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

Release R11i

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Oracle Advanced Supply Chain Planning and Oracle Global ATP Server User's Guide, Release R11i

Part No. A81011-01

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.

Contents

3 Setting Up

4 Running Collections

5   Supply Chain Modeling

6 Defining Plans

7 Planner Workbench/User Interface

8   Constraint-Based Planning

11   Performance Management

12   Oracle Global ATP Server

A   Profile Options

B   Oracle ASCP Flexfields

C   ATP Logic

Index

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- Is the information clearly presented?
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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 User's Guide.*

This document is intended for planners who will use Oracle Advanced Supply Chain Planning (ASCP) and Oracle Global ATP Server in their day-to-day operations. In contrast to the *Oracle Advanced Planning and Scheduling Implementation Manual,* which focuses on high-level conceptual issues and *why* they must be resolved in certain ways, it describes *how* to perform common tasks using Oracle ASCP and Oracle Global ATP Server.

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 describes how Oracle ASCP functionality relates to a planner's daily business processes.

- Chapter 3 instructs you how to set up Oracle ASCP.

- Chapter 4 describes the data collections process and architecture.

- Chapter 5 instructs you how to set up a supply chain.

- Chapter 6 describes features that help you select a plan that best satisfies your business requirements.

- Chapter 7 describes the Planner Workbench, a powerful graphical tool that lets you perform advanced simulation, review plan performance, and take actions based on system recommendations.

- Chapter 8 discusses constraint-based planning and scheduling, an approach for balancing material and plant resources while meeting customer demand.

- Chapter 9 describes Oracle ASCP's optimization capabilities.

- Chapter 10 describes Oracle ASCP's advanced simulation capabilities which let you rapidly simulate changes to a plan and respond to changing conditions.

- Chapter 11 discusses Oracle ASCP's integration with Oracle Business Intelligence System (BIS), a performance management tool.

- Chapter 12 discusses Oracle Global ATP Server, a tool that enables sophisticated, fast, accurate, and flexible order promising

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 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 Advanced Supply Chain Planning and Oracle Global ATP Server Implementation Manual

This document instructs system administrators and planning groups how to install and configure Oracle ASCP and Oracle Global ATP Server. It also provides instructions for setting up a demand plan using Oracle Demand Planning.

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
500 Oracle Parkway
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

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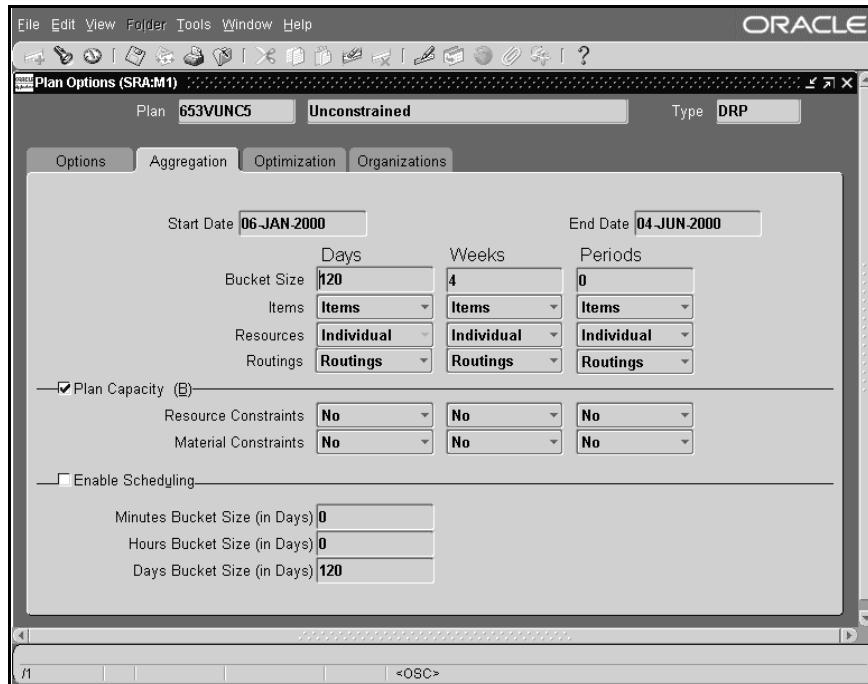
This comprehensive solution lets you generate and deploy long term plans that are optimal for meeting your business objectives, and are feasible to execute in the short term. You can specify flexible levels of granularity and control for the following:

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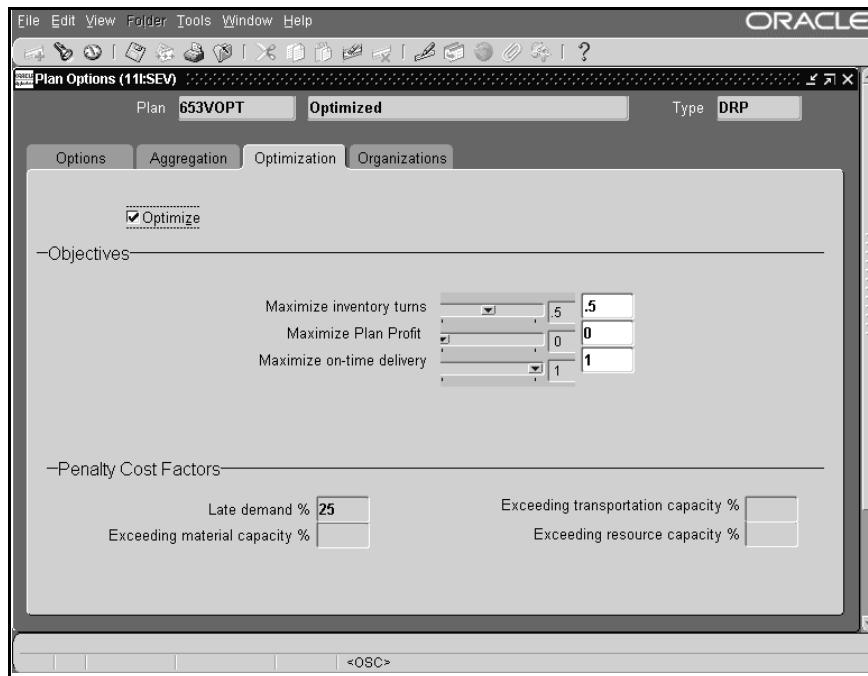
The plan objective is derived by combining and weighting chosen objectives. Optimization uses sourcing rules to determine the best possible sources of supply, considering all your material, resource, and transportation constraints.

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
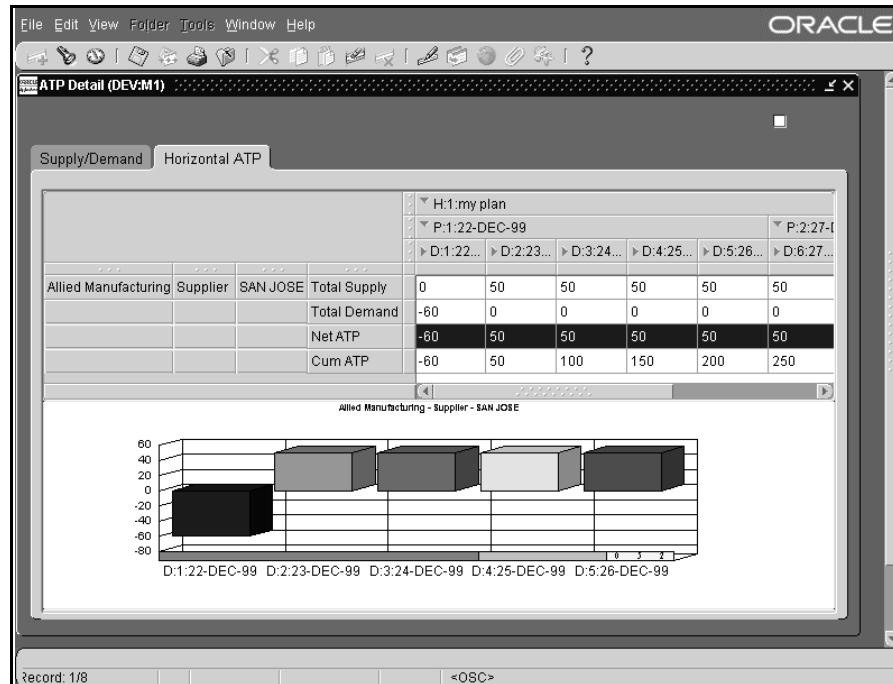
Collections Built-in collection programs let you collect data from any Oracle Applications instance and transmit the data to the planning or order promising server. You can also collect data from legacy applications via interface tables. This capability provides high availability and an extremely accurate 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
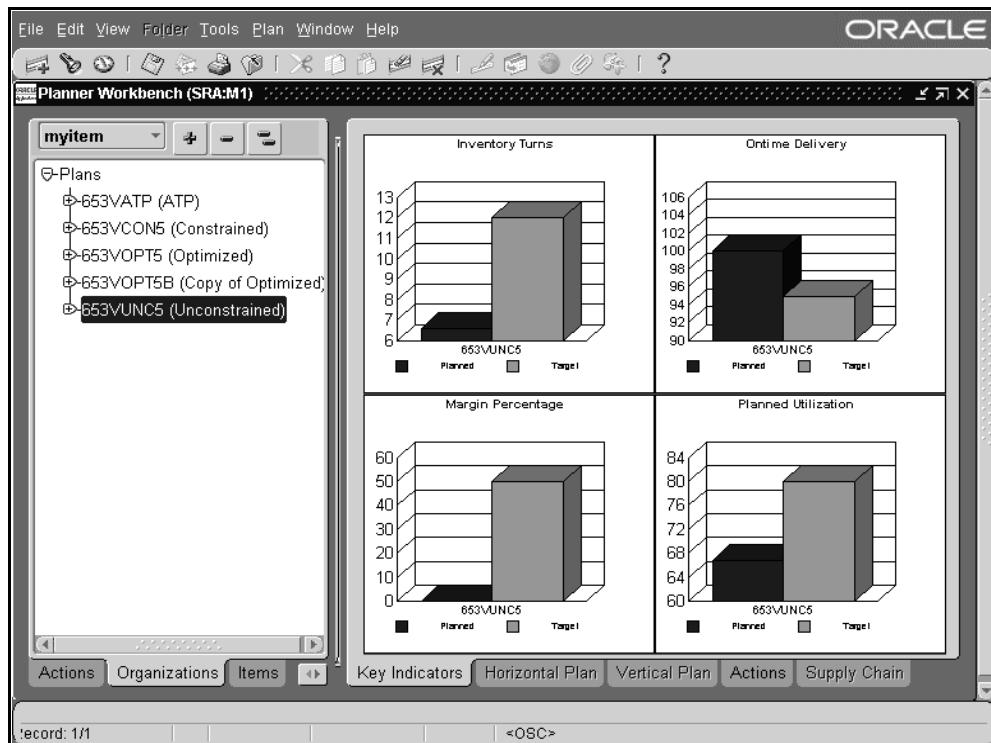
This screen gives you a quantitative assessment of the quality of a plan, based on its business objectives. You can see instantly how a plan will perform at improving profitability, on time delivery, inventory turnover, and resource utilization. Selecting indicator graphs displays more detailed additional 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
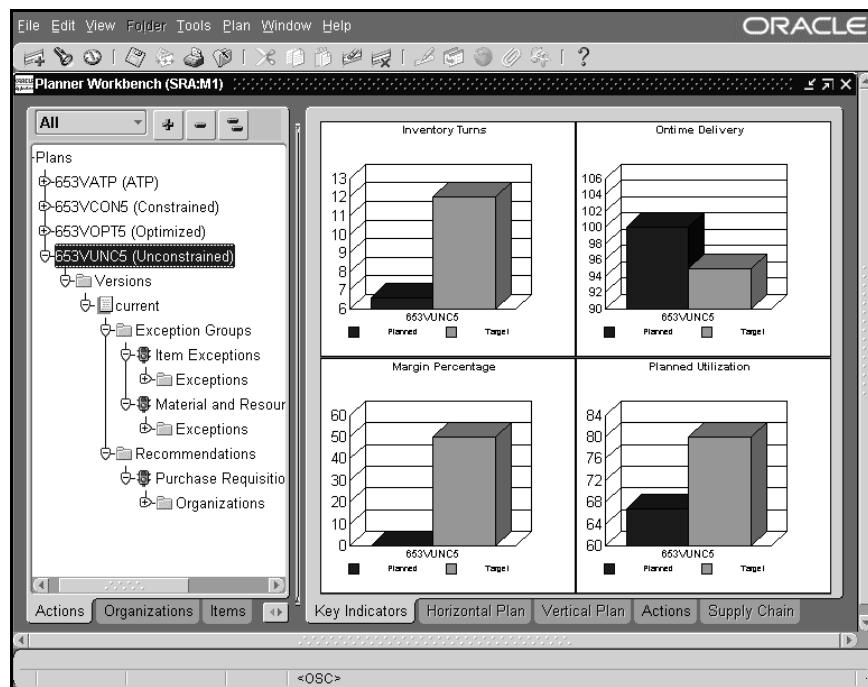
Graphics

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

Overview of Planning Processes

Topics covered in this section include the following:

- A Day in the Life of a Planner
- Specify Sources of Demand
- Create a Plan
- Launch the Plan
- Review Key Performance Indicators (KPIs)
- Review Exceptions
- Review Workflow Notifications
- View Pegged Supply and Demand
- Modify Objectives
- Modify Supply/Demand
- Modify Resources
- Modify Supplier Parameters
- Run Net-Change
- Release or Firm Orders

A Day in the Life of a Planner

This section describes an end-to-end planning flow that a planner might perform during the course of a planning cycle. The flow demonstrates the key features of Oracle Advanced Supply Chain Planning (hereafter, Oracle ASCP) that a typical planner would use in the course of his or her work.

