybrid environments.
- Chapter 6 discusses Oracle ASCP's support for powerful Internet-based collaboration, which allows you to communicate seamlessly with your customers.
- Chapter 7 offers high-level information on demand planning roles and detailed instructions on setting up a demand plan using Oracle Demand Planning.

Finding Out What's New

From the HTML help window for Oracle ASCP and Oracle Global ATP Server, choose the section that describes new features or what's new from the expandable menu. This section describes:

- New features in 11*i*. This information is updated for each new release of Oracle ASCP and Oracle Global ATP Server.
- Information about any features that were not yet available when this document was printed. For example, if your system administrator has installed software from a mini pack as an upgrade, this document describes the new features.

Other Information Sources

You can choose from many sources of information, including online documentation, training, and support services, to increase your knowledge and understanding of Oracle ASCP and Oracle Global ATP Server.

If this guide refers you to other Oracle Applications documentation, use only the Release 11*i* versions of those guides unless we specify otherwise.

Online Documentation

All Oracle Applications documentation is available online (HTML and PDF). The technical reference guides are available in paper format only. Note that the HTML documentation is translated into over twenty languages.

The HTML version of this guide is optimized for onscreen reading, and you can use it to follow hypertext links for easy access to other HTML guides in the library. When you have an HTML window open, you can use the features on the left side of the window to navigate freely throughout all Oracle Applications documentation.

- You can use the Search feature to search by words or phrases.
- You can use the expandable menu to search for topics in the menu structure we provide. The Library option on the menu expands to show all Oracle Applications HTML documentation.

You can view HTML help in the following ways:

- From an application window, use the help icon or the help menu to open a new Web browser and display help about that window.
- Use the documentation CD.
- Use a URL provided by your system administrator.

Your HTML help may contain information that was not available when this guide was printed.

Related User Guides

Oracle ASCP and Oracle Global ATP Server shares business and setup information with other Oracle Applications products. Therefore, you may want to refer to other documents when you set up and use Oracle ASCP and Oracle Global ATP Server.

You can read the guides online by choosing Library from the expandable menu on your HTML help window, by reading from the Oracle Applications Document

Library CD included in your media pack, or by using a Web browser with a URL that your system administrator provides.

If you require printed guides, you can purchase them from the Oracle store at http://oraclestore.oracle.com.

User Guides Related to All Products

Oracle Applications User Guide

This guide explains how to navigate the system, enter data, and query information, and introduces other basic features of the GUI available with this release of Oracle ASCP and Oracle Global ATP Server (and any other Oracle Applications product).

You can also access this document online by choosing *Getting Started and Using Oracle Applications* from the Oracle Applications help system.

Oracle Alert User Guide

Use this guide to define periodic and event alerts that monitor the status of your Oracle Applications data.

Oracle Applications Implementation Wizard User Guide

If you are implementing more than one Oracle product, you can use the Oracle Applications Implementation Wizard to coordinate your setup activities. This guide describes how to use the wizard.

Oracle Applications Developer's Guide

This guide contains the coding standards followed by the Oracle Applications development staff. It describes the Oracle Application Object Library components needed to implement the Oracle Applications user interface described in the *Oracle Applications User Interface Standards*. It also provides information to help you build your custom Oracle Developer forms so that they integrate with Oracle Applications.

Oracle Applications User Interface Standards

This guide contains the user interface (UI) standards followed by the Oracle Applications development staff. It describes the UI for the Oracle Applications products and how to apply this UI to the design of an application built by using Oracle Forms.

User Guides Related to This Product

Oracle Advanced Supply Chain Planning and Oracle Global ATP Server User's Guide

This document instructs planners how to use Oracle Advanced Supply Chain Planning and Oracle Global ATP Server in their day-to-day activities. It includes information on setting up and running collections, modeling a supply chain, choosing plan options, running optimized plans, simulating changes to plans, performance management, and order promising.

Oracle Applications Demonstration User's Guide

This guide documents the functional storyline and product flows for Vision Enterprises, a fictional manufacturer of personal computers products and services. As well as including product overviews, the book contains detailed discussions and examples across each of the major product flows. Tables, illustrations, and charts summarize key flows and data elements.

Oracle Bills of Material User's Guide

This guide describes how to create various bills of materials to maximize efficiency, improve quality and lower cost for the most sophisticated manufacturing environments. By detailing integrated product structures and processes, flexible product and process definition, and configuration management, this guide enables you to manage product details within and across multiple manufacturing sites.

Oracle Business Intelligence System Implementation Guide

This guide provides information about implementing Oracle Business Intelligence (BIS) in your environment.

BIS 11*i User Guide Online Help*

This guide is provided as online help only from the BIS application and includes information about intelligence reports, Discoverer workbooks, and the Performance Management Framework.

Oracle Capacity User's Guide

This guide describes how to validate a material plan by verifying that there are resources sufficient to perform the planned work for repetitive and discrete jobs. Using finite capacity planning techniques, you learn how to use rough-cut capacity

planning to validate a master schedule and capacity planning to validate the material plan.

Oracle Demand Planning User's Guide

This guide explains how to use Oracle Demand Planning, an Internet-based solution for creating and managing forecasts.

Oracle Flow Manufacturing User's Guide

This guide describes how to use Oracle's Flow Manufacturing functionality to support the processes of flow manufacturing. It describes design features of demand management, line design and balancing, and kanban planning. It also describes production features of line scheduling, production, and kanban execution.

Oracle Inventory User's Guide

This guide describes how to define items and item information, perform receiving and inventory transactions, maintain cost control, plan items, perform cycle counting and physical inventories, and set up Oracle Inventory.

Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide

This guide describes how to anticipate and manage both supply and demand for your items. Using a variety of tools and techniques, you can create forecasts, load these forecasts into master production schedules, and plan your end-items and their component requirements. You can also execute the plan, releasing and rescheduling planning suggestions for discrete jobs and repetitive schedules.

Oracle Project Manufacturing User's Guide

This guide describes the unique set of features Oracle Project Manufacturing provides for a project-based manufacturing environment. Oracle Project Manufacturing can be tightly integrated with Oracle Projects. However, in addition to Oracle Projects functionality, Oracle Project Manufacturing provides a comprehensive set of new features to support project sales management, project manufacturing costing, project manufacturing planning, project manufacturing execution and project quality management.

Oracle Self Service Web Applications User's Guide

This guide describes how Oracle Self Service Web Applications enable companies to provide a self-service and secure web interface for its employees, customers and suppliers. Employees can change their personal status, submit expense reports or

request supplies; customers can check on their orders; and suppliers can share production schedules with their trading partners. This guide is available in HTML only.

Oracle Work in Process User's Guide

This guide describes how Oracle Work in Process provides a complete production management system. Specifically this guide describes how discrete, repetitive, assemble-to-order, project, flow, and mixed manufacturing environments are supported.

Oracle Workflow Guide

This guide explains how to define new workflow business processes as well as customize existing Oracle Applications-embedded workflow processes. You also use this guide to complete the setup steps necessary for any Oracle Applications product that includes workflow-enabled processes.

Reference Manuals

Oracle Technical Reference Manuals

Each technical reference manual contains database diagrams and a detailed description of database tables, forms, reports, and programs for a specific Oracle Applications product. This information helps you convert data from your existing applications, integrate Oracle Applications data with non-Oracle applications, and write custom reports for Oracle Applications products.

You can order a technical reference manual for any Oracle Applications product you have licensed.

Oracle Manufacturing and Distribution Open Interfaces Manual

This manual contains up-to-date information about integrating with other Oracle Manufacturing applications and with your other systems. This documentation includes open interfaces found in Oracle Manufacturing.

Oracle Applications Message Reference Manual

This manual describes all Oracle Applications messages. This manual is available in HTML format on the documentation CD-ROM for Release 11i.

Oracle Project Manufacturing Implementation Manual

This manual describes the setup steps and implementation for Oracle Project Manufacturing.

Oracle Self-Service Web Applications Implementation Manual

This manual describes the setup steps for Oracle Self-Service Web Applications and the Web Applications dictionary.

Oracle Applications Flexfields Guide

This guide provides flexfields planning, setup, and reference information for the Oracle ASCP and Oracle Global ATP Server implementation team, as well as for users responsible for the ongoing maintenance of Oracle Applications product data. This guide also provides information on creating custom reports on flexfields data.

Installation and System Administration Guides

Oracle Applications Concepts

This guide provides an introduction to the concepts, features, technology stack, architecture, and terminology for Oracle Applications Release 11*i*. It provides a useful first book to read before an installation of Oracle Applications. This guide also introduces the concepts behind, and major issues, for Applications-wide features such as Business Intelligence (BIS), languages and character sets, and self-service applications.

Installing Oracle Applications

This guide provides instructions for managing the installation of Oracle Applications products. In Release 11*i*, much of the installation process is handled using Oracle One-Hour Install, which minimizes the time it takes to install Oracle Applications and the Oracle 8*i* Server technology stack by automating many of the required steps. This guide contains instructions for using Oracle One-Hour Install and lists the tasks you need to perform to finish your installation. You should use this guide in conjunction with individual product user guides and implementation guides.

Upgrading Oracle Applications

Refer to this guide if you are upgrading your Oracle Applications Release 10.7 or Release 11.0 products to Release 11*i*. This guide describes the upgrade process in

general and lists database upgrade and product-specific upgrade tasks. You must be at either Release 10.7 (NCA, SmartClient, or character mode) or Release 11.0 to upgrade to Release 11*i*. You cannot upgrade to Release 11*i* directly from releases prior to 10.7.

Using the AD Utilities

Use this guide to help you run the various AD utilities, such as AutoInstall, AutoPatch, AD Administration, AD Controller, Relink, and others. It contains how-to steps, screenshots, and other information that you need to run the AD utilities.

Oracle Applications Product Update Notes

Use this guide as a reference if you are responsible for upgrading an installation of Oracle Applications. It provides a history of the changes to individual Oracle Applications products between Release 11.0 and Release 11*i*. It includes new features and enhancements and changes made to database objects, profile options, and seed data for this interval.

Oracle Applications System Administrator's Guide

This guide provides planning and reference information for the Oracle Applications System Administrator. It contains information on how to define security, customize menus and online help, and manage processing.

Oracle Workflow Guide

This guide explains how to define new workflow business processes as well as customize existing Oracle Applications-embedded workflow processes. You also use this guide to complete the setup steps necessary for any Oracle Applications product that includes workflow-enabled processes.

Training and Support

Training

We offer a complete set of training courses to help you and your staff master Oracle Applications. We can help you develop a training plan that provides thorough training for both your project team and your end users. We will work with you to organize courses appropriate to your job or area of responsibility.

Training professionals can show you how to plan your training throughout the implementation process so that the right amount of information is delivered to key people when they need it the most. You can attend courses at any one of our many Educational Centers, or you can arrange for our trainers to teach at your facility. We also offer Net classes, where training is delivered over the Internet, and many multimedia-based courses on CD. In addition, we can tailor standard courses or develop custom courses to meet your needs.

Support

From on-site support to central support, our team of experienced professionals provides the help and information you need to keep Oracle ASCP and Oracle Global ATP Server working for you. This team includes your Technical Representative, Account Manager, and Oracle's large staff of consultants and support specialists with expertise in your business area, managing an Oracle server, and your hardware and software environment.

Conventions

In this manual, we use a number of notational and text conventions to visually identify different kinds of information.

Notational Conventions

The following notational conventions are used in this manual:

Table 0–1

Convention	Meaning
bold type	Bold type is used to designate certain user interface objects, including button, radio button, and window names.
<drive>>	A drive followed by a right caret denotes the Windows NT command prompt (for example, `c:\>`).
italic type	Italic type can mean one of two things: a) user-supplied information; or b) the title of a book, chapter, or section.
`monospace text`	Text in this typeface one of three things: a) feedback from Oracle ASCP; b) information you enter; or c) filenames and pathnames.

Text Conventions

The following text conventions are used in this manual:

Note

A Note calls attention to an important feature or fact that is related to the contents of the previous paragraph. Here is an example of a Note:

Note: This note is used to call attention to some feature or fact related to the previous paragraph.

Caution

A Caution represents information about a condition that could prevent the Integration from working correctly. Here is an example of a Caution:

Caution: This is a caution to pay attention to some feature or fact that could prevent Oracle ASCP from working correctly.

Code Examples

In code examples, an implied carriage return occurs at the end of each line, unless otherwise noted. You must press the Return key at the end of a line of input.

Choosing Menu Options

In procedures, an instruction to choose successive menu and sub-menu options is noted in an abbreviated way. For example, an instruction to select Action from the menu bar, then choose Save from the Action menu, is noted as follows:

To save your work choose Menu > Action > Save.

Do Not Use Database Tools to Modify Oracle Applications Data

We STRONGLY RECOMMEND that you never use SQL*Plus, Oracle Data Browser, database triggers, or any other tool to modify Oracle Applications tables, unless we tell you to do so in our guides.

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 Applications data, you risk destroying the integrity of your data and you lose the ability to audit changes to your data.

Because Oracle Applications tables are interrelated, any change you make using an Oracle Applications form can update many tables at once. But when you modify Oracle Applications data using anything other than Oracle Applications forms, you might 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 Applications.

When you use Oracle Applications forms to modify your data, Oracle Applications automatically checks that your changes are valid. Oracle Applications also keeps track of who changes information. But, 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.

About Oracle

Oracle Corporation develops and markets an integrated line of software products for database management, applications development, decision support and office automation, as well as Oracle Applications. Oracle Applications provides the

E-business Suite, a fully integrated suite of more than 70 software modules for financial management, Internet procurement, business intelligence, supply chain management, manufacturing, project systems, human resources and sales and service management.

Oracle products are available for mainframes, minicomputers, personal computers, network computers, and personal digital assistants, enabling organizations to integrate different computers, different operating systems, different networks, and even different database management systems, into a single, unified computing and information resource.

Oracle is the world's leading supplier of software for information management, and the world's second largest software company. Oracle offers its database, tools, and application products, along with related consulting, education and support services, in over 145 countries around the world.

Your Feedback

Thank you for using Oracle ASCP and Oracle Global ATP Server and this document.

We value your comments and feedback. This guide contains a Reader's Comment Form you can use to explain what you like or dislike about Oracle ASCP and Oracle Global ATP Server or this document. Mail your comments to the following address or call us directly at (650) 506-7000.

Oracle Applications Documentation Manager
Oracle Corporation
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Redwood Shores, CA 94065
U.S.A.

Or, send electronic mail to **appsdoc@us.oracle.com**.

1

Overview of Oracle ASCP and Oracle Global ATP Server

Topics covered in this section include the following:

- Introducing Oracle ASCP and Oracle Global ATP Server
- New Features in this Release

Introducing Oracle Advanced Supply Chain Planning

Oracle Advanced Supply Chain Planning™ (ASCP) is a comprehensive, Internet-based planning solution that can rapidly and significantly improve supply chain performance. Oracle ASCP is built on Oracle's Internet computing architecture, third-generation Oracle memory-based planning engine technology, and proven constraint based planning and optimization technology.

Oracle ASCP provides the tools required to optimize the flow of material, cash, and information across your virtual supply chain. It features Holistic Optimization, Planning and Scheduling to simultaneously plan, schedule, and optimize all facilities across all time horizons for the virtual enterprise.

Oracle ASCP completely integrates planning and execution with no redundant data. The integrated performance management system lets you monitor and improve supply chain performance. It provides support for mixed mode manufacturing so you can plan all manufacturing methods simultaneously. Finally, Oracle ASCP provides rapid return on investment (ROI).

New Features in this Release

Oracle's APS solution includes the following products:

- Oracle Demand Planning™
- Oracle Advanced Supply Chain Planning™ (ASCP)
- Oracle Manufacturing Scheduling™
- Oracle Global ATP Server™

> **Note:** This document covers only Oracle Advanced Supply Chain Planning and Oracle Global ATP Server

Centralized and Decentralized Planning

You can choose how to deploy Oracle ASCP to support either centralized or decentralized planning strategies. You can run one rapid, single-step supply chain plan that optimizes, plans, and schedules your entire virtual enterprise. Alternatively, you can break the planning problem into subsets. For example, you might choose to run an enterprise-wide high level plan, but plan manufacturing at the individual factory level. You can plan all or any subset of your virtual enterprise in a single plan. This reduces the number of plans as well as the time and effort required to coordinate planning activities.

Advanced Planning for Mixed Mode Manufacturing

Only Oracle ASCP supports full mixed mode manufacturing. You can plan for the full range of process, discrete, repetitive, project, and flow manufacturing environments. You can also plan make to stock, make to order, assemble to order, and configure to order products simultaneously.

Discrete and Process Manufacturing

ASCP is fully integrated with Oracle Manufacturing™ (Oracle's discrete manufacturing solution) and Oracle Process Manufacturing.

You can plan distribution and manufacturing operations enterprise for hybrid environments. Oracle ASCP includes full support for by-products, co-products, lot expirations, and formula effectivities.

Oracle Flow Manufacturing and Oracle ASCP

Oracle ASCP integrated with Oracle Flow Manufacturing™ lets you simultaneously deploy the two most significant advances in technology and methodology available today. No other ERP solution available today offers this integration.

ASCP can dramatically improve supply chain throughput and reduce inventories by improving synchronization of operations between facilities. In turn, Flow Manufacturing increases manufacturing plant throughout by dramatically decreasing manufacturing cycle times and removing in-process and finished goods inventory. The combination of ASCP and Flow can completely transform supply chain performance.

Oracle ASCP for Engineer to Order/Aerospace and Defense

Only Oracle ASCP supports constraint based supply chain planning and optimization with online simulations for ETO / A&D manufacturing. It features the following:

- hard and soft pegging
- supply chain project planning with hard pegging
- group netting
- borrow payback
- model / unit effectivity (serial effectivity)
- common supply netting
- workflow based project exception messages
- Seiban manufacturing (Asian manufacturing method)

Oracle Project Manufacturing

Oracle Project Manufacturing is an Internet-based manufacturing solution tailored to Engineer-to-Order, Make-to-Order, and Aerospace and Defense industries. Major features include:

- Engineering and configuration management
- Project Planning
- Supply chain management and execution
- Financial management and reporting

For more information, see the *Oracle Project Manufacturing User's Guide*.

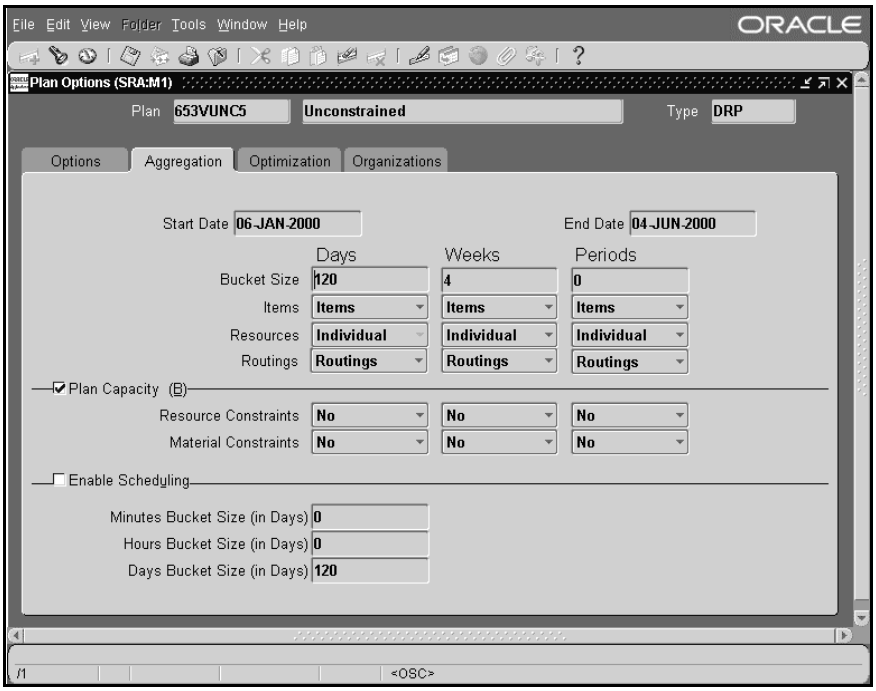
Simultaneous High Level Planning and Detailed Scheduling

You can optimize, plan, and schedule your entire supply chain simultaneously as part of a holistic planning process. Oracle ASCP combines many elements of planning that have historically forced companies into multi-step planning processes resulting in longer planning cycles and multiple plans to reconcile.

Oracle ASCP delivers faster planning cycles by combining the following capabilities into one integrated planning engine:

- internal, customer, and supplier locations
- distribution and manufacturing planning
- material and capacity planning
- individual item or product family level planning
- individual resource or aggregate resource planning
- long range planning and detailed scheduling
- optimization and constraint based scheduling

Figure 1–1 The Aggregation Tab



This comprehensive solution lets you generate and deploy long term plans that are optimal for meeting your business objectives, and are feasible to execute in the short term. You can specify flexible levels of granularity and control for the following:

- time bucketing
- item aggregation
- resource aggregation
- routing or bill of resources

You can specify time buckets as days, weeks, months, or quarters; plan items at the item or product family level; and plan resources at the resource or aggregate resource level. Additionally, you can specify multiple aggregation levels across the time horizon. For example, you can plan at the item and resource level in days for the first four weeks, at the item and aggregate resource level in weeks five through eight, and at the product family and aggregate resource level for the next nine months.

Finite, Constraint-Based Planning and Scheduling

Using advanced constraint based solving technology, Oracle ASCP ensures that your plan is feasible and respects your constraints, including finite material and resource capacity, project pegging, and so on. You can be confident of your ability to execute the plan and meet your commitments to your customers.

You can define rules to prioritize demands, and prioritize based on combinations of criteria such as dates, customer priorities, and item priorities. You will be able to build and save rules based on the combinations you choose as well as specify a default rule. You can also specify flexible levels of scheduling granularity and duration.

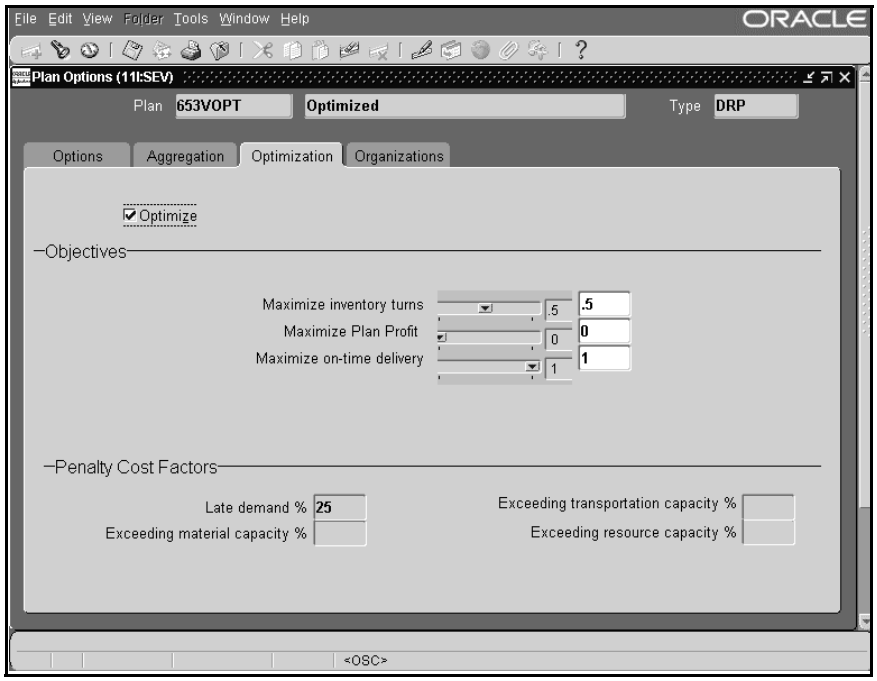
Optimization Across Multiple Objectives with Weighting of Objectives

Oracle ASCP incorporates advanced optimization techniques. Solver and optimization technology provide the most advanced optimization technology available. Oracle ASCP uses third-generation memory based planning technology that was first introduced in Oracle Supply Chain Planning™ Release 10.7. This combination provides you with an extremely fast, flexible, sophisticated planning process based on robust and proven technology.

You can optimize your plans to:

- maximize inventory turns
- maximize plan profit
- maximize ontime delivery

Figure 1–2 The Optimization tab



The plan objective is derived by combining and weighting chosen objectives. Optimization uses sourcing rules to determine the best possible sources of supply, considering all your material, resource, and transportation constraints.

Online Replan

Oracle ASCP can plan in online replan mode, yielding plans that are always up-to-date. Data from the transaction systems is collected on an online replan basis and published to the planning server. You control the timing and frequency of data collection from the transaction systems, as well as the timing and frequency of planning; balancing network traffic and the need to monitor current status in your plans.

Advanced Simulation

Oracle ASCP provides online interactive simulation planning so you can rapidly simulate changes and respond to changing conditions. For example, you could generate an unconstrained plan and a constrained plan and compare the results based on your performance indicators. You can:

- simulate changes to material and capacity simultaneously
- copy and version your plan
- save and compare exceptions
- visually highlight changes
- simulate changes to demand priorities
- run and compare multiple simulation scenarios
- simulate the effects of changing sources

Integrated Performance Management

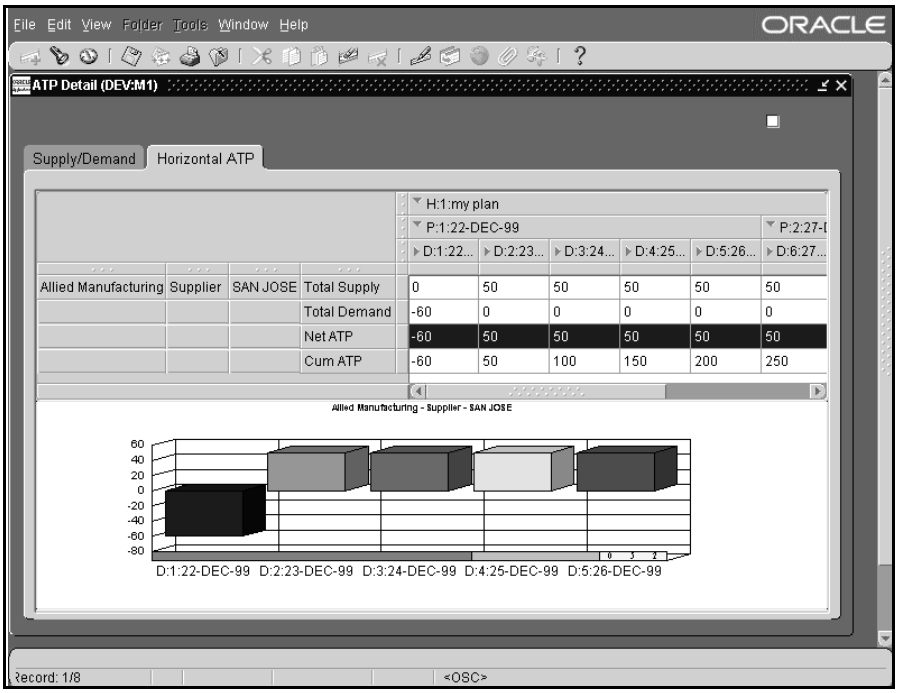
Oracle ASCP is integrated with BIS performance management system. BIS lets you set the organizational objectives used to drive continuous improvement in your enterprise. You can set performance targets and exception tolerances by business units or by period and automatically notify the appropriate people when exceptions arise.

Using the Planner Workbench, you can run multiple simulations, comparing them to your own performance metrics. As you firm a plan, you can directly update performance metrics in the execution system.

Global Order Promising

You can use Global ATP Server to support distributed order promising. Multiple Order Entry systems can access a global statement of availability. It is completely Internet-based, allowing low cost collaborative deployment with only a browser. Oracle Global ATP Server can be deployed either as a component of a complete applications system, or by itself on a separate distributed server. This flexibility lets you support any combination of centralized and decentralized order promising. You can consolidate data from multiple instances and different versions of Oracle Applications. Existing Oracle Applications Release 10.7 and 11.0 customers need not upgrade other applications.

Figure 1–3 Global ATP Server



Collections Built-in collection programs let you collect data from any Oracle Applications instance and transmit the data to the planning or order promising server. You can also collect data from legacy applications via interface tables. This capability provides high availability and an extremely accurate statement of availability to all customers in your global supply chain. Non-Oracle Applications order entry systems can access global order promising via APIs.

Multilevel Supply Chain ATP/CTP/CTD As order promising methodology has evolved, new terms have been coined to describe advanced order promising capabilities. Available to Promise refers to the ability to promise availability based on a predefined statement of current and planned supply. Capable to Promise refers to the additional ability to determine the availability of component materials and resources to meet unplanned demands. Capable to Deliver refers to considering transportation resources as well as considering the transit time necessary to meet your customers delivery needs. Oracle Global ATP Server encompasses all of these capabilities.

Oracle Global ATP Server's order promising solution is flexible and configurable. You can control the list of potential sources to be considered in the availability check. You can also control the number of levels in your supply chain bill to be considered in your check. At each level in the supply chain bill, you can specify the key components and bottleneck resources for which to check availability. You can also check the group availability of products that must ship together.

Fast accurate order promising is the key to retaining existing customers and attracting new customers. Oracle Global ATP Server lets you make quick delivery promises your customers can rely on.

Advanced Graphical User Interface

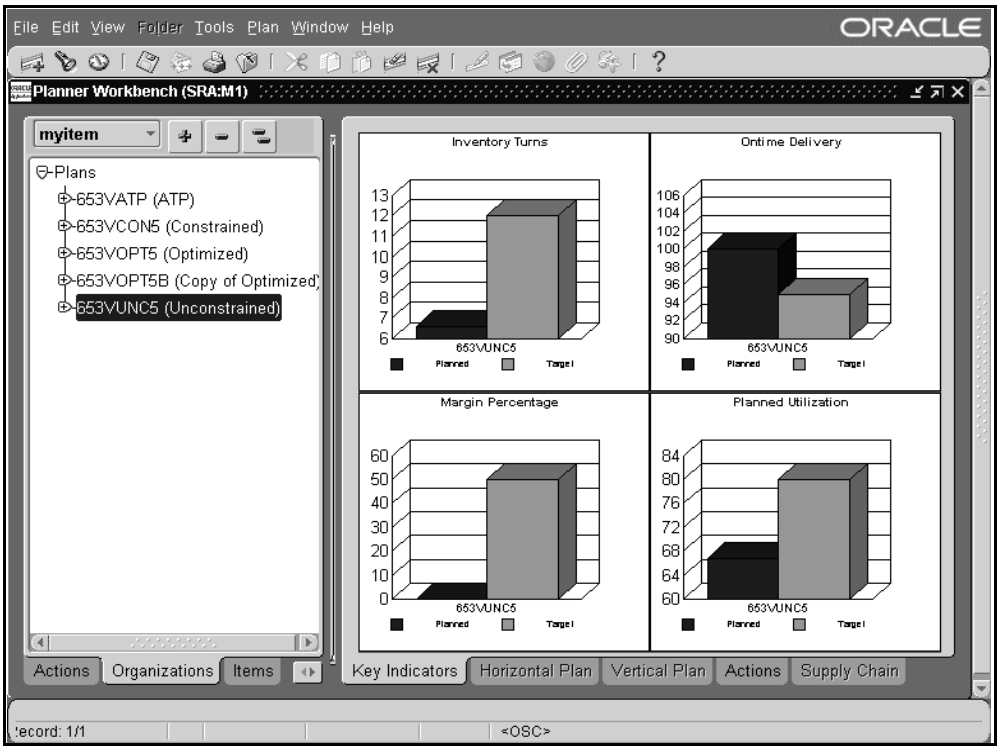
Oracle ASCP introduces a redesigned and updated version of the Planner Workbench. The new Planner Workbench is more flexible, intuitive, and easier to use.

Planners need to respond rapidly to a dynamic and complex environment. They need to have instant access to vast amounts of information including supply and demand information about the entire global supply chain. The new Planner Workbench streamlines the common activities of planners, while providing easy access to the information needed to answer the tough questions faced by planners.

Key Performance Indicators

The opening window of the Planner Workbench is a graphical display of the plan's Key Performance Indicators (KPIs).

Figure 1–4 Plan Performance Management



This screen gives you a quantitative assessment of the quality of a plan, based on its business objectives. You can see instantly how a plan will perform at improving profitability, on time delivery, inventory turnover, and resource utilization. Selecting indicator graphs displays more detailed additional information about the measure. You can also use Oracle Business Intelligence System (BIS) for more extensive analysis of selected measures.

You can also use intuitive customizable tree structures to display detailed information about a plan, as shown above. Tree structures offer quick and easy access to frequently used information about your plan.

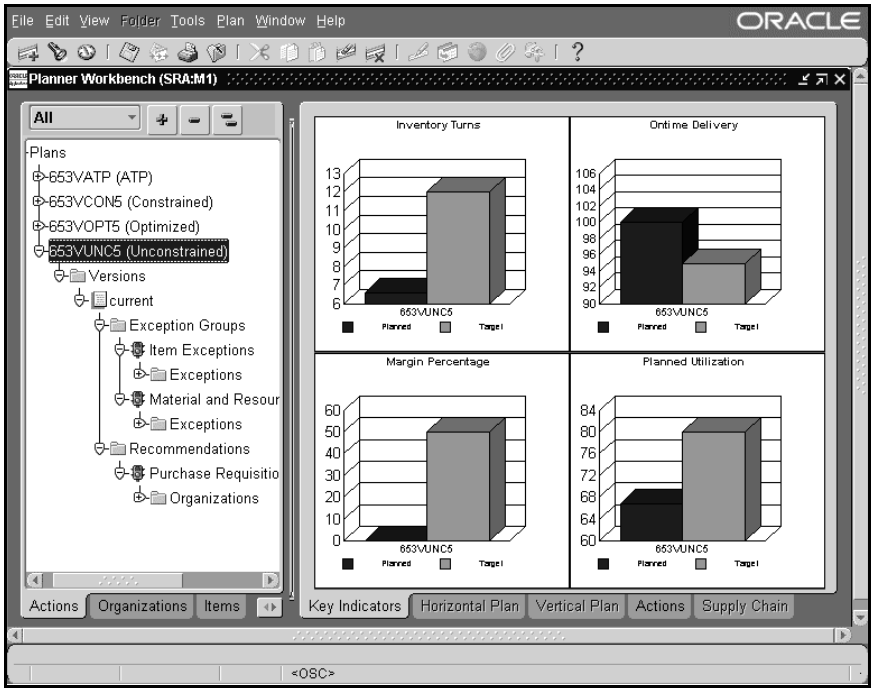
The Actions Tab and Tree

Another key feature of the Planner Workbench, the Actions tab and tree, segregates all actions that require immediate attention. The Actions tree contains all

recommended new orders due to be executed within a user defined time window, as well as all exception messages requiring attention.