The general flow that occurs during a planning cycle is as follows:

Figure 2–1   A Day in the Life of a Planner:
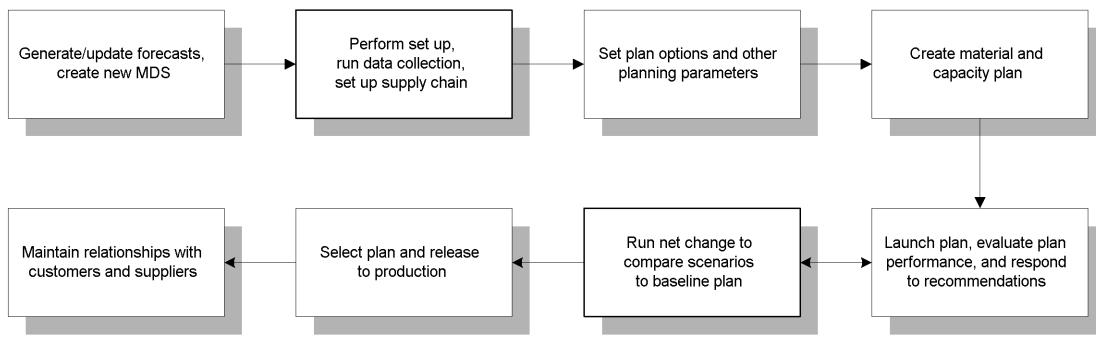
Specify Sources of Demand

▶▶ **To specify sources of demand:**

1. Load the adjusted (unconstrained) forecasts into a Master Demand Schedule (MDS) for use by Oracle ASCP.

   Note: You can generate forecasts using Oracle Inventory, Oracle Master Scheduling/MRP and Oracle Supply Chain Planning, or Oracle Demand Planning. You can also import forecasts from a third-party system via the open Applications Programmatic Interface (API).

2. Choose MDS > Names to create the name of a new MDS or to use an existing MDS.

3. Choose MDS > Source List to associate individual forecasts with your MDS.

4. Individual forecasts for customers, sales regions, an so on, can be loaded into a single MDS so that all designated forecasts can be planned at once.

5. Choose MDS > Load-Copy-Merge to load merge your new or updated MDS with another MDS.

If you are using basic forecasting and MDS functionality found in Oracle Master Scheduling/MRP and Oracle Supply Chain Planning, see "Overview of Forecasting" in the *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide.* If you are using Oracle Demand Planning, see the *Oracle Demand Planning User's Guide.*

Create a Plan

After an MDS has been defined, an MPS, MRP, or DRP plan/schedule can be created.

▶▶ **To create a plan:**

1. Choose [MPS, MRP, or DRP] > Names to create a new plan/schedule or modify an existing plan/schedule.

2. Click the Plan Options button to specify plan options.

3. Click the Plan Organizations button to specify organizations to be planned.

4. Load MDS plans in the Demand Schedules section of the Plan Organizations form.

5. Save your work.

> **Note:** The MRP, MPS, or DRP plan/schedule that you have created should cover all organizations that have been specified on your MDS(s).

See "Defining Plans" for more information.

Launch the Plan

After you have created your MRP, MPS, or DRP plan/schedule and saved it, choose the plan from [MPS, MRP, or DRP] > Names and click the Launch Plan button.

You can view the run status of your plan by choosing [MPS, MRP, or DRP] > View Plan Status.

Review Key Performance Indicators (KPIs)

Once your new plan has completed running, you can evaluate the performance of the plan by comparing it to Key Performance Indicators (KPIs). Evaluating a plan based on its impact to KPIs is a good way to see the high level impact of the plan without doing off-line analysis and looking at plan details to see which demand is fulfilled on time and which is not.

The Key Indicators compare actual plan values to target values defined in the Target Repository. Evaluating plans against KPIs lets you select the plan which best meets organizational objectives that you have defined.

You can drill down to the trend over time using the right-mouse menu.

▶▶ **To review KPIs for a plan:**

1. Navigate to the Planner Workbench.

2. Choose either the Organizations tab or the Items tab in the left pane.

3. Select the Key Performance Indicators tab in the right pane.

4. In the left panel, select the plan you want to evaluate or the plans you want to compare.

5. View the results on the graphs in the right panel.

See "Planner Workbench/User Interface" and "Performance Management" for more information.

Review Exceptions

After you have evaluated your plan(s) based on KPIs, you can evaluate a plan based on the number and types of exceptions it generates. Reviewing the exceptions generated by a plan lets you evaluate a plan's performance in more detail than a KPI comparison provides. For each exception type displayed in the Planner Workbench, you can click and drill down on an exception to get more detailed information about the nature of the exception.

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 replan simulations, you can compare different versions of the same plan or analyze the strengths and weaknesses of a single plan.

For guidelines on evaluating and interpreting the exceptions generated by your plan, see "Performance Management."

To review exceptions for a plan:

1. Navigate to the Planner Workbench.

2. Choose the Organizations or Items tab in the left pane and select the plan(s) for which you want to view exceptions.

3. Choose the Actions tab on the right portion of the screen. Exceptions are displayed by exception type on the top portion of the screen. Exception counts can be viewed graphically at the bottom of the screen.

4. Double click on an exception to drill down to detail.

Refer to "Performance Management" for more information.

Review Workflow Notifications

Oracle ASCP's powerful collaboration features enable you to automate and streamline your interactions with customers and suppliers.

You can automate the processing of exceptions which lets you take corrective action more quickly and efficiently, driving overhead costs out of your process.

You can define the process that a Workflow Notification should follow which includes the routing for the exception notifications, actions available to the recipient of the notifications, and the approval steps. The messages can be viewed either in Applications (see "Review Exceptions") or via e-mail. Certain response actions may be required.

> **Note:** Oracle ASCP comes with four standard workflow processes which generate various types of exceptions:

Process	Exception Types
Item 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
Project Workflow	■ Items with shortage in a project ■ Items with excess in a project ■ Items allocated across projects
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

See the *Oracle Workflow Guide* for more information on creating notifications and building new workflows.

View Pegged Supply and Demand

You can easily analyze the impact of changing a supply or demand order at any level of your bill of material using the powerful graphical pegging feature. Full pegging traces supply information for an item to its corresponding end demand details. Full pegging can also link a demand order to all corresponding supply. You can trace a purchased item or subassembly shortage to the sales order that would be affected. You can use this information to prioritize critical material and capacity resources.

To use graphical pegging you must select Pegging in the Plan Options window. You must also have the Pegging item attribute (in Oracle Inventory) set to one of the pegging options.

See "Planner Workbench/User Interface" and "Item Attribute Controls"in the *Oracle Inventory User's Guide* for more information.

Modify Objectives

If you are unsatisfied with the results of your plan, you may wish to change your optimization objectives to improve the plan's performance against KPIs or reduce the number of exceptions.

Available Supply Chain Optimization objectives are:

- Maximize Inventory Turns

- Maximize Plan Profit

- Maximize On-time Delivery

- Maximize Planned Utilization

▶▶ **To run an optimized plan:**

Choose [MPS, MRP, or DRP] > Plan Options > Optimization tab to select a baseline plan and adjust optimization objectives or associated penalty costs.

Once you have changed objectives, you can run a new, separate plan, or you can run a simulation in net change mode to view only the differences between the baseline plan and the simulated plan.

See "Optimization" and "Simulations" for additional information.

Alternatively, you may evaluate your plan or check feasibility based on available material and resources by running an unconstrained plan.

▶▶ **To run an unconstrained plan:**

Choose [MPS, MRP, or DRP] > Plan Options > Aggregation tab to choose material or resource constraints. Once you have made the change you can run a new, separate plan, or you can run a simulation in net change model to view only the differences between the baseline plan and the simulated plan.

See "Optimization" and "Simulations" for more information.

Modify Supply/Demand

After you have run additional plans or simulations based on changes to your optimization objectives, you may still be unsatisfied with the results of your plans.

At this point, you may wish to consider the impact to changing demand and supply levels. You can quickly and easily simulate the impact of changes in inventory, purchase order schedules, and product demand. Changes to demand can be performed directly in your MDS or to individual forecasts associated with your MDS. Changes to supply may consist of changes to material availability (for example, supplier capacity) or to resource availability. You can make changes to either capacity or materials and see the effects of these changes on your plan.

▶▶ **To modify demand/supply:**

1. Navigate to the Planner Workbench.

2. Choose Tools > Supply/Demand.

3. Select the Supply/Demand you want to change from the list of values.

4. Make the desired changes and close the window.

Modify Resources

To increase available supply, you may wish to modify resource availability.

There are a number of ways in which to modify resources:

- Add additional production resources (for example, add shifts).

- Define alternate resources available for producing particular items.

- Change the resource consumption for an item (for example, change the amount of an item that can be produced in a given amount of time).

▶▶ **To modify resources:**

1. Navigate to the Planner Workbench.

2. Choose Tools > Resources.

3. Make the desired changes and close the window.

Modify Supplier Parameters

At this point you might choose to modify supply parameters such as Supplier Capacity, Supplier Order Modifier, Supplier Tolerance Fence. For more information see "Supply Chain Modeling."

Run Net Change

After you have changed optimization objectives, demand, supply or resources, you can run simulated plans in net-change mode to view only the differences of the simulated plan compared to a baseline plan.

Net-change is used for:

- changes in item supply and demand, resource availability

- changes in your objectives

- changes to demand priority rules

- changes to sourcing

- changes to BOM/Routing effectivity

See "Running Net Change Mode Simulations" for more information.

Review a Constrained Forecast that Results from Net Change Planning

The forecast or MDS that is loaded into an MRP, MPS, or DRP plan/schedule is generally a prediction of total customer demand, regardless of your company's ability to produce the demand.

After an MRP, MPS, or DRP plan/schedule has been run based on an unconstrained forecast/MDS as an input, the resulting plan that has been constrained by material and resource availability is a demand plan constrained by production capabilities.

The easiest way to view the differences between an unconstrained demand plan and a constrained demand plan is to view the exceptions that occur after MPS, MRP, or DRP is run with material and resource constraints set to Yes in plan options.

The exception set "Late forecast for customer demand" will show all demand that could not be met due to material and resource limitations.

An alternate way to compare an unconstrained demand plan to a constrained plan is to run your MRP, MPS, or DRP once with material and resource constraints set to No in plan options and run a second plan with material and resource constraints set

to Yes. The two plans can then be compared side by side via KPI comparisons or exception comparisons.

Release or Firm Orders

▶▶ To release or firm orders:

1. From the Planner Workbench, choose Tools > Supply/Demand.

2. In the Order tab, choose an organization and an item then choose to release or firm orders for that organization or item.

    You can also redefine release properties for the organization or item.

3

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
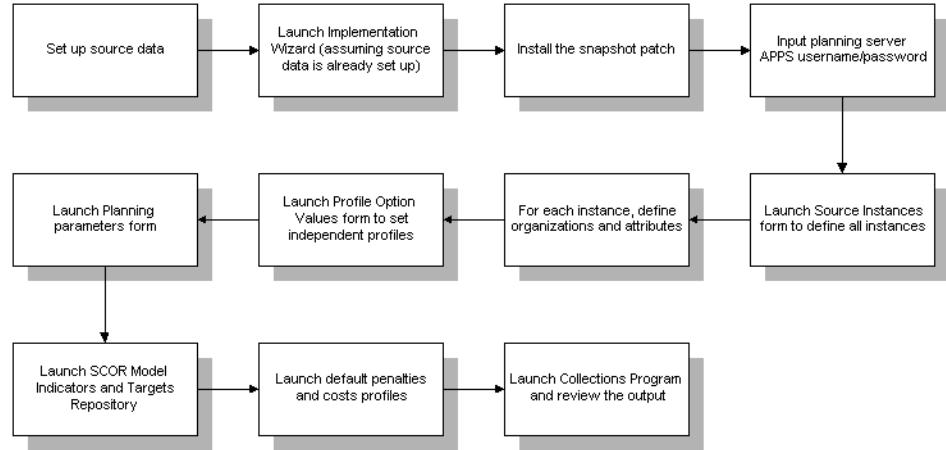
Setup Steps

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:

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 3–1   The Change Organizations window
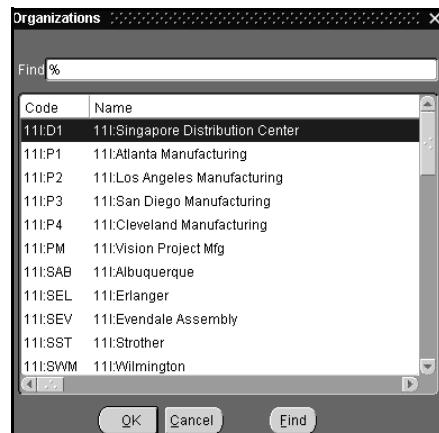
2. Choose Change Organization

3. Select an organization in the Organizations window.

4. Choose OK.

4

Running Collections

Topics covered in this section include the following:

- Overview of Running Collections
- Definitions
- Collection Strategy
- Architecture
- Collection Setup Steps

A Day in the Life of a Planner

Generate/update forecasts, create new MDS	→	Perform set up, run data collection, set up supply chain	→	Set plan options and other planning parameters	→	Create material and capacity plan

Maintain relationships with customers and suppliers	←	Select plan and release to production	←	Run net change to compare scenarios to baseline plan	←	Launch plan, evaluate plan performance, and respond to recommendations

Overview of Running Collections

This section describes the architecture used in the collection of planning data from multiple operational sources into Oracle ASCP. These sources could be different versions/instances of Oracle Applications or other legacy systems. Oracle ASCP consists mainly of a data store based on the planning data model which is exposed through interface tables. The data is pulled from the designated data sources into its planning data store; data sources are responsible for synchronization as changes are made to the data sources. The configurability of the pull strategy is enabled through a pull program based on AOL concurrent program architecture.

The data collection process consists of the pull process and the Oracle Applications Data Store (ADS) Load. The collection process lets you plan across Oracle Application Version 10.7 or higher. It supports several configurations. You can run complete or incremental refresh. You can also choose the frequency of refresh.

Basic data cleansing is provided as a part of the data collection process. User specific data cleansing can be done using the Oracle Applications concurrent manager to add Cleansing Stage between Data Pull and ADS Load.

Definitions

You should be familiar with the following terms before examining the data collections architecture:

Oracle Applications Data Store (ADS) Represents all the source data tables used to build and maintain the planning data store within Oracle ASCP. It represents a single source data instance.

Operational Data Store (ODS) Part of Oracle ASCP that represents all the planning data tables that act as destination for the collected data from each of the data sources (both ADS and Legacy). This acts as the input for the snapshot portion of the planning process. ODS and PDS share the same physical tables where a special plan identifier (for example, -1) is used for distinction.

Planning Data Store (PDS) Represents all the tables within Oracle ASCP which encompass those in the ODS and other output tables from planning, including copies/snapshots of the input data used for the current planning run striped by the appropriate plan identifier.

Data Collection Data collection consists of the following:

- Pull program

  Collects the data from the ADS, and stores the data into the staging tables. This pull program is a registered AOL concurrent program that could be scheduled and launched by a system administrator. If you are using a legacy program, you must write your own pull program.

- ODS Load

  A PL/SQL program which performs the data transform and moves the data from the staging tables to the ODS. This collection program is a registered AOL concurrent program that could be scheduled and launched by the system administrator.

Collection Workbench Collection Workbench is a centralized data repository providing collected data from the source. Data from different source instances can be viewed using the Collection Workbench. The functionality here is similar to the Planner Workbench functionality. For more information on the Planner Workbench, see "Planner Workbench/User Interface."

Collection Strategy

Major features included for the data collection process include:

- Multiple Source Instances
- Pull Architecture
- Detect Net Changes to Synchronize Oracle Applications and Oracle ASCP
- Multi-Process Collection Architecture
- Data Consolidation
- Projects/Tasks, and Seiban Numbers
- Oracle Applications Version and RDBMS Version
- Support for Several Configurations

Multiple Source Instances

You can register any number of source data instances and non-Oracle data sources on each Oracle ASCP installation.

Pull Architecture

You can collect new source data instances into Oracle ASCP with minimal impact. The data is pulled from the source data instance by Oracle ASCP. Each instance can have its own refresh interval. A failure in one instance will not affect data collections from other instances.

Detect Net Change to Synchronize Oracle Applications and Oracle ASCP

You can synchronize the data in Oracle Applications and Oracle ASCP with the net changes identification and incremental maintenance functions.

Multi-Process Collection Architecture

You can enhance the performance of the pull program by distributing the tasks to multiple collection workers. The number of workers could be controlled by a profile option. Specify the number of workers in the Parameters window.

Data Consolidation

The collection program can consolidate the following entities across instances based on the corresponding user defined key.

Entity	User Key
MTL_SYSTEM_ITEMS	Concatenated Item Segments
MTL_CATEGORIES	Concatenated Category Name
MTL_CATEGORY_SETS	Category Set Name
PO_VENDORS	Vendor Name
PO_VENDOR_SITES	Vendor Site Code
RA_CUSTOMERS	Customer Name
RA_SITE_USES_ALL	Customer Name Site Use Code Location Operating Unit
Unit Of Measure	UOM Code

For all the entities not described in the table, instance ID together with the entity key in each instance uniquely identifies each row.

Projects/Tasks, and Seiban Numbers

You can consider Projects, Tasks, and Seiban Numbers to be unique within the context of an Oracle Applications instance; no consolidation is required.

Oracle Applications Version and RDBMS Version

You can plan across Oracle Applications version 10.7 or higher.

	Version of RDBMS	
Version of Oracle Applications	8.0	8i
10.7	Y	Y
11.0	Y	Y
11i	NA	Y

Support for Several Configurations

You can perform centralized and decentralized configurations based on the scale of the enterprise and specific business needs. Source data applications and Oracle ASCP can reside on one server, or on separate servers.

Architecture

Oracle ASCP's data collection architecture, shown below, depicts the data objects, procedures, and data flow between source data and Oracle ASCP. The major repositories are ADS, ODS, and PDS. Procedures enable data cleansing, data collecting, data communication, and net-change handling between data repositories.

When Oracle ASCP and its source data reside on the same instance, communication between them is enabled by PL/SQL based public API procedures or interface tables. In a distributed environment, procedure calls are made using database links.

Data Collections Architecture
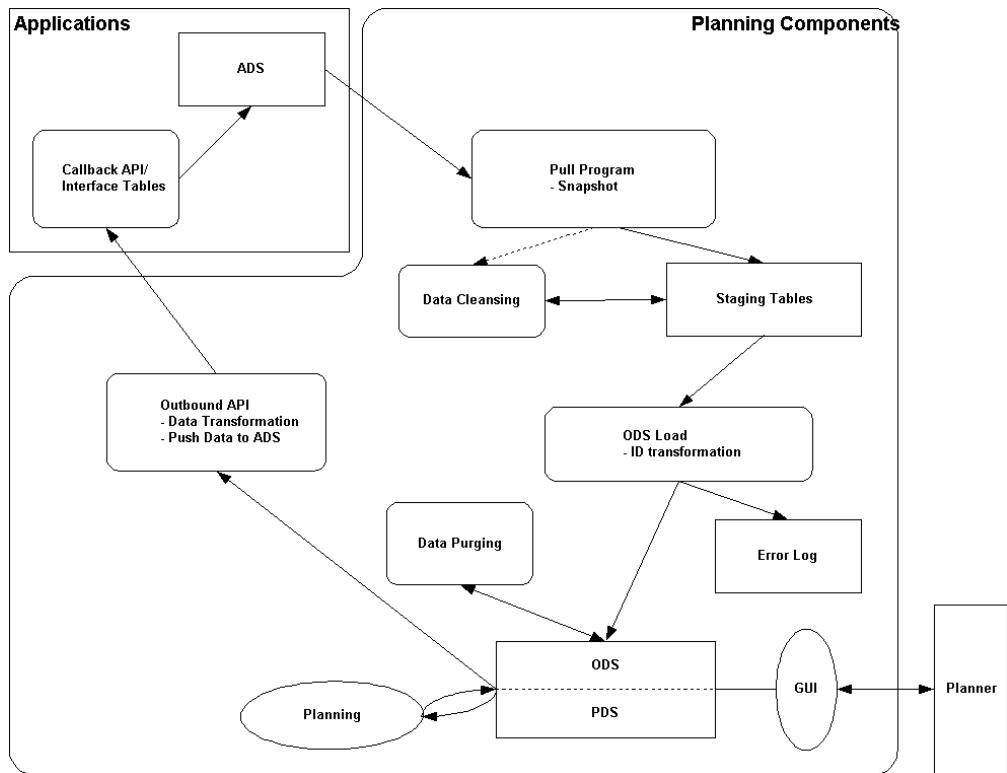
Supported Configurations

Oracle ASCP supports the following configurations for installation and deployment.

- centralized planning
- decentralized planning

These configurations offer you enough flexibility to design a mode of planning that suits your business objectives. Both configurations are supported using a consistent architecture as outlined in the previous section. The sole distinction is that centralized planning uses database links to pull data into the Oracle ASCP data store.

Centralized Planning

The following figure shows the centralizedcentralized planning configuration:

Centralized Planning
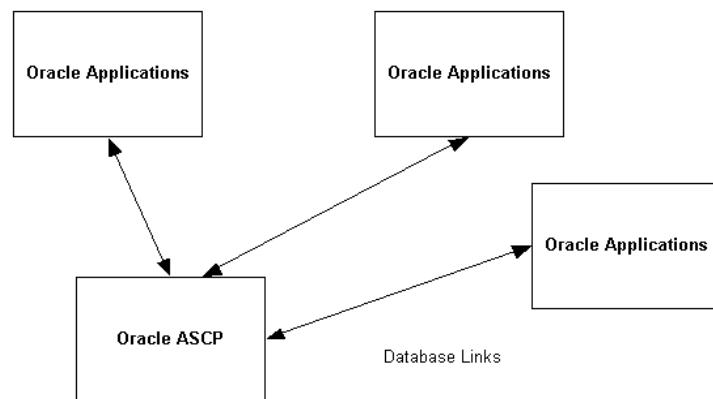
Oracle ASCP works as a central Planning Server across several source data instances. The collection program is installed on the planning server and the data stripped by instance_id is moved into staging tables within Oracle ASCP during the data collection process.

After the planning process, results can be pushed back to each instance.

Decentralized Planning

The following figure shows the decentralized planning configuration:

Decentralized Planning
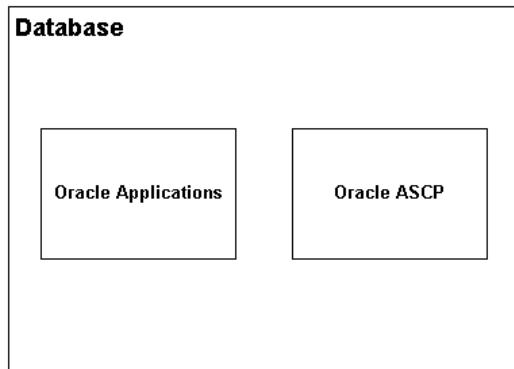
Oracle ASCP and its source data reside in the same database. No database link is required in this case. Two components can communicate through the planning object APIs and the interface tables defined in Oracle Applications.

In this configuration, the following simplified architecture is adopted, and the data transformation is not required.