From almost any summary information you can drill down to the details. Right mouse menus allow you to perform tasks related to the current display, including launching other windows or programs for more information.

Figure 1–5 The Actions tab



Graphics

The Planner Workbench also includes extensive graphics. All summary windows include customizable default graphical displays. You can specify data to be graphed, resize windows, add or hide columns and rows, and zoom in or out on the display. You can also control the granularity and mix of time buckets used in horizontal displays. For example, you could choose to display the first 2 weeks in daily buckets, the next 6 weeks in weekly buckets, and the next 10 months in monthly buckets.

Supply Chain Collaboration

Oracle ASCP extends the collaborative features of Oracle Applications. It is built on Oracle's Internet computing architecture which allows all Oracle Applications to be deployed over the Internet or your corporate Intranet. It is also completely integrated with Oracle's Self Service Web Applications. Oracle ASCP provides powerful Internet-based collaboration methods that allow you to communicate seamlessly with your trading partners. These include the following:

- collaborative supply chain planning
- collaborative demand planning
- collaborative order promising
- collaborative performance management

Oracle ASCP is the most complete Internet-based planning solution. It allows low cost web deployment of the entire advanced planning solution. Its architecture is compliant with open Internet standards and the data model is accessible through Java Business Objects and XML. This enables you to extend collaboration with Oracle's web based ad-hoc query tools and OLAP tools, or any SQL-based query tool. Oracle's Internet computing architecture provides an advanced framework for managing today's collaborative supply chain.

Oracle ASCP enables Internet-based collaboration by automatically forwarding planning and forecast accuracy exceptions to trading partners using Oracle Workflow. Trading partners can research and respond to exceptions by selecting links to self service web applications including forecast maintenance, supplier capacity update, ATP, and a secured version of the Planner Workbench. Trading partner responses can, in turn, trigger other workflow activities such as an internal notification, even an automatic reschedule of a purchase order or sales order.

2

Setting Up

Topics covered in this section include the following:

- Overview of Setting Up
- Setup Prerequisites
- Set Up Flowchart
- Setup Steps
- Changing Your Organization

Overview of Setting Up

This section tells you how to set up Oracle ASCP and Oracle Global ATP Server.

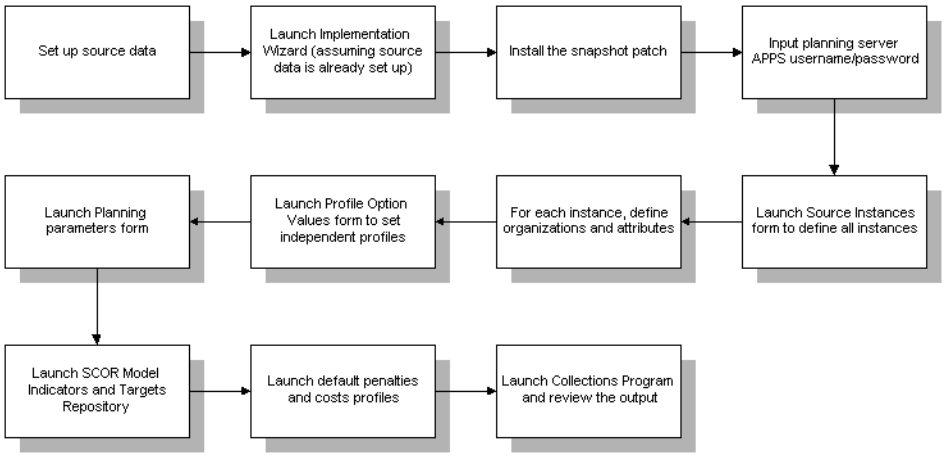
Setup Prerequisites

Before setting up Oracle ASCP and Oracle Global ATP Server, you should install and configure the following applications:

- Oracle Inventory
- Oracle Purchasing
- Oracle Bills of Material (BOM)
- Oracle Work in Process
- Oracle Business Intelligence System (BIS)
- Oracle Workflow
- Oracle Manufacturing Scheduling
- Oracle Project Manufacturing *(optional)*
- Oracle Flow Manufacturing *(optional)*

See the appropriate Oracle Applications documentation for more information.

Set Up Flowchart



Setup Steps

1. Set up source data with BOMs, resources, routings, supplier data, flexfields, purchasing information, item masters, Oracle BIS targets, and any other data required by your plan.
2. Launch the Oracle APS Implementation Wizard.
3. Install the snapshot patch on the Planning Server.

   If you are licensing Oracle Advanced Planning and Scheduling and Oracle Global ATP Server, install the snapshot patch using adpatch. This patch creates snapshots of transaction tables imported from source data into the Planning Server. Install the patch by running the driver:

   `$MSC_TOP/admin/driver/dmscsnap.drv`

   See your System Administrator for more information on installing the patch.
4. Enter the user name and password for the APPS schema on the Planning Server. Contact your System Administrator if you do not have this information.
5. Enter each of the Application instances for which you would like the Planning Server to plan.

This step creates two database links, one each way between the Planning Server and the Applications server to enable the collection of planning data from the Applications to the Planning Server.

6. For every instance, enter the organizations on each of the instances from which to collect the Planning data and plan for on the Planning Server.
7. Enter the values for Oracle ASCP profile options after querying them up in the form. You may choose to retain the default values if you so choose. For a complete listing of profile options, see "Profile Options."
8. ***(Optional)*** For every instance, review the Key Performance Indicators (KPIs) that you have measured on your Applications and compare them with industry and competitor benchmarks. You may then choose to set targets for each of them in the Oracle Business Intelligence System (BIS) repository.
9. ***(Optional)*** Enter the default costs and penalties for profile options. You may accept the seeded defaults if you choose.

   See "Profile Options" for more information.
10. ***(Optional)*** For every organization in each instance, specify the concurrent program parameters to launch the data collection program for each of the organizations in your applications instances.
11. Run the collections program.
12. Review the output of the collection programs. Please provide sufficient time for the programs to complete before viewing the output. You can also access this form via the Navigator.
13. ***(Optional)*** Specify the concurrent program parameters to launch the Planning process for the plan name specified.
14. ***(Optional)*** Launch the collections program and review its output.

Setup Menu Options

Oracle ASCP Navigator offers the following Setup menu options:

Table 2–1

Menu Option	Description
Parameters	Set up planning parameters.
Priority Rules	Set up priority rules. You can make a priority rule the default if you wish.
Instances	Use to set up your instances.
Lookups	Use to view lookup tables.

Setting Flexfields

A flexfield is a flexible data field that your organization can customize to your business needs without programming. Oracle Applications uses two types of flexfields, key flexfields and descriptive flexfields. A key flexfield is a field you can customize to enter multi-segment values such as part numbers, account numbers, and so on. A descriptive flexfield is a field you customize to enter additional information for which your Oracle Applications product has not already provided a field.

See the *Oracle Applications User's Guide* for more information on flexfields.

Oracle ASCP Flexfields

This section lists the flexfields you can use to enter penalty cost data at the appropriate levels for independent demands, items, and resources.

- Penalty Cost Factor for Late Demands
- Penalty Cost Factor for Exceeding Material Capacity
- Penalty Cost Factor for Exceeding Resource Capacity
- Penalty Cost Factor for Exceeding Transportation Capacity
- Aggregate Resource for a Resource
- Simultaneous Resource Sequence
- Alternate Resources for an Operation
- Priority of Alternate Resources for an Operation

- Priority for Substitute Items
- Cost of Using Alternate BOM / Routing

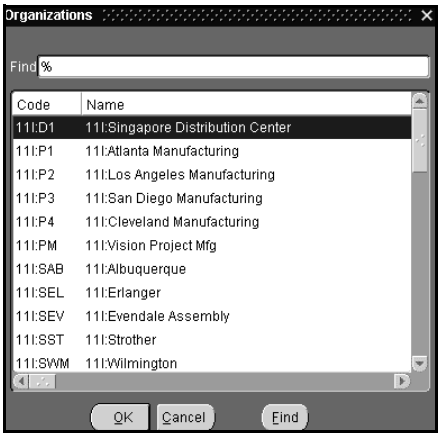
See "Oracle ASCP Flexfields" for more detailed information.

Changing Your Organization

To change your organization:

1. Navigate to the Change Organization window.

Figure 2–1 The Change Organizations window



2. Choose Change Organization
3. Select an organization in the Organizations window.
4. Choose OK.

3

Tailoring Planning

Topics covered in this section include the following:

- Deciding Whether to Subset Plan
- Choosing a Plan Type
- Choosing the Level of Optimization
- Choosing an Objective Function
- Choosing Aggregation Levels

Deciding Whether to Subset Plan

Global Supply Chain Planning

Oracle ASCP can generate planned orders for an entire supply chain within a single DRP plan. This can be illustrated with a sample supply chain (Figure 3–1, “Sample Supply Chain.”) and bill of material (Figure 3–2, “Sample Bill of Material.”).

Figure 3–1 Sample Supply Chain

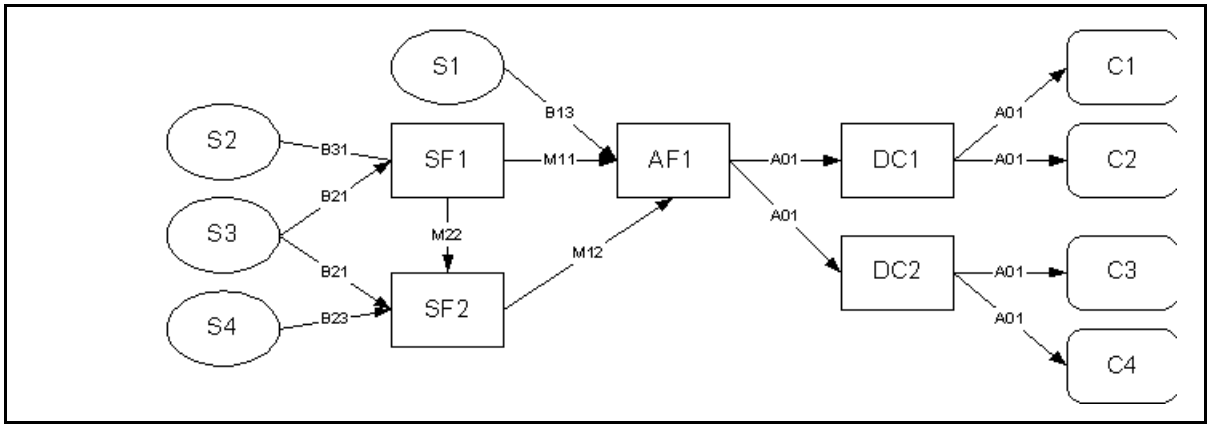
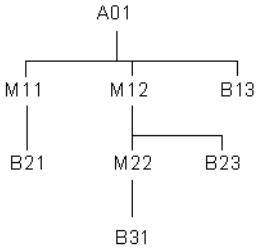


Figure 3–2 Sample Bill of Material



In this sample supply chain, SF1 and SF2 are subassembly facilities, AF1 is a final assembly facility, DC1 and DC2 are distribution centers, C1, C2, C3 and C4 are customers and S1, S2, S3 and S4 are suppliers. Quantities in parentheses are values for the MRP Planning Type attribute for each item.

A single MRP plan of the entire supply chain would have the following inputs:

- Demand quantity (forecast + actual sales orders) for A01 at DC1 for each of the time buckets in the planning horizon. This would be captured in a Master Demand Schedule (MDS) for DC1.
- Demand quantity for A01 at DC2 for each of the time buckets in the planning horizon. This would be captured in an MDS for DC2.

The plan would output planned order quantities, start dates, and completion dates for A01 and all of its components and subcomponents.

The single-plan approach is advantageous for the following reasons:

- Least planning effort. Fewer plans need to be generated; fewer planning servers need to be deployed and maintained.
- Data consistency. Without the single-plan ability, requirements must be repeatedly transferred upstream within the supply chain, to each successive supplier facility. Each transfer presents an opportunity for mis-communication or data loss.
- Global optimization. Intelligent tradeoffs between the performance of individual facilities (as measured by, say, plan profit) can be made because Oracle ASCP optimizes the supply chain planned orders as a whole.
- Minimum communication lag.
    - The effects of decisions made at the highest level of the supply chain are immediately visible at the lowest level of the supply chain. If individual facility plans are used, there is at least a one planning-run-duration lag between the receipt of requirements at a facility and the passing of the dependent requirements to the facility's suppliers. Moreover, this lag is often much greater due to differences in working hours between upstream and downstream facilities (for example, if the facilities are in different time zones). Also, the planning cycles of upstream and downstream facilities may not be in synch (for example, customer facility AF1 runs its plan on Monday, while supplier facility SF1 runs its plan on Sunday). This results in even longer communication lags.
    - The overall effect of plan communication lag is to make the supply chain less responsive to meeting changes in customer demand.

Subset Planning Scenarios

There are some situations in which it makes sense to plan a portion of the supply chain separately, outside of the overall supply chain DRP plan.

Scenario 1: Unique Local Objectives Must be Respected Along with Global Objectives Suppose that subassembly plant SF1 (Figure 3–1, "Sample Supply Chain"), which makes M12 (Figure 3–2, "Sample Bill of Material"), contains very expensive capital equipment. SF1 is the overall supply chain constraint, so every minute that its resources are utilized brings extra profits to the enterprise. Resource utilization is the most important objective for SF1. For the supply chain as a whole, however, due to rapid product life cycles and a fickle market, inventory turns might be the most important objective. In this situation you could run a two-stage planning process.

- An MRP for organization SF1 with resource utilization as the objective to generate planned orders for M11, M22, B31, and B21 (the portion required at SF1).
- A DRP for organizations DC1, DC2, AF1, SF1, and SF2 with the above MRP as a supply schedule with inventory turns as the objective to generate planned orders for A01, M12, B13, B23, and B21 (the portion required at SF2).

Scenario 2: Local Restrictions Not Captured in Global Planning Inputs Suppose that item B21, a subcomponent of item M11 (Figure 3–2, "Sample Bill of Material"), has volatile pricing. In lieu of implementing the default planned orders in facility SF1 that a global DRP would generate for M11 and its subcomponents (B21), one could plan the supply chain as follows:

1. DRP plan for organizations DC1, DC2, AF1, and SF2 to generate planned orders for A01, M12, B13, M22, and M11.
2. Load the DRP as a demand schedule into an MPS for organization SF1. Dependent demand for M11 is derived from the planned orders for A01.
3. Run the MPS.
4. Manually adjust the planned orders for M11 in the MPS (for example, to pull ahead the orders for M11 in order to take advantage of a time-sensitive special promotion on B21.)
5. Run an MRP for organization SF1 with the adjusted MPS as input to create planned orders for M11 components and subcomponents (B21 in this case).

Situation 3: Single Global Data Model Not Available The one-step supply chain planning capability of Oracle ASCP presumes either the installation of ASCP as part of an enterprise-wide implementation of Oracle Applications, or the existence of collection programs to pull cross-supply chain transaction data from various Oracle Applications instances or from legacy systems. Cross-supply chain data must be accessible to build the net change snapshot used by Oracle ASCP to generate planned orders.

This may not be the case. For example, one or more facilities in the supply chain perform planning and / or transaction processing on legacy systems not yet integrated to Oracle ASCP via some sort of collection program. In this situation the renegade facilities must be scheduled outside the global DRP plan according to the same steps as used in Scenario 2 above.

Pitfalls of Subset Planning

The two principal pitfalls of subset planning (as opposed to global, single-plan supply chain planning) are:

- local optimization as opposed to global optimization
- plan infeasibility due to supply chain interdependencies

The first pitfall is the fact that plans that optimize individual facilities may not be compatible with the optimum global supply chain plan. Take the case of the two distribution centers DC1 and DC2 in Figure 3–1, “Sample Supply Chain.” The way to maximize ontime delivery for DC1 is to allocate all production from AF1 to DC1. The same logic holds for DC2. The global optimum solution, which would be missed via subset planning, comes from some allocation of AF1 output to both DC1 and DC2.

A simple example of supply chain interdependency is Supplier S3 in Figure 3–1, “Sample Supply Chain.” This supplier supplies item B21 to both subassembly facilities SF1and SF2. Individual plans run for SF1 and SF2 could not recognize the shared capacity at supplier S3 and could not evaluate, if the combined SF1 and SF2 demands for B21 are too high, how best to allocate the B21 to SF1 and SF2. In such a situation the SF1 and SF2 individual plans would be infeasible, but would not even generate any exception notices to alert the planners.

Choosing a Plan Type

In Oracle ASCP you can launch three type of plans:

- Material Plan
- Manufacturing Plan
- Distribution Plan

Each creates time-phased planned orders that satisfy independent and dependent demand while seeking to respect material and resource constraints.

A choice of plan types lets you tailor the degree of subset planning that is performed for the supply chain: from a single, global supply chain plan down to manually adjusted plans for each item in each organization of the supply chain.

To do this, the three types of plans need to be used in conjunction with the MRP Planning Type item attribute that is set for each item. Possible values for this attribute are:

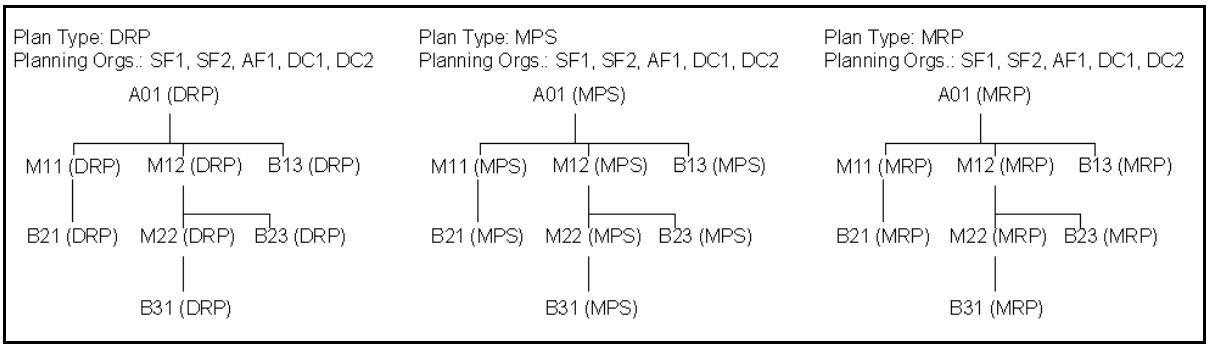
- MRP Planned
- MPS Planned
- DRP Planned
- DRP and MRP Planned
- DRP and MPS Planned

The MRP Planning Type item attribute can be set at either the item level (by selecting Inventory > Items > Master Items) or at the more detailed item-organization level (by selecting Inventory > Items > Organization Items).

Each type of plan includes or ignores an item for planning depending on the setting of its MRP Planning Type attribute. A comprehensive listing of the inclusion criteria is located in the *Oracle ASCP and Oracle Global ATP User's Guide*. The discussion below focuses on the principal ways in which plan type (DRP, MPS, MRP) can be used in conjunction with MRP Planning Type item attribute values (MRP Planned, MPS Planned, DRP Planned, DRP and MRP Planned, DRP and MPS Planned).

For starters, we recognize the logical equivalence of the different planning types by noting that the following plans, applied to the sample supply chain (Figure 3–1, "Sample Supply Chain.") and BOM (Figure 3–2, "Sample Bill of Material."), yields identical planned orders across the supply chain. In the BOMs below, the values in parentheses indicate the setting of the MRP Planning Type item attribute.

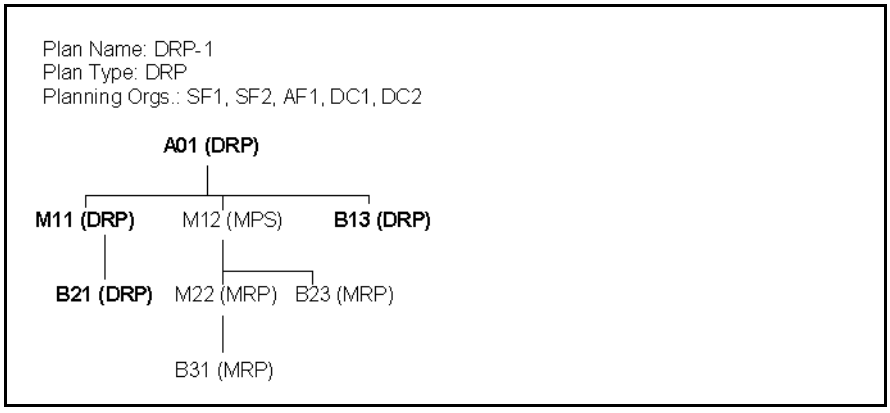
Figure 3–3 Sample Bill of Material



The usefulness of the different types of plans comes in when we wish to subset plan. Suppose, for example, that we wish to subset plan M12 and all its components and subcomponents. Some reasons for wishing or needing to do so are discussed above.

1. Run a DRP plan to generate planned orders for all items except for M12 and its components and subcomponents (Figure 3–4, “Sample Bill of Material.”):

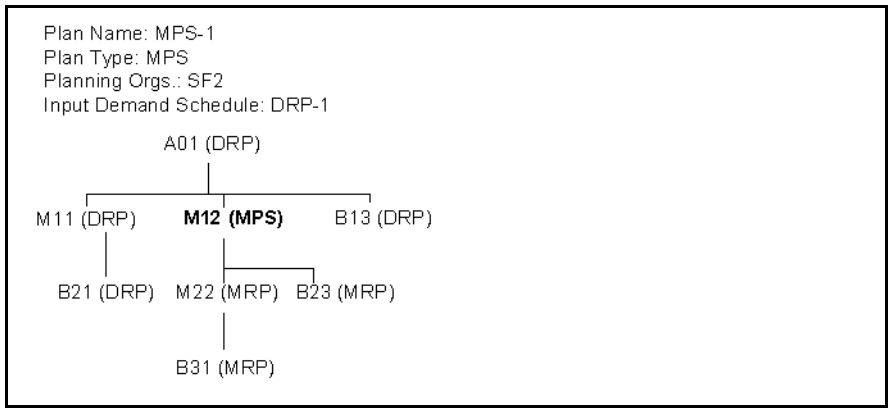
Figure 3–4 Sample Bill of Material



This combination of plan type and MRP Planning Type item attribute values creates cross-supply chain planned orders for A01, M11, B13, B21 and omits M12, M22, B23, B31.

2. Use the DRP plan as a demand schedule for an MPS plan run. This generates dependent demand for M12 from the planned orders for A01, and then generates planned orders for M12.

Figure 3–5 Sample Bill of Material



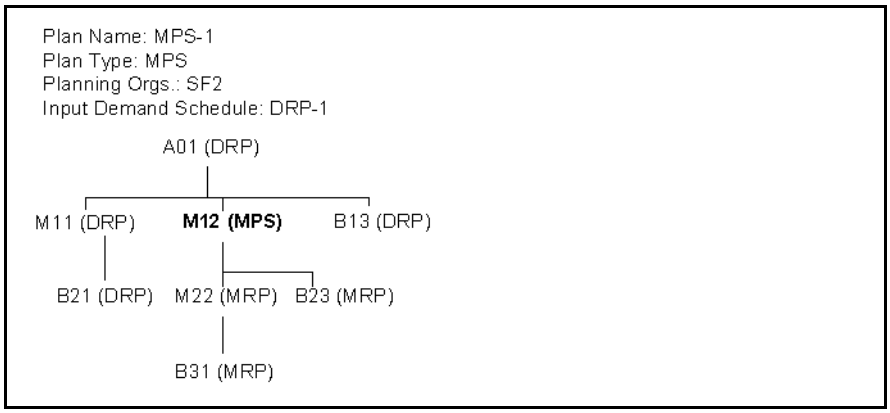
This combination of plan type and MRP Planning Type item attribute values creates planned orders for M12 within organization SF2.

3. Manually modify the MPS for M12 as necessary.

> **Note:** With Oracle ASCP, this step is less frequently necessary than before. This is because the finite-capacity planning performed by Oracle ASCP takes resource and material availability into account, and therefore eliminates much of the need to manually "smooth" production via an MPS.

4. Run an MRP plan, using the MPS as an input demand schedule. This generates planned orders for M22, B23 and B31 (Figure 3–6, "Sample Bill of Material.").

Figure 3–6 Sample Bill of Material



This combination of plan type and MRP Planning Type item attribute values creates planned orders for M22, B23 and B31.

Two of the possible MRP Planning Type item attribute values

- DRP and MRP Planned
- DRP and MPS Planned

were not used in the above example. These values are useful in situations in which items which are generally globally planned may need to have their planned orders tweaked at a local organization level.

Choosing the Level of Optimization

Oracle ASCP allows for multiple levels of optimization in generating plans. These are described below along with the situations under which each would be most useful.

Unconstrained

In this option, 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.

This level of optimization is most useful for generating plans for the long-term future. It answers the question, “How much resource capacity and material availability do I need to arrange in order to satisfy all anticipated demand in a timely manner?” The exceptions generated point out where resource capacities and material availabilities (supplier capacities) need to be adjusted. “Long-term” in this context is therefore defined to be far enough into the future to allow resource acquisition / disposition and supplier sourcing decisions taken to address the exceptions to take effect.

Resource Constrained

In this option, all resource constraints such as available machine hours, transportation capacity, alternate resources as well as alternate bill of materials are considered. Alternate bill of materials are evaluated if enough resources are not available to build assemblies with the primary bill. Material constraints are used only to generate exceptions arising due to lack of material availability and are not considered during planning.

This level of optimization, like the unconstrained level, is most useful for generating plans for the long-term future. It answers the question, “How much material availability do I need to arrange in order to satisfy all anticipated demand in a timely manner?” It differs from the unconstrained level in that plans generated respect resource capacity constraints but allow material availability constraints to be violated. The violations are tracked, however, and generate exceptions that point out where material availabilities need to be adjusted. You would use this level of optimization in lieu of the unconstrained level in situations where it would be difficult to change resource capacity (for example, due to floor space constraints), but where increased outsourcing would be an option. “Long-term future” in the context of this optimization level is defined to be far enough into the future to allow supplier sourcing decisions taken to address the exceptions to take effect.

Material Constrained

In this option, all material constraints that can be specified in the form of a supply schedule from manufacturing plants or by statements of vendor capacity from vendors are considered. In cases where a primary item has limited availability, the system also considers substitute items in place of the primary item or alternate vendor sources. Resource availability constraints are used only to generate exceptions arising due to over utilization or under-utilization of resources.

This level of optimization is similar to Resource Constrained, except that the roles of the material and the resource constraints are reversed. It is, again, most useful for

generating plans for the long-term future, and answers the question, “How much resource capacity do I need to arrange in order to satisfy all anticipated demand in a timely manner?” It differs from the unconstrained level in that plans generated respect supplier capacity (material availability) constraints but allow resource capacity constraints to be violated. The violations are tracked, however, and generate exceptions that point out where resource capacities need to be adjusted. You would use this level of optimization in lieu of the unconstrained level in situations where it would be difficult to change material availability (for example, due to strategic partnering with fixed suppliers), but where internal resource acquisition / disposition would be an option. “Long-term future” in the context of this optimization level is defined to be far enough into the future to allow resource acquisition / disposition decisions taken to address the exceptions to take effect.

Material and Resource Constrained

In this option, you can generate a plan that respects material, resource, distribution, and transportation constraints. However, no plan objectives are considered.

This level of optimization is most useful for generating plans in the near-term future, in which you do not have time to overcome material and resource constraints and therefore must respect them in order to generate a feasible supply chain plan.

It differs from the Optimized level of planning (see below) in that the linear programming planning engine is not invoked in order to generate planned orders. Instead, a fast heuristic is used. This is useful in situations in which planning execution time is of the essence (for example, a replan necessitated by an unexpected failure of a key resource, where quick adjustment to the disruption is essential to maintain supply chain coordination).

Optimized

In this option, you can generate an optimized and executable plan based on plan objectives as well as material, resource, and transportation constraints.

This level of optimization, like Material and Resource Constrained planning is most useful for generating plans in the near-term future, in which you do not have time to overcome material and resource constraints and therefore must respect them in order to generate a feasible supply chain plan. In addition, solution quality is improved over that of Material and Resource Constrained planning: a linear programming planning engine is used to optimize the user-defined plan objective (some linear combination of Ontime Delivery, Plan Profit, Utilization of Bottleneck Resources, Balancing of Critical Resources and Inventory Turns) while generating

planned orders across the supply chain. This option should be used over the Material and Resource Constrained option if execution time constraints permit.

Different Levels of Optimization and Their Scope

Of the five levels of optimization discussed above, the first four (Unconstrained, Resource Constrained, Material Constrained, Material and Resource Constrained) are local settings that can be applied to temporal subsets of an overall supply chain plan. These simply dictate which types of constraints (material and resource) are obeyed in which portions of the plan. You can, for example, specify (via the ASCP Plan Options window, Aggregation tab) that the first 4 weeks of a plan should be planned using the Material and Resource Constrained optimization level, the next 10 months using the Resource Constrained optimization level, and then the next year using the Unconstrained optimization level.

The last optimization level (Optimized) is a global setting that applies to the entire supply chain plan. This setting dictates whether the planned orders for the Resource Constrained, Material Constrained and Material and Resource Constrained time portions of the plan are generated via a fast heuristic (Optimized option unchecked) or via a linear programming planning algorithm (Optimized option checked).

Note: The planned orders for the Unconstrained time portion of the supply chain plan are always generated using traditional MRP type logic.

You should always check the Optimized option if execution time constraints permit, since this explicitly optimizes objective that are important to the user. There is no guarantee that the fast heuristic (used when Optimized is unchecked) will do so.

Choosing an Objective Function

When generating plans via the Optimized option, Oracle ASCP lets you specify the objectives to be considered in generating planned orders across the supply chain.

All objectives are expressed in units of dollars.

This section describes each of the available objectives and how multiple objectives can be combined into a single objective function which captures tradeoffs between competing objectives.

Inventory Turns Objective

The inventory turns objective is calculated as follows:

inventory turns = - (inventory carrying cost)

- Inventory carrying cost is summed up for all items in all time buckets.
- Inventory turns are maximized by minimizing inventory carrying cost.
- Inventory carrying cost is defined in greater detail below.

Margin Percentage Objective

The margin percentage objective is calculated as follows:

margin percentage = (plan revenue) - (plan cost)

plan revenue = {(sales order line price)*(sales order quantity)} + {(item list price)*(item discount)*(forecast quantity)}

- Plan revenue is calculated and summed up for all items with independent demand in all time buckets.

plan cost = (item cost) + (transportation cost) + (inventory carrying cost)

- Plan cost is calculated and summed up for all items, resources, and ship methods in all time buckets.

item cost = {(resource cost)*(resource quantity used)} +
{(buy item cost)*(buy item quantity)} +
{(process cost)*(quantity using process)}

transportation cost = {(transfer quantity)*(item weight)*(shipping cost per unit weight)} +
{(buy quantity)*(item weight)*(shipping cost per unit weight)}

inventory carrying cost = {(average inventory per bucket)*(carrying cost pct)*(item cost)}

- Margin percentage is the most aggregate of objectives in the sense that it combines multiple costs.

Ontime Delivery Objective

The ontime delivery objective is calculated as follows:

ontime delivery = - (penalty cost for late demand)

- Ontime delivery is calculated and summed up for all items with independent demand in all time buckets.

penalty cost for late demand = {(penalty cost factor for late demand [$/unit/day])*(days late)* (quantity of late demand)} + {(penalty cost factor for unmet demand [$/unit/day])*(days late)* (quantity of unmet demand)}

- Ontime delivery sums two types of costs: late demand cost and unmet demand cost. An unmet demand is simply a very late demand. Specifically, it is a demand for which the plan generates supply that exceeds the demand due date by more than allowable days early/late. Allowable days early/late is a user-set profile option.
- Penalty cost factor for late demand is a user-specified plan option.
- Penalty cost factor for unmet demand is a system-supplied plan option, obtained by multiplying the penalty cost factor for late demand by a constant that is greater than 1. This makes unmet (very late) demands cost more than late demands.