Simplified Data Collections Architecture
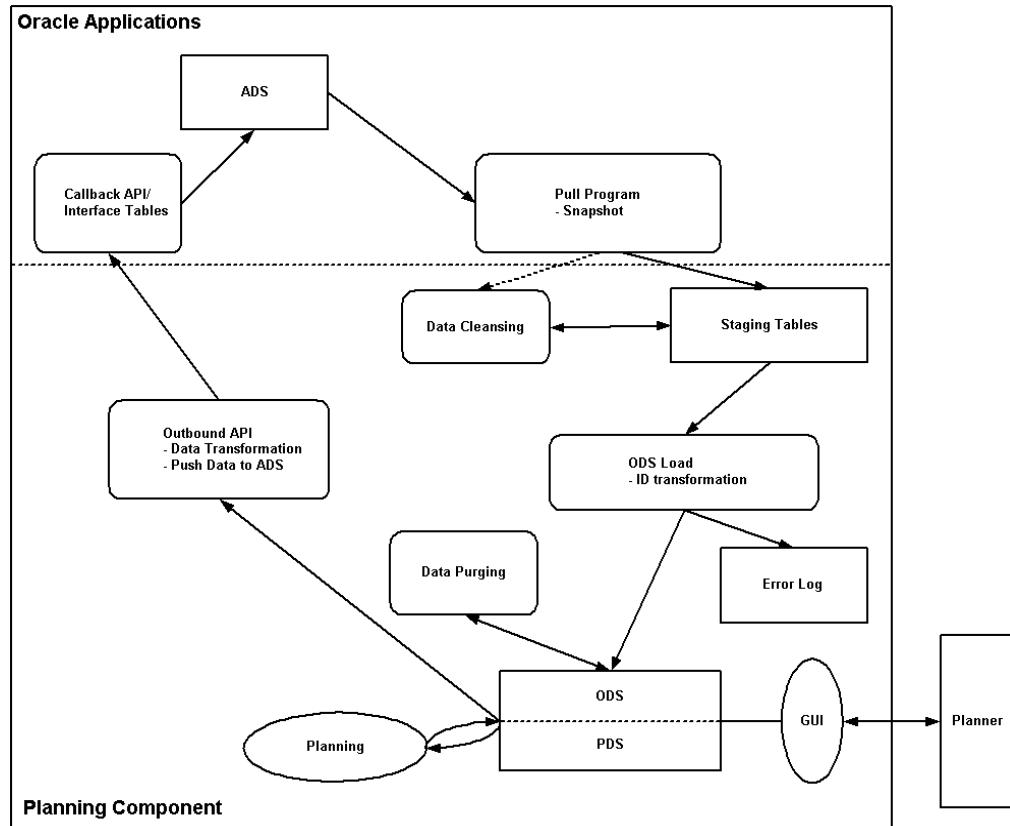
Collection Setup Steps

▶▶ **To set up collections:**

   1. From the Navigator, choose Setup > Instances.

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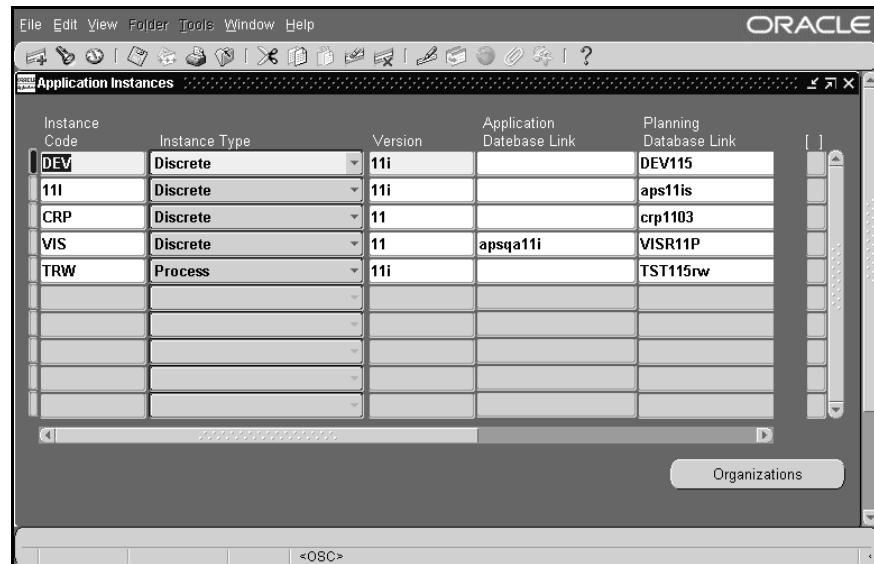
   2. Complete the following fields and flags in the Applications Instance window.

   > **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.

Field/Flag	Description
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.

3. Set up organizations by clicking the Organizations button.

The Organizations wIndow
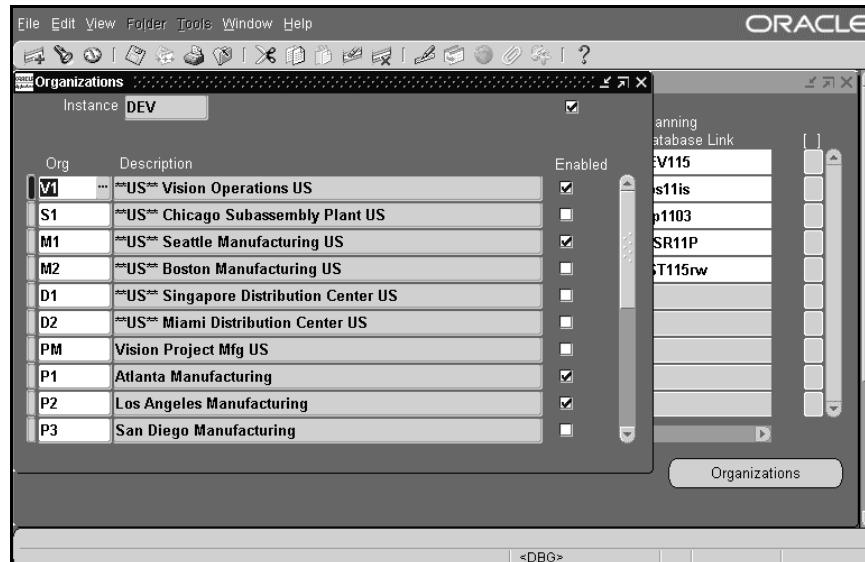
4. Select the organizations for a particular instance.

5. Close the Organization window.

6. Save the Instance Definition setup.

7. From the Navigator, choose Collection > Data Collection.

The Planning Data Collection window appears. When you try to enter Data Pull parameters, the Data Pull Parameters window appears.

The Data Pull Parameters Window
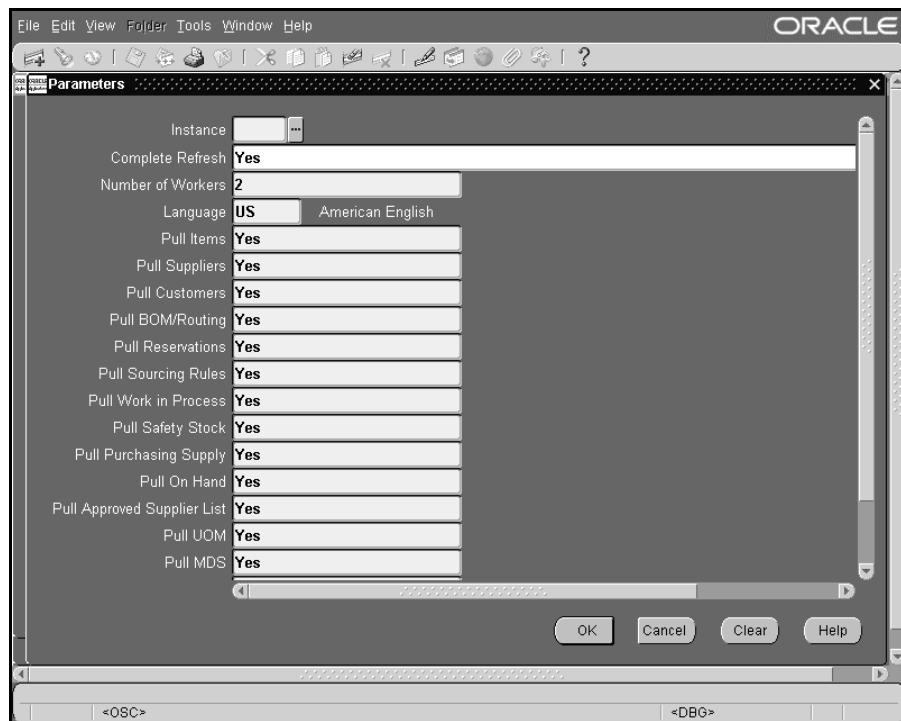
8. Set up parameters in the Data Pull Parameters window:

Parameter	Values
Instance	Instance Code you created in Step 1
Complete Refresh	Select Yes for a complete refresh, No for an incremental refresh (net change mode). Complete refresh collects all data. Incremental Refresh collects only the incremental changes in the transactional data since the most recent refresh.
Number of Workers	One or more, this could be increased to improved the performance (parallel process).

Parameter	Values
Language	List of values
Pull Items	Yes or No (default is Yes)
Pull Suppliers	Yes or No (default is Yes)
Pull Customers	Yes or No (default is Yes)
Pull BOM/Routing	Yes or No (default is Yes)
Pull Reservations	Yes or No (default is Yes)
Pull Sourcing Rules	Yes or No (default is Yes)
Pull Work in Process	Yes or No (default is Yes)
Pull Safety Stock	Yes or No (default is Yes)
Pull Purchasing Supply	Yes or No (default is Yes)
Pull On Hand	Yes or No (default is Yes)
Pull Approved Supplier List	Yes or No (default is Yes)
Pull UOM	Yes or No (default is Yes)
Pull MDS	Yes or No (default is Yes)
Pull MPS	Yes or No (default is Yes)

9. Click OK.

When you try to enter ODS Load parameters, the ODS Load Parameters window appears.

The ODS Load Parameters Window
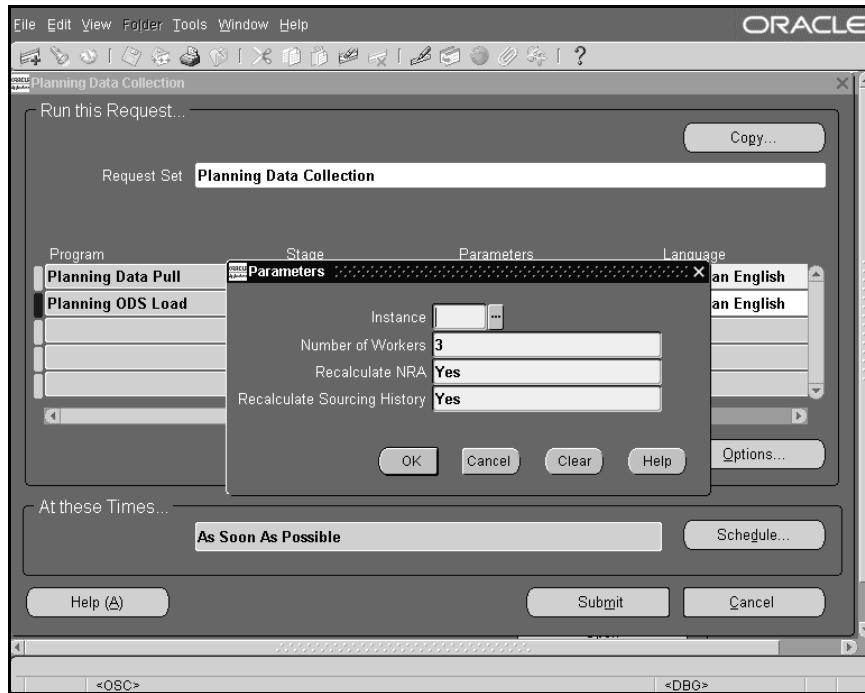
10. Set up parameters in the ODS Load Parameters window.

Instance	Instance Code you created in Step 1
Number of Workers	Number of workers
Recalculate NRA	Set to Yes when adding additional capacity to existing resource/WIP line in source Instance; Set to No when adding new resource/WIP line in source Instance when there is no change to resource(s) in source Instance. Defaults to Yes.
Recalculate Sourcing History	If Org 1 Itemxxx is transferred from Org 2: set to Yes to recalculate "accumulated transaction" between these two organizations – data is in Org-Item level. Defaults to Yes.

11. Click on the Schedule button to open the Schedule window.

> **Note:** If you want to perform an incremental refresh frequently, use this feature.

The Schedule WIndow
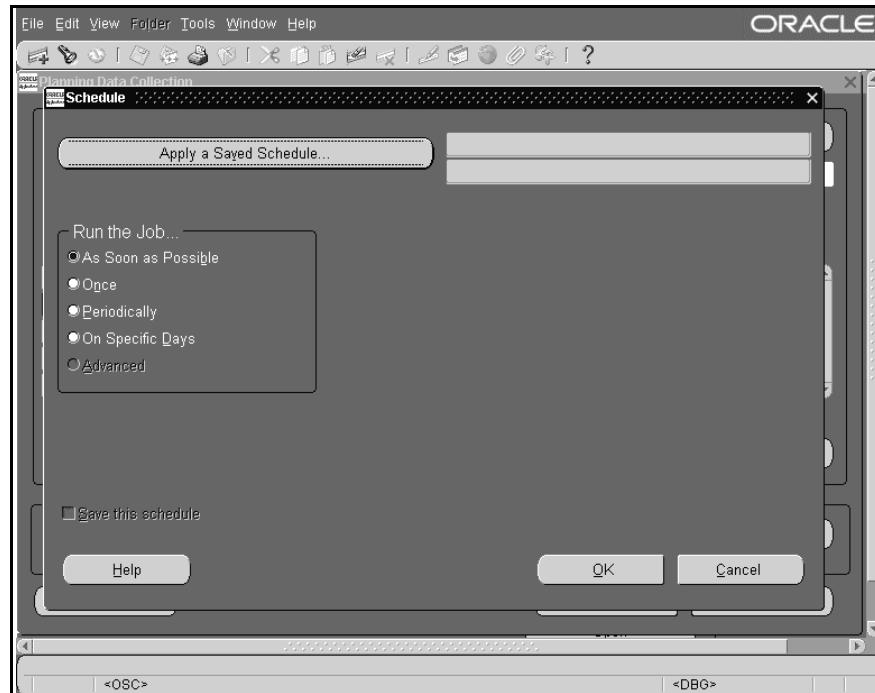
You have complete control over the timing and frequency of the collection of data from the transaction systems, as well as the timing and frequency of planning. You can manage the balance between network traffic and the need to monitor current status in your plans.

12. Select a frequency for running the job in the left pane. Complete any additional fields that appear based on your selection.

13. Click OK.

14. Choose Submit in the Data Collection Form

15. From the toolbar, choose View > Request to view the status of the collection process.

The Find Requests window displays.

16. Select a type of requests to view then select Find.

The Requests Window displays data collection progress.

> **Note:** Data cleansing is sometimes performed between the data pull and ODS load. Oracle provides some basic ID transformation for data cleansing. You can add data cleansing tools/programs to modify data in the staging tables to address your needs. For more information on data cleansing, see the *Oracle ASCP and Oracle Global ATP Server Implementation Manual*.

17. After the collection process completes, view your results.

18. From the Navigator window, choose Collection > Workbench.

The Collection Workbench
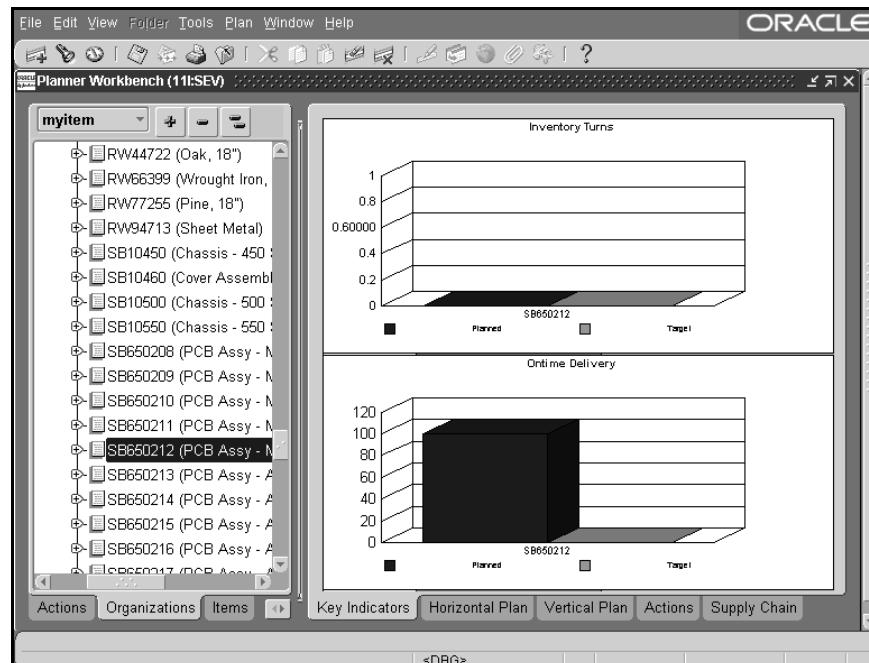
Notice that data is brought over from selected instances.

5

Supply Chain Modeling

Topics covered in this section include the following:

- Overview of Supply Chain Modeling

- Setting up the Supply Chain

- Setting Supplier Capacity Constraints

- Allocating Demand to Suppliers

- Viewing the Supply Chain

- Performing Tasks on Destination Data

A Day in the Life of a Planner
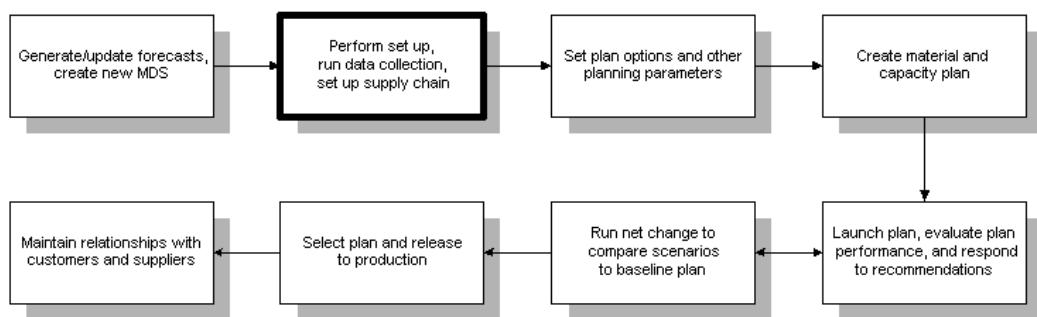
Overview of Supply Chain Modeling

Oracle ASCP is a powerful tool that integrates manufacturing and distribution into a single planning process. With it, you can generate plans that include the entire supply chain. In a single step you can schedule and plan material and distribution requirements for multiple organizations, or centrally plan the entire enterprise. You can also include customer and supplier inventories in the supply chain planning process.

Oracle ASCP lets you plan finished products, as well as intermediate assemblies and purchased items, for all facilities in your supply chain. Material plans for feeder plants and distribution centers automatically consider requirements originating from any number of other facilities. You can load planned order demand from multiple using–organizations into the master schedule of supplying organizations.

In addition to planning the material requirements of your supply chain, you can plan the requirements for your distribution network. This includes all warehouses, distribution centers, and any location that ships products. You can use these distribution requirements plans (DRPs) as input for your material plans.

You can combine centralized distribution and material planning, for items with significant inter-organization supply or demand, with subset planning, where you prefer autonomous, local planning. Output from the central plan can go into plant–level material plans and vice versa.

Oracle ASCP gives you a transparent view of the virtual enterprise, where all inventory locations participate in the planning process.

Setting up the Supply Chain

You can define the rules that govern the movement of goods throughout your supply chain. This network is the backbone of your material flow, but you can further control its behavior by defining a time-phased replenishment strategy. Oracle ASCP implements this strategy with sourcing rules and bills of distribution (BODs).

Sourcing rules and BODs both describe sourcing supply; in other words, for any organization, they answer the question "from where do I get part A?" (They never say "where do I send part A.") Sourcing rules apply the answer to one organization or all the organizations in your enterprise. BODs define this behavior across multiple organizations (not just one or all).

Defining Sourcing Rules

You can define sourcing rules that specify how to replenish items in an organization, such as purchased items in plants. Sourcing rules can also specify how to replenish all organizations, as when the entire enterprise gets a subassembly from a particular organization.

If there is a conflict between a sourcing rule and a bill of distribution, the sourcing rule takes precedence. For instance, if you assign a bill of distribution to AUS that tells it to source a part from NYC, AUS can still define a sourcing rule to source the part from SAC. In this case, the local sourcing rule overrides the bill of distribution.

For more information on defining sourcing rules, see "Defining Sourcing Rules" in the *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide.* For information on viewing sourcing rule assignments, see "Viewing the Supply Chain" in this document.

Defining BODs

You can define BODs that specify a multilevel replenishment network of warehouses, distribution centers, manufacturing centers (plants), and trading partners.

For more information on defining BODs, see "Defining Bills of Distribution" in the *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide.* For information on viewing BOD assignments, see "Viewing the Supply Chain" in this document.

Defining Assignment Sets

Once you have defined your sourcing rules and BODs, you must assign them to particular items and/or organizations. These assignments are grouped together in assignment sets. This is where your various sourcing strategies define a particular supply chain network.

Each assignment set to represents selection of organizations and/or items you want planned. To influence the planning process, you must include an assignment set in your plan options.

In an assignment set can assign your sourcing rules and BODs at different levels, as follows:

- Item-Organization
- Category-Organization
- Item

- Organization
- Global

These levels allow you to assign a replenishment rule to as many or as few items as possible. For example, a category of items could be defined as packaging material, and a sourcing rule that identifies the suppliers could be assigned.

For more information on assigning a sourcing rule or BOD, "Assigning Rules and Bills" in the *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide.* For information on viewing sourcing rule and BOD assignments, see "Viewing the Supply Chain" in this document.

Assignment Hierarchy

In the preceding list of assignment levels, rows above override rows below. For instance, Item-Organization overrides Item.

For information on viewing assignments, see "Viewing the Supply Chain."

Setting Supplier Capacity Constraints

You can specify the time-phased capacity of individual suppliers to specific items in Oracle Purchasing. You can allocate planned orders using the constraints of the suppliers – planned orders are assigned supplier sources relative to their capacity. Planning uses the ranking information you specify and first attempts to source the planned orders with the primary sources. If the capacity to fulfill the demand is not available, alternative sources are used.

Supplier capacity is specified in units per day over a designated time period. Supplier capacity accumulates if not used on a particular day. For example, if a supplier's capacity is 100 units per day from 1/1/99 to 1/10/99 and no units are ordered from the supplier from 1/1/99 to 1/3/99, then planning considers a total of 1000 units to be available from 1/4/99 to 1/10/99. See "Allocating Demand to Suppliers" for more information on ranking and supplier capacity.

Setting Supplier Capacity by Time Periods

Supplier capacity can vary by time period. You can specify one daily capacity for period 1 and a different capacity for period 2. Time periods are specified from a start date to an end date.

▶▶ To set capacity by time period:

1. Choose Purchasing > Supply Base > Approved Suppliers List.

2. Choose the searchlight icon in the toolbar to search for an item.

   Supplier information displays.

3. Choose a supplier by clicking in the Supplier field.

4. Click the Attributes button.

   The Items Attributes window displays.

Figure 5–1   The Items Attributes window
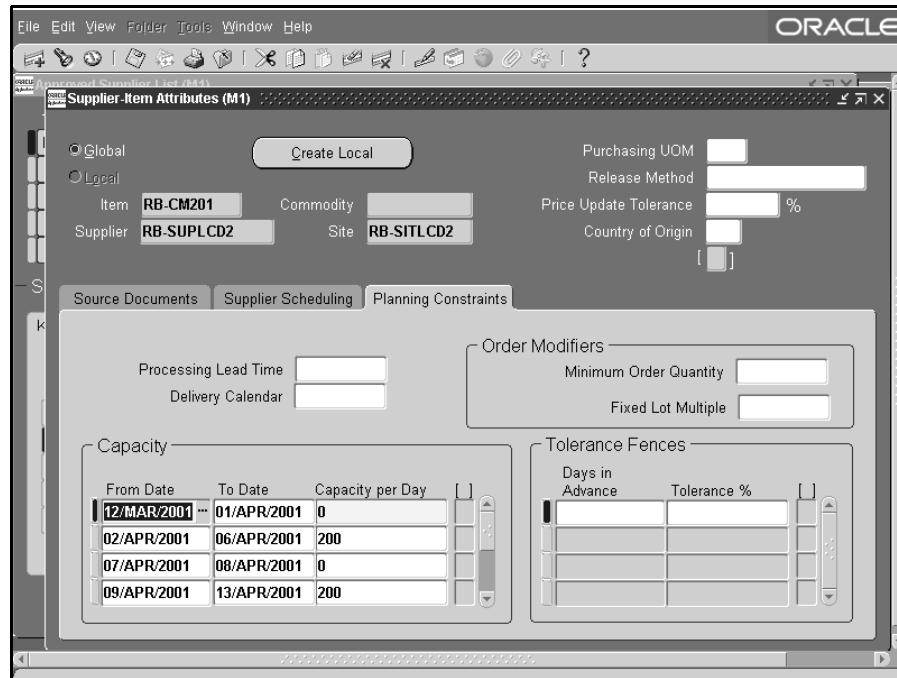
5. Choose the Planning Constraints tab.