Implicit Objectives

In addition to the objectives defined above, which can be selected / weighted or deselected by the user, Oracle ASCP maintains a set of implicit (hidden) objectives that it takes into consideration no matter what you select. These objectives are defined to be the negative of various penalty costs, as follows:

implicit objectives = - (penalty cost for late demand) -
(penalty cost for resource capacity violation) -
(penalty cost for transport capacity violation) -
(penalty cost for safety stock violation) -
(penalty cost for any unused supply) -
(penalty cost for using alternate sources) -
(penalty cost for using alternate routings) -
(penalty cost for using alternate resources) -
(penalty cost for using substitute items)

Combining Objectives

Oracle ASCP combines the above objectives into the following objective function:

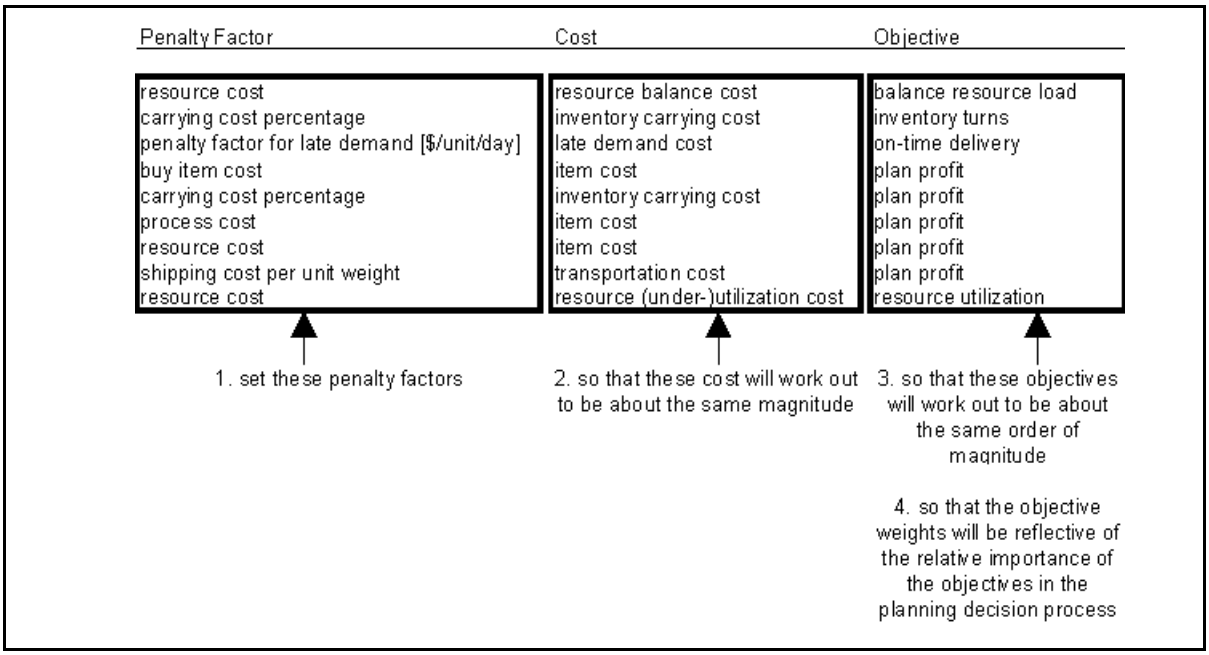
overall objective = maximize w1*(plan profit) +
w2*(ontime delivery) +
w3*(inventory turns) +
1.0*(implicit objectives)

- Objective weights w1–w3 are restricted to the range 0 to 1. Setting an objective's weight to 0 directs Oracle ASCP not to consider that particular objective.
- Setting an objective's weight to 1 places the maximum possible emphasis on that objective.
- Objective weights w1–w3 may be set independently.
- Beware interdependent objectives. Some costs are contained in more than one objective.
  - For example, inventory carrying cost is a part of both the Plan Profit and Inventory Turns objectives. Therefore, only use these two objectives together if it is desired to artificially weight inventory carrying cost higher than the other costs (item cost, transportation cost) contained within Plan Profit.
  - A more subtle case is penalty cost for late demand, which appears both in the Ontime Delivery objective and in the implicit objectives not seen by the

user. Thus, no matter what the weight on ontime delivery, Oracle ASCP considers late demand cost in its planning decision-making.

- Objective weights w1–w3 in general do not precisely show the relative importance of each objective in planning decisions. As can be seen from the above definition of the overall objective, the percentage of the overall objective value occupied by a particular objective depends also on the dollar magnitude of the objective, and it is the product of the weight and the dollar magnitude of the objective which reflects the relative importance of each objective in planning decisions.
- There are two equally valid ways in which you can look at the above fact.
  - In order for the weights to correlate to actual planning performance (for example, high weight on inventory turns and low weight on resource utilization results in high inventory turns and low utilization, while low weight on inventory turns and high weight on resource utilization results in low inventory turns and high resource utilization), care should be taken in the selection of the following penalty factors so that the magnitudes of the corresponding costs are about the same.

Figure 3–7



- Your best estimate of penalty factor values may simply imply that some objectives (say, ontime delivery) are intrinsically more important than others (say, inventory turns). In this example, the cost for late demands (without the weight) is much greater in value than the inventory carrying cost (without the weight). No amount of playing with the Inventory Turns weight value makes Inventory Turns more important than Ontime Delivery. If you take this view, then it make sense just to set the weights of the important objectives to 1.0, and let the penalty factor values decide the relative importance of the different objectives.

Choosing Aggregation Levels

Oracle ASCP allows planning to occur at different levels of aggregation within the same plan. This allows detailed scheduling and long-range planning to take place within a single integrated plan. Flexible aggregation levels exist along several planning dimensions:

- time
- product
- resource / routing

Aggregation level options for each dimension is described below.

> **Note:** Each plan has its own aggregation level settings which are set in the Aggregation tab of the plan's Plan Options window.

Choosing Time Aggregation Levels

In ASCP, the available time aggregation levels are:

- minutes
- hours
- days
- weeks
- periods

- In order to reduce the computational effort to calculate a plan and to reduce the volume of plan output (for clarity), time bucket sizes should be set only as small as is necessary to capture the necessary detail - not any smaller.
- Time bucket size must increase or stay level over the planning horizon; it cannot decrease.
- The following sequences of time aggregation levels are examples of those (but not all) that are legal within a single plan:
- minutes-hours-days-weeks-periods (check Enable Scheduling)
- days (uncheck Enable Scheduling)
- days-weeks (uncheck Enable Scheduling)

- hours-days-periods (check Enable Scheduling. Note: weeks time aggregation level is skipped.)
- Planning at the minute and hour aggregation levels is referred to as scheduling, and is enabled only when the Enable Scheduling check box in the Aggregation tab of the Plan Options window is checked.
- Periods default to months.
- All lower level demand that occurs within a higher level time bucket (for example, a daily demand occurring in the middle of a weekly time bucket) is moved to the first day of the higher level bucket for planning purposes. This is the information lost through aggregation.
- Supplies are always scheduled to arrive at the start of periods.

Choosing Product Aggregation Levels

In ASCP, the available product aggregation levels are:

- item
- product family
- Planning at the item level explodes material and resource requirements down to each bottom-level component (provided that the component's MRP Planning Type item attribute matches the type of Manufacturing, Material, or Distribution Plan being run).
- When planning at the product family level, no explosion of material or resource requirements occurs.
- Information concerning the resources required to make a product family are taken from the routing for the product family. Therefore, if planning is to be done at a product family level, there needs to be a routing defined for each product family.
- No material requirements are considered when planning at a product family level.

Choosing Resource Aggregation Levels

There are two ways in which the aggregation level of resource information may be specified in Oracle ASCP.

The first is to employ the following resource aggregation levels:

- individual
- aggregate

The second is to employ the following routing aggregation levels:

- routing
- bill of resource (BOR)

Note: Resource aggregation levels do not have any effect unless the Plan Capacity check box in the Aggregation tab of the plan options window is checked.

Let us first discuss resource aggregation levels.

- Individual: all resources listed in all item routings (if the item aggregation level is set to 'Item') or all product family routings (if the item aggregation level is set to 'Product Family') are considered in planning.
- Aggregate: only resources specified as aggregate resources are considered in planning. Aggregate resources are specified in the window accessed by the Operations Resources button during routing definition (select Bills of Material > Routings > Routings). Each operation resource can have a designated aggregate resource (which may be itself or another resource).

Routing aggregation levels serve a similar function.

- Routing: all resources listed in all item routings (if the item aggregation level is set to 'Item') or all product family routings (if the item aggregation level is set to 'Product Family') are considered in planning. This is identical in meaning to the individual resource aggregation level described above.
- Bill of resource (BOR): only resources listed in bills of resources for items (if the item aggregation level is set to 'Item') or product families (if the item aggregation level is set to 'Product Family') are considered in planning. Bills or resources are lists which associate items or product families with individual resources and the processing times (usages) incurred on those resources for each item / product family. (In Oracle Applications, the navigation path to define a bill of resource is Capacity Planning > Bill of Resource.) The usages in a bill of resource may be automatically generated by summing the resource usages from the routings for an item and its components and subcomponents. A bill of resource may also be manually defined, allowing you to include only certain key resources and to manually adjust the usage quantity for each key resource as necessary.

- When using the routing aggregation level BOR, Oracle ASCP generates resource requirements during planning only for those items or product families that have defined BORs.
- When using the routing aggregation level BOR, operation sequencing information is from the routings that are used to generate the BOR is lost.

The higher levels of resource aggregation (aggregate) and routing aggregation (BOR) both have the effect of limiting the number of resources considered in planning.

Resource and routing aggregation level have overlapping effects.

- If either the resource aggregation level is set to individual or the routing aggregation level is set to routing, all individual resources for items (if the item aggregation level is set to 'Item') or product families (if the item aggregation level is set to 'Product Family') are considered in planning.

4

Designing Your Process

Topics covered in this section include the following:

- Making Decision about Your Process
- Making Decisions on the Basis of a Plan
- Key Performance Indicators (KPIs)
- Tracking Plan Performance Against KPIs
- Making Improvements Based on KPIs
- Exception Messages

Making Decision about Your Process

Computational Burden Considerations

At all levels of optimization except for unconstrained plan (see “Choosing the Level of Optimization”), Oracle ASCP performs some type of finite-capacity scheduling. This is computationally much more complex than the infinite-capacity planning performed in R11 and earlier versions. Therefore, formulating the planning problem so that it is less computationally intensive is worthwhile.

The computational burden of a planning problem is increases with the number of resources, the number of items, and the number of demands.

Ways to decrease the number of resources include:

- Leave non-critical (non-constraint) resources out of routings. For example, an entire cell in a cellular manufacturing system might be modeled as a single resource instead of as a group of resources.
- Maximize the use of resource and routing aggregation (see “Choosing Resource Aggregation Levels”).

Ways to decrease the number of items include:

- Because each combination of item-organization counts as a separate 'item', enable each item in as few organizations as possible.
- Maximize the use of item aggregation (to the product family level) in the plan options.
- Set the Planned Items plan option to something other than 'All Planned Items.' For example, set it to demand schedule items only.

Ways to decrease the number of demands include:

- Maximize the use of time aggregation (larger time buckets) in plan options. This collapses multiple demands occurring within a larger time bucket to a single demand at the end of the time bucket.
- Maintain long-term forecasts in larger time buckets (for example, weeks or periods) instead of shorter time buckets such as days. This reduces the number of MDS demands once the forecast is loaded into an MDS for input to the planning process.

Useful Tools in the Planner Workbench

Detailed instructions for use of the planner workbench are contained in the *Oracle Advanced Supply Chain Planning User's Guide*. The following section is intended to highlight the major features of the planner workbench, so that major uses are not unintentionally bypassed by the user.

Intuitive Layout of Information

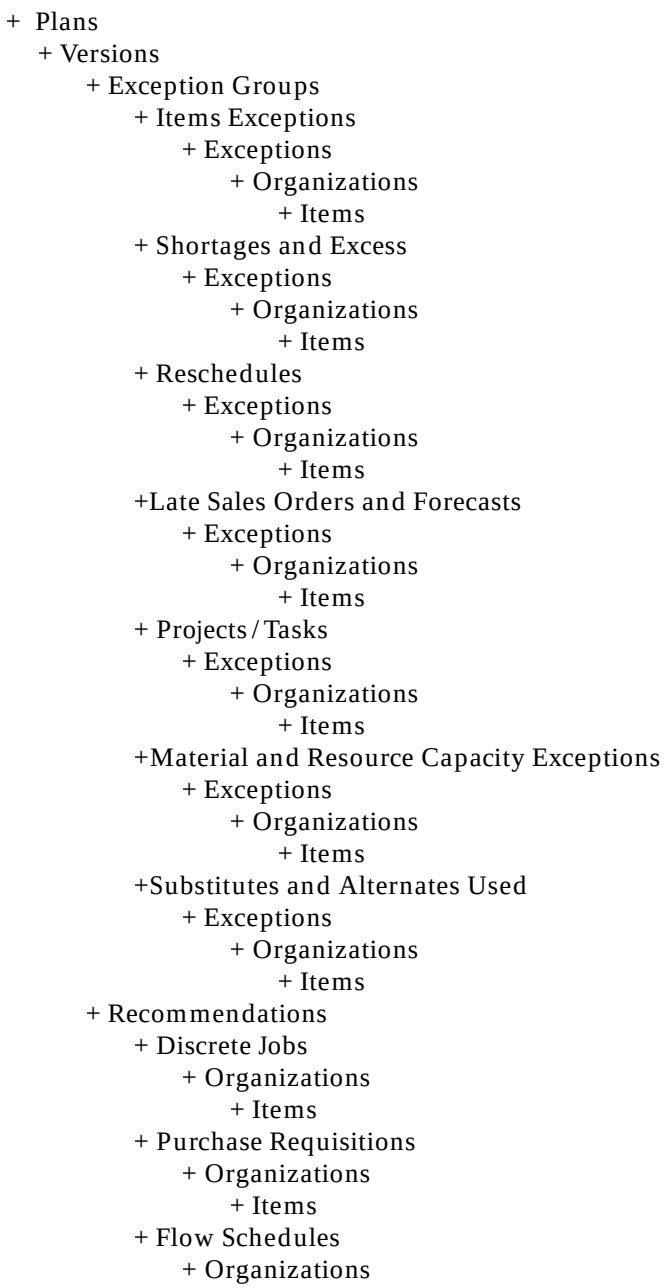
The Planner Workbench contains two panes with tabs. The left pane contains the hierarchical tree. The right pane contains summary information in tables and graphs. The context of the right pane is controlled by highlighting one or more nodes on the hierarchical tree. In addition, the find window may be used on either the left or right panes to further limit the context. From the right pane, you can drill down to detail information.

The following tabs on the left pane change the tree layout:

- Items
- Organizations
- Actions
- Resources
- Projects
- Suppliers

Tree layouts for these tabs follow.

Figure 4–1 Planner Workbench left pane tree layout for the Actions tab



+ Items
+ Repetitive Schedules
+ Organizations
+ Items

Figure 4–2 Planner Workbench left pane tree layout for the Organizations tab

+ Plans
+ Organizations
+ Product Families / Models / Option Classes
+ Items
+ Components
+ Approved Suppliers
+ Categories
+ Items
+ Components
+ Approved Suppliers
+ Departments
+ Resources (owned resources only)
+ Items
+ Components
+ Approved Suppliers
+ Lines
+ Items
+ Transportation Resources

Figure 4–3 Planner Workbench left pane tree layout for the Items tab

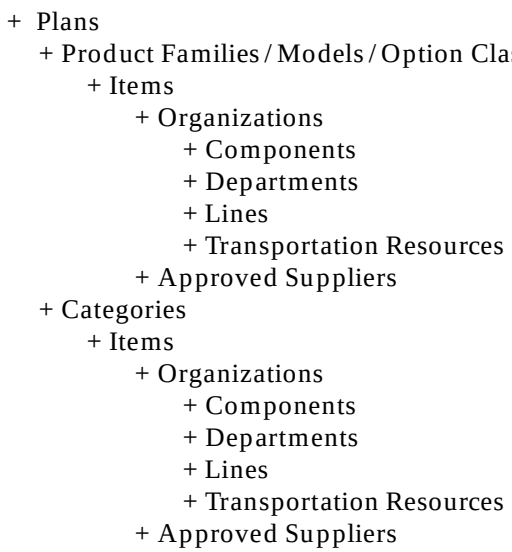


Figure 4–4 Planner Workbench left pane tree layout for the Projects tab

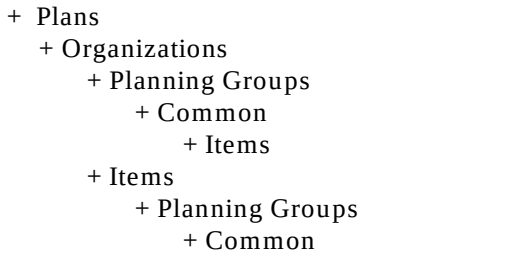


Figure 4–5 Planner Workbench left pane tree layout for the Resources tab

+ Plans
  + Organizations
    + Department Classes
      + Departments
        + Resources
          + Items
    + Resource Groups
      + Departments
        + Resources
          + Items
    + Lines
      + Departments
        + Resources
          + Items
    +Transportation Resources
      + Departments
        + Resources
          + Items

Figure 4–6 Planner Workbench left pane tree layout for the Suppliers tab

+ Plans
  + Approved Suppliers
    + Categories
      + Items
        + Organizations

Configurable Layout

The Planner Workbench can be configured to display only information that is relevant to a user. The following settings can be configured and saved: default left tab, default right tabs for each node on the tree, node name, tab names, which graphs are displayed for the key performance indicators and what type of graph, find queries on the summary and detail windows, filter on the tree, window sizes, and splitter location.

Find Window Flexibility

The find windows control the volume of data displayed. Find criteria may be set for all the trees, summary, and detail windows. The tree's find functionality has several forms: filter, goto, and search. The filter window lets you to save a filtered tree - for

instance, a tree containing only the items for Planner A. The goto window lets you to enter an exact tree node path and expands the node. The search window lets you enter search criteria, such as A%, and returns all the nodes on the tree that meet that criteria. Double-clicking on one of the lines returned by the search engine takes you directly to the node.

Access Additional Information Easily

Toolbar menus and the right-mouse menus can be used to quickly access additional information about information displayed in the left and right workbench panes. For instance, right-mouse clicking a selected item brings up item detail and lead times.

Access and Execute Planned Orders Directly

You can quickly retrieve planned orders by navigating to the Action Summary. You can access a subset of planned orders for a specified time period or other user defined sort criteria. You can firm all planned orders or a specified subset of planned orders using a “Firm All” feature. You can release all planned orders using a “Release All” feature or you can individually select planned orders for release.

Access and Correct Action Messages Directly

You can retrieve action messages directly from the planner workbench. You can drill into a subset of action messages. You can drill to detail on an Action Message (by double-clicking or with the right mouse menu) and make changes to correct the problem.

View and Update Orders Directly from the Planner Workbench

You can zoom to the Purchase Orders, Purchase Requisitions, Forecast Entries, WIP Discrete Jobs, Flow Schedules, and Sales Orders windows directly from the planner workbench windows. You can modify order information and see resulting changes in the Net Change Replan.

View Key Performance Indicators

You can view Key Performance Indicators at a plan or organization level to see how well the plan is performing.

Access the Horizontal Plan Windows Directly

You can access the Horizontal Plan windows directly from the hierarchical tree.

Totals in the Horizontal Plan window

You can dynamically aggregate the values in the Horizontal Plan into totals using the pivot table. The pivot table shows values at an aggregate level and they can be expanded to show the detail.

View Vertical Plan

You can view supply and demand records by item and organization with time on the vertical axis. You can view a cumulative total for each item/org. You can drilldown from any row to access detailed information about that row.

User-Defined Graphs

You can define graphs by selecting which pieces of information to be graphed. You can dynamically choose types of graphs (line, bar, etc.), legends, texts, and colors. There is the option to zoom in or zoom out of a portion of a particular graph. You can print graphs directly from the screen (using inherent Netcharts functionality).

View Graphical Supply Chain Bill

In the View Supply Chain Bill window, you can obtain a global or item view of a supply chain. You can see the sourcing between organizations.

Access Components Information

You can view the components of an item on the hierarchical tree. You can drilldown to Plan Details to see supply and demand information directly from the tree, using the right mouse button.

Complete Graphical View of Supply and Demand with Full Pegging

You can obtain a complete graphical view of a supply or demand order. The Object Navigator also shows the current date and document number for a released supply order. You can drill both up and down from a supply or demand order.

Ability to Monitor Status of Releases

In the Actions window, you can view the status of the load, after loading the MRP planned orders to WIP or PO. An exception is generated if the load fails.

Zoom to Execution System

You can drill down to view the detail of an order in the execution system. For example, you can zoom to the WIP Discrete Jobs window to view additional information on a discrete job.

Interactive Simulation

You can easily make changes to the plan and run a simulation replan. You can make the following changes: sourcing rules, BOM / ECO effectivity, supply date / quantity, order priority, objectives, and resource availabilities.

Nervousness

Nervousness is the condition in which small changes in demand cause large changes in supply (planned order releases). In traditional MRP, plan nervousness causes lost time due to extra setups (and confusion and frustration) on the plant floor. With Oracle ASCP's ability to generate a single global supply chain plan, the effects of nervousness are magnified because they extend to trading partners (who may not have the same urgency to constantly re-plan manufacturing to accommodate rapidly changing requirements).

Consider the following example. End-item A has lead time 1 day and order modifier of Fixed Order Period = 3 days. End-item A contains one component B, which has a lead time of 3 days and order modifier Lot for Lot. Initial planned orders for A and B are shown below.

Figure 4–7 Initial planned orders for A and B.

Item A		1	2	3	4	5
Gross Requirements		10	10	10	10	50
Scheduled Receipts						
Project On-Hand	15	5	-5	-	-	-
Net Requirements			5	10	10	50
Planned Order Due Date			25			50
Planned Order Start Date		25			50	
Item B		1	2	3	4	5
Gross Requirements		25			50	
Scheduled Receipts						
Project On-Hand	25	0	0	0	-50	-
Net Requirements					50	
Planned Order Due Date					50	
Planned Order Start Date		50				

Now suppose that the demand for A on day 2 decreases by 5 units. Revised planned orders are shown below.

Figure 4–8 Revised planned orders for A and B.

Item A		1	2	3	4	5
Gross Requirements			70			
Scheduled Receipts						
Project On-Hand	25	25	-50	-	-	-
Net Requirements			50			
Planned Order Due Date			50			
Planned Order Start Date		50*				
Item B		1	2	3	4	5
Gross Requirements		10	5	10	10	50
Scheduled Receipts						
Project On-Hand	15	5	0	-10	-	-
Net Requirements				10	10	50
Planned Order Due Date				70		
Planned Order Start Date			70			

* Late Start

- Note that the decrease in demand caused the planned orders for A to change from 25 on Day 1 and 50 on Day 4 to 70 on Day 3. This is an example of nervousness at work.
- Note further that the resulting change in dependent demand for B causes the planned orders for B to become infeasible, resulting in a late start - this after the demand for A decreased.

Several steps may be taken to reduce planning nervousness of the sort illustrated above.

- Eliminate the use of the order modifier Fixed Order Period for end items. Instead, use Fixed Lot Multiple or Fixed Order Quantity. Reserve Fixed Order Period for lowest-level items only.

- Make use of a planning time fence. A planning time fence of x days freezes planned orders in the interval [plan start date, plan start date + x]. This eliminates near-term disruptions to the manufacturing schedule.
- Make use of a release time fence. A release time fence of x days automatically firms and releases to the execution system planned orders in the time interval [plan start date, plan start date + x]. Subsequent planning runs then treat these planned orders as scheduled receipts, not subject to manipulation via order modifiers. This reduces planning nervousness.

Time fences can be used to freeze near-term plans and reduce nervousness. However, they also reduce the ability of the planning process to accommodate changes in demand. They should be set to the lowest values possible.

Making Decisions on the Basis of a Plan

Oracle ASCP is integrated with Oracle Business Intelligence's performance management system. Oracle Business Intelligence lets you set the organizational objectives

> **Note:** These objectives, known as *Performance Measures* in the Oracle Business Intelligence System (BIS), are referred to as *Key Performance Indicators* (KPIs) in Oracle ASCP

KPIs are used to drive continuous improvement in your enterprise. You can set performance targets and exception tolerances by business units (an organization, for example) or by period and automatically notify the appropriate people when exceptions arise.

Using the Planner Workbench, you can run multiple simulations, comparing them to your own performance metrics. As you firm a plan, you can directly update performance metrics in the execution system.

Key Performance Indicators (KPIs)

Oracle ASCP provides four standard KPIs against which a plan's performance can be compared:

- Inventory Turns
- Margin Percentage
- Planned Utilization
- Ontime Delivery

Inventory Turns

Inventory turns for a given plan between time periods t1 and t2 are calculated as follows:

$$\text{Inventory Turns} = \frac{\text{Dollar Value of MDS demand between time periods } t_1 \text{ and } t_2}{\text{Dollar value of average inventory between time periods } t_1 \text{ and } t_2}$$

$$\text{Average inventory between time period } t_1 \text{ and } t_2 = \frac{(\text{Ending inventory in time period t1} + \text{Ending inventory in time period } t_2)*(t_2-t_1)}{2*(365)}$$

Ending inventory in time period t1 = Ending inventory in time period t-1
+ Purchase orders during period t
+ Purchase requistions during period t
+ Planned orders during period t
+ Discrete jobs during period t
+ Repetitive schedules during period t
- Master schedule demand during period t

Note: These calculations use standard costs of items. Standard cost systems use a single value to cost all material and resource transactions in inventory and work in process systems.

Margin Percentage

Margin Percentage is the net difference between planned revenues and planned production costs.

Margin Percentage = (total shipment units)x(standard price)x(standard discount) - (total shipment units)x(standard cost)

where total shipment units include sales orders and forecasts.

Planned Utilization

Planned Utilization for a department/resource or line R1 is calculated as follows:

$$\text{Utilization for } R_i = \frac{\text{Hours of capacity actually used}}{\text{Available hours of capacity}} * 100$$

$$\text{Average Utilization} = \frac{\sum_i \text{Utilization for } R_i}{\sum_i}$$

Ontime Delivery

Customer service level or delivery performance are calculated as follows:

$$\text{On-time delivery} = \frac{(\text{Total number of orders} - \text{number of late orders}) * 100}{\text{Total number of orders}}$$

Tracking Plan Performance Against KPIs

Oracle ASCP lets you track plan performance against KPIs. For more information, see "Planner Workbench/User Interface."

Making Improvements Based on KPIs

Increasing Inventory Turns

- Decrease the penalty factor for safety stock violation.
- Increase weight given to the maximize inventory turns objective, decrease weight given to other objectives by choosing Plan Options > Optimization tab.
- Change sourcing rules used by the plan to reflect material sources (for example, inventory stocks) that are controlled by the planner or the organization being planned. For example, if a plan is run with many inventory sources specified in the sourcing rules, inventory turns will be lower than if only a few inventory sources are used.

Increasing Planned Utilization

- Decrease penalty factor for exceeding resource capacity.
- Increase weight given to the maximize resource utilization objective, decrease weight given to other objectives.
- Increase the demand that is being planned. Note that increasing demand can have adverse impact to other KPIs (for example, On Time Delivery) if material capacity is not sufficient to support the demand.

Increasing Margin Percentage

- Decrease penalty factors considered in the margin percentage calculation.
- Increase weight given to the maximize margin percentage objective, decrease weight given to other objectives.
- If material and/or resource capacity is constrained, demand will not be fulfilled by the request date and sales will either be lost of penalty costs will be incurred for late demand. See actions described in “Increasing On Time Delivery.”

Increasing On Time Delivery

- On Time Delivery will suffer if material capacity and resource capacity is not sufficient to meet requested delivery dates. By looking at the exceptions that occur after a plan is run, you can determine whether material or resource capacity is the gating factor.
- To determine material and resource capacities required to meet all requested delivery dates for demand, run the plan unconstrained by material and capacity

to determine total resource and material capacity requirements. (Choose Plan Options > Aggregation tab to specify material and resource constraints.)

- If material capacity is insufficient:
  - Add capacity at the bottleneck supplier(s)
  - Specify alternate components that can be used if the primary (constrained) component is not available
  - Add capacity at feeder plants supplying sub assemblies
- If resource capacity is insufficient:
  - Add capacity at the bottleneck resource. For example, add shifts, add outsourcing providers, add labor
  - Specify alternate resources that can be used
- If material capacity and resource capacity is not constrained:
  - Increase penalty factor for unmet demand and late demand
  - Increase weight given to the maximize on-time delivery objective, decrease weight given to other objectives

Exception Messages

You can view the following exception messages in the Planner Workbench Actions tab.

Item Exceptions

- Items that are over-committed
- Items with repetitive variance
- Items with no activity
- Items with negative starting on hand
- Items with expired lot
- Replenishment before need date
- Replenishment after need date
- Orders with compression days

Shortages and Excess

- Items with a shortage
- Items with excess inventory
- Items below safety stock

Reschedules

- Orders to be rescheduled in
- Orders to be rescheduled out
- Orders to be cancelled
- Past due orders

Late Sales Orders and Forecasts

- Past due sales orders
- Past due forecast
- Late supply pegged to sales order
- Late supply pegged to forecast

- Late order due to resource shortage
- Late replenishment for sales order
- Early replenishment for sales order
- Late replenishment for forecast
- Early replenishment for forecast
- Sales Order affected by Resource Constraint

Projects/Tasks

- Items with a shortage in a project
- Items with excess inventory in a project
- Items allocated across projects / tasks

Material and Resource Capacity

- Resource overloaded
- Resource underloaded
- Supplier capacity overloaded
- Resource Constraint
- Material Constraint
- Transportation resource overloaded
- Transportation resource underloaded
- Transportation resource constraint

Substitutes and Alternates Used

- Planned order uses alternate BOM
- Planned order uses alternate routing
- Planned order uses substitute components
- Planned order uses alternate resources

Making Decisions Based on Exceptions

Oracle ASCP provides a range of exception messages for all plans. You can easily manage your plan by displaying only those items and orders that require your attention, and you can further narrow your search using other criteria such as by buyer or by line.

By saving the exception messages each time you perform simulations, you can compare different versions of the same plan or analyze the strengths and weaknesses of a single plan. Some of the guidelines to respond to the exceptions are:

- **Items with a shortage** Usually, this exception occurs within a planning time fence; you should consider reviewing and correcting supply / demand imbalances inside the planning time fence.
- **Items with no activity** You should consider changing the item attribute Planning Method to Not planned.
- **Items with excess inventory** You should consider canceling unneeded scheduled receipts, transferring the material to another facility, or moving the inventory to an obsolete area.
- **Orders to be rescheduled out** For discrete material planning only, you should consider reviewing the recommendations for this item.
- **Orders to be rescheduled in** For discrete material planning only, you should consider reviewing the recommendations for this item.
- **Orders to be canceled** For discrete material planning only, you should consider reviewing the recommendations for this item.
- **Past due sales order** You should consider revising the sales order schedule date.
- **Past due forecast** You should consider either no longer planning for the forecast entry or revising the forecast entry due date.

- **Late sales order** You should decide between expediting the supply order and revising the sales order schedule date.
- **Past due orders** For discrete material planning only, you should consider checking the demand that resulted in this planned order and either arrange to alter the demand and supply due dates or prepare to expedite the scheduled receipt that you create from this planned order.
- **Capacity over-utilized** You should consider increasing available capacity or reducing the workload.
- **Capacity under-utilized** You should consider increasing the workload, decreasing available capacity, shifting resources to other work centers, processing rework, or executing special projects.

5

Planning in Mixed Mode Environments

Topics covered in this section include the following:

- Overview of Mixed Mode Manufacturing
- Common Features in Hybrid Manufacturing Environments
- Oracle Project Manufacturing
- Oracle Flow Manufacturing
- Oracle Process Manufacturing

Overview of Mixed Mode Manufacturing

Oracle ASCP supports mixed mode manufacturing which lets you plan distribution and manufacturing operations for hybrid environments. You can plan for the full range of discrete, repetitive, process, project, and flow manufacturing environments. You can also plan to make to stock, make to order, assemble to order, and configure to order products simultaneously, using a single plan across all methods. This features enables you to use the most efficient process to build each product.

Mixed mode manufacturing is supported by the following combination of Oracle Applications: Oracle BOM (for discrete manufacturing), Oracle Flow Manufacturing, Oracle Project Manufacturing, and Oracle Process Manufacturing. These serve primarily to provide process plan (routing) data to the Oracle ASCP engine. They also provide the user interfaces with which users of the different manufacturing modes view the output of the planning process.

Common Features in Hybrid Manufacturing Environments

Oracle ASCP includes full support for by-products, co-products, lot expirations, and formula effectivities. For repetitive manufacturing, all features in Oracle Applications Release 10.7 and Release 11 are supported.

Phantom Routings

Phantoms are non-stocked assemblies that let you group together material needed to produce a subassembly. Oracle MRP explodes requirements through a phantom subassembly to the components as if the components were directly tied to the parent assembly. No planned orders are generated for phantom assemblies. Routings for phantom items are now used to generate resource requirements.

Phantom Routings are now included for all phantom items in an organization based on the settings of the Organization level parameter “use phantom routings” in Oracle Bill of Material. An additional parameter “inherit phantom operation sequence” set at the inventory organization level in Oracle Bill of Material determines whether components of phantom items will retain their operation sequence or inherit them from the parent.

Note: The combination of “use phantom routings” = “Y” and “inherit phantom operation sequence” = “N” is not supported.

The following table summarizes the different behavior of a phantom item and its components associated with settings of the two parameters, according to the example that follows.

Figure 5–1 Bill of Material Structure for Assembly A.

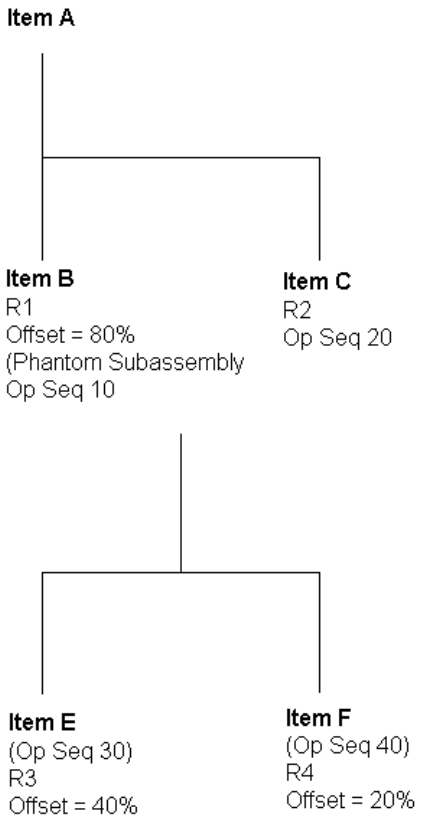


Table 5–1

Release	Use Phantom Routing	Inherit Phantom Op Seq	Behavior
10.7	Yes	Yes	Not supported
	Yes	No	Not supported
	No	Yes	Resource requirements generated for R1 and R2, but not R3 and R4. Due dates of Items E and F are calculated based on offset percentage of Op Seq 10.
	No	No	Resource requirements generated for R1 and R2, but not R3 and R4. Due dates of Items E and F are calculated based on offset percentages of Op Seq 30 and 40, respectively.
11.0	Yes	Yes	Not supported
	Yes	No	Not supported
	No	Yes	Resource requirements generated for R1 and R2, but not R3 and R4. Due dates of Items E and F are calculated based on offset percentage of Op Seq 10.

Table 5–1

Release	Use Phantom Routing	Inherit Phantom Op Seq	Behavior
	No	No	Resource requirements generated for R1 and R2, but not R3 and R4. Due dates of Items E and F are calculated based on offset percentages of Op Seq 30 and 40, respectively.
11i	Yes	Yes	Resource requirements generated for R1, R2, R3 and R4. Due dates of Items E and F are calculated based on offset percentage of Op Seq 10.
	Yes	No	Not supported
	No	Yes	Resource requirements generated for R1 and R2, but not R3 and R4. Due dates of Items E and F are calculated based on offset percentage of Op Seq 10.
	No	No	Resource requirements generated for R1 and R2, but not R3 and R4. Due dates of Items E and F are calculated based on offset percentages of Op Seq 30 and 40, respectively.

Utilization Efficiency

Utilization and efficiency are now incorporated into Capacity Planning with Oracle ASCP. Routings are used to generate capacity requirements for planned orders and suggested repetitive schedules by the memory based planner. You can now define utilization and efficiency on a department resource within Bills of Materials. For Flow Routings, the utilization and efficiency of individual resources used on a line in the Mixed Model Map definition are considered for determining the line rate. For repetitive schedules, it is assumed that the efficiency and utilization are factored into the user definition of line rate.

The range of values for utilization is 0.0 to 1.0. The range of values for efficiency is zero to infinity. The availability of department resources will take into account the utilization and efficiency of the resource. The net availability is calculated as follows:

Net availability = the number of hours the resource is available * utilization * efficiency.

You can view utilization and efficiency in the Resources window in the Planner Workbench.

Routing Effectivity

Routing Effectivity is now incorporated into Capacity Planning with Oracle Planning Products.

Routings are used to generate capacity requirements for Planned Orders and Suggested Repetitive schedules by the planning engine. With the new functionality, resource requirements will be generated using routings which are effective on the start date of the planned order or suggested repetitive schedule.

Each routing now has an effective date and a disable date which indicates the date range for which the routing is effective. This is defined in Oracle Bills of Material. Routings are used to list the different resources which are required at each operation for an item.

Simultaneous, Aggregate, and Alternate Resources

The following new flexfields have been added in Oracle Applications to enter data for planning and scheduling. A sample implementation follows the flexfield definitions.

Aggregate Resource for a Resource This is defined in the Department Resources Form. It is based on the existing flexfield "Aggregate Resource Id."

Simultaneous Resource Sequence This is defined via a flexfield in the Operation Resources Form.

Alternate Resource for an operation This is defined via a flexfield in the Operation Resources Form.

Priority of Alternate Resources for an operation This is defined via a flexfield in the Operation Resources Form.

Priority for Substitute Items This is defined in the Substitute Components Form.

Cost of using Alternate BOM / Routing This is defined via a flexfield in the Bills of Material Form.

Example

- Assumption: Primary resource has a priority of 0
- Principal Flag: 1 - Yes (primary resource); 2 - No (alternate resource)
  Note: When multiple resources are required for the same operation, one and only one must be marked

Table 5–2

Operation Sequence	Resource Sequence	Resource	Flexfield	Values
10	10	R1	Resource step number	10
			Priority / Group	0
			Principal Flag	1 (Yes)
10	20	R2	Resource step number	20
			Priority / Group	0
			Principal Flag	2 (No)
10	30	R3	Resource step number	10

Table 5–2

Operation Sequence	Resource Sequence	Resource	Flexfield	Values
			Priority / Group	1 (Yes)
			Principal Flag	2 (No)

Table 5–3

Operation Sequence	Resource Sequence	Resource	Flexfield	Values
10	10	R1	Resource step number	10
			Priority / Group	0
			Principal Flag	1 (Yes)
10	20	R2	Resource step number	10
			Priority / Group	0
			Principal Flag	2 (No)
10	30	R3	Resource step number	10
			Priority / Group	1 (Yes)
			Principal Flag	1 (Yes)
10	40	R4	Resource step number	10
			Priority / Group	1 (Yes)
			Principal Flag	2 (No)

Table 5–4

Operation Sequence	Resource Sequence	Resource	Flexfield	Values
10	10	R1	Resource step number	10
			Priority / Group	0
			Principal Flag	1 (Yes)
10	20	R2	Resource step number	10
			Priority / Group	0
			Principal Flag	2 (No)
10	30	R3	Resource step number	30
			Priority / Group	0
			Principal Flag	2 (No)
10	40	R1	Resource step number	10
			Priority / Group	1 (Yes)
			Principal Flag	1 (Yes)
10	50	R4	Resource step number	10
			Priority / Group	1 (Yes)
			Principal Flag	2 (No)

If Resource step number is NULL, the value will be defaulted to Resource sequence. If priority is NULL, the value will default to the primary priority.

Oracle Project Manufacturing

Oracle Project Manufacturing is designed to support companies that manufacture products for projects or contracts. It provides robust project tracking, billing, and budgeting. You can plan in a project or contract environment by segmenting all sources of supply and demand by project. This allows the planning process to identify components as shared or project specific, track existing inventories by project, and provide visibility to all supply and demand associated with the project.

Oracle Project Manufacturing also supports Seiban production. Seiban is a Japanese management practice. The words “sei” means production, “ban” means number, thus implying a “production number.” A manufacturing plan is therefore managed by a Seiban number. All demand and supply for the manufacturing plan is associated with the Seiban number (via its project number).

Oracle Project Manufacturing is also designed for engineer-to-order (ETO) environment and a assemble-to-order environment. This enables a manufacturer to track supply and demand with a particular product, project or customer.

Oracle ASCP supports Oracle Project Manufacturing through Project MRP. With Project MRP you can:

- Include project or project-task or Seiban numbers in forecast, MPS, and MDS entries.
- Load, copy or merge forecast, MPS, and MDS entries with project or project-task or Seiban numbers.
- Recognize and allocate supply according to project or project-task or Seiban numbers.
- Combine project or project-task and Seiban related supply and demand with common supply and demand in the same plan or schedule.
- Perform netting by planning groups, project or Seiban, and tasks
- Generate planned orders with project or Seiban, and task references
- Execute a plan in the Planner Workbench by planning group, project or project-task, and Seiban.
- Perform net change simulation in a project environment.
- Generate planned orders with project or project-task or Seiban.
- Implement planning suggestions by planning group, project or project-tasks, or Seiban numbers.

Oracle Project Manufacturing is now integrated with Oracle ASCP. Oracle ASCP supports constraint based supply chain planning and optimization with online simulations for Engineer-to-Order (ETO) manufacturing typical in the Aerospace and Defense Industry. It features the following:

Hard and Soft Pegging

The hard and soft pegging feature being offered previously is fully supported by Oracle ASCP. An item's attribute can be set to any of the following pegging levels which are elaborated below:

Soft Pegging

The planning process will allocate supply for a project-task (or Seiban) to demand for the project-task (or Seiban) according to the reservation level set in the plan level options.

All reservations of supply to demand records is for a single item. Common, non-project supply is used to satisfy project demand. For a soft pegged demand, excess project supply (or common supply) is always available for another project's demand.

No project references are made to planned orders issued to soft pegged items.

(Choose the End Assembly / Soft Pegging option for both soft pegging and end assembly pegging. End assembly pegging traces the end assembly to which the item is pegged at the top of the bill of material.)

Hard Pegging

In this option the planning process allocates supply for a project task (or Seiban) to demand for the project task (or Seiban), according to the reservation level set in the plan level options. Excess common supply from one project can only be shared among projects in the same planning group, if reservation level is set at planning group.

Project references are attached to planned orders for hard pegged items.

(Choose the End Assembly / Hard Pegging option for both hard pegging and end assembly pegging).

Common Supply Netting

The new netting logic for Project MRP now also takes into account excess common supply for project demand for hard pegged items. This netting logic is available only if the reservation level option for the plan is set to Planning Group.

For the above, you can generate a graphical pegging display. If “none” is used for pegging, project material allocation, end assembly pegging and graphics are disabled.

Supply Chain Project Planning with Hard Pegging

In situations where projects are executed across multiple organizations, Oracle ASCP provides you with the same useful features for managing demand and supply across multiple organizations in the supply chain.

It uses similar logic as Project Manufacturing planning to plan projects in multiple organizations and ensures that the project information is permeated to all organizations in the Supply Chain. Supply for a project belonging to multiple organizations can be netted against the demand for the same project in a single planning run.

Project Supply Chain Planning provides you with a visibility across the entire supply chain. You can use the same features to obtain project specific information from the Planner Workbench.

Note: The project control level for all project manufacturing organizations must be the same for all organizations in the supply chain project planning scenario.

Group Netting

The netting logic can include a group of projects. Excess supply in one project can be reserved against demand for another project belonging to the same planning group. For this, set the reservation level to “planning group.” If reservation level is set to project then it is not group netting.

Borrow Payback

Two order types have been created in Project MRP to distinguish demand and supply resulting from a borrow / payback transaction in Project Manufacturing:

- Payback Demand
- Payback Supply

You can search for borrow / payback demand / supply using these order types. You can also see these order types on the Planner Workbench.

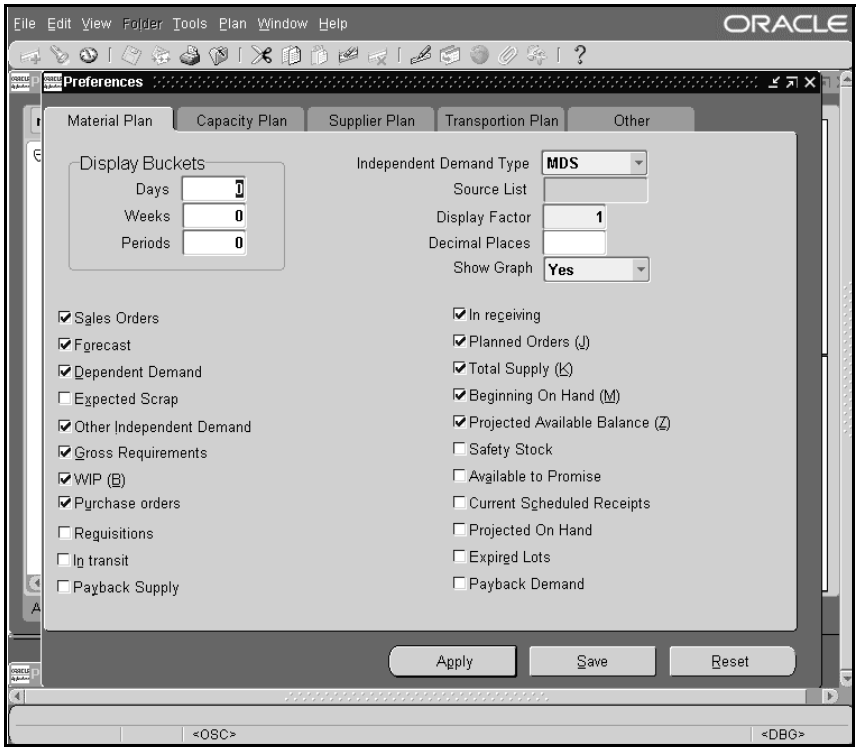
Planner Workbench

You can view payback demand created in the borrowing project and payback supply created in the lending project for a Item or Organization in the horizontal material plan and the Supply / Demand window in the Planner Workbench.

A scheduled payback transaction is considered as a new type of supply called "payback supply" for the lending project and a new type of demand called "payback demand" for the borrowing project. The scheduled payback date is used as the supply and demand date.

In the Preferences window, you can choose to display the payback demand and payback supply for the horizontal material plan.

Figure 5–2 Defining Display Preferences



The supply / demand picture can be viewed. No changes are allowed here, for example rescheduling or changing the quantity.

In the enterprise view, the payback supply is in a separate column. Payback demand is included in “other independent demand” column. Payback supply is included in “total supply.” Payback demand is included in “gross requirements.” In addition, payback supply is included in “current schedule receipts.”

Pegging

You can view the borrow and payback relationships in the pegging window.

Please see the *Oracle Project Manufacturing Implementation Manual* for more information on Borrow / Payback in Project MRP.

Model/Unit Effectivity (Serial Effectivity)

Oracle ASCP supports Model / Unit Effectivity.

Items

Items can be set for effectivity control method. The full pegging attribute for the item must not be set to “no pegging” if the item is under model effectivity control. It must be set to “soft pegging” or “hard pegging.”

For items under model effectivity control, it is now necessary that the unit numbers associated to the lot that is expiring are the same as that of the requirements against which they are consumed. Also, when requirements are created for the unconsumed quantity, the unit number tied to the lot that is expiring must be associated with the new requirement.

Define MDS/MPS Entries by Unit Numbers

You can enter schedule entries by Model Unit Number. The unit number that you enter will be validated against the master list of unit numbers that are eligible for that end item. If the item on the entry is a orderable sub-assembly, used in the bills of other end items, the entry can be associated with the unit numbers of its end item.

Unit Numbers in Sales Orders

You can load sales orders into a MDS, and have the unit number specified against the sales order.

Effectivity in the BOM

You can snapshot bills for items under unit effectivity in addition to those under date effectivity. The Engineering Changes Information snapshot as a part of the BOM can now have the component effectivity specific to an end item unit number or a range of item unit numbers.

The snapshot tasks now include end item unit number for different supply and demand entities used in the planner.

Generating Planned Orders

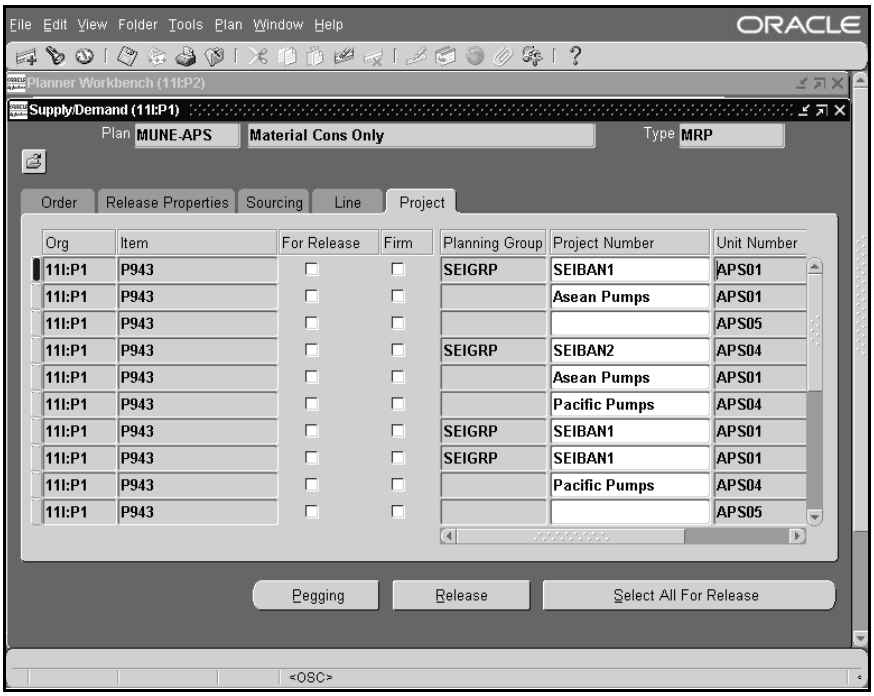
You can net all supply for a End Item Unit number to the demand for the end item. MRP will generate planned orders with Unit Number specified on them. Demand for components can be created with model / unit number effectivity in addition to

components with date effectivity. MRP will not generate suggested repetitive schedules with Unit Number specified on them.

Planner Workbench

You can view the unit numbers of all items under unit number effectivity in the demand, supply, items, end assemblies. In the Find window you can specify the unit numbers while viewing items, supply / demand or exceptions. You can enter unit number information for new planned orders and MDS entries in the Planner Workbench. However, you will not be able to modify existing unit numbers tied to planned orders / MDS records from the Planner Workbench.

Figure 5–3 Supply/Demand for Unit Effective Items



Pegging

You can view the unit number information in the pegging views.

WIP Mass Load/ PO Requisitions Interface

When you implement Planned Orders in the Planner Workbench, you can pass on the unit number information to WIP and PO.

Flow Line Scheduling

You can view the unit numbers of all unscheduled orders under unit number effectivity in the Line Scheduling Workbench Unscheduled Orders window (Oracle Flow Manufacturing Workbench). When you create new schedules based on an unscheduled order unit number effectivity, the resulting flow schedule will contain the unit number reference.

You can create new flow schedules under unit number effectivity and view the numbers for existing schedules in the Line Scheduling Workbench Detail window. You can create and update flow schedules under unit number effectivity using the API.

Workflow Based Project Exception Messages

Along with the other MRP Exception Messages, Project MRP provides the following project related exception messages that can help monitor project material plans. Like other exception messages, these exception messages are also workflow enabled for better supply chain coordination. The Project Manager or Task Manager (if defined) will also be notified of these plan exceptions.

- Items with Excess inventory in a project-task: This exception message enlists all items with excess inventory in a project or project-task. This exception occurs when the projected on-hand quantity of the item in a project or project-task exceeds zero or safety stock by more than the value you entered in Excess Quantity in the exception set for the item.
- Items with Shortage in a project-task: This exception message highlights the items whose demand exceeds supply for that project or project-task. For items with a shortage in a project-task, an exception message is generated when the projected on hand quantity for an item in a project is negative or below the safety stock.
- Items allocated across project-task: This exception message indicates items where supply for one project or project-task is used to satisfy demand for another project or project-task.

- Reschedule In
- Reschedule Out
- Cancellation

Project MRP Implementation Steps

The steps to set up, run and view a plan in a project environment are as follows.

Oracle Project Manufacturing Setup

1. Define projects and tasks directly in Oracle Project Manufacturing, manually using Entry Project, or using the Project Manufacturing Seiban Number Wizard, or define Seiban numbers in Project Manufacturing using the Seiban Number Wizard.
2. Define "planning group" Quick Code.
3. Associate a project / Seiban to a planning group (in the project parameters form)

Refer to the *Oracle Project Manufacturing User's Guide* for detailed setup instructions.

Oracle Inventory Setup

Define item pegging attributes. The following item pegging attributes can be used:

- Soft pegging, or End Assembly / Soft Pegging: In this case excess project or common supply is available to satisfy project demand of any project irrespective of plan options chosen. Planned orders do not carry project and task references.
- Hard Pegging, or End Assembly / Hard Pegging: In this case excess supply in one project can be used for demand of a different project in the same planning group if reservation is set to "planning group." Excess common supply is also available for project demand only if the reservation level is "planning group." Planned orders carry project and task references as defined by the "hard pegging level" plan option.
- None: Disables project material allocation. Also, planned orders do not carry any project or task reference irrespective of the hard pegging level plan option.

Refer to *Oracle Inventory User's Guide* for detailed setup instructions.

Oracle ASCP Setup

1. Define Plan Options by choosing Tools > Pegging.

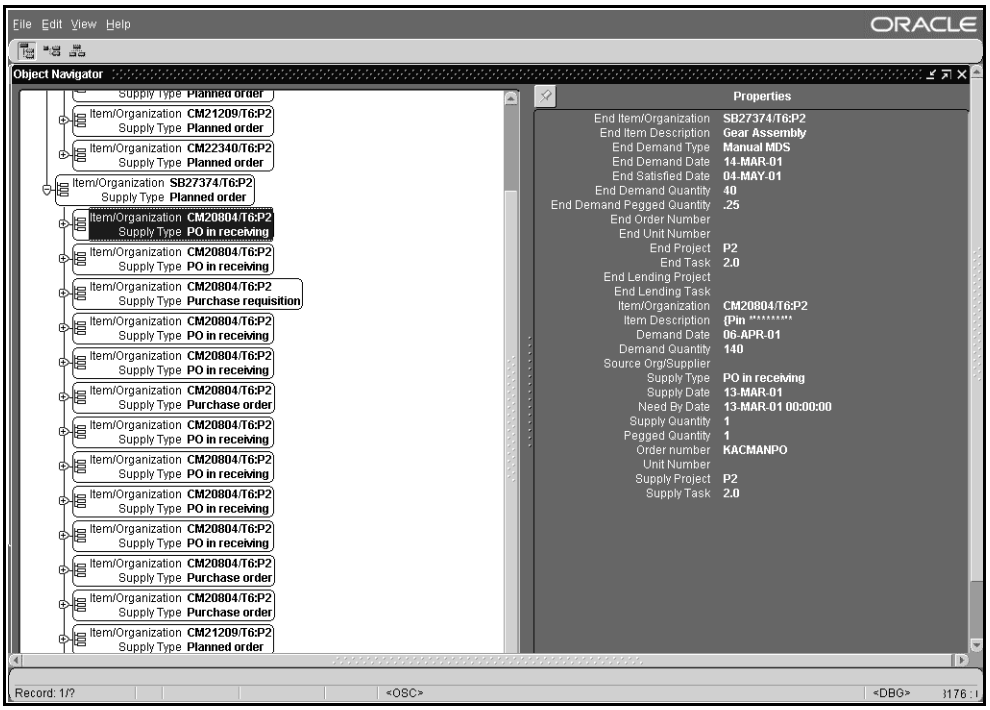
   The Pegging window displays.

2. Complete the following options in the Pegging window.

Table 5–5

Option	Description
Reservation Level	This option determines the method of pre-allocation of project supply to project demand. You can choose to reserve based on: ■ Planning Group In this case the plan will reserve project specific supply at the planning group level. Excess supply in one project can be reserved against demand for another project belonging to the same planning group. Excess common supply will also be allocated to project demand. ■ Project In this case project specific supply is used for demand specific to that project only. This will allow cross-allocation across tasks within the same project. ■ Task This will reserve supply for a project-task against demand for the same project-task only. No cross-allocation of material belonging to the same project but different tasks is allowed. ■ None This will be a non-project MRP plan.
Hard pegging level	This option determines if the project or project-task references will be added to planned orders. This is applicable to hard pegged items only for which the pegging attribute must be “hard pegging” or “End Assembly / Hard Pegging.” For soft pegged items, no project references are associated. These work independent of the reservation level options.

Figure 5–4 The Pegging window



3. Launch a plan

Refer to the *Oracle ASCP and Oracle Global ATP Server User's Guide* for more information on defining plan options launching plans.

Project MRP Planning Logic

Refer to the *Oracle Project Manufacturing Implementation Manual* for Project MRP planning logic. Netting Logic with examples of hard pegging with common supply netting and the pegging logic is explained here.

> **Note:** Order modifiers are applied *before* project netting calculations.

Viewing the Plan

The plan can be viewed from the Planner Workbench. You can view planning information by project and implement manufacturing plans in the workbench by project.

Use the Supply, Demand or Supply / Demand window of the Planner Workbench to view information about the plan's supply and demand. Planning Group, Project Number and / or Task Number may be used as the search criteria.

You could also use customizable folders in the Supply, Demand or Supply / Demand screens to query planning information for a particular project or project-task.

The Horizontal Plan and Enterprise View windows enable you to view supply and demand information by Planning Group, Project, and Project-Task. You can also choose to see the planning status of all the material or only common material in these forms.

The Planner Workbench also generates Reschedule In, Reschedule Out and Cancel action messages for project supply. It follows the current Planning Time Fence and Acceptable Days Early logic to generate these messages.

Oracle Flow Manufacturing

Oracle Flow Manufacturing is a demand driven production system with balanced production lines and processes designed to produce a constantly changing mix of products at a steady rate. Flow manufacturing uses schedules for mixed model production instead of work orders to drive production. The mixed model schedules are sequenced based on scheduling rules and material is replenished, or pulled through the sequence, using kanbans.

This is in contrast to a traditional discrete environment where the Master Production Schedule and MRP are used to explode requirements and create planned orders that are converted into purchase orders and work orders. There are some cases in which Oracle ASCP may be used effectively. For example - you have a seasonal business, and you use MRP to create planned orders during your "slow" period to build up inventory to satisfy your peaks in demand. In these cases planned orders may be converted into flow schedules.

When there is a hybrid of manufacturing methods, for example if a flow manufacturing system feeds to a discrete manufacturing plant, Oracle ASCP may be used effectively, because Oracle ASCP can consider a flow schedule as a supply.

Oracle ASCP continues to support features in Oracle Flow Applications Release 11.0.

Supply Chain Synchronization

Oracle ASCP can improve supply-chain throughput and reduce inventories by improving synchronization of operations between facilities. In turn, Oracle Flow Manufacturing increases manufacturing plant throughput by dramatically decreasing manufacturing times and removing in-process and finished goods inventory.

Constraint Based Factory Rescheduling

If you specify line capacity, Oracle ASCP can constrain by that capacity to create plans. If demand is more than what can be manufactured, then Oracle ASCP will create a plan considering the constraints. These planned orders may be converted into flow schedules.

Oracle ASCP includes flow schedules to be considered as supplies.

The processes to define, implement, and maintain Oracle Flow Manufacturing are:

- Demand Management
- Line Design & Balancing
- Line Scheduling & Sequencing
- Production Execution
- Kanban Planning and Execution

Planning plays an important part in the design phase of an Oracle Flow Manufacturing implementation. The forecast, MDS, and / or MPS that are established are only used for planning purposes for line design and kanban sizing as described below. External to the enterprise, the forecasts are communicated with suppliers so that they may, in turn, plan their operations.

Demand Management

Oracle Flow Manufacturing forecast tools, Master Demand Schedules, and Master Production Schedules with Oracle ASCP are used for managing demand. Similar products are grouped into families to allow for planning at an aggregate level. The creation of forecasts, MDS / MPS are used for line design and kanban planning. If

you are not building directly to customer demand, Oracle Flow Manufacturing can create schedules from the planned orders generated by the above tools.

The following planning capabilities need to be setup: Forecasting & Master Demand Schedules. Oracle Flow Manufacturing uses the Demand Management tools provided in Oracle MPS/MRP or Oracle ASCP to plan production volumes.

Line Design and Balancing

Line Design includes grouping products into product families, defining the processes, and events required to produce each product, and re-grouping events into line operations to approximate TAKT time (German for “target cycle time”). The statement of demand established in Demand Management,whether it is from a forecast, MDS, or MPS, is critical to the line design function. The demand sets the upper limit of production capacity and becomes the basis for balancing procedures.

Kanban Planning and Execution

Generally the same forecast, MDS, or MPS that is used to design a mixed model production line is also used for kanban planning. The derived demand of components is used to establish size requirements. Oracle ASCP uses the snapshot of inventory for on-hand quantity and safety stock.

Product Families

Flow uses product families to plan at an aggregate level. Oracle ASCP supports product family items. You can define different planning horizons for product families or item level. Resources can be planned at the product family level.

Oracle Process Manufacturing

The Oracle Process Manufacturing (OPM) user is fully integrated to Oracle ASCP and can now plan based on plan objectives and use the materials and resources optimally. There will be no need to execute OPM P/MRP.

Oracle ASCP provides an integrated plan for multiple modes of process manufacturing including batch, continuous, and packaging operations. It incorporates a formula-based, process unique requirements including co-products, and scaling.

The data used to plan materials and capacity exists in the OPM schema. This data is now used by the Oracle ASCP Planning Server. Oracle ASCP uses inventory, planning, and sales data from OPM and purchasing data from Oracle Applications. The user can run multiple plans and manage materials and resources. Once satisfied with the plan it can be executed in the Production Module.

The following changes have been made to the existing methodology:

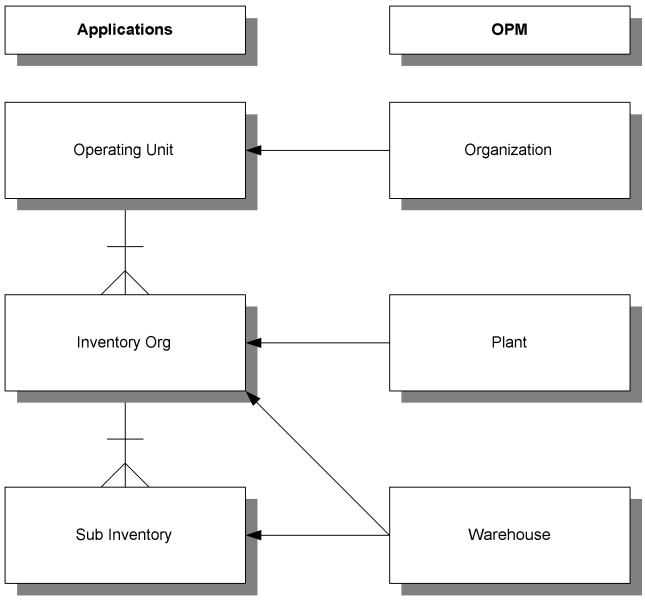
- No need to execute OPM P/MRP
- Outside vendor for finite scheduling no longer needed
- All Planning Activities can be on a Separate Server
- Plans are no longer restricted to material planning
- OPM structure now mimics Apps Organization Structure

OPM Data for Oracle ASCP

Merged Organization Structure

The OPM structure now merges with the Oracle Applications structure, as shown.

Figure 5–5 OPM and Oracle Applications Structures



OPM production batches and planning functions occur at the plant level. These are now merged to production and planning data at the inventory organization level.

OPM demand is placed at the warehouse level and planning can occur at this level as well. These are now merged to the inventory organization level.

OPM on-hand balances are stored at the warehouse or location level. Stock allocation and nettability takes place at the warehouse level. These are now merged to the sub-inventory level of Oracle Applications.

The above data and transactions can also occur at the location level in OPM. The corresponding level in Oracle Applications is the locator level, but Oracle ASCP does not plan at the locator level. All OPM location data therefore must be merged into the warehouse and mapped at the sub-inventory level.

Differences Between Production in OPM and Oracle Applications

In Oracle Applications, at the Inventory Organization level, site locations are used for vendors and customers, and departments are used to control resources. In OPM, the resources are defined at the plant level.

A work order (a WIP job, in Oracle Applications) is roughly equal to a production batch in OPM. Both work orders and production batches consume resources. In Oracle Applications, a work order (created at the inventory organization level) can only draw from resources available in the inventory organization for which the work order was created. In OPM, a batch may only access resources for the plant.

Plant warehouse effectivities in OPM allow a production batch to draw from materials available outside the warehouse in which the production batch was created. OPM also lets you specify the warehouses from which to pull inventory to complete a production batch. You can define multiple allocation parameters for an item. This allows you to allocate inventory from multiple warehouses.

The ingredients for a batch must come from a single warehouse. Oracle ASCP does not allow the allocation of ingredients from multiple warehouses. OPM works around this issue by using the work-in-process warehouse or the resource warehouse, if available, as the single source of ingredient inventory when the batch has multiple sources or destinations. The work-in-process warehouse or the resource warehouse shows Oracle ASCP from where to allocate inventory.

Recommended OPM Organization Structure for Oracle ASCP

The following OPM organization structure is recommended in order for OPM data to smoothly merge with Oracle ASCP:

- Each OPM production plant owns one warehouse. Production is assumed to take place in this warehouse.
- One warehouse for production per plant
- Multiple production plants can draw raw material inventory from common warehouses to meet their production demand.
- Multiple production plants can supply common warehouses (distribution center).
- Each OPM warehouse must have a corresponding inventory organization in Oracle Applications.
- If multiple production plants use the same warehouse as their raw material inventory source, then the production for these plants should be planned together.

Merging Effectivities, Formulas, and Routings

Oracle ASCP expects organization-specific formulas and routings.

Oracle ASCP now includes the following OPM functionality:

- Effectivities
- Scaling
- One-level circular references

One-level circular references allow the definition of formulas that have a product or by-product listed as an ingredient in the same formula. For example, when making sourdough bread, you save a small portion of the dough to use as a starter for the next batch. Therefore, when defining a sourdough bread formula, the dough is a product, but it is also an ingredient.

Creating a Resource Warehouse

In Oracle ASCP, capacity planning occurs at the inventory organization, department, or resource level. OPM needs to perform capacity planning at the plant level, but Oracle ASCP does not recognize production plants. To bridge this gap between OPM and Oracle ASCP, one warehouse is defined for each production plant that requires capacity planning. These warehouses are called Resource Warehouses. Oracle ASCP recognizes Resource Warehouses as production facilities that require capacity planning.

Unit of Measure

You can define item units of measure in OPM that are four characters long, but the value will be truncated to three characters once the unit of measure is copied into Oracle Applications. You can automatically convert UOMs from OPM to Applications.

This also applies for OPM organizations where OPM allows four characters and Applications allows three characters.

Setting Up and Using OPM Data

The OPM data that must be set up are:

- OPM organizations & warehouses
- OPM items, Unit of Measure, and conversions
- Effectivities, formulas and routings

- Resources
- MPS Schedules for Oracle ASCP
- Plant warehouse effectivities
- Batches, FPOs, sales orders, forecasts, and on-hand inventory

For detailed instructions on setting up OPM data refer to the *Oracle Process Manufacturing User's Guide.*

Besides the points stated in the previous section, some of the other areas which link to Oracle ASCP are described below.

OPM Organizations

If you plan to use the capacity planning function in Oracle ASCP, each OPM production plant must own one resource warehouse.

Effectivity, Formulas and Routings

Effectivity When an effectivity is defined for a specific plant, any warehouse that is defined for the item in the effectivity will have a version of the effectivity in Oracle ASCP. When more than one of these warehouses are mapped to the same inventory organization, only one effectivity will be written. If the effectivity is global then the effectivity is applied to all plants where the item can be produced.

The following effectivity functions can be used with Oracle ASCP: min and max quantities, start and end effective dates, formula and routing assignments, and preferences.

Formula Oracle ASCP can only accept one product per formula. If an OPM formula has multiple effectivities for a product or for co-products, a different formula is effectively viewed by Oracle ASCP. Oracle ASCP expects only one product per bill of material (in our case, a formula) and this causes the co-products and byproducts to be reported as components with negative quantities. Also, linear and fixed scaling is now implementable.

Routings The routing / formula combination must be unique. The routing quantity uses the base UOM of the effectivities product. A OPM step is equivalent to an Operation. An OPM activity is equivalent to an Operation Resource Sequence. A routing resource is equivalent to an Operation Resource.

With OPM CRP, you have the option of using alternate resources. Resources are assigned a Plan Type indicating primary (1), auxilliary (2), or secondary (0) on the

Operations form. In Oracle ASCP, only the primary and auxilliary resources are used. Secondary resources are ignored.