6. Specify the time fence control period.

> **Note:** You can define capacity tolerance percentages that can vary for each of your items. The tolerance fence data in Oracle Purchasing is used to adjust production according to capacity changes for item/supplier combinations when the order is placed. Tolerance fence values can be specified for the capacity fluctuation allowed for available to promise; and used to determine demand based on the amount of advanced notice given to the supplier.

7. Enter the numbers of days in advance and the tolerance percentage.

For example, entering 15 days and 5% means that within 15 days, the supplier can increase the capacity by 5%.

Setting Supplier Specific Planning Constraints

▶▶ **To set a supplier specific lead time:**

Enter a value in the Processing Lead Time field.

Using Delivery and Reception Frequency Calendars

You can specify delivery dates for each supplier or supplier/item combinations and create a schedule to define the dates an organization is able to receive items. The planning engine adjusts planned orders so deliveries are scheduled for the dates the receiving organization is available. You enter processing lead times in Oracle Purchasing, and then choose a Delivery Calendar pattern. The Delivery Calendar is independent of your workday calendar.

▶▶ **To set a delivery and reception frequency calendar:**

Choose the value for the delivery and reception calendars.

Using Supplier Specific Order Modifiers

Order modifiers can be specified at the supplier site level, this overrides item level order modifiers. Two order modifiers can be specified:

- Minimum Order Quantity to specify minimum quantities that can be placed on a single order to a particular supplier.

■ Fixed Lot Multiple to specify order lot sizes that must be considered when ordering from a particular supplier. For example, if the Fixed Lot Multiple is 100 units, a planning order requirement for 125 units will result in a recommended order to the supplier for 200 units.

▶▶ **To set an order modifier:**

Enter the order modifier value for Minimum Order Quantity or Fixed Lot Multiplier.

Allocating Demand to Suppliers

For more information on the following topics, see "Sourcing Rules and Bills of Distribution" in the *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide.*

Setting Rank and Allocation

You can define a rank for each source of supply named in the sourcing rules and BODs. You can then define a sourcing percentage for each source within a rank, allowing you to allocate a portion of the total orders to each source.

Splitting Demand According To Sourcing Percentages

In unconstrained plans, demand can be divided and allocated to multiple sources according to target sourcing percentages set in the rules and bills.

The data in these tables demonstrate how allocation percentages for planned orders are divided according to ranking information.

The demand for Item A on the date of 06/10 is:

Demand	Due Date	Quantity
1	07/15	300

Item	Source	Rank	Percentage	Effective From	Effective To
A	S1	1	40	05/15	12/31
A	S2	1	30	05/15	12/31
A	S3	1	30	05/15	12/31

Demand is assigned using the ranking information and calculating the percentages assigned to each source to calculate the planned orders.

- S1: 300 x 0.40 = 120
- S2: 300 x 0.30 = 90
- S3: 300 x 0.30 = 90

Three planned orders are created for the quantities of 120, 90, and 90 respectively.

> **Note:** All planned orders generated in this process are subject to item order modifiers.

If optimization is used, planning will consider the costs and capacities of each supplier when recommending a source. For example, if the following suppliers are available for Item A111, optimization will recommend using Supplier 1 because its unit cost is lowest for the same lead time, assuming Supplier 1 has sufficient capacity to meet demand.

Supplier	Rank	Unit Cost	Lead Time	Capacity
Supplier 1	3	$1.00	2	100

Supplier	Rank	Unit Cost	Lead Time	Capacity
Supplier 2	2	$2.00	2	100
Supplier 3	1	$3.00	2	100

Allocating Demand to Suppliers Based on Historical Demand

You can allocate planned orders taking into account historical allocations in unconstrained plans. The enhanced sourcing logic considers historical allocations and allows the splitting of demand to achieve target sourcing percentages.

Viewing the Supply Chain

There are several view options with Oracle ASCP including:

- Viewing Sourcing Rules
- Viewing BOD
- Viewing Sourcing Rule and BOD Assignment Set
- Viewing Sourcing Assignment Hierarchy

Viewing Sourcing Rules

You can quickly and easily retrieve sourcing rules for reference. After retrieving a sourcing rule, you can display it in a convenient, hierarchical representation, or you can locate the assignment sets in which it is assigned.

For more information, see "Viewing Sourcing Rules" in the *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide.*

Viewing BODs

You can quickly and easily retrieve BODs for reference. After retrieving a bill of distribution, you can display it in a convenient, hierarchical representation, or you can locate the assignment sets in which it is assigned.

For more information, see "Viewing Bills of Distribution" in the *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide.*

Viewing Assignment Set

Once you have defined your sourcing rules and BODs, you must assign them to particular items and/or organizations. These assignments are grouped together in

assignment sets. This is where your various sourcing strategies define a particular supply chain network.

You can quickly view your assignment sets to review particular sourcing schemes, locate particular assignments of sourcing rules or BODs, or view the supply chain bill for a particular assignment set.

For more information, see "Viewing Sourcing Rules" and "Viewing Bills of Distribution" in the *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide.*

Viewing Sourcing Assignment Hierarchy

You can display all the assignment levels and identify the active assignment level for an item.

For more information, see "Viewing Assignment Hierarchy" in the *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide.*

Performing Tasks on Destination Data

You can perform the following tasks only on the Planning Server:

- Create instances
- Define plan options/plan names
- Create priority rules

You can perform the following tasks on the source or Planning Server:

- Add new sourcing rules
- Add new assignment sets
- Add new bill of distribution
- Change the order priority for any independent demand
- Add/change supplier capacity and flex fences
- Change plan parameters

6

Defining Plans

Topics covered in this section include the following:

- Overview of Defining Plans
- Global Supply Chain Planning and Subset Planning
- Choosing Plan Classes
- Setting Plan Options
- Choosing Plan Types
- Controlling Aggregation Levels

A Day in the Life of a Planner
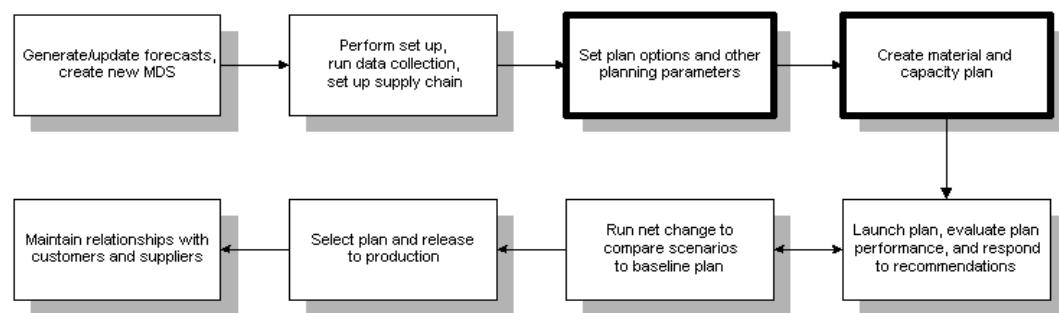
Overview of Defining Plans

This section describes features that help you select a plan that best satisfies your business requirements. You can choose to run a global supply chain plan or a subset plan to suit your supply chain environment or single organization environment, respectively. You can also select constrained, unconstrained, or optimized plan class based on business objectives such as maximizing inventory turns, resource utilization, and plan profit. You can select to run a Material, Manufacturing, or Distribution plan to fulfill your planning needs. Lastly, you can specify aggregation levels to view plans at varying levels of detail.

Global Supply Chain Planning and Subset Planning

Oracle ASCP lets you create material and capacity plans and schedules for single organizations or multiple organizations. Global supply chain planning refers to planning across multiple organizations while subset planning refers to single organization planning.

Choosing Between Global Supply Chain and Subset Plans

In general, resource and material capacity are most efficiently utilized in a global supply chain planning environment where planning distribute production requirements across multiple organizations. However, the choice of global supply chain versus subset planning should depend on a number of factors.

Factors to consider include:

- **Physical proximity of the organizations being planned** – If planned organizations are geographically dispersed, it is generally more difficult to fulfill demand in one region from a plant or distribution center far away because of transportation costs and longer lead times. Note, however, that the costs associated with fulfilling demand from remote plants can be modeled in planning. Planning can then optimize production allocation across plants to meet the objectives that have been set. For example, if balancing resource loads is the primary objective of a multi-organization plan, planning will distribute production across plants to meet that objective.

- **Commonality of the items produced** – If you have multiple organizations that produce similar products, global supply chain planning are beneficial because planning can consider factors like material and resource availability, material costs, and resource costs to create an optimal supply chain plan.

- **Commonality of the supply base** – Similar to having commonality of items produced, organizations which share the same suppliers are good candidates

for global supply chain planning because supplier capacity can be optimally distributed across plants depending on the production requirements that have been allocated to each plan. Global supply chain planning will ensure that supplier capacity is most effectively used to meet end customer demand and to minimize inventory.

- **Linkage among plants** – If production at one plant must be coordinated with production at other plants, global supply chain planning should be used. For example, if Plant A provides subassemblies to Plant B (Plant A is a feeder plant), both plants should be planned together.

- **Corporate structure** – The internal organizational structure of a corporation is also a major determinate of the planning method used. If there are clear organizational boundaries between divisions, global supply chain planning are difficult to implement.

The table below summarized the factors to consider when deciding whether to run a global supply chain or subset plan.

Factor	Global Supply Chain Planning	Subset Planning
Physical proximity	Close Physical Proximity	Distant Physical Proximity
Commonality of items produced	High Commonality	Low Commonality
Commonality of supply base	High Commonality	Low Commonality
Linkage among plants	Tight Linkage Among Plants	Loose Linkage Among Plants
Corporate structure	Centralized Corporate Structure	Decentralized Corporate Structure

Running a Global Supply Chain Plan

In order to run a global supply chain plan, the following prerequisites are required:

- Each planned organization must be set up on the source instance.

- Collection programs must be directed to collect data from the transactional instance of each planned organization.

- Items to be planned must be enabled in each organization that can produce (or distribute) the item. During item setup, items can be enabled in all organizations or only in specific organizations.

- Routings and/or Bills of Resource for each planned item must exist or be enabled in each organization that are planned centrally.

- Suppliers and sourcing rules must be enabled in all relevant organizations.

❱❱ To create and launch a global supply chain plan:

1. Choose [Material, Manufacturing, or Distribution Plan] > Names.

   The [Material, Manufacturing, or Distribution Plan] Names window appears.

Figure 6–1   The [Material, Manufacturing, or Distribution Plan] Names window
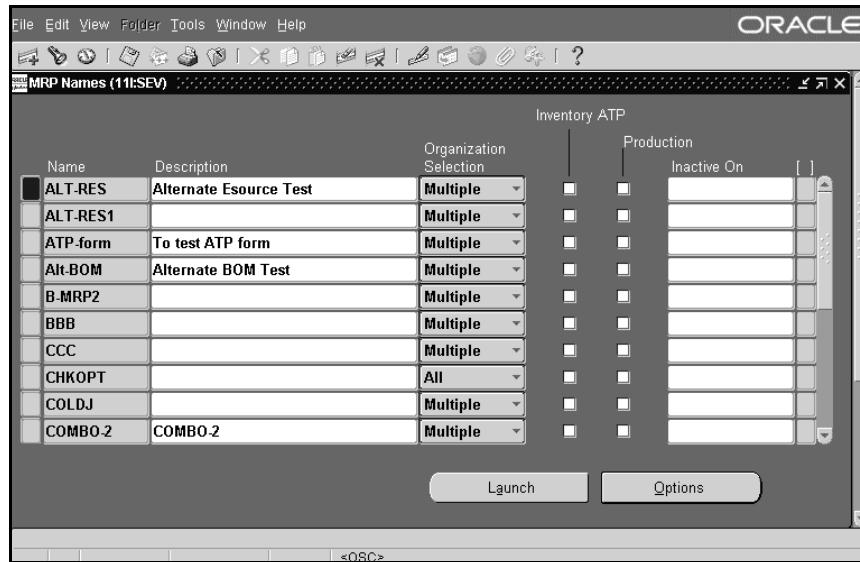
2. Select the organizations (multiple) to be included in the plan, and continue setting plan options and parameters.