Oracle ASCP uses resource count and usage quantity information. You record resource count and usage quantity information in the Operations form. For example, if two identical blenders are used for mixing, enter 2 in the Count field. If the resource can mix 200 gallons per hour, enter 200 in the Process Quantity field and 1 in the Usage Quantity field.

Oracle ASCP enables you to use more than one resource at the same time during an operation, but you can not complete more than one operation in a routing at the same time. Oracle ASCP enables you to overlap an operation with another operation, but this restricts OPM's functionality of allowing concurrent operations and multiple dependent operations. Because Oracle ASCP does not provide a way for the user to allow concurrent operations instead of multiple dependent operations (or vice versa), concurrent operations are not allowed with Oracle ASCP.

Resources

When you complete the Resource Information form, you define a relationship between a plant and the resource. Because Oracle ASCP acknowledges the plant via the resource warehouse associated with the plant, Oracle ASCP views the resource as having a relationship with a resource warehouse instead of with a plant. Because a resource warehouse is mapped to a department in an inventory organization in Oracle Applications, the resource is essentially mapped to a department in an inventory organization via the plant resource form.

You can use Oracle ASCP to develop capacity plans for your resources. The resource warehouse for the plant indicates to Oracle ASCP the need to perform capacity planning. The Oracle ASCP capacity planning function assumes that all resource capacity is measured in hours. The Assigned Quantity field indicates the number / quantity of the resource used in the specified plant for which you are defining production costs and usage availability. The number you enter depends on how broad a resource categorization you are defining. For example, if you defined the resource as "Blender 1" (a specific machine) you would enter "1". If you use three blenders in the production line, and you defined the resource as "Blenders" (rather than defining each individual machine) enter "3".

The cost of using a resource for one unit of measure (for example, the cost of running a mixer for one hour) that you define in OPM Cost Management is also used by Oracle ASCP, but this cost must be recorded in the nominal cost value for the resource. Oracle ASCP assumes the unit of measure for all resources is an hour.

To set capacity planning, from the Navigator, choose Capacity Planning > Setup > Resources.

Plant/Warehouse Relationships

Plant warehouse effectivities are also known as plant / warehouse relationships. Plant warehouse effectivities specify the warehouses from which a plant consumes each item when it is used as an ingredient in a batch. They also specify the warehouses that a plant replenishes with each item when the item is a product of a batch.

On the Plant Warehouses form, if the Warehouse Item field is left blank for a particular warehouse, then any item can be consumed from or replenished to that warehouse. This is called a global rule. The plant warehouse effectivity item consumption and replenishment rules are enforced by Oracle ASCP for both global and warehouse items. Setting global rules increases the amount of data transferred because all warehouse item data is transferred, regardless of whether or not the warehouse items are actually consumed or replenished from the warehouse.

You can transfer items between warehouses as long as the item is defined in plant warehouse effectivities as a global or a specific rule. The consumption and replenishment indicators for the item / warehouse combination can be turned off and the item / warehouse combination can still be considered for transfers.

MPS Schedule

Integrating MPS Schedule Parameters With Oracle ASCP When you define your master production schedule (MPS) parameters, you indicate which plants are included in a schedule and select the criteria for including different sources of inventory supply and demand. The MPS schedule parameters serve the same purpose in Oracle ASCP and are used to create the Oracle ASCP master demand schedule. The Oracle ASCP master demand schedule includes all plants linked to the MPS schedule in the MPS Schedule Parameters form detail.

The MPS schedule must have a unique, five character name. The Oracle ASCP master demand schedule name consists of the MPS schedule name and the warehouse name. For example, a MPS schedule named SCHD1 for resource warehouse RSW1 would result in a master demand schedule named SCHD1/RSW1.

The Make to Stock field on the MPS Schedule Parameters form allows you to choose whether or not to include forecasts as a source of demand. The Make to Order field allows you to choose whether or not to include sales orders as a source of demand.

The Plant Warehouses form defines the items and warehouses from which to pull the demand for each plant linked to the MPS schedule.

Integrating Forecasts With Oracle ASCP The setup steps necessary to use forecast consumption for Oracle ASCP are the same setup steps you must complete when using forecast consumption in OPM. Forecast information created and linked to an MPS schedule in OPM is used by Oracle ASCP to create the master demand schedule. The forecasts used by the MPS schedule are specified on the Forecast Schedule Association form. A forecast can contain any number of items in various warehouses, but the schedule only uses those items that are valid to consume for a warehouse according to the Plant Warehouses form.

> **Note:** Because one forecast can be used in multiple MPS schedules, be careful not to duplicate the demand for an item in a warehouse.

Integrating Production Orders With Oracle ASCP Oracle ASCP views pending OPM production orders as a source of supply and demand. Oracle ASCP can only view pending OPM production orders (firm planned orders, pending batches, and work-in-process batches) for those items that have a item / warehouse / plant relationship defined on the Plant Warehouses form.

You must turn on Production Operations Control (POC) for a plant and you must define a resource warehouse for a plant if you want to create capacity plans for the plant. If POC is turned on, Oracle ASCP collects the plant's routing and resource requirements once a batch is created and the batch information is transferred to Oracle ASCP. If a plant does not have a resource warehouse, routing and resource data is not transferred to Oracle ASCP.

The ingredients for a batch must come from a single warehouse. Oracle ASCP does not allow the allocation of ingredients from multiple warehouses. OPM works around this issue by using the work-in-process warehouse or the resource warehouse, if available, as the single source of ingredient inventory when the batch has multiple sources or destinations. The work-in-process warehouse or the resource warehouse shows Oracle ASCP from where to allocate inventory.

The quantity of a batch product is reported in the converted primary unit of measure of the item.

Firm planned orders are viewed by Oracle ASCP the same as batches, except the firm planned order routing and resource requirements are not considered. Routing and resource requirements are considered once a firm planned order is converted into a batch.

Production rules (defined in OPM Inventory) are not required, but they do ensure that batches created meet fixed and variable leadtime requirements.

The process of creating production batches or firm planned orders from planning suggestions remains the same, regardless of whether or not the planning suggestions was created in Oracle ASCP or OPM. Any user can create production batches or firm planned orders from Oracle ASCP planning suggestions as long as the plant is listed in their security schema.

Integrating Onhand Inventory With Oracle ASCP Oracle ASCP only sees the on-hand inventory of item / warehouse combinations defined for the plant that is attached to the MPS schedule. If a lot has expired, Oracle ASCP does not consider the lot as available inventory. It also does not suggest that you use the available lot that is closer than the other lots to expiring. Oracle ASCP observes lot statuses and will not consider a lot for consumption unless the lot status identifies the lot as nettable.

6

Collaborative Planning

Topics covered in this section include the following:

- Collaborating with Customers
- Collaborating with Suppliers
- Performance Management and Supply Chain Partners
- Using Workflow in Oracle ASCP

Oracle ASCP extends the collaborative features of Oracle Applications. It is built on Oracle's Internet computing architecture which allows all of the applications to be deployed over the Internet or your corporate Intranet. It is also completely integrated with Oracle's Self Service Web Applications.

Collaborating with Customers

Collaboration is practical only in environments where all can gain by sharing information. When collaborative arrangements are carefully established throughout a supply chain, many competitive advantages accrue to the group.

Oracle Web Customers is a business-to-business application that enables companies to setup a web-based sales and service channel. Oracle Web Customers lets you configure and place orders online, enter, review and modify service requests, and check order status, regardless of whether the order was placed through the web, by a sales rep, or through a call center. Oracle Web Customers offers a simple, easy-to-use customizable interface, and integrates with Oracle's other CRM and EC applications.

Sharing Forecasts/Demand Plans

Oracle ASCP supports powerful Internet-based collaboration, which allows you to communicate seamlessly with your customers.

Providing Viewing and Update Access

Because Oracle ASCP is a complete Internet-based planning solution, it allows you customers to review and enter forecasts.

Viewing Customer Specific Forecasts

By allowing customers to enter their own forecasts, you have the freedom to view customer specific forecasts which in turn will help you better plan your own forecasts and demand plans.

Forecast Consumption Status

You should be able to perform regenerative forecast consumption during planning to improve the performance of your transaction system.

Customer Submissions

Consolidating Customer Forecasts

Consolidated forecasts are complete forecasts for the entire business. They are built by consolidating all the forecasts into a single forecast. The forecast is then rolled up to the highest level of aggregation, and spread down to the lowest level of detail.

Oracle Demand Planning Demand forecasting is a crucial function for managing the manufacturing process. It provides the information necessary to improve the operational plans, as well as improve the companies ability to manage its profitability and customer expectations.

Oracle Demand Planning improves the planning process by providing the information necessary to make the product-mix decisions in a manner consistent with the goals of the company

Oracle Demand Planning is a system that will enable manufacturers to systematically create the best forecasts with all the information available.

You can collect the data you need from multiple disparate sources and use Oracle Workflow to route information, manage processes, and monitor performance. You can provide secure access to portions of the plan and manage multiple scenarios to develop a collaborative consensus demand plan. The integration between Oracle ASCP and Oracle Demand Planning also allows you to maintain both constrained and unconstrained versions of the demand plan to manage the balance between market needs and production capabilities.

Incorporating Customer Forecasts Into the Demand Plan Oracle Demand Planning support Internet collaboration, incorporating information from sales, marketing, operations, and customers. Oracle Demand Planning provides a robust Internet-based framework for developing collaborative demand plans and forecasts.

Collaborating with Suppliers

Communication with suppliers can not be easier with Oracle ASCP Internet capability. Suppliers' material availability and capacity could be viewed and updated via the Internet.

Sharing Plans with Suppliers

Because Oracle ASCP is built on Oracle's Internet computing architecture, which allows all of the applications to be deployed over the Internet or your corporate Intranet, you can share production scheduling information with your suppliers over the Internet. Similarly, your suppliers can share production capacity information with you.

Providing Viewing and Update Access

Suppliers' plans, commitments, and capacities are available for viewing and updating.

Supplier Submissions

Supplier Material Plan Submissions and Updates

Supplier has the ability to submit material plan and provide updates.

Supplier Capacity Update Submissions

In addition to material availability, supplier could also submit changes to capacity.

Performance Management and Supply Chain Partners

The planning system is integrated with the performance management system provided by Oracle Business Intelligence System (BIS). BIS is an Internet ready performance management system for Oracle Applications. By transforming transactional data into meaningful information, BIS lets you define, monitor, and analyze corporate performance in order to make strategic and timely decisions. BIS is a user-friendly, pre-packaged decision support solution integrated with Oracle Applications. You log onto BIS through a customizable web page for easy access to vital information. You receive notifications when enterprise performance does not meet predefined targets. These notifications include web links to related reports. BIS reporting is easy to understand, crosses functional areas, and provides different levels of analysis depending on your needs. Managers can respond immediately to

BIS notifications in order to share information or take corrective actions. By enabling managers to proactively track, measure, and analyze enterprise performance, BIS provides a powerful corporate management tool, enabling strategic and timely decision-making.

Measuring Supply Chain Partner Performance

Oracle ASCP optimizes your plans to help you achieve your targets, and plans can be evaluated based on their impact on your key performance measure.

Providing View Access to Performance Metrics

From Planner Workbench, select your plan from navigation tree and go to the Key Indicators tab, you will be able to view KPIs for performance of your plan against target.

Viewing Partner Performance

Partner performance could also be view the same way. To view exceptions, select plan and go to Action tab, you will be able to view your action and details of action.

Using Workflow in Oracle ASCP

Oracle ASCP enables web-based collaboration by automatically forwarding planning and forecast accuracy exceptions to trading partners using Oracle Workflow. Trading partners can research and respond to exceptions by clicking on links to navigate directly to self service web applications such as forecast maintenance, supplier capacity update, ATP, and a secured version of the Planner Workbench. Trading partner responses can, in turn, trigger other workflow activities such as an internal notification, or even an automatic reschedule of a purchase order or sales order.

Overview of Oracle Workflow

Business processes today involve getting many types of information to multiple people according to rules that are constantly changing. Oracle Workflow lets you automate and continuously improve business processes, routing information of any type according to business rules you can easily change to people both inside and outside your enterprise.

Routing Information

With so much information available, and in so many different forms, how do you get the right information to the right people? Oracle Workflow lets you provide each person with all the information they need to take action. Oracle Workflow can route supporting information to each decision maker in a business process.

Defining and Modifying Business Rules

Oracle Workflow lets you define and continuously improve your business processes using a drag-and-drop process designer.

Unlike workflow systems that simply route documents from one user to another with some approval steps, Oracle Workflow lets you model sophisticated business processes. You can define processes that loop, branch into parallel flows and then rendezvous, decompose into subflows, and more. Because Oracle Workflow can decide which path to take based on the result of a stored procedure, you can use the full power of PL/SQL, the language of the Oracle7 Server, to express any business rule that affects a workflow process.

Delivering Electronic Notifications

Oracle Workflow extends the reach of business process automation throughout the enterprise and beyond to include any E-mail or Internet user. Oracle Workflow lets people receive notifications of items awaiting their attention via E-mail, and act based on their e-mail responses. You can even view your list of things to do, including necessary supporting information, and take action using a standard Web browser or an Oracle Applications Notification form.

Predefined Workflows for Oracle ASCP

There are five Workflow exception processes:

Table 6–1

Workflow	Notifications
Item Forecast Workflow	■ Item is over committed ■ Item has a shortage ■ Item has excess inventory ■ Items with expired lots ■ Past due forecast ■ Late supply pegged to a forecast ■ Items below safety stock
Sales Order Workflow	■ Past due sales orders ■ Late supply pegged to a sales order
Rescheduling Workflow	■ Item has orders to be rescheduled in ■ Item has orders to be rescheduled out ■ Item has orders to be cancelled ■ Item has orders with compression days ■ Item has past due orders
Project Workflow	■ Items with shortage in a project ■ Items with excess in a project ■ Items allocated across projects
Material and Resource Capacity Workflow	■ Material constraint

For a complete list of exception messages viewable in the Planner Workbench Actions tab, see the *Oracle Advanced Planning and Scheduling User's Guide*. For a general information on exceptions, see the *Oracle Workflow Guide.*

7

Implementing Oracle Demand Planning

Topics covered in this section include the following:

- Demand Planning Roles
- Demand Planning Administrator Responsibilities
- Demand Planning Manager Responsibilities
- Demand Planner Responsibilities
- Setting up a Demand Plan
- Data Collection
- Pull Data
- Publish Forecast to Source Instance
- Setup Instances, Requests, and Profiles
- Application Utilities Lookups
- Changing Your Organization

> **Note:** For definitions of terms related to Oracle Demand Planning, refer to "Oracle Demand Planning Glossary."

Demand Planning Roles

Demand Planners, Forecasters, managers, and System Administrators must contribute in different ways to customize Oracle Demand Planning, and to derive value out of the product. Based on the expected skills and responsibilities, four roles have been defined:

- System Administrator
- Demand Planning Administrator
- Demand Planning Manager
- Demand Planner

The purpose of this section is to guide planners, managers, and planning administrators involved in any one of these roles (other than System Administrator).

> **Note:** For information on running demand plans, refer to the *Oracle Demand Planning User's Guide*.

System Administrator

Responsible for RDBMS and Express administration. Abilities include database and computing expertise.

> **Note:** This document does not address the System Administrator.

Demand Planning Administrator

The Demand Planning Administrator determines the overall default settings for the demand planning system from a deep understanding of the business process. He or she is responsible for specifying the forecast level, assigning data (and conflict resolution) to individual Demand Planners, specifying the baseline forecast methods and forecast allocation rules, selecting and setting defaults for the pre-defined reports, and invoking forecast consolidation after all data from personal databases have been sent to the shared database. Qualifications of a Demand Planning Administrator include a thorough knowledge of the business processes and forecasting methodologies.

Demand Planning Manager

The Demand Planning Manager is responsible for the final forecast numbers for each Scenario that are submitted back to the Planning Server. Once the individual Demand Planners submit numbers from the personal to the shared database for each Forecast Scenario, these are rolled up to obtain the final consolidated forecast by the Demand Planning Administrator, who invokes this consolidation process. The Demand Planning Manager looks at the consolidated forecast for each Scenario, and decides whether to accept or reject them. He or she could modify the numbers, or choose to re-assign them to the individual planners through the Demand Planning Administrator. The Demand Planning Manager is expected to be in overall charge of the planning and forecasting process, and fully responsible for submitting the Forecast Scenarios to the Planning Server (for other components of the Supply Chain) or to higher level management, as the case may be.

Demand Planner

The Demand Planner is responsible for analyzing and forecasting demand in an allocated data segment, and for submission of demand forecasts (corresponding to each Scenario specified by the Planning Server) for his or her segment of the data. He or she is assigned a segment of the shared data by the Demand Planning Administrator. Allocation rules, default settings for pre-defined reports, and generation of the baseline forecasts for each Scenario are already done before the Demand Planner looks at the data. The Demand Planner could generate forecast variants, new custom measures and aggregates, and rotate, drill down or aggregate the data for his or her own convenience. A Demand Planner is an individual Forecaster. His or her qualifications include forecasting and data analysis abilities as well as a good understanding of the business processes governing his or her segment of the data.

Demand Planning Administrator Responsibilities

The Demand Planning Administrator has a key role to play in generating forecasts and demand plans. We describe how he or she could perform assigned tasks.

Generating Baseline Forecasts

Baseline forecasts are generated as the defaults each time ODP is implemented. The Demand Planning Administrator must specify the rules one time in the shared database. Note that the baseline forecasts as defined by ODP are obtained by a specified statistical method and thus represent statistical forecasts. These are further modified by event (or, causal) factors which are obtained as user defined inputs (for example, uplift factors) from the Planning Server. After these forecasts are generated, they are allocated at all levels.

The Demand Planning Administrator must be aware that baseline forecasts are usually sufficiently accurate for a majority of products. In a typical industry, a fraction (for example, 20%) of all products generate the maximum revenue. Identification and refinement of the forecasts at selected aggregate levels for these key value drivers would add value. Forecast refinement could rely on judgmental updates of the final numbers through manual edits or the use of the data modification wizard. The Demand Planner could also choose to modify the forecast parameters, or create a new variant of the history (for example, by adding or subtracting effects of known events like promotions). The new information could be used for re-forecasting or forecast modification.

While generating baseline forecasts, the Planning Administrator must be aware of a key limitation in ODP's event handling capabilities (there will be substantial upgrades surrounding this feature in future releases). Note that events are specified in the Planning Server as factors. These factors could be additive or multiplicative. A Demand Planner would be able to automatically view two forecasts; one with event factors (also called the "baseline" forecast), another without. If he or she decides to create a variant of the baseline (for example, by changing the forecast method or parameters), the new variant would not have the event factors. In addition, the Demand Planner has no way of knowing whether the event factors specified in the Planning Server are additive or multiplicative. It would therefore be difficult to reforecast (based on changed forecast methods, parameters, amount of history, or modified history) and still retain the original event information. However, it would be straightforward to use the forecast without the event factors, then modify the numbers based on new event information that might be available to the Demand Planner. The original event information would still be available.

The Demand Planning Administrator could choose to work in one of two modes: (a) limited prior knowledge about the nature of the data or forecasting leading to the use of automatic methods (which we shall call the "Auto" mode), or, (b) sufficient prior knowledge about forecasting, data patterns or enough resources to perform off-line statistical analysis on samples of data leading to a manual mode ("Manual" mode). For each of the modes, we define the tasks. Note that for baseline forecast generation, the Auto mode might be good enough as these could be modified by the individual Demand Planners in response to system generated Alerts about high inaccuracies.

The following choices need to be made by the Demand Planning Administrator:

1. Forecast Level

   This defines the aggregate level at which forecasts are to be generated. If the leaf nodes are specified, the variations in the data might be large causing decreased forecast ability and high forecast variability, and these might get magnified at the aggregate levels. If top nodes are specified, the forecasts after aggregation might pick up localized trends and allocate them wrongly (for example, if demand only increases for one product in a family, and forecasts are generated only at the product family level, the results of allocation could show that all products in the family have higher demand). In the Auto mode, business judgment must be used to specify a mid-level. In the Manual mode, statistical data analysis could be carried out off-line, and the best level could be chosen based on trend preservation and reduced variability. The level at which the forecast error variance on unseen data is the lowest could be used for generating forecast numbers. Note that the choice of level also includes the choice of the temporal granularity level.

2. Historical Time Periods

   The competing factors here are that while more data could lead to better statistical approximations and curve fits, data that is too much in the past might not be too informative as the factors generating the data might have changed. (An example would be demand forecasts for MS Windows: More data would lead to better forecasts, but conditions might have changed so much after the wide spread use of the Internet that predicting the demand of Windows with data from before the advent of the Internet might actually reduce forecast accuracy.) If causal factors were precisely known, this would not be as big an issue, but such information is not always available. For Auto mode, one way would be to use all available data and let the sophisticated outlier and trend detection techniques do the rest. For Manual mode, trial and error using data samples is a reasonable method.

3. Statistical Method

   For Auto mode, choose Automatic Best-Fit. Even for Manual, choose Automatic Fit unless there is sufficient evidence from detailed (but not necessarily exhaustive) data analysis that a specific model and a given parameter set always performs better. The Automatic Best-Fit searches exhaustively through all the data, and as a baseline model, this could be preferred as detailed analysis might not be possible at the Demand Planning Administrator level. Choice of other methods and parameters could always be done by the individual Demand Planners on their personal database.

4. Allocation Rule

   The allocation rule that best preserves the trends and does not need too much heuristics is the one based on forecasts generated at all levels. This should be the preferred method, even though it is more expensive.

Assigning Data to Demand Planners

The Demand Planning Administrator needs to assign the entire data (which is present in the shared database) to individual Demand Planners (which they could view in their personal database). Data could be assigned at any level, however, they are read back from the personal to the shared database only at the lowest level (or the leaf nodes). Tools are provided for conflict resolution during data assignment.

The Demand Planning Administrator must be aware that each individual Demand Planner views the world according to the data assigned to him or her. For example, if a Demand Planner were only assigned Worcester and Cambridge in Massachusetts, his or her view of the demand in Massachusetts would just be an addition of the two cities assigned to him or her, irrespective of the demand variations in the city of Massachusetts. It is important to note that when data are written back to the shared database from the personal, the values at the lowest aggregate level (or, leaf nodes) are written back. Finally, any locks a Demand Planner might have placed on a cell is lost in the shared database.

An example could illustrate what could go wrong. Consider two hypothetical Demand Planners: Joseph Roy (JR), an expert statistical Forecaster who would want to forecast at lower levels where more data are available, and Mahajan (SM), an experienced Demand Planner and sales personnel with knowledge about the company's sales processes, whose forecasts would tend to be at higher aggregate levels for want of detailed sales numbers for the future. Let us consider Massachusetts to represent the highest Geography level, and city the lowest level, with the following four cities only: Worcester, Cambridge, Boston, and Brookline. Assume the Demand Planning Administrator were to assign, say from proximity to

home and office considerations, Boston and Brookline to JR, but Worcester and Cambridge to SM. If JR is happy with his or her statistical forecasts for Boston, he or she might want to lock that. SM on the other hand could be confident about Massachusetts and Cambridge based on his or her experience with the field, and could feel compelled to lock those. This would imply that in the shared database, the forecast numbers for Boston, Cambridge, and the whole of Boston needs to be preserved, based on the Demand Planners' degree of belief in their forecast. That is not quite what occurs though. The numbers that go through to the shared database are the ones for all four cities from JR and SM, these get added up in the shared database to yield estimates for Massachusetts. What is lost is the confident sales judgmental forecast from SM, as Massachusetts forecasts change. This is unfortunate, especially since we believe that the judgmental update capability, enabled through Internet-based collaboration, is a key value proposition provided by ODP. The only person who can now incorporate the aggregate information for Massachusetts is the Demand Planning Manager (after he or she views the consolidated forecasts) in the shared database. However that is very difficult as his or her view includes the entire database, and tackling issues like these might just be too time consuming. Note also that if he or she changes the numbers in the shared database, forecast ownership is lost, along with the Demand Planner specified locks on the data. These problems would be compounded as the number of levels and hierarchies increase, and we feel data assignment is a key issue that will effect the ability of ODP to handle judgmental forecasts and derive value from collaborative planning. Note that the problem is somewhat compounded as error bars are not generated with each forecast, nor could Demand Planners specify their subjective degree of confidence in a number (other than locks).

Data assignment is a key issue, however the Demand Planning Administrator would probably just need to do that once (or very rarely). This must be done with a knowledge of the business logic, as well as the expected skills (at given aggregate levels) of each Demand Planner.

Selecting Pre-defined Reports

The Demand Planning Administrator could select from 18 pre-defined reports. He or she sets which report to assign to which Demand Planner, which ones to view in the shared database, and the system generated default settings for these reports. The Demand Planning Administrator must take into account which reports might be useful for the Demand Planning Manager, for higher management, for promotion and event planning, for what- if simulations and Scenario planning, for sales personnel, and also for individual Demand Planners. The list of pre-defined, and if needed, custom built reports could be published by the Demand Planning

Administrator, while the Demand Planners, Demand Planning Managers, and field personnel could publish their requirements.

Maintaining Alerts and Notifications

The Demand Planning Administrator is responsible for creating and maintaining the Alerts in the shared database that could be sent via email, pager, phone etc. to a list of users based on exception criteria, both specified by the Demand Planning Administrator. These are the only Alerts and notification tools that have a view of the whole data, and could determine exception criteria from the entire database. The Demand Planning Administrator could decide whether a segment of the data that generated the exception needs to be sent to the user, and the priority of the notification. The list of users to be notified must include all personnel (within the company, customers, suppliers etc.) who might be effected by the exception criteria, while the criteria itself could be specified by them or determined objectively. An example would be forecast error variance and a user interested in tracking that would be the Demand Planning Manager.

Demand Planning Manager Responsibilities

The Demand Planning Manager looks at the consolidated forecasts (the forecast consolidation process is triggered by the Demand Planning Administrator after he or she receives the forecasts from the individual Demand Planners), and decides their validity. Based on his or her judgment, the data might be re-assigned to the individual Demand Planners, to the Demand Planning Administrator, modified by the Demand Planning Manager, or submitted to higher management as reports and graphs.

The Demand Planning Manager is responsible for the overall forecasts. His or her knowledge and expertise of the business logic and forecasting methods at multiple aggregate levels must be really sharp, for he or she has to look at consolidated forecasts and identify problem areas. The Demand Planning Manager could choose to edit any data in the shared database, and his or her word is final. This capability must be reserved for information that cannot be incorporated by the Demand Planning Administrator or by the individual Demand Planners. Finally, he or she must ensure that knowledge at all aggregate levels (for example, sales forecasts for product families and statistical forecasts for individual products) are integrated into one set of forecast in a meaningful fashion.

The Demand Planning Manager takes responsibility for the overall forecasts, and could change or re-assign them. The implementation guides for the Demand Planning Administrator and an individual Demand Planner all apply to him or her.

Demand Planner Responsibilities

The Demand Planner looks at his or her personal database (the segment assigned to him or her by the Demand Planning Administrator) and generates forecasts corresponding to each Scenario defined by the Planning Server. The baseline forecasts, generated by the Demand Planning Administrator in the shared database, are visible to the Demand Planner in the personal database. This baseline cannot be modified, but it could be saved as a new forecast variant, which could then be modified. The various tasks that a Demand Planner implements, and certain guidelines for implementation, are described briefly.

Choosing the Statistical Forecasting Model

The Demand Planner could use the Modify Forecast button to change the forecast parameters:

1. Choosing a new statistical model type – There are two broad kind of models, regression models and exponential smoothing models. A time series typically has two components, a deterministic portion, and a non-deterministic or random component. The deterministic component is best handled through curve fitting techniques like regression, while the random component could be modeled by exponential smoothing. Theoretically, depending on the degree of determinism in the data, one of the two methods could be chosen. In practice, quantifying the determinism, while statistically feasible, is not an easy task, and it might be just easier to try the various models and see how they perform on held-out data, or data not used during model fitting.
2. Choosing among regression models – The degree and nature of non-linearity in the data would determine the choice of a specific model. Linear regression models attempt to use historical data to calculate linear coefficients, modeling a future demand (dependent variable) as a function of previous demand (independent variable). All the non-linear regression models used in ODP use linear regression equations, but on transformed data. Thus, while the relationships between the transformed variables are linear, the overall relation could be non-linear. Linear regression is dealt with in elementary statistical textbooks. One way to determine the best model would be to look at the behavior of the dependent variable (or its transformations) as a function of the independent variable (or its transformations). The linear regression coefficient would indicate the degree of fit with the original or transformed data. Once again, it might be just easier to try the various models and see how they perform on held-out data, or data not used during model fitting.

3. Choosing among exponential smoothing models – The exponential smoothing models calculate future demand as a weighted sum of previous demand and previous forecasts for the demand. It could be shown through some mathematical manipulation that this is identical to forecasting future demand as a weighted function of all previous demands, with the value of the weights decaying exponentially as one gets further back in time. Single exponential smoothing can model a random component, Double exponential smoothing could also handle trends, while Triple or Holt-Winter's handles trend and seasonality. Presence of trends and seasonality could be guessed at by visual inspection, or through statistical significance tests and measures like auto-correlation and spectral densities. As before, it might be just easier to try the various models and see how they perform on held-out data, or data not used during model fitting.

Choosing the Aggregate Level, Granularity, and Past Data

See the discussions for forecast level and historical time periods in the Demand Planning Administrator's task list. It might be noted that computation performance is dependent only on the length of the input series, thus granularity might be a factor.

Modifying Forecast Numbers Using Judgment

The Demand Planner is primarily responsible for using available information at all aggregate levels to edit baseline or statistical forecasts, either manually or through the data modification wizard. The Alerts maintained on the personal database could play a critical role, as forecast inaccuracy reports could be sent to the field. The Demand Planner must note that any locks he or she puts on the data are for his or her own benefit only, they are lost in the shared database. Further, only the data at the leaf nodes (lowest aggregate level) are passed to the shared database. Thus, careful consideration must be given to ensure that information at higher aggregate levels are preserved. It is important to plan cooperatively with other Demand Planners who might have a different view of the data at lower aggregate levels, but identical views at higher levels. It must be remembered that for Version 1 of ODP there is no way to preserve a forecast based on the Demand Planner's (or a sales person's) confidence in the forecasts.

Modifying History and Re-forecasting

The Demand Planner could choose to remove effects of causal factors and events (which are not expected to be repeatable) from the actual demand history. However, the history must be preserved, and a variant could be created, using the Modify Data button, or by editing manually. Once the effects of events are removed, the Demand Planner could choose to re-forecast to determine what the future would look if there are no events. Finally, he or she could choose to apply known event factors to these new forecasts. The Demand Planner must note that in Version 1 events are assumed to be fixed at the Planning Server level, implying that new information cannot be incorporated by the Demand Planner. However if such information becomes available, we would recommend the Demand Planner to edit the forecasts subjectively in the ODP user interface, or outside ODP by exporting the data to a spreadsheet like Excel.

Submitting Forecasts for Each Scenario

The Demand Planner is responsible for submitting one forecast for each Scenario, thus he or she must know the assumptions behind each Scenario.

Performing What-if Simulations and Sales Planning

Editing capabilities of history and forecasts provide powerful tools for What-If simulations and planning. History could be subjectively modified to try and remove (or add) causal and event (real or hypothetical) effects. These could then be used to generate forecast variants to answer questions like what would happen if a promotion or a new product were introduced.

Reacting to Administrator Alerts and Maintaining Individual Alerts

The Demand Planning Administrator should identify the tasks of each individual Demand Planner in response to a system generated Alert maintained in the shared database. To inform other Demand Planners and also organizations like sales and manufacturing about exception criteria, as well as to get inputs from knowledgeable sales personnel, the Demand Planner maintains Alerts on his or her personal database. These should be carefully thought out, and each user alerted should know his or her responsibilities.

Generating Pre-defined and Ad-hoc Reports

The Demand Planner could view pre-defined reports based on his or her data, and could also create ad-hoc reports of his or her own. He or she could choose to keep those reports for his or her own perusal, or in a library for others to view. Earlier, we mentioned a potential problem with sub-optimal data assignment, a similar situation could occur if an aggregate level needs to be broken up during data assignment. Finally, given the loss of locks in the shared database and the fact that only leaf node values gets passed into the shared database, forecast ownership and benefits of judgmental forecasts could be easily lost. Viewing reports from other Demand Planners regularly could alleviate this problem to some extent.

Planning Collaboratively at Multiple Levels

This is a key benefit of ODP, and can only work if data assignment takes the business process and skill levels into account, Alerts are properly maintained and responded to, information is shared and incorporated, forecast ownership is maintained through comments, and judgmental edits are properly accounted for at al levels. ODP is a tool that needs to be used properly to derive the maximum value.

Setting up a Demand Plan

Follow these steps to create a demand plan:

1. Define Demand Planning Dimensions
2. Define Demand Planning Hierarchies
3. Define Demand Planning Levels
4. Define Demand Planning Hierarchy Levels
5. Define Demand Plans
6. Define Demand Plan Hierarchies
7. Define Demand Plan Scenarios
8. Define Demand Plan Parameters
9. Define Express Setup

Note: Once you have defined the Demand Planning Definitions, you need only define the Demand Plan Definitions to create a new Demand Plan and Scenario.

To create a new Scenario from an existing Demand Plan, you need only define the Scenario and parameters.

Note: The procedures in this sections are written at a level of detail that assumes familiarity with Oracle Applications functionality. Refer to the *Oracle Application User's Guide* for more information.

Demand Planning Definitions

The effectiveness of the forecast relies on how data is organized in Oracle Demand Planning.

The first consideration when setting up Demand Planning Definitions is to determine who the customer of the forecast will be. In most companies the forecast is used to drive manufacturing and distribution requirements, while other companies use it for financial reporting.

Determining the structure of the data is another important decision. The structure should be kept simple but predictable for statistical forecasting. It should also support forecast modifications at the appropriate levels of detail and consider the number of people who will produce and analyze forecasts.

Demand Planning Definitions include Dimensions, Hierarchies, and Levels that ultimately define the way data is organized for predicting, reporting, and managing forecasts.