Figure 6–2   The Options tab
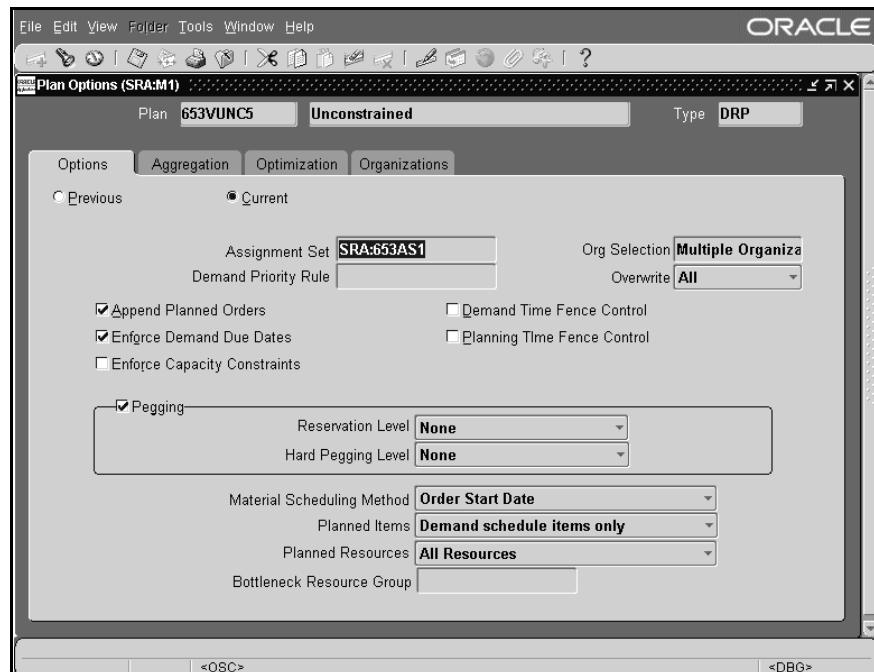
For more information, see *"The Options Tab"* and the *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide.*

Running a Subset Plan

▶▶ **To run a subset plan:**

1. Choose [Material, Manufacturing, or Distribution Plan] > Names to create a new Material, Manufacturing, or Distribution Plan plan.

2. Select only the organization(s) you want to plan, and continue setting plan options and parameters. For more information, see "Overview of Setting Up." in the *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide.*

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

Setting Global Supply Chain vs. Subset Planning Parameters

You can choose the way you deploy Oracle ASCP to support either global supply chain or subset planning strategies. You can run one rapid single step supply chain plan that optimizes, plans, and schedules your entire virtual enterprise. You can also choose to break the planning process into subsets. For example, you may 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 planning process. This reduces the number of plans and reduces the time and effort required to coordinate planning activities.

If you have a single instance of Oracle Applications, or if you prefer to pursue a strategy of subset planning, Oracle ASCP can be deployed as a module as part of an integrated Oracle Applications instance.

Choosing Plan Classes

Oracle ASCP allows for the following options for generating plans.

- Unconstrained

- Resource Constrained

- Material Constrained

- Material and Resource Constrained

- Optimized

These options 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 option 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) must 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 bills of materials are considered. Material constraints are used only to generate exceptions arising due to lack of material availability.

This option, like the Unconstrained option, 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 option 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 option in lieu of the Unconstrained option 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 option 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. When material availability is not a concern, resource availability constraints are used only to generate exceptions arising due to over utilization or under-utilization of resources.

This option is similar to the Resource Constrained option, except that the roles of the material and the resource constraints are reversed. It is, 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 option 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 option in lieu of the Unconstrained option 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 option 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 option is most useful for generating plans in the near-term future, in which you don't 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 option (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).

For more information on constraints, see "Constraint Based Planning."

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 option, like Material and Resource Constrained, 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 inventory turns, margin percentage, planned utilization, ontime delivery) 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.

See "Optimization" for more information.

Different Plan Options and their Scope

Of the five options 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 option, the next 10 months using the Resource Constrained option, and then the next year using the Unconstrained option.

The last option (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.

Running an optimized plan often provides a better alternative since this explicitly optimizes objective that are important to you. There is no guarantee that the fast heuristic (used when Optimized is unchecked) will do so.

Setting Plan Options

Set up your plan options using the plan status option from the simulation pull down menu. Plan Status option opens up the plan options window. This window contains the following four tabs:

- Options
- Aggregation
- Optimization
- Organizations

The Options Tab

◗◗ **To access the Options tab from the Navigator, choose [Material, Manufacturing, or Distribution Plan] > Options.**

The Options tab displays.

Figure 6–3   The Options tab
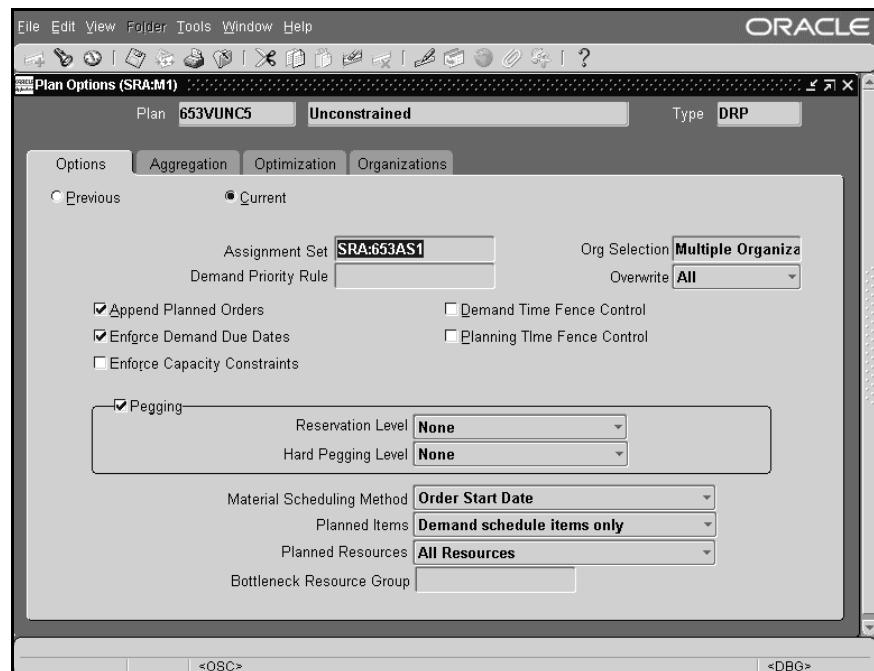
You can specify the following fields and options:

Object	Description
Assignment Set	The assignment set for your plan created within your organization.
Demand Priority Rule	Select the demand priority rule for your plan.
Bottleneck Resource Group	If you have defined bottleneck resource groups in Oracle Bills of Material and you want to plan only those groups, designate them here.

Object	Description
Org Selection	Based on all or a subset of organizations. This is a view-only field, determined by the value entered in the Names form.
Overwrite	List of values.
Append Planned Orders	Appends new planned orders to current plan.
Enforce Demand Due Dates	Choose if you want enforcing demand due dates to be your hard constraint. For more information, see "Setting Hard and Soft Constraints" in "Constraint Based Planning."
Enforce Capacity Constraints	Choose if you want enforcing capacity constraints to be your hard constraint. For more information, see "Setting Hard and Soft Constraints" in "Constraint Based Planning."
Demand Time Fence Control	Select to enforce demand time fence control.
Planning Time Fence Control	Select to enforce planning time fence control.
Pegging	Select to calculate graphical pegging information. Oracle ASCP traces supply information for an item to its corresponding end demand details, which you can then view in a diagrammatic display.
Pegging – Reservation Level	Choose a reservation level: Planning Group, Project, Project-Task, or None.
Pegging – Hard Pegging Level	Choose a hard pegging level: Project, Project-Task, or None.
Material Scheduling Method	Choose from Operation Start Date or Order Start Date scheduling methods.
Planned Items	Choose planned items from the list of values.
Planned Resources	Choose all resources or bottleneck resources. If selecting bottleneck resources, you must first specify a Bottleneck Resource Group. (See Bottleneck Resource Group, above.)

The Aggregation Tab

▶▶ **To access the Aggregation tab from the Navigator, choose [Material, Manufacturing, or Distribution Plan] > Aggregation.**

The Aggregation tab displays.

Figure 6–4   The Aggregation tab
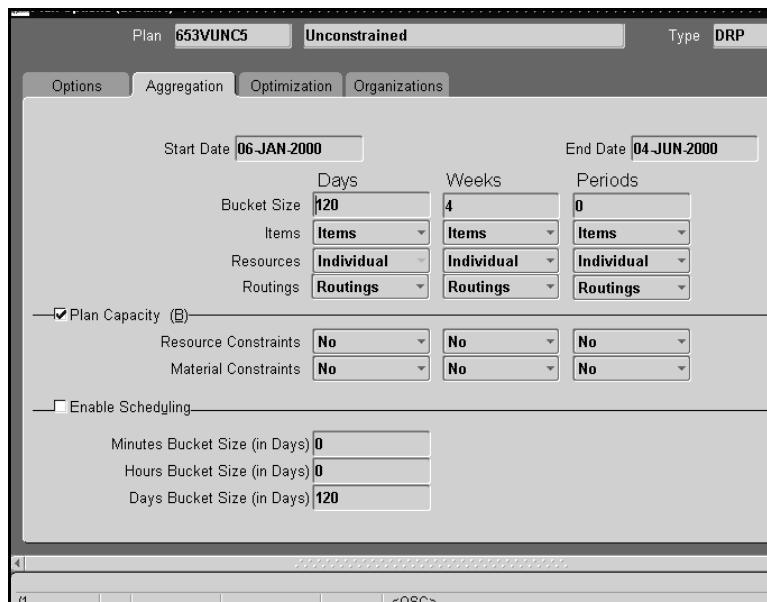
You can specify the following fields and options

Object	Description
Start Date	Choose a start date for your plan. This is a view-only field, whose value equals the start date of the plan if the plan has already been run. Otherwise, it defaults to the sysdate.
End Date	Shows the calculated end date for your plan. This is a view-only field, calculated based on the bucket sizes you specify.
Bucket Size	Specify bucket size in days, weeks, and periods.
Items	Choose aggregation at item level or product family level.
Resources	Choose resource aggregation at individual level or aggregate level.

Object	Description
Routings	Choose aggregation level at individual routing or bill of resources level.
Plan Capacity	Specify whether constraints are used.
Resource Constraints	Select Yes to consider resource constraints.
Material Constraints	Select Yes to consider material constraints.
Enable Scheduling	Specify whether to enable scheduling.
Minutes Bucket Size	Specify the bucket size in minutes for the Days planning period.
Hours Bucket Size	Specify the bucket size in hours for the Days planning period.
Days Bucket Size	Specify the bucket size in days for the Days planning period.

The Optimization Tab

▶▶ **To access the Optimization tab from the Navigator, choose [Material, Manufacturing, or Distribution Plan] > Optimization.**

The Optimization tab displays.

Figure 6–5   The Optimization tab
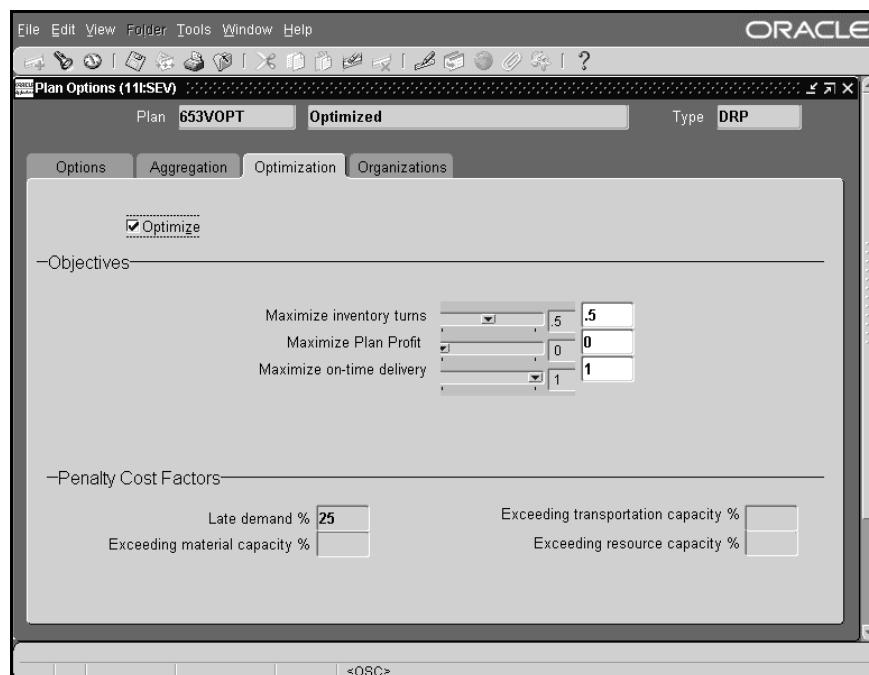
You can specify the following fields and options:

Object	Description
Optimization	Select this checkbox if you are running an optimized plan. **Note:** For this checkbox to be enabled, you must have enable Plan Capacity and set at least one field in Material or Resource Constraints to Yes in the Aggregation tab.
Objective: Maximize Inventory Turns	Specify a weighting percentage for this objective using the sliding bar or by entering a value between 0 and 1.