1. Define Demand Planning Dimensions

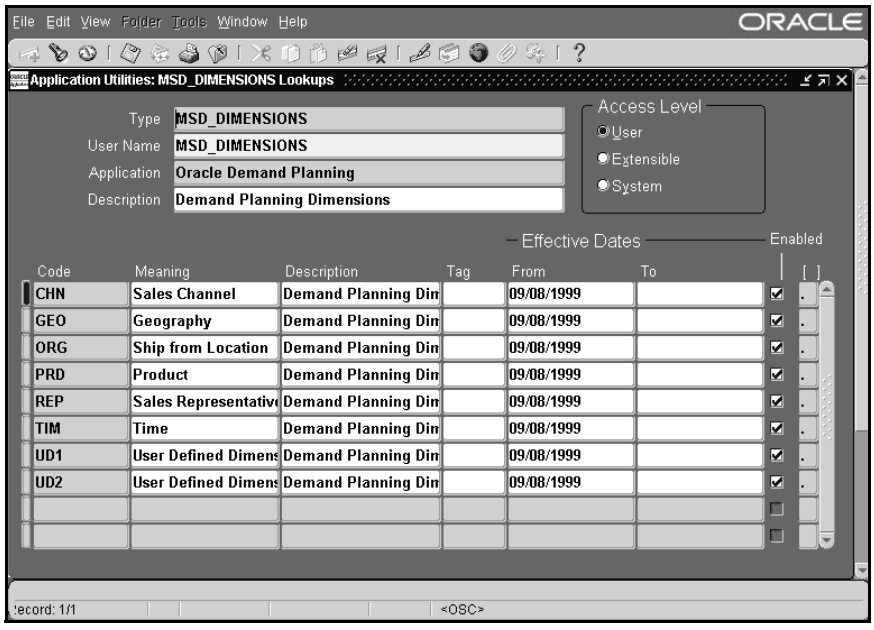
Dimensions define the way data is segmented for generating, modifying, and viewing forecasts.

◗◗ To define Demand Planning Dimensions:

1. In the Navigator, choose Setup > Dimensions.

   The Application Utilities: MSD_DIMENSIONS Lookups window displays.

Figure 7–1 The Application Utilities: MSD_DIMENSIONS Lookups window



Use this window to view the six pre-defined Demand Planning Dimensions and to change the Meaning and Description names. Two user-defined Dimensions are also available.

2. Complete the following fields in this window:

Table 7–1

Field	Function	Legal Values
Code	Lookup code that uniquely identifies the Demand Planning Dimension	CHN, GEO, ORG, PRD, REP, TIM, UD1, UD2
Meaning	Name of the Demand Planning Dimension	List of Values
Description	Describes the Code as being a Demand Planning Dimension	For informational purposes only

2. Define Demand Planning Hierarchies

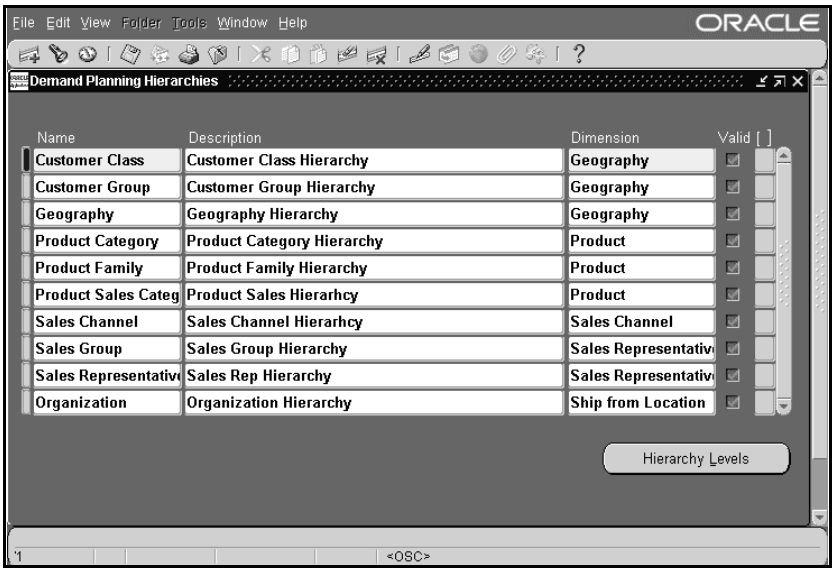
Dimensions contain Hierarchies that are used for aggregating data. Multiple Hierarchies can exist for each Dimension, allowing one Hierarchy to be used for allocation while others are used for reporting.

◗◗ To define Demand Planning Hierarchies:

1. In the Navigator, choose Setup > Hierarchies.

   The Demand Planning Hierarchies window displays.

Figure 7–2 The Demand Planning Hierarchies window



Use this window to create new Hierarchies and associate them with a Demand Planning Dimension defined in the previous window.

In this example, the Hierarchy Name Geography has been created for the Geography Dimension with a Description of Geography Hierarchy. Note that multiple Hierarchy Names can be created for a Dimension as in the case of Sales Representative which has Sales Group and Sales Representative.

2. Complete the following fields in this window:

Table 7–2

Field	Function	Legal Values
Name	Hierarchy Name	VARCHAR2(30)
Description	Detailed Description for the Hierarchy Name	VARCHAR2(240)
Dimension	Demand Planning Dimension Name	List of Values

3. Define Demand Planning Levels

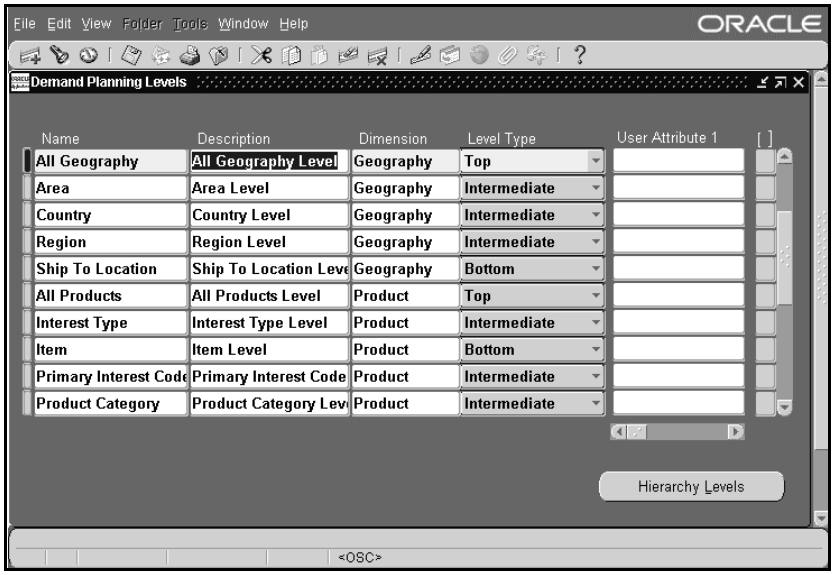
Demand Planning Levels represent different ways of aggregating data within a Dimension.

◗◗ To define Demand Planning Levels:

1. In the Navigator, choose Setup > Levels.

   The Demand Planning Levels window displays.

Figure 7–3 The Demand Planning Levels window



Use this window to define Levels and associate them with the Demand Planning Dimensions, and identify the position of the Level in the Dimension.

In this example, Level Names All Geography, Area, Country, Region, and Ship To Location have been defined for the Geography Dimension with detailed Description names. The positioning of the Levels in the Hierarchy have also been defined with All Geography being the Top Level and Ship to Location the Bottom Level. Area, Country, and Region Level Names are the Intermediate Levels.

2. Complete the following fields in this window:

Table 7–3

Field	Function	Legal Values
Name	Level Name	VARCHAR2(30)
Description	Detailed Description for the Level	VARCHAR2(240)
Dimension	The Demand Planning Dimension to which the Level is associated	Lookup Values
Level Type Code	The position of the Level in a Hierarchy	Lookup Values (1: Top, 2: Bottom, 3: Intermediate)
User Attribute 1-5	The User Attribute associated with the Level	VARCHAR2(240)

4. Define Demand Planning Hierarchy Levels

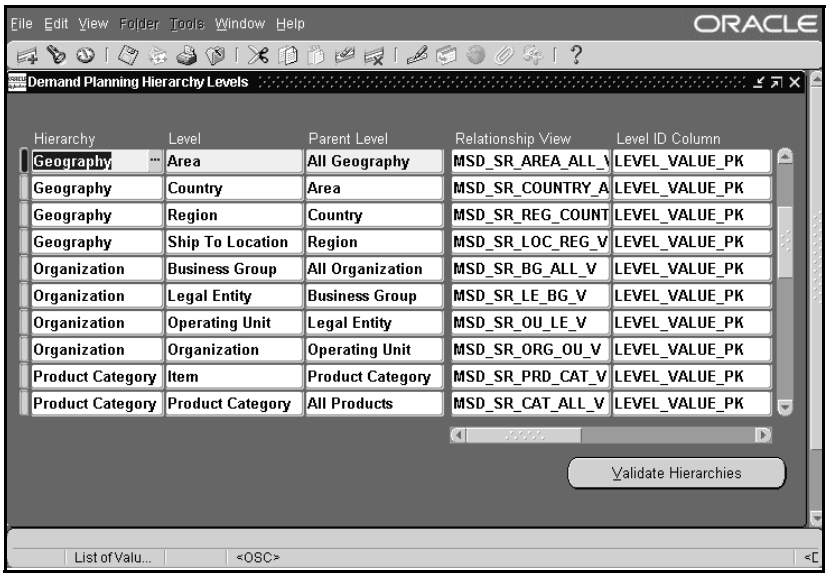
Hierarchy Levels are created by associating a Hierarchy Name with a Level Name.

To define Demand Planning Hierarchy Levels:

1. In the Navigator, choose Setup > Hierarchy Levels.

   The Demand Planning Hierarchy Levels window displays.

Figure 7–4 The Demand Planning Hierarchy Levels window



Use this window to create links in the Hierarchies by associating the Levels to its Parent Level within a Demand Planning Hierarchy. Here you also specify the view as well as the columns in this view that will be used to fetch this information for a link from the Source Instances. Once the Links are defined and saved, you can click on the Validate Hierarchies to make sure that all the Levels in a Hierarchy are valid.

In this example, Level Name Area is associated with Parent Level Name All Geography, Level Name Country is associated with Parent Level Name Area, Level Name Region is associated with Parent Level Name Country, and Level Name Ship To Location is associated with Parent Level Name Region for the Hierarchy Name Geography.

2. Complete the following fields in this window:

Table 7–4

Field	Function	Legal Values
Hierarchy Name	Name of the Hierarchy	VARCHAR2(30) [Lookup Values]
Level Name	Name of the Level	VARCHAR2(30) [Lookup Values]
Parent Level Name	The Parent Level to which the Level is aggregated in this Hierarchy	VARCHAR2(30) [Lookup Values]
Relationship View	The view from which this relationship information can be collected into the Planning Server	VARCHAR2(30)
Level Value Column	The Column from which the Level Value will be fetched	VARCHAR2(30)
Parent Value Column	The Column from which the Parent Level Value will be fetched	VARCHAR2(30)

Demand Plan Definitions

Once Demand Planning Definitions have been created, Demand Plans containing specific User Dimensions, Hierarchy Names, and Scenarios can be defined.

A Demand Plan can represent an entire business or specific portions of the business.

5. Define Demand Plans

You can associate up to four User Dimensions with a Demand Plan. The remaining Demand Planning Dimensions can be collapsed into other User Dimensions. Although you cannot view more than four User Dimensions at one time, this collapsing allows you to toggle between them. Time and Product Demand Planning Dimensions are mandatory.

There may be situations where different units of measure exist for items within the same product family. This makes it extremely difficult to determine what the forecast should be at an aggregate level when there is no common unit of measure. The Base UOM field provides a method to change the units for all items within a higher level of aggregation to a common unit of measure as determined by the Demand Planning Administrator.

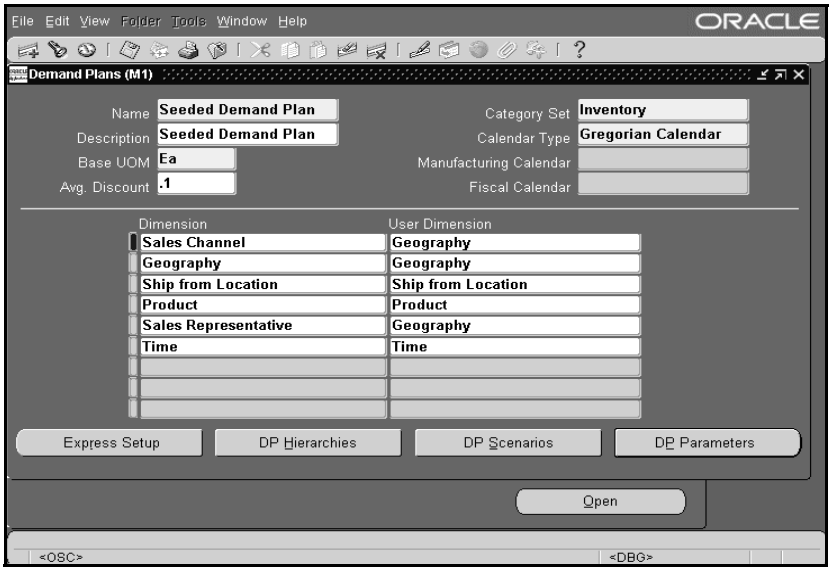
The Calendar Type selected here must be used for all Scenarios created for this Demand Plan.

To define Demand Plans:

1. In the Navigator, choose Demand Plan Definitions > Demand Plans.
2. Choose an organization if you have not already done so.

   The Demand Plans window displays.

Figure 7–5 The Demand Plans window



Use this window to define a Demand Plan – Name a Demand Plan, and define its UOM, Average Discount, Calendar and Category Sets. The bottom region of this form is used for collapsing the various Demand Planning Dimensions to the User Dimensions associated with this Demand Plan.

In this example, the Name and Description of the Demand Plan is Seeded Demand Plan. The Base UOM is Ea and the Avg Discount is .1. The Calendar Type used for this Demand Plan is the Gregorian Calendar. Six Demand Planning Dimension are being collapsed into four User Dimensions. Sales Channel, Geography, and Sales Representative are being collapsed into the

Geography User Dimension. Product and Time are the other User Dimensions and must always be included in a Demand Plan.

3. Complete the following fields in this window:

Table 7–5

Field	Function	Legal Values
Name	Demand Plan Name	VARCHAR2(30)
Description	Detailed Description for the Demand Plan	VARCHAR2(240)
Base UOM	The Demand Plan UOM is the UOM that will be used for aggregating at higher levels above the product level	VARCHAR2(3)
Average Discount	The average discount that would be applied to products if the product's individual discount is not defined	NUMBER below 1
Category Set	Specify the Category Set to be used for classifying the products	VARCHAR2(30)
Calendar Type	The Type of Calendar used for this Demand Plan	Lookup Values (1: Gregorian, 2: Manufacturing, 3: Fiscal)
Manufacturing Calendar	This is required only if the Calendar Type is Manufacturing Calendar. It defines the Manufacturing Calendar used for the Demand Plan.	Lookup Values
Fiscal Calendar	This is required only if the Calendar Type is Fiscal Calendar. It defines the Fiscal Calendar used for the Demand Plan.	Lookup Values
Dimension	The Demand Planning Dimension collapsed to the User Dimension associated with this for the Demand Plan	Lookup Values

Table 7–5

Field	Function	Legal Values
User Dimension	The User Dimension defined from the Demand Planning Dimensions for the Demand Plan	Lookup Values

6. Define Demand Plan Hierarchies

The Hierarchy Name(s) selected for each User Dimension is based on the Demand Planning Hierarchy Names created in Step 2 of Demand Planning Definitions.

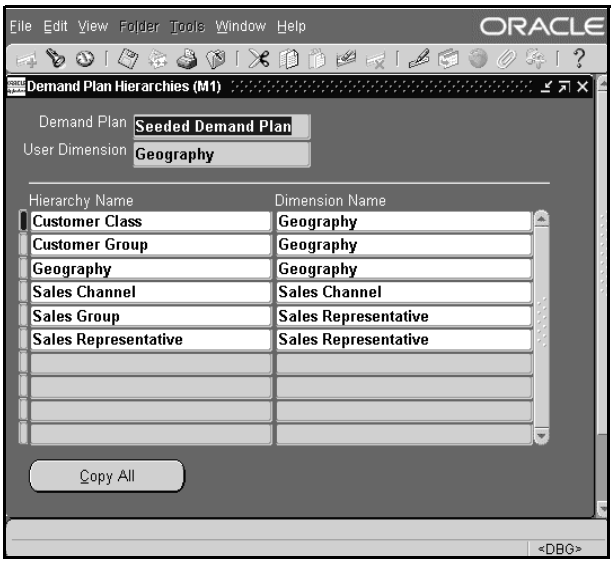
Only one Hierarchy Name needs to selected for each Dimension Name.

To define Demand Plan Hierarchies:

1. In the Navigator, choose Demand Plan Definitions > Demand Plan Hierarchies.

   The Demand Plan Hierarchies window displays.

Figure 7–6 The Demand Plan Hierarchies window



Use this window to associate Hierarchies with a Demand Plan. You can select only the Hierarchies that belong to the Demand Planning Dimensions that are collapsed into the User Dimensions for this Demand Plan. The user can click on Copy All to select all Hierarchy Names associated with a User Dimension.

In this example, all Hierarchy Names are being associated with the Geography User Dimension for the Seeded Demand Plan.

2. Complete the following fields in this window:

Table 7–6

Field	Function	Legal Values
Demand Plan	Demand Plan Name	VARCHAR2(30)
User Dimension	The User Dimension defined from the Demand Planning Dimensions for the Demand Plan	Lookup Values
Hierarchy Name	Name of the Hierarchy	List of Values
Dimension Name	Demand Planning Dimension associated with the Hierarchy Name	List of Values

Scenarios

Scenarios represent forecasts from multiple sources like marketing, sales, customer, or statistical. A Demand Plan can contain multiple Scenarios.

The recommended demand and period data to be used for the statistical Forecast Scenario is Booking History and Requested Date which represents true customer demand.

The Output Level of the Scenario should reflect the level of detail required by the customer of your forecast.

Scenario Events and Introduction Plans are optional during setup.

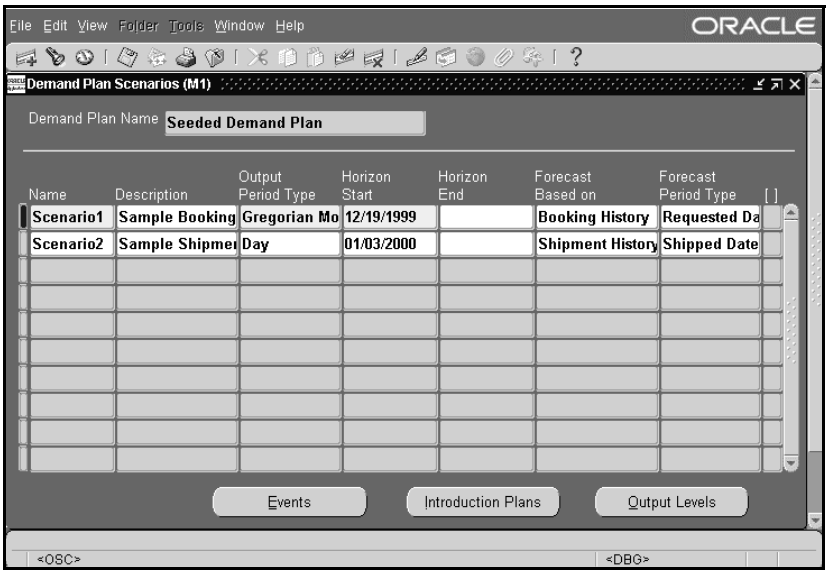
7. Define Demand Plan Scenarios

To define Demand Plan Scenarios:

1. In the Navigator, choose Demand Plan Definitions > Demand Plan Scenarios.

   The Demand Plan Scenarios window displays.

Figure 7–7 The Demand Plan Scenarios window



Use this window to define Scenarios for a Demand Plan. Specify the following: a Scenario name, the Time Level at which the forecast needs to be published back from Oracle Express to the Planning Server, the time frame in which this Scenario needs to be generated, information about the type of history to be used for generating the forecast, and the specific period type to be used for generating the forecast.

In this example, Scenario Name Scenario1 has been created with a Description of Sample Booking for the Seeded Demand Plan. The Output Period Type is Gregorian Month which must be associated with the a Time Level defined in the Calendar Type for this Demand Plan. The future forecast Horizon Start date is 12/19/99 and the Horizon End date is blank which means a forecast will be generated for all future periods. The Forecast Based on is Booking History and

the Forecast Period Type is Requested Date which are historical data to be used in generating the statistical forecast for Scenario1.

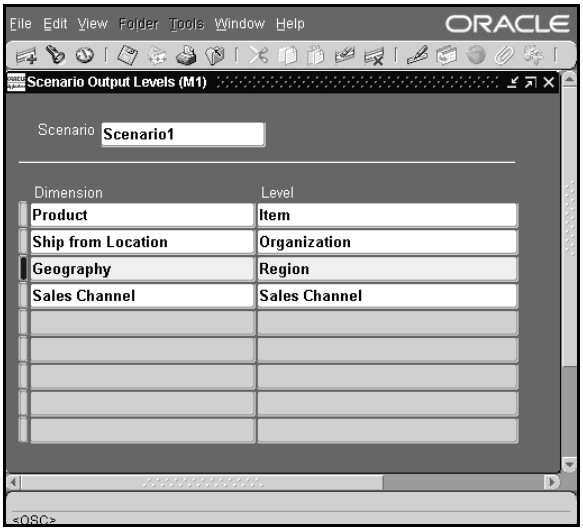
2. Complete the following fields in this window:

Table 7–7

Field	Function	Legal Values
Demand Plan Name	Name of the Demand Plan	VARCHAR2(30)
Name	Scenario Name	VARCHAR2(30)
Description	Detailed Description for the Scenario	VARCHAR2(240)
Output Period Type	The Time Level at which the Scenario will be published back from Oracle Express to the Planning Server	Lookup Values
Horizon Start Date	The Start Date for the Scenario	DATE
Horizon End Date	The End Date for the Scenario	DATE
Forecast Based On	The type of history used to generate the forecast for this Scenario	Lookup Values (1: Booking History, 2: Shipment History)
Forecast Period Type	This is a specific Period Type used to generate the forecast for this Scenario	Lookup Values (1: Booked Date, 2: Shipped Date, 3: Requested Date, 4: Scheduled Date, 5: Promised Date)

3. Open the Scenario Output Levels window by selecting the Output Levels button from the Demand Plan Scenario window.

Figure 7–8 The Scenario Output Levels window



Use this window to define the various Levels in the Demand Planning Dimensions at which the Scenario is to be published from Oracle Express to the Planning Server (except for the Time Dimension).

In this example, Level Item in the Product Dimension, Level Organization in the Ship from Location Dimension, Level Region in the Geography Dimension, and Level Sales Channel in the Sales Channel Dimension, will be the level of detail published back to the Planning Server for Scenario1.

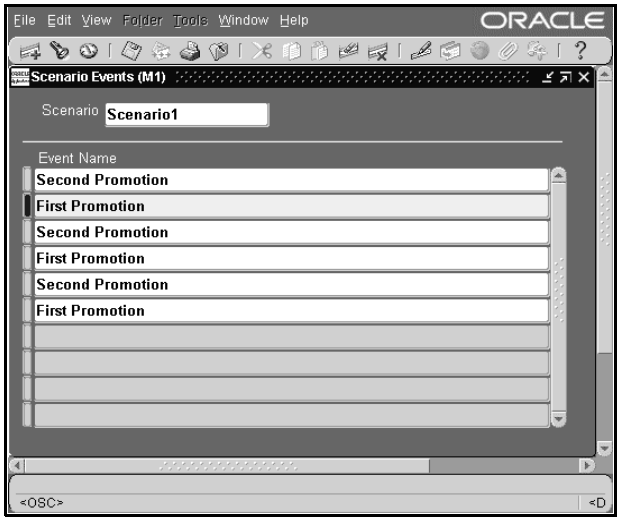
4. Complete the following fields in this window:

Table 7–8

Field	Function	Legal Values
Scenario	Scenario Name	Lookup Values
Dimension	Demand Planning Dimension	Lookup Values
Level	The Level associated to the Demand Planning Dimension at which the Scenario will be published back from Oracle Express to the Planning Server	Lookup Values

5. Open the Scenarios Event window by selecting the Events button from the Demand Plan Scenarios window.

Figure 7–9 The Scenarios Event window



Use this window to associate Events with Scenarios.

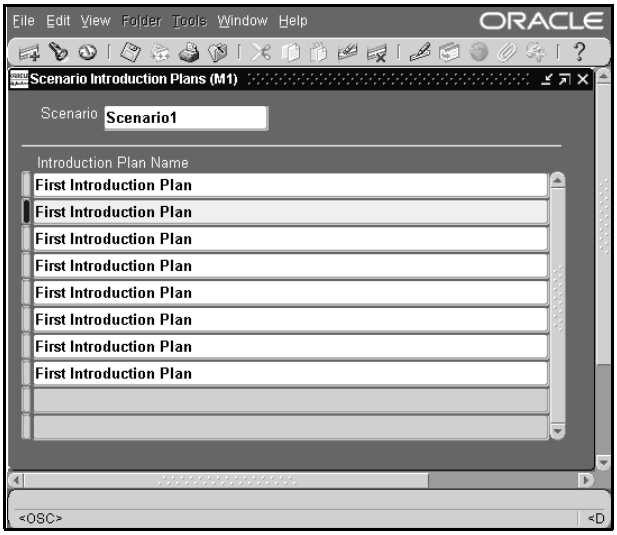
6. Complete the following fields in this window:

Table 7–9

Field	Function	Legal Values
Scenario	Scenario Name	Lookup Values
Event Name	Name of the Event	Lookup Values

7. Open the Scenario Introduction Plans window by selecting the Introduction Plans button from the Demand Plan Scenarios window.

Figure 7–10 The Scenario Introduction Plans window



Use this window to associate Introduction Plans with Scenarios.

8. Complete the following fields in this window:

Table 7–10

Field	Function	Legal Values
Scenario	Scenario Name	Lookup Values
Introduction Plan Name	Name of the Introduction Plan	Lookup Values

8. Define Demand Plan Parameters

Input Parameters determine the data that will be imported into Oracle Express for creating and analyzing forecasts. Multiple inputs can be specified and used in different Scenarios.

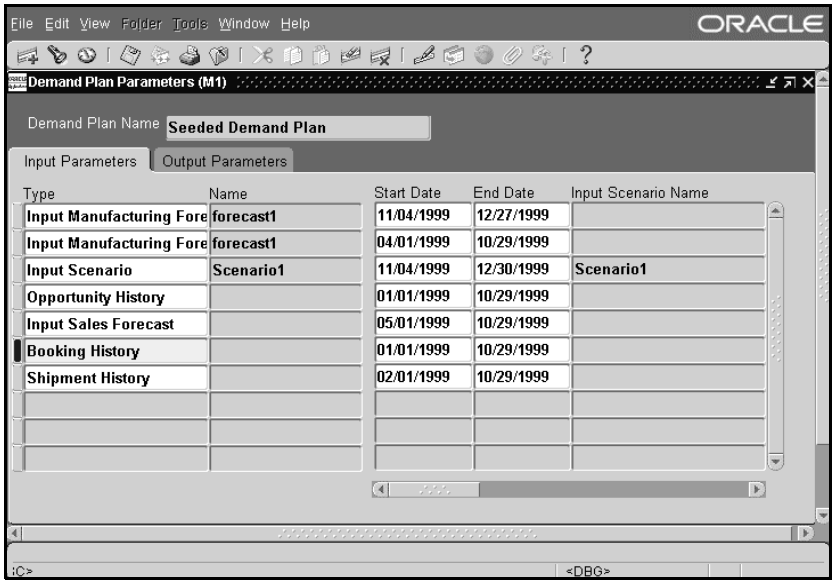
Output Parameters determine the Scenarios to be published back to the Planning Server for planning.

To define Demand Plan Parameters:

1. In the Navigator, choose Demand Plan Definitions > Demand Plan Parameters.

   The Demand Plan Parameters window displays.

Figure 7–11 The Demand Plan Parameters window



Use this window to specify the various inputs to Oracle Express. You can specify any one of the following kinds of Input Parameters: Manufacturing Forecast, Booking History, Shipment History, Sales Forecast, Sales Opportunities, and other Scenarios from different Demand Plans.

You can also specify a historical or future date range depending on the Type of Input Parameter that needs to be uploaded into Oracle Express. You can filter or group the information that is uploaded using the View Name associated with every Input Parameter. For each one of the Input Parameters you can select the fact information you want to work with, such as Quantity Used, Manufacturing Forecast, Forecast by for Shipment and Booking History, Amount Used for Sales Forecast, and Forecast Used for Input Scenario.

In this example, Booking History is one Type of Input Parameter specified that will be used to generate the forecast for Scenario1. Booking History with a Start Date of 01/01/99 and an End Date of 10/20/99 is being fetched.

2. Complete the following fields in this window:

Table 7–11

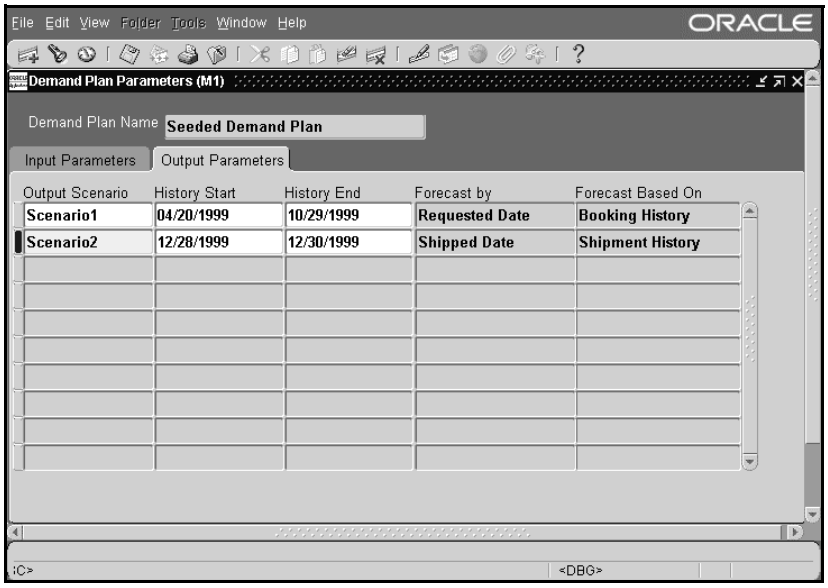
Field	Function	Legal Values
Demand Plan Name	Name of the Demand Plan	VARCHAR2(30)
Type	Type of Input Parameter	Lookup Values
Name	Manufacturing Forecast Name	VARCHAR2(240)
Start Date	Start Date for the Type of Input Parameter	DATE
End Date	End Date for the Type of Input Parameter	DATE
Input Scenario Name	The Name of the Input Scenario to be fetched	Lookup Values
Input Demand Plan Name	The Demand Plan with which the Input Scenario is associated	Lookup Values
Forecast by	This is specific to Booking History and Shipment History Input Parameters	Lookup Values (1: Booked Date, 2: Shipped Date, 3: Requested Date, 4: Scheduled Date, 5: Promised Date)
Quantity Used	This is specific only to the Manufacturing Forecast	Lookup Values (1: Original Quantity, 2: Current Quantity)
Amount Used	This is specific only to the Sales Forecast	Lookup Values (1: Forecast Amount, 2: Upside Amount, 3: Quota Amount)
Forecast Used	This is specific only to the Input Scenario Name	Lookup Values (1: Overridden Forecast, 2: Baseline Forecast)
Fact Type	This is specific to the Manufacturing Forecast, Sales Forecast, Opportunity History, and Input Scenario	Lookup Values (1: Partially Recalculable, 2: Fully Recalculable, 3: Chaotic)

Table 7–11

Field	Function	Legal Values
View Name	This is an optional field for all the Input Parameters you can use to write your own view to filter and group the fact data so that only the relevant information is uploaded into Oracle Express	VARCHAR2(30)

3. Select the Output Parameters tab.

Figure 7–12 The Output Parameters window



Use this window to specify the Scenarios that will be published back to the Planning Server. You can also specify the date range of history to be used for generating the forecast in the Output Parameters window. This date range can be a subset of the Input Parameters date range.

In this example, Output Scenario Name Scenario1 will be published back to the Planning Server for the Seeded Demand Plan. The History Start Date is 04/20/

99 and the History End date is 10/29/99 which is the date range of history to be used for generating the statistical forecast Forecast by and Forecast Based On are automatically defaulted from the information defined in Step #7.

4. Complete the following fields in this window:

Table 7–12

Field	Function	Legal Values
Demand Plan Name	Name of the Demand Plan	VARCHAR2(30)
Output Scenario	Output Scenario Name	Lookup Values
History Start	The History Start Date for the Scenario. It is possible to publish the same Scenario multiple times from Oracle Express for different History Start Dates which are subsets of the Scenario's Input Parameters Start Date.	DATE
History End	The History End Date for the Scenario. It is possible to publish the same Scenario multiple times from Oracle Express for different History End Dates which are subsets of the Scenario's Input Parameters End Date.	DATE
Forecast by	The is the specific period type used for generating the forecast. This field is automatically defaulted from the Scenario information that was defined in the Demand Plan Scenarios window.	Lookup Values
Forecast Based On	The is the type of history used to generate the forecast. This field is automatically defaulted from the Scenario information that was defined in the Demand Plan Scenarios window.	Lookup Values

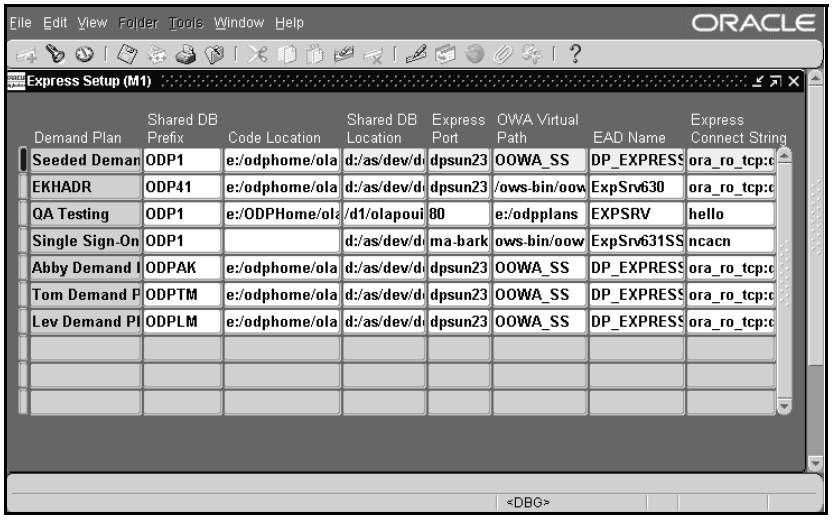
9. Define Express Setup

To define Express Setup:

1. In the Navigator, choose Setup > Express.

   The Express Setup window displays.

Figure 7–13 The Express Setup window



Use this form to set up the Oracle Express system parameters.

> **Note:** This step is usually performed by the Express System Administrator.

2. Complete the following fields in this window.

Table 7–13

Field	Function	Legal Values
Demand Plan	Demand Plan Name	VARCHAR2(30)
Shared DB Prefix	Express Database Names will be based on this value. If empty, will be defaulted to ODPxxx, where xxx is Demand Plan ID.	VARCHAR2(30)
Code Location	Express Code Databases Directory	VARCHAR2(80)
Shared DB Location	Express Databases Directory	VARCHAR2(80)
Express Port	Express Server Computer and Port Number	VARCHAR2(80)
OWA Virtual Path	Virtual Directory Path defined in the Oracle Express Web Agent Cartridge	VARCHAR2(240)
EAD Name	Express Server Instance Identifier	VARCHAR2(80)
Express Connect String	String needed for XRB to set EXPRESS_SNAPI Connection	VARCHAR2(80)

Data Collection

Collect Data programs move data from the source instance into staging tables where data integrity is checked before being loaded into Oracle Express. Pull Data programs move the data from the staging tables to the Express database.

The information being collected and pulled is used to create Demand Plans.

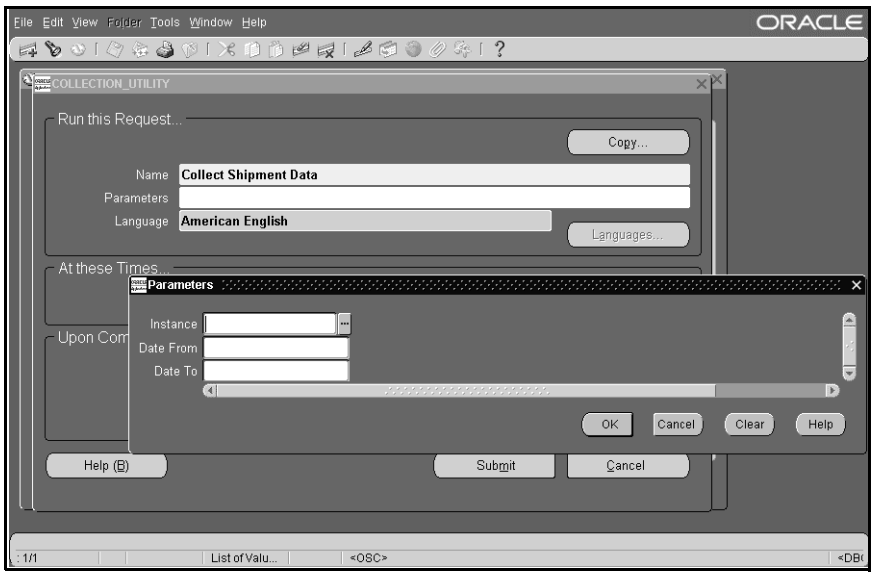
The Demand Planning Integration Administrator is usually responsible for specifying collected data.

◗◗ To collect data:

1. Start Oracle Demand Planning.
2. In the Navigator, choose Collections > Collect Data > [Shipment Data, Booking Data, Currency Conversion, Sales Forecast, or Sales Opportunity].

   A Parameters pop-up window displays overlaying the Collection Utility window.

Figure 7–14 The Collection Utility window and Parameters pop-up window



3. Complete the following fields in this window for each of the data selected:

Table 7–14

Field	Function	Legal Values
Instance	The Instance from which the data is to be moved to the staging tables in the Demand Planning Server	Lookup Values
Date From (*Optional*)	The date to start data collection	DATE
Date To (*Optional*)	The date to end data collection	DATE

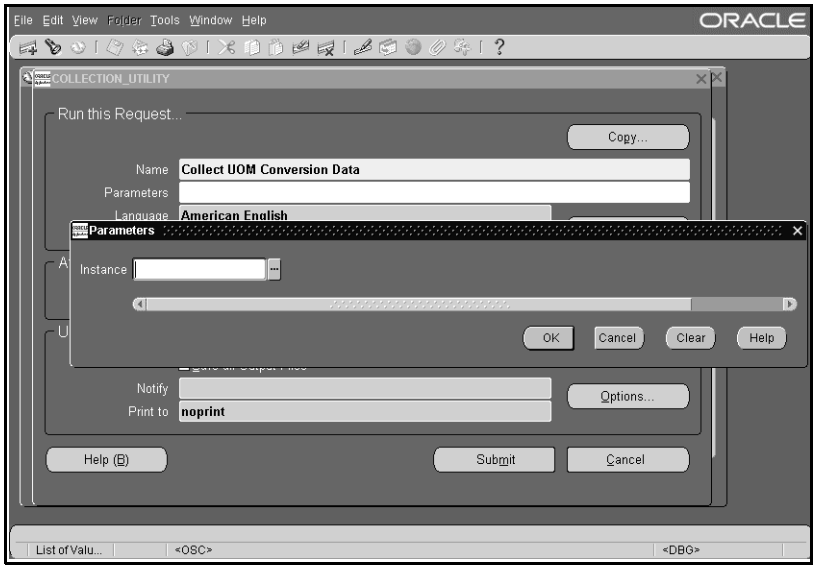
4. Click the OK button.

   The Collection Utility window displays.

5. Choose UOM Conversion from the list of values in the Name field.

   A Parameters pop-up window displays overlaying the Collection Utility window.

Figure 7–15 The Collection Utility window and Parameters pop-up window



6. Complete the following field in this window:

Table 7–15

Field	Function	Legal Values
Instance	The Instance from which the data is to be moved to the staging tables in the Demand Planning Server	Lookup Values

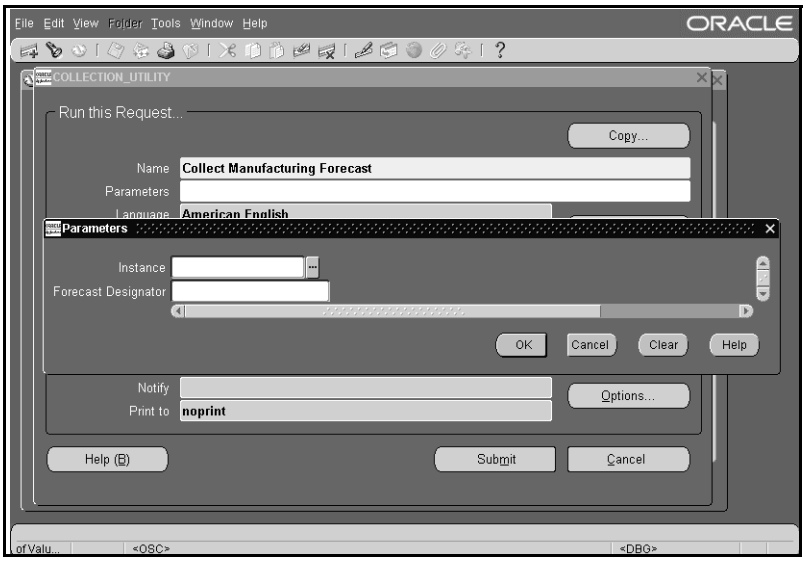
7. Click the OK button.

The Collection Utility window displays.

8. Choose Manufacturing Forecast from the list of values in the Name field.

A Parameters pop-up window displays overlaying the Collection Utility window.

Figure 7–16 The Collection Utility window and Parameters pop-up window



9. Complete the following fields in this window:

Table 7–16

Field	Function	Legal Values
Instance	The Instance from which the data is to be moved to the staging tables in the Demand Planning Server	Lookup Values
Forecast Designator	The designator of the forecast that is to be collected from the source Instance	Valid Manufacturing Forecast

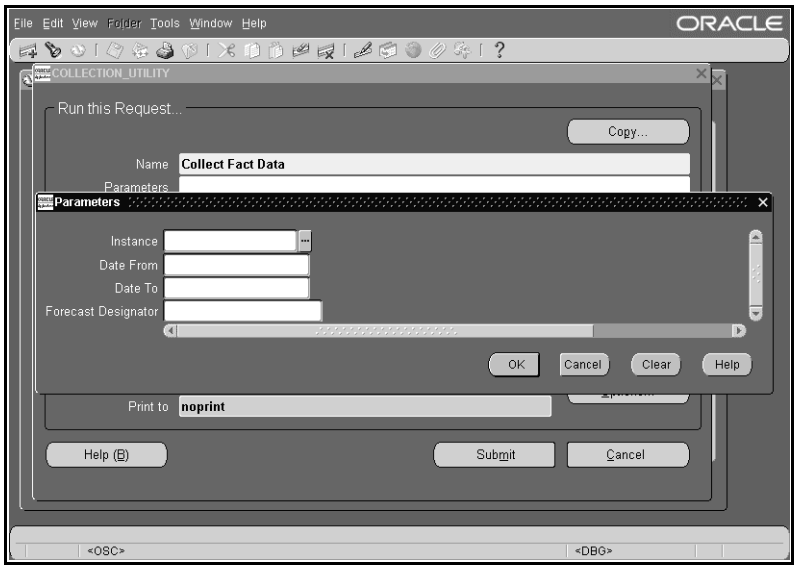
10. Click the OK button.

The Collection Utility window displays.

11. Choose All Fact Data from the list of values in the Name field.

A Parameters pop-up window displays overlaying the Collection Utility window.

Figure 7–17 The Collection Utility window and Parameters pop-up window



12. Complete the following fields in this window:

Table 7–17

Field	Function	Legal Values
Instance	The Instance from which the data is to be moved to the staging tables in the Demand Planning Server	Lookup Values
Date From (*Optional*)	The date to start data collection	DATE
Date To (*Optional*)	The date to end data collection	DATE

Table 7–17

Field	Function	Legal Values
Forecast Designator (*Optional*)	The designator of the forecast that is to be collected from the source Instance	Valid Manufacturing Forecast

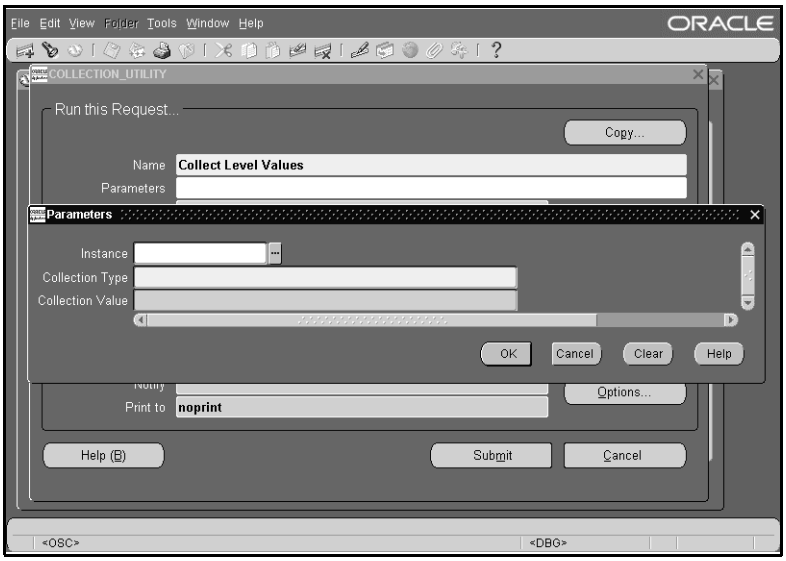
13. Click the OK button.

The Collection Utility window displays.

14. Choose Level Values from the list of values in the Name field.

A Parameters pop-up window displays overlaying the Collection Utility window.

Figure 7–18 The Collection Utility window and Parameters pop-up window



15. Complete the following fields in this window:

Table 7–18

Field	Function	Legal Values
Instance	The Instance from which the data is to be moved to the staging tables in the Demand Planning Server	Lookup Values
Collection Type	The type of entity that is collected: Level, Hierarchy, Dimension, Demand Plan, or Levels across Demand Plans	Lookup Values
Collection Value	Identifies the name of the entity to be collected	Lookup values based on values for Collection Type

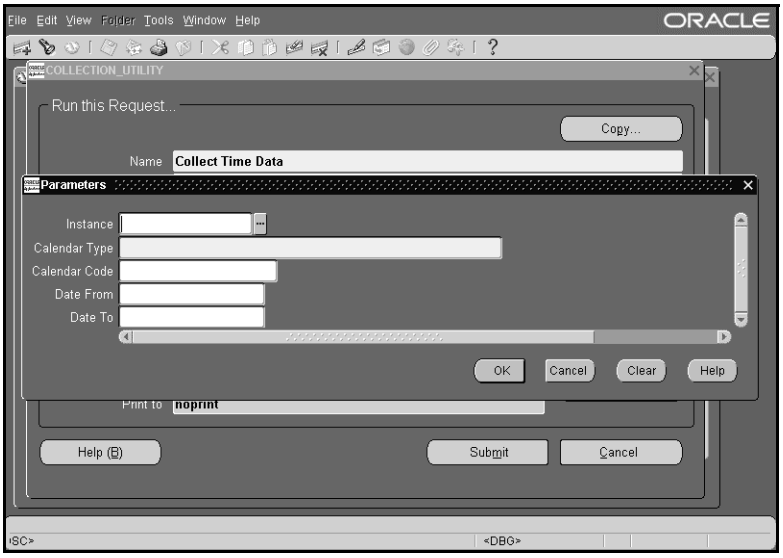
16. Click the OK button.

The Collection Utility window displays.

17. Choose Time Data from the list of values in the Name field.

A Parameters pop-up window displays overlaying the Collection Utility window.

Figure 7–19 The Collection Utility window and Parameters pop-up window



18. Complete the following fields in this window:

Table 7–19

Field	Function	Legal Values
Instance	The Instance from which the data is to be moved to the staging tables in the Demand Planning Server	Lookup Values
Calendar Type	Identifies the type of calendar	Manufacturing Calendar, Gregorian Calendar, Fiscal Calendar
Calendar Code (*Optional*)	The name of the Manufacturing or Fiscal Calendar to be collected	Valid Calendar Type. Based on Calendar Type value
Date From (*Optional*)	The date to start data collection	DATE
Date To (*Optional*)	The date to end data collection	DATE

19. Click the OK button.

    The Collection Utility window displays.

20. Click the Submit button.

Pull Data

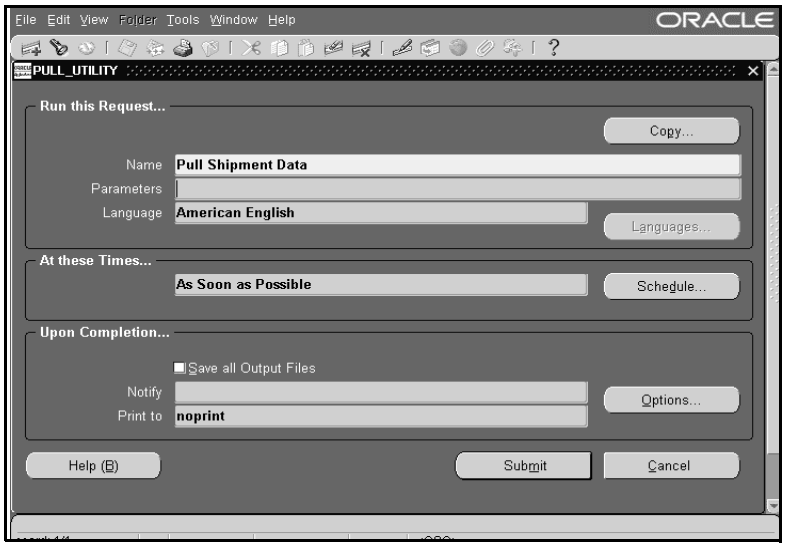
To pull data:

1. In the Navigator, choose Collections > Pull Data > [Shipment Data, Booking Data, Currency Conversion, UOM Conversion, Manufacturing Forecast, Sales Forecast, Sales Opportunity, All Fact Data, Level Values, or Time Data].

   The Pull Utility window displays.

2. Click the Submit button to move data from the staging tables to the Express database in the Demand Planning Server.

Figure 7–20 The Pull Utility window and Parameters pop-up window



Publish Forecast to Source Instance

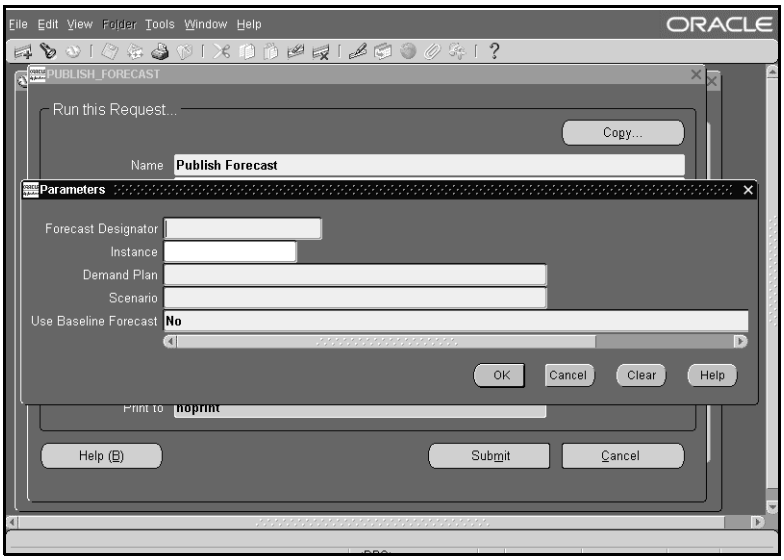
Forecasts can be published back to the source Instance from the Demand Planning Server.

◗◗ To publish a forecast:

1. In the Navigator, choose Publish Forecast.

   A Parameters pop-up window displays overlaying the Publish Forecast window.

Figure 7–21 The Publish Forecast window and Parameters pop-up window



2. Complete the following fields in this window:

Table 7–20

Field	Function	Legal Values
Forecast Designator	The designator for the forecast that is to be moved from the Demand Planning Server to the Source Instance	Valid Name
Instance (*Optional*)	The Instance to which the data is to be moved from the Demand Planning Server	Lookup Values
Demand Plan	Name of the Demand Plan	Lookup Values
Scenario	Name of the Scenario	Lookup Values
Use Baseline Forecast	Lets you publish back the Scenario's baseline or modified forecast as the forecast	Yes, No

3. Click the Submit button.

Setup Instances, Requests, and Profiles

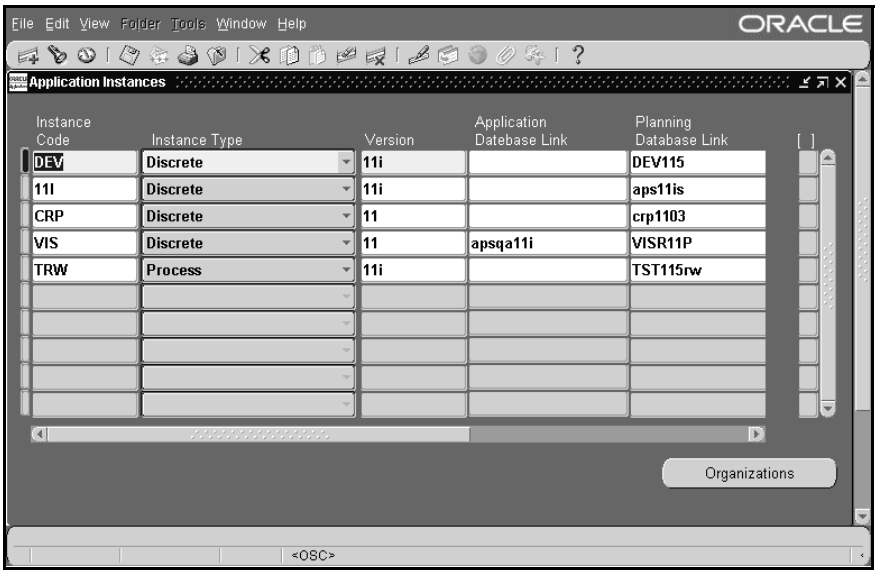
Instances

To set up instances:

1. From the Navigator, choose Setup > Instances.

   The Applications Instance window displays.

Figure 7–22 The Applications Instance wIndow



2. Complete the following fields and flags in the Applications Instance window.

> **Note:** You are only required to set up Applications Instances the first time you perform data collection.

Field/Flag	Description
Instance Code	Choose from multiple instances
Instance Type	Discrete, Process, other, or Discrete & Process
Version	Unique version for the specified instance
Application Database Link	A link to connect the Applications database(s) to Oracle ASCP. This link is determined by the database administrator.
Planning Database Link	A link to connect Oracle ASCP to the Applications database(s). This link is determined by the database administrator.
Enable Flag	Select this option to enable the collection process
GMT Difference	The difference between instance time zone and GMT

Note: If you are implementing a distributed configuration, the database administrator must manually create the bi-directional database links between each Applications database and Oracle ASCP manually. Additional identification such as user name and password may be required.

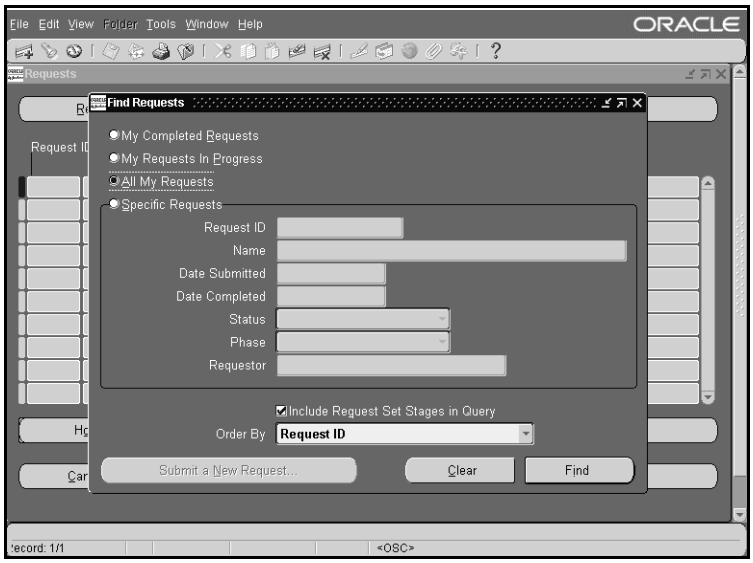
Requests

◗◗ To set up requests:

1. From the Navigator, choose Other > Requests.

   The Requests window displays.

Figure 7–23 The Requests wIndow



Refer to the *Oracle Applications User's Guide* for more information about requests.

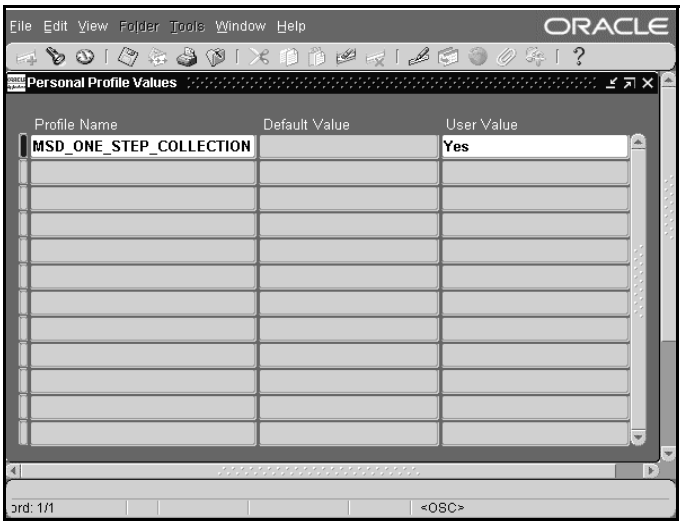
Profiles

◗◗ To set up profiles:

1. From the Navigator, choose Other > Profiles.

   The Personal Profile Values window displays.

Figure 7–24 The Personal Profile Values window



Refer to the *Oracle Applications User's Guide* for more information about setting personal profile values.

Application Utilities Lookups

User Dimensions Lookups

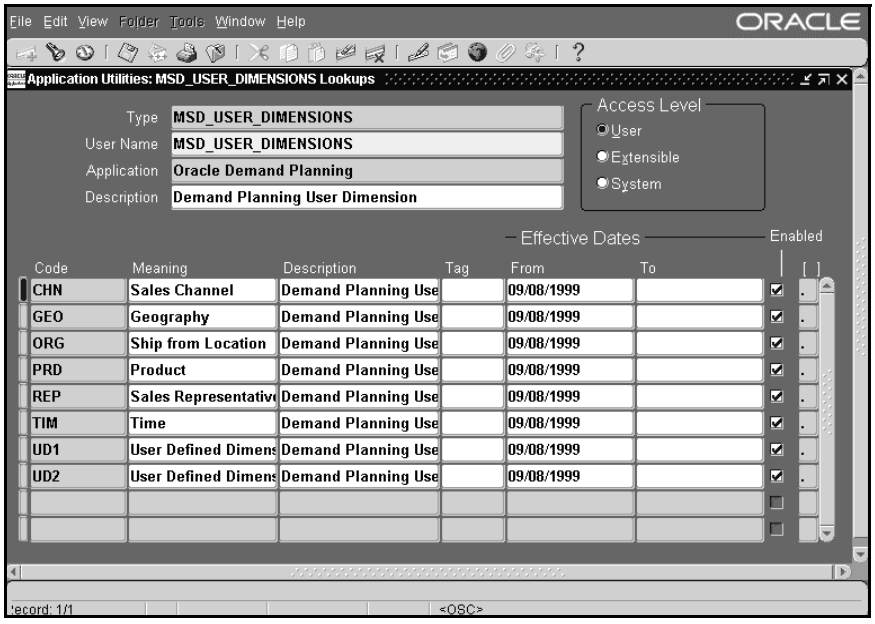
Use this screen to view the Demand Planning User Dimensions and to change the Meaning and Description fields.

To set up User Dimension Lookups:

From the Navigator, choose Setup > User Dimensions.

The Application Utilities: MSD_USER_DIMENSIONS_Lookups window displays.

Figure 7–25 The Application Utilities: MSD_USER_DIMENSIONS_Lookups wIndow



2. Complete the following fields in this window:

Field	Function	Legal Values
Code	Lookup code that uniquely identifies the Demand Planning User Dimension	CHN, GEO, ORG, PRD, REP, TIM, UDI, UD2
Meaning	Name of the Demand Planning User Dimension	List of Values
Description	Describes the Code as being a Demand Planning User Dimension	For informational purposes only

Data Element Lookups

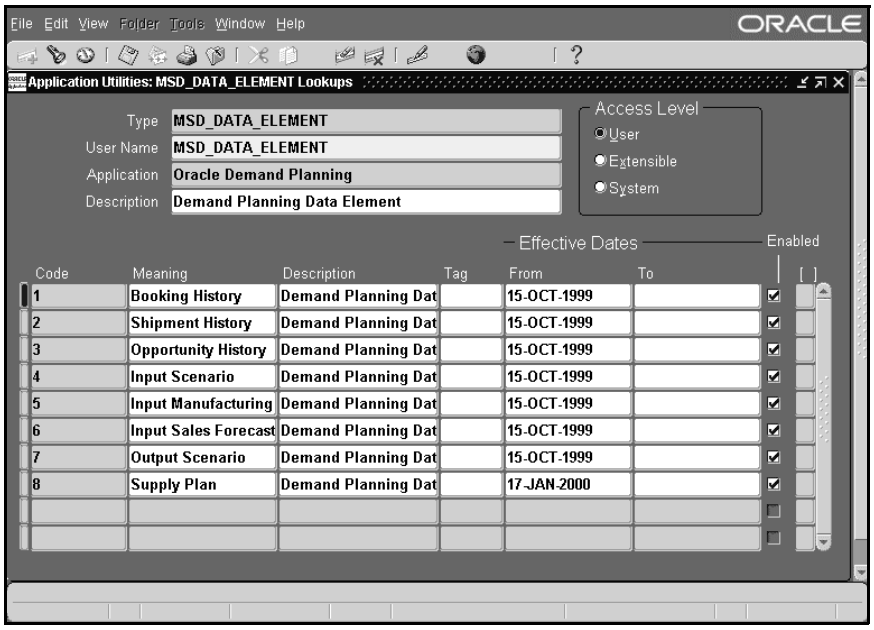
Use this screen to view the various Data Elements and to change the Meaning and Description fields.

◗◗ To set up Data Element Lookups:

From the Navigator, choose Setup > Data Elements.

The Application Utilities Lookups window displays.

Figure 7–26 The Application Utilities Lookups wIndow



3. Complete the following fields in this window:

Field	Function	Legal Values
Code	Lookup code that uniquely identifies the Demand Planning Data Elements	1-7
Meaning	Name of the Demand Planning Element	Booking History, Shipment History, Opportunity History, Input Scenario, Input Manufacturing Forecast, Input Sales Forecast, Output Scenario
Description	Planning Data Elements	For informational purposes only.

Lookups

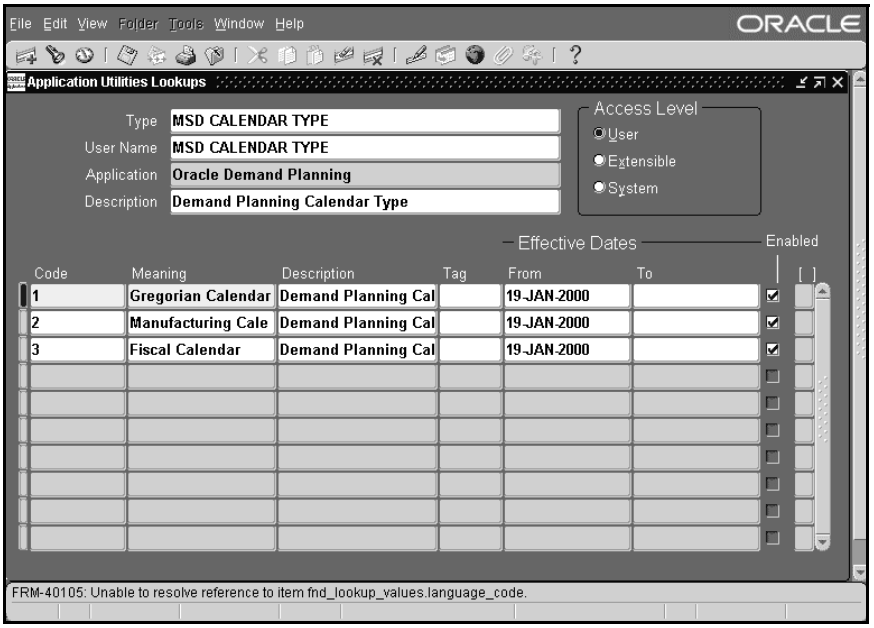
Use this screen to view the various lookups for Demand Planning, to change the Meaning and Description fields for existing Lookups, and to create new Demand Planning Lookups.

To set up Lookups:

From the Navigator, choose Setup > Lookups.

The Application Utilities Lookups window displays.

Figure 7–27 The Application Utilities Lookups wIndow



4. Complete the following fields in this window:

Field	Function	Legal Values
Code	Lookup code that uniquely identifies the Demand Planning Data Elements	1-7

Field	Function	Legal Values
Meaning	Name of the Demand Planning Lookup Values	Booking History, Shipment History, Opportunity History, Input Scenario, Input Manufacturing Forecast, Input Sales Forecast, Output Scenario
Description	Description of the Demand Planning Lookup Values	For informational purposes only

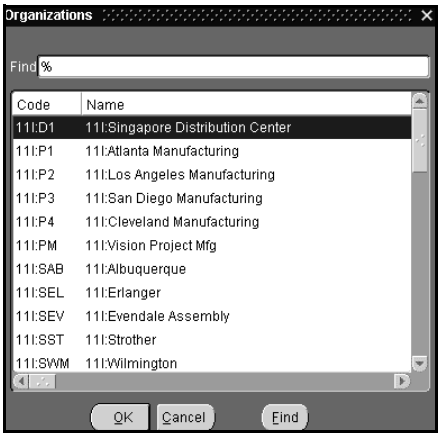
Changing Your Organization

To change your organization:

1. In the Navigator, choose Other > Change Organization.

   The Change Organization window displays.

Figure 7–28 The Change Organizations window



2. Select an organization in the Organizations window.
3. Choose OK.

A

Profile Options

This section lists profile options you set when configuring Oracle ASCP and Oracle Global ATP Server.

Oracle ASCP Optimization Profile Options

The following profile options can be used to specify default values necessary for optimization

MSO: Penalty Cost Factor for Late Demands Use this profile option to define a penalty cost factor common to all demands. The demands include sales orders and forecasts. The value is specified as a number greater than 0.

This profile option can be defined at the site level. You can update this value.

MSO: Penalty Cost Factor for Exceeding Material Capacity Use this profile option to define a global penalty cost factor for exceeding material capacity. This value will be common to all items in the plan. The value is specified as a number greater than 0.

This profile option can be defined at the site level. You can update this value.

MSO: Penalty Cost Factor for Exceeding Resource Capacity Use this profile option to define a global penalty cost factor for exceeding resource capacity. This value will be common to all manufacturing and transportation resources in the plan. The value is specified as a number greater than 0.

This profile option can be defined at the site level. You can update this value.

MSO: Inventory Carrying Costs Percentage Use this profile option to specify the inventory carrying costs percentage for all items in the plan. The value is specified as a number between 0 and 1.

This profile option can be defined at the site level. You can update this value.

MSO: Maximum Allowable Days Late Use this profile option to limit the number of days by which a demand or unfirmed scheduled receipt can be moved out. This value is
used to improve performance during optimization. The value is specified as an integer greater than 0.

This profile option can be defined at the site level. You can update this value.

MSO: Maximum Demands per Group Use this profile option to determine the maximum number of demands that can be grouped together for rescheduling. The value is specified as an integer greater than 0.

This profile option can be defined at the site level. You can update this value.

MSO: Number of Backtracks Allowed Use this profile option to limit the number of backtracks it performs in the search tree. The value is specified as an integer greater than 0.

This profile option can be defined at the site level. You can update this value.

MSO: Floating Point Precision Use this profile option to convert floating point numbers to integers since ILOG scheduler works only with integers.

This profile option can be defined at the site level. You can update this value.

MSO: Maximum Resource Over-capacity This profile option is used to assign resource slacks whenever it does not find the resource available and it is forced to use slacks. The value is specified as a number greater than 0.

This profile option can be defined at the site level. You can update this value.

MSO: Maximum Lead Time Factor This is the fraction of the overall horizon length, within which the backward pass restricts looking for resources to fit the schedule. If we cannot schedule within this, we would forward schedule. The value is specified as a number between 0 to 1.

This profile option can be defined at the site level. The default value is 1. You can update this value.

Oracle Global ATP Server Profile Options

INV: Capable to Promise This site level profile option determines which ATP program will be used for ATP check. It can have the following values:

Table A–1

Value	Text
1	Enable Product Family ATP and CTP
2	Enable Product Family ATP
3	Enable ATP
4	Enable PL/SQL based ATP with Planning Output (*)
5	Enable PL/SQL based ATP without Planning Output (*)

(*) new setting for this release

Note: The site level profile option, MRP: ATP Database Link, determines if a distributed ATP is used or not.

B

Oracle ASCP Flexfields

This section lists the flexfields you can use to enter penalty cost data at the appropriate levels for independent demands, items, and resources.

Penalty Cost Factor for Late Demands (at the demand level) Defined via a flexfield in the Forecast Items form (for forecasts) or in the Scheduling region of the Sales Orders form (for sales orders). This will be stored in the table OE_ORDER_LINES_ALL and MRP_FORECAST_DATES.

Penalty Cost Factor for Late Demands (at the item level) Defined via a flexfield in the Items form. This will be stored in the table MTL_SYSTEM_ITEMS.

Penalty Cost Factor for Late Demands (at the org level) Defined via a flexfield in the Organizations Parameters form. This will be stored in the table MTL_PARAMETERS.

Penalty Cost Factor for Exceeding Material Capacity (at the item/vendor level) Defined via a flexfield in the Supplier-Item Attributes form (in the header region). It will be stored in PO_ASL_ATTRIBUTES.

Penalty Cost Factor for Exceeding Material Capacity (at the item level) Defined via a flexfield in the Items form. It will be stored in MTL_SYSTEM_ITEMS.

Penalty Cost Factor for Exceeding Material Capacity (at the org level) Defined via a flexfield in the Organizations Parameters form. This will be stored in the table MTL_PARAMETERS.

Penalty Cost Factor for Exceeding Resource Capacity (at the resource level) Defined via a flexfield in the Department Resources form. This will be stored in the table BOM_DEPARTMENT_RESOURCES.

Penalty Cost Factor for Exceeding Resource Capacity (at the org level) Defined via a flexfield in the Organizations Parameters form. This will be stored in the table MTL_PARAMETERS.

Penalty Cost Factor for Exceeding Transportation Capacity (at the ship method level) Defined via a flexfield in the Inter-location Transit Times form. It will be stored in MTL_INTERORG_SHIP_METHODS.

Penalty Cost Factor for Exceeding Transportation Capacity (at the org level) Defined via a flexfield in the Organizations Parameters form. This will be stored in the table MTL_PARAMETERS.

Aggregate Resource for a Resource Defined via a flexfield in the Department Resources form. It is based on the existing flexfield Aggregate Resource Id. It will be stored in the table BOM_DEPARTMENT_RESOURCES.

Resource Step Number Defined via a flexfield in the Operation Resources form. This will be stored in the table BOM_OPERATION_RERSOURCES.

Principle Resource for an Operation Defined via a flexfield in the Operation Resources form. It will be stored in the table BOM_OPERATION_RERSOURCES.

Resource Priority for an Operation Defined via a flexfield in the Operation Resources form. This will be stored in the table BOM_OPERATION_RERSOURCES.

Priority for Substitute Items Defined in the Substitute Components form. This will be stored in the table BOM_SUBSTITUTE_COMPONENTS.

Cost of Using Alternate BOM/Routing Defined via a flexfield in the Bills of Material form. It will be stored in the table BOM_BILLS_OF_MATERIALS.

Applying Flexfields to Different Versions of Oracle RDBMS

All flexfields are applied as a set the following releases of the Oracle RDBMS: 10.7

- 10.7
- 11.0
- 11i

In each case, Oracle ASCP and Oracle Global ATP Server checks to whether you have existing flexfield. If you are, it does not overwrite your existing settings.

Transportation Capacity

Oracle ASCP and Oracle Global ATP Server R11i provides fields in the Inter-Location Transit Time window for setting load weight and load volume. These fields are not available in Releases 10.7 and 11.0. You should use flexfields to set these values when running either Release 10.7 or 11.0

C

Oracle Demand Planning Glossary

ABC classification

See *pareto analysis.*

absolute error

Magnitude of forecast errors, actual less forecast values, without regard to sign.

across

The column position in a Demand Planning report or worksheet. Columns go across the page.
See also *column*.

activity log

Demand Planning feature that enables planners to view a record of system activities that are to the process of generating forecasts.

ad hoc analysis

The process of analyzing data using a report or graph for which you specify the dimensions, dimension values, and layout. While viewing an ad hoc analysis, you can drill up or down on aggregate values.
See also *graph*, *report*.

adjustment

In Demand Planning, refers to the manual modification of forecast values to account for outliers or incorrect measurements. You can adjust a single value or a range of values. You can enter comments regarding the adjustments.

aggregate

Predefined grouping of values along a hierarchy, or a user-defined grouping of values. For example, a predefined aggregate for Geography might total territories by city, state, region, and country. A user-defined aggregate for Geography might combine values for three cities that are of interest to the user.
See also *aggregation*, *custom aggregate*.

aggregate forecast

For a forecast variable such as demand, adding the contributions of child levels to obtain a single forecast value for the parent level.

aggregation

In Demand Planning, the consolidation of data for child dimension values into parent values. Data is often collected at the lowest level of detail and is aggregated into higher level totals for analysis. For example, units sold in various cities might be aggregated into total units sold for all cities in a region. The aggregation rule might be “sum,” in which case the values are added, or there might be an alternate aggregation rule such as “average.”

aggregation level

In Demand Planning, the position in a dimension hierarchy at which data can be viewed or manipulated. For example, aggregation levels for a Geography dimension might include City, County, State, Region, and so forth.

alert

In Demand Planning, a set of exception conditions that generates a notification to specified individuals when the conditions are met.

allocation

In Demand Planning, the process of changing child nodes values based on the change in the parent node, according to an algorithm. The algorithm might assign fixed, often equal, weights to each child, with the weights summing to unity.

alpha

A parameter used by the three forecasting methods of the exponential smoothing family: single, double, and Holt-Winters. This is the “level,” or baseline, parameter.
See also *exponential smoothing*.

anomalies

Outliers and other non-standard patterns in historical data.

APS

Acronym for Advanced Planning and Scheduling, a suite of Oracle products that includes Advanced Supply Chain Planning, Global ATP (Available to Promise Server), Demand Planning, and Manufacturing Scheduling.

assignment

In Demand Planning, the task of providing information and data from the database or from a demand plan. The Demand Planning administrator specifies assignments for demand planners and demand planning managers.

asymptotic fit

A forecasting method of the nonlinear regression type in which a linear relation ($y' = a \times x' + b$) is fitted to a transformation of the original data, where $x' = 1/x$ and $y' = 1/y$. This results in the development of an asymptotic model: $y = x/(a + bx)$.
See also *nonlinear regression*.

auto-correlation

A number between -1 and +1 that signifies the correlation between a given data and its own lagged values, where 0 implies no identifiable relation, -1 implies perfect negative correlation, and +1 reflects perfect positive correlation.

automatic best fit

See *best forecast*.

base measure

Term used to refer to a Demand Planning measure that comes from the planning server and is available to all users. Individual users can use base measures to define their own custom measures.
See also *custom measure*, *measure*.

baseline forecast

A statistical forecast that uses historical data and the best fit statistical model. In Demand Planning, baseline forecasts are automatically generated by the planning server.

best fit forecast

The best performing method of the statistical forecasting models, based on historical data. Baseline forecasts that are generated in Demand Planning use the best forecast method.

beta

Parameter used by two forecasting methods of the exponential smoothing type: double and Holt-Winters. It is referred to as the “trend” parameter because it controls the estimate of the trend.
See also *exponential smoothing*.

bias

An error in the mean value of a forecast when compared to the actual data. Bias could apply to the entire data, or to a segment of the data.

bottom-up

A method of allocating forecasts that are generated at the lowest level of a hierarchy to the higher levels through aggregation. The aggregation rule might be “sum,” in which case the values are added, or there might be an alternate rule such as “average.”

calendar

A system to handle consistency for time-varying data. Demand Planning usually uses a Manufacturing calendar, where production is divided into four week periods.

calibration

The process of estimating model parameters from historical data in statistical forecasting models. Alternatively know as “training.”

cannibalization

The phenomena, often observed during the introduction of new products, in which one product takes the market share of another related product. Cannibalization is defined as a standard event in Demand Planning.

causal analysis

The process of forecast generation that uses known or calculated relations between a dependent variable, such as demand, and one or more factors that affect the dependent variable, such as weather, product promotion, and discounts.

cell lock

In Demand Planning, protecting a cell so that its data cannot be modified until the lock is removed.

child

A dimension value at the level immediately below a particular value in a hierarchy. Values of children are included in the calculation that produces the aggregated total for a parent. A dimension value might be a child for more than one parent if the dimension has more than one hierarchy.
See also *hierarchy*.

collaborative forecasting

Forecast generation by consultation among, or consolidation of, individual forecasts issued by organizations that are linked to each other in the supply chain such as suppliers, manufacturers, customers, retailers and manufacturers.

column

A Demand Planning report or worksheet has three components for displaying multi-dimensional data: column, row, and page. The column component separates data for the dimension values that run across the report.
See also *across*.

competitive event

Event that could potentially compete with other events in terms of its effect on product demand. In Demand Planning, only the competitive event with the highest priority is applied in any particular area.

composite forecast

Process of merging forecasts for identical quantities. The forecasts can come from multiple sources such as sales and marketing forecasts for product demand in a given region. The forecasts can also come from a single source such as statistical forecasts that have been generated using different models or the optimistic and pessimistic forecasts of one salesperson.

compulsory event

An event whose effects will be felt independently of other events that might occur. In Demand Planning, a priority is associated with such an event to determine the precedence of occurrence. This priority is necessary as the demand modification adds a specific number or uses an uplift factor, and operator precedence becomes important.

confidence bounds or limits

The maximum and minimum level of variation expected for demand, the forecast quantity. These bounds are usually dictated by the uncertainty associated with the

forecasts and represent the degree of confidence in the forecast values. For statistical forecasts, these correspond to the range with which a forecast value is expected to lie with some probability.

consensus forecast

Forecast generation by consultation among or consolidation of individual forecasts issued by different groups within an organization.

consolidation

The process of merging multiple forecasts for related, but not identical quantities. The forecasts can originate from multiple sources such as sales forecasts for different items, management forecasts for individual products, two managers forecasting sales for two different regions, or statistical forecasts for different commodities. Forecasts might also originate from a single source such as sales forecasts of different products from one salesperson.

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*.

correlation

The relation between two or more variables, expressed as a number between -1 (perfect negative relation) and +1 (perfect positive correlation). The number 0 implies no relation.

correlation of events

See *event correlation*.

cross-correlation

The relation between a variable and the lagged values of another variable, expressed as a number between -1 (perfect negative relation) and +1 (perfect positive correlation). The number 0 implies no relation.

currency

The units of demand that are used during data visualization, manipulation, and forecasting. In Oracle Demand Planning, currency is referred to as measures.
See also *measure*.

custom aggregate

A single value that users can create in their personal database to combine multiple values from one dimension. For example, a custom aggregate might consist of three geographies rolled up into a single value in the Geography dimension. Saved custom aggregates appear on selection lists of dimension values.

custom measure

A formula that users can create in their personal database to fine-tune data visualization and analysis. For example, a planner might create a custom measure that applies a weight to a forecast measure.
See also *base measure*, *measure*.

data element

A variable or set of variables that store data values. Alternatively, a place holder for data storage or viewing such as a cell or set of highlighted cells.

demand plan

An overall forecast of demand and possibly plans for integration with a supply chain. This consists of all available information from the planning server including base measures, baseline forecasts, conversion tables, scenarios, and event information.

demand planner

A user responsibility that is defined for Demand Planning. Demand planners are given specific data assignments and are responsible for submitting their forecasts to the shared database. A single forecast must be submitted for each scenario specified by the planning server.

dependent variable

In regression or modeling, a variable that is expressed as a function of another variable, or explained in terms of another variable.

differencing

The process of obtaining difference values at any give time. Difference values are the current value less the value at a given lag.

dimension

In Demand Planning, a list of categories for data. A dimension acts as an index for identifying the values of a variable. Examples of dimensions are Product, Geography, and Time.

dimension value

An element in the list that makes up a dimension. For example, dimension values in the Geography dimension might include Boston, Chicago, and New York.

disaggregate

The inverse of aggregation; spreading down or allocating data values at higher nodes to the lower nodes.

document

In Demand Planning a collective term used to refer to a report, graph, or worksheet.
See also *report*, *graph*, *worksheet*.

double exponential smoothing

A forecasting method of the exponential smoothing type in which the current estimate is taken as the geometrically weighted average of past values and then added to a trend term that is calculated in an identical fashion. Single exponential smoothing is therefore applied to both the series and the trend term.
See also *exponential smoothing*.

down

The row position in a report or worksheet. Rows go down the page.
See also *row*.

drill

In Demand Planning, to navigate up and down through the levels of aggregation in a dimension that has a hierarchy. When selecting dimension values or viewing data, you can expand or collapse a hierarchy by drilling down or up in it. Drilling down expands the view to include child values that are associated with parent values in the dimension hierarchy. Drilling up collapses the list of descendant values associated with a parent value in the dimension hierarchy.

error bars

Error range that forecast values are expected to exhibit with some degree of confidence.

estimation

Defining or determining a model or the parameters thereof.

event

Any occurrence in the real world that has a direct or indirect effect on the demand for the products under consideration. Demand Planning associates a start time and an end time with each event and handles them through discrete step functions.

event model

A technique that attempts to numerically capture the effect of an event on product demand at any aggregation level.

event correlation

The relation among events, such as the a product introduction event and the corresponding cannibalization of a related product.

exception report

An ad hoc report that displays data associated with dimension values that are exceptions to planner-defined cutoff values. The criteria is applied to each page of data. For example, an exception report might identify customers whose orders have dropped by more a certain amount compared to the same period last year.

exponential asymptotic fit

A forecasting method of the nonlinear regression type in which a linear relationship ($y' = a \times x' + b$) is fitted to a transformation of the original data, where $x' = x$ and $y' = \ln(y/K - y)$. This results in the development of an exponential asymptotic curve: $y = cK\exp(ax)/\{1 + c\exp(ax)\}$.
See also *nonlinear regression*.

exponential fit

A forecasting method of the nonlinear regression type in which a linear relationship ($y' = a \times x' + b$) is fitted to a transformation of the original data, where $x' = x$ and $y' = \ln(y)$. This results in the development of exponential model between x and y: $y = c \times \exp(ax)$.
See also *nonlinear regression*.

exponential smoothing

A class of statistic forecasting techniques in which the forecasts are obtained as simple linear weights of the actual value and the forecast value at previous time steps, or through some variation of this rule. The linear weights are the model

parameters which are determined through calibration from historical data. Demand Planning offers three exponential smoothing methods: single, double, and triple (referred to as "Holt-Winter's").
See also *double exponential smoothing*, *Holt-Winters*, *single exponential smoothing*.

Express

The common technology underlying the Oracle Express Server and Personal Express products. The Demand Planning application distributes data from the planning server to a multi-dimensional Express database.

fact values

Historical facts that represent a record of facts.

filtering

In statistics, smoothing the data values by removing high frequency components. Filtering aids in the identification of underlying longer term trends and seasonality in the data that have some forecast-ability.

forecast error

Each forecast that Demand Planning generates includes an estimate of the forecast error. The types of errors computed are mean absolute percent error (MAPE), mean square error (MSE), and mean absolute deviation (MAD).
See also *mean absolute percent error MAPE)*, *mean square error (MSE)*, and *mean absolute deviation (MAD)*.

forecast reconciliation

See *reconciliation*.

forecasting methods

Refers to the statistical methods that you can use to generate forecasts in Demand Planning. As an alternative to selecting a method, you can allow the system to determine the best forecasting method to use.
See also *asymptotic fit*, *automatic best fit*, *double exponential smoothing*, *exponential asymptotic fit*, *exponential smoothing*, *Holt-Winters*, *linear regression*, *logarithmic fit*, *nonlinear regression*, *polynomial regression*, *single exponential smoothing*.

frequency

The inverse of the time period at which the historical or forecast data are expected to repeat their past behavior. Seasonal or periodic data exhibit a low frequency

component corresponding to their period. Purely random data that contain no substantial information usually exhibit high frequency.

frequency domain analysis

Analyzing time series data by first transforming it to the frequency domain, or by determining the time series components as a function of frequency. Estimates of the frequency components of a time series is often achieved through smoothed periodograms, using Fourier analysis. Frequency domain analysis often provides a better estimate for seasonal or periodic cyclicity in the data than time domain analysis. Demand Planning uses frequency domain analysis to calculate signal to noise ratios for outlier detection; however, this analysis is not visible to the planner and results are not reported directly.

gamma

A parameter used by Holt-Winters, a forecasting method in the exponential smoothing family. This is the seasonal parameter.

Geneva

Refers to Roadmap Geneva Forecasting™ from Roadmap Technologies. Geneva is the forecasting engine that is used in Demand Planning for statistical forecast generation.

geography dimension

In Demand Planning, a category of data that denotes geographical area. For example, Geography dimension might include values such as “Eastern US,” “Massachusetts,” and “Boston.”
See also *dimension*.

graph

Demand Planning document that enables you to visualize and manipulate multi-dimensional data in graphical format. Types of graphs include area, bar, line, bar-line, pie, 3D, and scatter graphs.

hierarchy

In Demand Planning, a means of organizing and structuring data within a dimension. A hierarchy exists when values within a dimension are arranged in levels, with each level representing the aggregated total of the data from the below. For example, a Geography dimension might have a hierarchy that includes levels for Account, City, State, and Region.
See also *aggregation*, *level*.

Holt-Winters

A forecasting method of the exponential smoothing type. Holt-Winters is used on seasonal data and can handle changes in mean, trend, and seasonality components. It combines double exponential smoothing methods with multiplicative seasonal factors, which are in turn estimated through single exponential smoothing.
See also *exponential smoothing*.

independence

See *independent variable*.

independent variable

If a variable does not depend on another variable or set of variables in any way, then the first variable is said to be independent of the second. In regression, independent variable are those that cannot be expressed in terms of another variable. Note that independence implies no correlation between variables; however, the converse is not necessarily true.

input errors

Errors in measurement or data entry of variables that are used as inputs in the forecasting or planning process. Input error can be due to human or instrument error.

intermittent demand

Refers to sporadic demand patterns observed for certain products over certain time horizons. These types of demand are characterized by sudden surges followed by periods of zero or very low demand. Special modeling efforts might be required to handle these situations if the products constitute a significant proportion of the total sales.

introduction

See *product introduction event*.

lag

Backwards in time, a lag of *n* implies values of variables observed or forecast *n* time steps before the current time.

lead

Forward in time, a lag of *n* implies values of variable observed or forecast *n* time steps before the current time.

level

A position in a dimension hierarchy. Each level above the base level represents the aggregated total of the data from the level below. For example a Geography dimension might have ascending levels such as Customer, City, State, and Region. Within a dimension hierarchy, a dimension value at one level has a family relationship with the dimension values at the levels above and below that level. See also *aggregation*, *hierarchy*.

level values

The values of a variable in terms of the chosen currency at a given level.

life cycle

The period over which a product stays in the market or is operationally produced by the manufacturer. A product's lifecycle events include the following:

- Born — A new product
- Young — A recently introduced product
- Old — A mature product
- Dead — A product whose functionality is no longer required as a result of new technology

likelihood

The probability of occurrence. The likelihood of a given model is the probability of the assumed model and the estimated parameters approximating reality.

linear models

A class of linear formulations that approximate the future behavior of a variable in terms of its own current and past values, or the current and past values of independent variables. The term implies that the model expresses the forecasts or the dependent variable as a linear function of the independent variables.

linear regression

A forecasting method in which a linear relationship, ($y = a \times x + b$), is fitted to the data, where a and b are parameters estimated from history.

logarithmic fit

A forecasting method of the nonlinear regression type in which a linear relationship, ($y = a \times x + b$) is fitted to a transformation of the original data, where $x = \log(x)$ and $y' = y$. This results in the development of a logarithmic model

between x and y: $y = a \times \log(x) + b$.
See also *nonlinear regression*.

MAD

See *mean absolute deviation (MAD)*.

MAPE

See *mean absolute percent error (MAPE)*.

mean absolute deviation (MAD)

A performance metric for evaluating forecast accuracy. $MAD = \{\Sigma(|Z_1 - Y_1|)\}/N$, 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.
$MAPE = \{\Sigma|100 \times (Z_1 - Y_1)/(Yi)|\}/N$, 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 squared error (MSE)

A performance metric for evaluating forecast accuracy. $MSE = \{\Sigma(Z_1 - Y_1)^2\}/N$, 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.

measure

In Demand Planning, data that can be analyzed such as sales or cost. You can select and display the data for a measure in worksheets, reports, and graphs. Base measures come from the planning server and are available to all users. Planners can also use base measures to create their own custom measures.
See also *base measure, custom measure*.

measurement errors

The expected errors or standard deviation errors that are associated with the measured or input values. For example, errors during a transaction are measurement errors.

metric

See *performance metric*.

middle-out

A method of allocating forecasts generated at a middle level of a hierarchy to the higher levels through aggregation and to lower levels through allocation.

model

An abstract, often statistical or mathematical, representation of reality. Used to approximate the complex process of demand generation, generate forecasts, and answer what-if queries.

moving average

A smoothing or forecasting technique where the smoothed or forecast value at a point is determined by the average, or weighted average for weighted moving average, of adjacent values in time. The window size used for computing the average is often a parameter that must be specified. For smoothing, both lagged and lead values can be used; for forecast, only past values can be used.

moving median

A smoothing or forecast technique where the smoothed or forecast value at a point is determined by the median of adjacent values in time. The window size used for computing the median is often a parameter that must be specified. It is used in Demand Planning to detect and filter outliers from historical data during statistical forecast generation. However, this analysis is hidden from the planner and results are not directly reported.

MSE

See *mean squared error.*

multidimensional

Accessing data through multiple dimensions that can be arranged and organized according to a planner's requirements.

new product introduction

See *product introduction event*.

noise

In statistics, random variations in data caused by small changes in unaccountable factors, such as measurement error and lack of perfect repeatability during data generation. Loosely used to denote unexplained variances that are associated with demand that could be caused by individual human factors and are not expected to reoccur.

nonlinear regression

A class of statistical forecasting methods in which a linear relationship is fitted to a transformation of the original data. Demand Planning offers five non- linear regression methods: asymptotic fit, exponential fit, exponential asymptotic fit, logarithmic fit, and polynomial regression.
See also *asymptotic fit*, *exponential fit*, *exponential asymptotic fit*, *logarithmic fit*, *polynomial regression*.

ODP

Abbreviation for Oracle Demand Planning.
See *Oracle Demand Planning*.

OLAP

Abbreviation for Online Analytical Processing.

Oracle Demand Planning

An application for generating demand forecasts and for planning and tracking variables and factors related to past, present, or future customer demand. Oracle Demand Planning is an integrated module within Oracle's Advanced Planning and Scheduling application.

Oracle Workflow

The Oracle Workflow engine sequences the processes of demand planning. It is also used to schedule jobs and notify planners of certain events or exceptions.

outlier

A data value that is unusually large or small, usually caused by events that are not expected to reoccur and must be removed from the historical data when generating statistical forecasts.

outlier detection and filtering

The process of detecting and removing outliers from historical data for purposes of statistical forecast generation. The statistical forecasting techniques in Demand

Planning automatically filter outliers through one of two methods: moving median in the “time domain” and signal to noise ratio in the “frequency domain.” During the forecast generation process, the best method is automatically selected.

page

In a Demand Planning document, the page component separates data for the dimension values that appear as pages.

parameter

Adjustable variable in a forecasting model, the values of which must be adjusted from historical data through a process called calibration or training.

parameter estimation

See *calibration*.

parent

In a hierarchical relationship, the immediately superior level or node. For example in a Geography dimension, Eastern U.S. might be the parent of Massachusetts.

pareto analysis

A method for forecast model selection based on the type of item in stock. Items are divided into the following categories:

- A — Comprising 1- to 20% of all items but representing 80% of the total value, forecast in a controlled environment with non-adaptive forecasting models and significant monitoring
- B — Comprising 20 to 30% of all items worth 15 to 20% of sales, forecast using short term adaptive models
- C — Comprising 50 to 70% of all items and 5 to 10% of the value for which forecasts cannot provide significant ROI

percolation

The process of modifying the values of parent nodes and successive nodes at the top of a hierarchy to reflect changes in the values of the child nodes.

performance metric

A quantity that measures the performance of forecast values by comparing with actual data, for example, root mean square error.

period type

The temporal granularity, such as weeks or months, at which the effects of an event are likely to be felt.

periodicity

See *seasonality.*

personal database

The database to which a single user has access and modification rights. A demand planner works in his or her personal database and submits final forecasts to the shared database.

phase out

See *product phase out event*.

planning administrator

A user responsibility that is defined for Demand Planning. The planning administrator configures the application to meet the business needs of the organization and administers the demand planning process.

planning manager

A user responsibility that is defined for Demand Planning. Planning managers review consolidated plans that have been submitted to the shared database.

planning server

A database that reads data from Advanced Supply Chain Planning and Scheduling, stores the forecasts issued by Demand Planning, and integrates the Demand Planning forecasts into Advanced Supply Chain Planning and Scheduling.

point forecast

The forecast value of a variable defined at any one point, such as at a given level of aggregation, for specified hierarchies of each dimension.

point value

The value of a variable, such as actual or forecast demand, defined at a given level of aggregation for specified hierarchies of each dimension.

polynomial regression

A forecasting method of the nonlinear type in which a linear relation ($y' = a \times x' + b$) is fitted to a transformation of the original data; in this case $x' = \log(x)$ and $y' = \log(y)$. This results in the development of a polynomial model: $(y) = c \times x^a$. Note that this is one of several types of polynomial regression models, and not necessarily the most general form.
See also *nonlinear regression*.

predefined reports

In Demand Planning, a set of preformatted reports that target specific issues. There are predefined reports for forecast accuracy, trend analysis, comparison, distribution, growth, quota, ranking, and review.

product dimension

In Demand Planning, a category of data that denotes a product or group of products. For example, you might have product dimension values such as “sporting goods” and “rackets.”
See also *dimension*.

product introduction event

An event where a new product is introduced. Demand Planning calculates the forecast based on the history or forecast, depending on the model type, of one or a linear combination of many model products using the spread model of a spread model product, which might be the same as the model product.

product phase out event

An event when an existing product is allowed to die. In Demand Planning, a product phase out event is modeled as linear decay in demand.

promotion

Introduction of special schemes, incentives, or advertising to promote the demand and sale of a particular product. In Demand Planning, a promotion is defined as a standard event.

recalculate

In Demand Planning, refers to calculating forecast values at selected points based on modified or new planner inputs, while keeping other forecast parameters the same as before.

reconciliation

Forecasts issued at higher levels of aggregation must be propagated to the lower levels through a top down technique. However, this process must not interfere with the numbers at the lower level, which could be generated from another forecast or for which some actual data might be available. In Demand Planning, reconciliation refers to the process of propagating forecast information from higher to lower levels without loss of information at the lower levels.

reforecast

Generate new forecast values for a selected data range, using modified history, a new history date range, or a different forecast method. A reforecast might also take into account effects such as promotions and new product introductions that had not been accounted for in a previous forecast.

regression

In statistics, a technique for determining the mathematical relation and the associated uncertainties between dependent variables, such as demand; independent variables, such as past demand; and other factors, such as price, promotions and discounts, through linear or nonlinear models. The form of the model could be dictated beforehand, or it could be dictated by the data.

report

A tabular presentation of multidimensional data. Demand Planning supports ad hoc reporting and also includes a set of predefined reports.

residual

Remainder. The residual of a forecasting process refers to the forecast error or the remaining variability that cannot be explained by the forecasting process.

responsibility

Term used to denote a user role defined for Demand Planning. There are four roles: system administrator, planning administrator, planning manager, and planner. These roles represent user levels that are based on needs, permissions, and security.

ROI on forecast

Return of Investment on forecast. Compares the revenue saved by issuing accurate forecast for *n* units of an item with the cost of gathering the data and issuing the forecast.

role

See *responsibility.*

row

A Demand Planning report has three components for displaying multidimensional data: column, row, and page. The row component separates data for the dimension values that run down the report.
See also *down*.

safety stock

Amount of inventory set aside to cover for shortages. Depends on the forecast uncertainties and past performance.

scenario

Forecasts can be generated from multiple sources such as sales, management, marketing, budget, constrained, and unconstrained. Forecasts from each source can also differ in scope, certainty, expectation (for example, optimist versus pessimistic), aggregation level, time horizon, attributes, and so forth. Each forecast or demand plan that is associated with a different forecast situation or cost function represents a forecast scenario. Scenarios are specified in the planning server. The administrator is responsible for submitting a forecast for each scenario. An individual demand planner creates, refines, and submits a forecast for each scenario for his or her segment of the data.

seasonality

Any regular, periodic, low frequency variation in time-varying data such as demand. Seasonalities might be nested. For example, one single time-varying data might show one quarterly variation, while another might show periodicity within quarters.

shared database

The database that stores base measures and forecast from individual demand planners for the entire data in a demand plan. Planners submit forecasts from their personal databases to the shared database where they are consolidated; planning managers review data in the shared database; planning administrators upload data from the shared database to the planning server.

signal to noise ratio

In time series, the ratio of the strength of the underlying signal, which is thought to generate the data, and the noise, which is thought to corrupt the data. This is a

frequency domain tool used in Demand Planning for outlier detection.
See also *noise*.

single exponential smoothing

A forecasting method of the exponential smoothing type in which the current estimate is taken as the geometrically weighted average of past values, and all future values are given this same value. This method is applicable to short term forecasts of non-seasonal data.
See also *exponential smoothing*.

sporadic demand

See *intermittent demand*.

spread model

The method for allocating data using top-down, bottom-up, or middle-out strategies. This could be done using specified weights, or weights that are calculated from history or forecasts.

standard event

Any event other than product introduction or product phase out. These are characterized by event category, event type, priority, modification type, and uplift factor. The modifications are either additions or subtractions of numbers, or a factor of the demand of the product under consideration.

statistical forecast

Historical data are used to generate statistical forecasts in Demand Planning. A variety of methods for generating forecasts are available. The resulting statistical forecasts include an estimate of the forecast error.

submit

In Demand Planning, the process of committing a forecast to the shared database. Demand planners are given forecasting assignments by the Demand Planning administrator and work on their assignments in their personal database. As planners complete their forecasts, they submit them to the shared database.

system administrator

A user responsibility that is defined for the highest level of Demand Planning user. The system administrator is responsible for installing Demand Planning and managing the environment in which it operates.

time dimension

A dimension whose values represent time periods. For example, values in the time dimension could include the following:

- Years such as “1999” and “2000”
- Quarters such as “Quarter 1 - 2000” and“ Quarter 2 - 2000”
- Months such as “February 2000” and “March 2000”

time domain analysis

Analysis of time dependent quantities using the actual values in time as independent variables. Temporal qualifiers such as time elapsed from some start date, might also be used as independent variables.

time series

A set of time-stamped data, such as demand data by the day, that forecast by the day.

time series analysis

Statistical analysis of time series data to determine statistical and other properties, and to often generate forecasts.

top-down

A method of allocating forecasts generated at the highest level of a hierarchy to the lower levels through allocation by a specified spreading rule.

tracking

The process of monitoring demand, historical data, accuracy of historical data, previous forecasts, and the past performance of forecasts.

training

See *calibration*.

trend

A characteristic that measures the inclination of time varying, demand, or other data values to move up or down in an approximate straight line. While trend usually implies linear trend, it is loosely used to indicate other characteristics of data such as variation from mean, periodicity, or nonlinearity.

trend analysis

The process of analyzing data to yield trend estimates.

triple exponential smoothing

See *Holt-Winters.*

uncertainty

The degree of belief associated with a forecast. Uncertainty is measured and reported in terms of one of the following:

- the expected standard deviation of the forecast errors
- the expected upper and lower bonds on the forecasts
- the probability of the forecast being accurate

Uncertainty is useful to understand the expected skill of each forecast, and is an essential input for issuing composite forecasts.

unconstrained forecast

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*.

uplift factor

For a standard event, the factor by which the existing demand must be increased or decreased.

variable

In Demand Planning, a quantity that acts as a placeholder for a single datum or group of data. Demand for a particular product in a specific region is an example of a variable.

variance

In statistics, the square of the standard deviation. In Demand Planning, variance is loosely used to denote the forecast errors.

variant

In Demand Planning, a forecast version and related what-if analyses that planners can create.

view

See *multidimensional*.

verification

The process of determining forecast performance using data that was not used during the forecast process.

what-if analysis

A mechanism that enables planners to formulate ad hoc queries that represent hypothetical but realistic situations.

workflow

See *Oracle Workflow*.

worksheet

A Demand Planning document that enables planners to modify, create, and submit demand forecasts.

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