Object	Description
Objective: Maximize Plan Profit	Specify a weighting percentage for this objective using the sliding bar or by entering a value between 0 and 1.
Objective: Maximize Ontime Delivery	Specify a weighting percentage for this objective using the sliding bar or by entering a value between 0 and 1.
Penalty Factor: Late Demand	Enter a numerical value to quantify the impact of late demand.
Penalty Factor: Exceeding material capacity	Enter a numerical value to quantify the impact of exceeding material capacity.
Penalty Factor: Exceeding transportation capacity	Enter a numerical value to quantify the impact of exceeding transportation capacity
Penalty Factor: Exceeding resource capacity	Enter a numerical value to quantify the impact of exceeding resource capacity.

> **Note:** Penalty Factors set using the Optimization tab override default values set using flexfields. For more information on setting penalty factors using flexfields, see "Oracle ASCP Flexfields." For more information on the implications of setting these fields and options using the Optimization tab, see "Optimization."

The Organizations Tab

◗◗ **To access the Organizations tab from the Navigator, choose [Material, Manufacturing, or Distribution Plan] > Organizations.**

The Organizations tab displays.

Figure 6–6   The Organizations tab
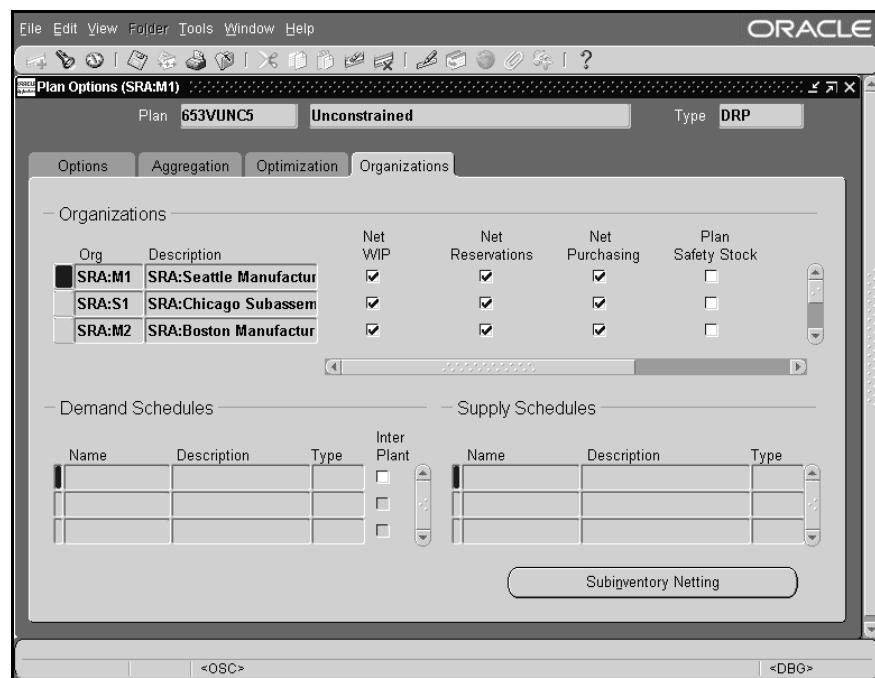
You can specify the following fields and options

Object	Description
Org	Your plan's organization. See "Global Supply Chain Planning and Subset Planning."
Description	The name of your organization.
Net WIP	Select to consider Net WIP.
Net Reservations	Select to consider Net Reservation.
Net Purchasing	Select to consider Net Purchasing.

Object	Description
Plan Safety Stock	Select to consider plan safety stock.
Bill of Resource	Select Bill of Resources from the list of values.
Simulation Set	Select Simulation Set from the list of values.
Demand Schedules	Select the name of your demand schedule.
Interplant	Determines the type of demands that are fed from one plan to another (for example, planned orders, demand schedule entries, and so on).
Supply Schedules	Select the name of your supply schedule for each organization.
Subinventory Netting	Opens the Subinventory Netting window.

Using an Existing Plan as a Supply Schedule for a New Plan

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

▶▶ **To use an existing plan as a supply schedule for a new plan:**

1. Choose [Material, Manufacturing, or Distribution Plan] > Names to create a new MRP, MPS, or DRP plan for the organization that will use an existing plan as a source.

2. Choose Plan Options > Organizations.

3. Specify the plan name to be used as a source for the new plan in the Supply Schedule portion of the form.

Using an Existing Plan as a Demand Schedule For New Plan

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

▶▶ **To use an existing plan as a demand schedule for new plan:**

1. Choose [Material, Manufacturing, or Distribution Plan] > Names to create a new Material, Manufacturing, or Distribution plan for the organization that will use an existing plan as a source.

2. Choose Plan Options > Organizations.

3. Specify the plan name to be used as a source for the new plan in the Demand Schedule portion of the form.

4. Click the Subinventory Netting button.

The Subinventory Netting window displays.

Figure 6–7   Subinventory Netting Window
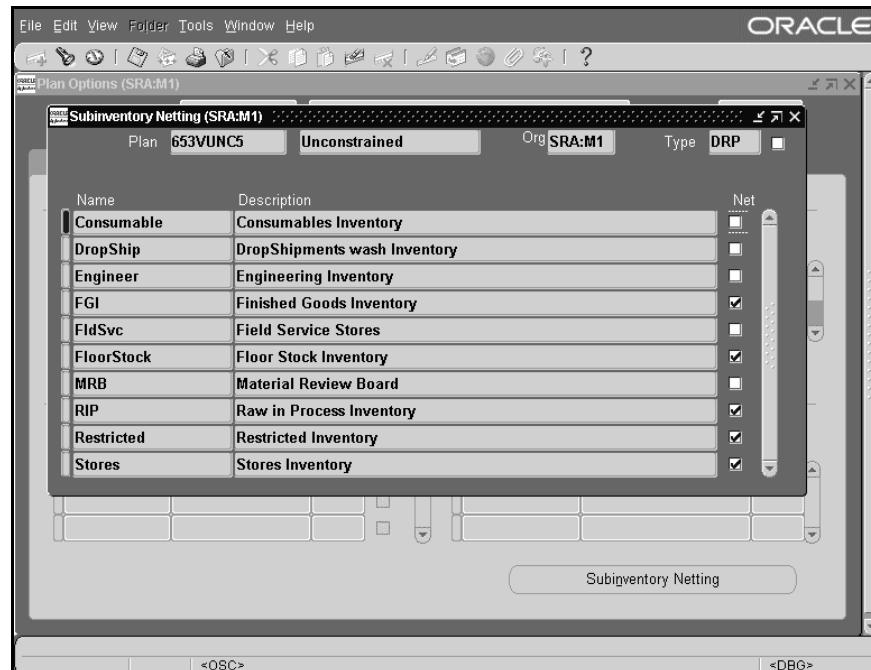
You can specify the following fields and options

Object	Description
Name	Shows all active inventory for your organization. This is a view-only field.
Description	A description of the subinventory. This is a view-only field.
Net	Select whether to net the subinventory.

Choosing Plan Types

You can choose from Material, Manufacturing, or Distribution planning. All three options are available from the Navigator.

MPS Planning (Production Plan)

Oracle ASCP lets you specify various types and levels of aggregation for time buckets, materials, resources, and routings in your MPS plan. Aggregation control lets you specify the level of detail desired for different time horizons within a plan or schedule. For example, you may want detailed scheduling of items and individual resources using routings in daily time increments for the short term portion of the schedule. You may want aggregated scheduling at the product family level using aggregated resources and bills of resources in monthly time buckets for the long term portion of the schedule.

Items

MPS Planning will consider only MPS Items.

Demand and Supply Schedules

A Demand Schedule can be an MDS or any MRP, MPS, or DRP. Supply Schedules can be any MRP, MPS, or DRP.

Product Families

Product families are modeled in MPS. You can select the time horizons during which planning should occur at the product family level.

Routings

Routings will not be used for planning MPS items. A bill or resources is used to represent resource and supplier material requirements for MPS items.

Manufacturing Resources

Manufacturing resources are represented by a bill of resources roll-up.

Transportation Resources

Transportation resources are modeled to represent carrier requirements and capacity constraints between the organizations, distribution center, and vendors. You can define transportation capacity for each carrier for a given route.

Time Buckets

You can select from the following time granularities to represent the planning horizon:

- days

- weeks

- months

You will also be able to indicate the portion of the planning time horizon in which scheduling should occur. They can then use finer time granularities for scheduling. The time granularities supported during scheduling are:

- minutes

- hours

- days

For more information, see "Overview of Master Scheduling" in the *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide.*

MRP Planning (Manufacturing Plan)

Items

You can select one of the following options to specify the set of items to plan:

- MRP Items

- DRP + MRP Items

- MPS + MRP Items

- All Planned Items

Demand and Supply Schedules

A Demand Schedule can be an MDS or any MRP, MPS, or DRP. Supply Schedules can be any MRP, MPS, or DRP.

Product Families

Product families are modeled in MRP. You can select the time horizons during which planning should occur at the product family level.

Routings

Routings are modeled in different levels of detail in the three modules. Choose Routings or BOR (Bill of Resources) according to your plan requirements.

Manufacturing Resources

All resources that have been marked as "planned" are included in MRP planning. The level of aggregation for resources are user defined. You can choose to model either individual or aggregate resources during each planning horizon.

Transportation Resources

Transportation resources are modeled to represent carrier requirements and capacity constraints between the organizations, distribution center, and vendors. You can define transportation capacity for each carrier for a given route.

Time Buckets

Running an optimized plan, you can select from the following time granularities to represent the planning horizon:

- days

- weeks

- months

You can represent the planning horizon in non-homogenous buckets using these time granularities. In addition, you can specify the portion of the time horizon in which scheduling should occur and the time granularities during this period. You can select from the following time granularities for the scheduling horizon:

- minutes

- hours

- days

For more information, see "Material and Distribution Requirements Planning" in the *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide.*

DRP Planning (Distribution Plan)

Items

DRP will consider all of the following sets of items in its plan.

- DRP items

- DRP + MPS items

- DRP + MRP items

Demand and Supply Schedules

A Demand Schedule can be an MDS or any MRP, MPS, or DRP. Supply Schedules can be any MRP, MPS, or DRP.

Product Families

Product families are modeled in DRP. You can select the time horizons during which planning should occur at the product family level. During the time period when planning occurs at the product family level, sourcing rules that have been defined for the product family are used.

Routings

Routings that have been defined at the distribution center (for example, for light manufacturing, kitting) are modeled.

Manufacturing Resources

Resources associated with the routings that have been defined at the distribution center are considered in DRP. The level of aggregation for these resources is flexible and user defined. In the future, this can be extended to include loading, un-loading and other material handling resources at the distribution center.

Transportation Resources

Transportation resources are modeled in DRP to model carrier capacity constraints between the organizations and distribution center. You can define transportation capacity for each carrier for a given route.

Time Buckets

You can select from the following time granularities to represent the planning horizon:

- days

- weeks

- months

In the case of DRP, receiving and shipment calendars will also be considered.

You will also be able to indicate the portion of the planning time horizon in which scheduling should occur. They can then use finer time granularities for scheduling. The time granularities that are supported during scheduling are:

- minutes

- hours

- days

For more information, see "Material and Distribution Requirements Planning" in the *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide*.

Controlling Aggregation Levels

You can set aggregation levels for modeling items, resources, alternates and routings in your Material, Manufacturing, or Distribution plan. You will have the option of specifying different levels of aggregation in different time buckets so that detailed information is considered more frequently and less detailed information is considered less frequently.

▶▶ **To select an existing MPS or add a new MPS choose MPS > Names.**

▶▶ To set the material aggregation level for a time horizon:

1. Navigate to the Planner Workbench.

2. Choose Plan Options > Aggregation tab.

    The Aggregation tab displays.

3. Enter the time horizon in days, weeks, or periods.

    You can specify different levels of aggregation in different time buckets so that detailed information is considered more frequently and less detailed information is considered less frequently.

Figure 6–8   The Aggregation tab
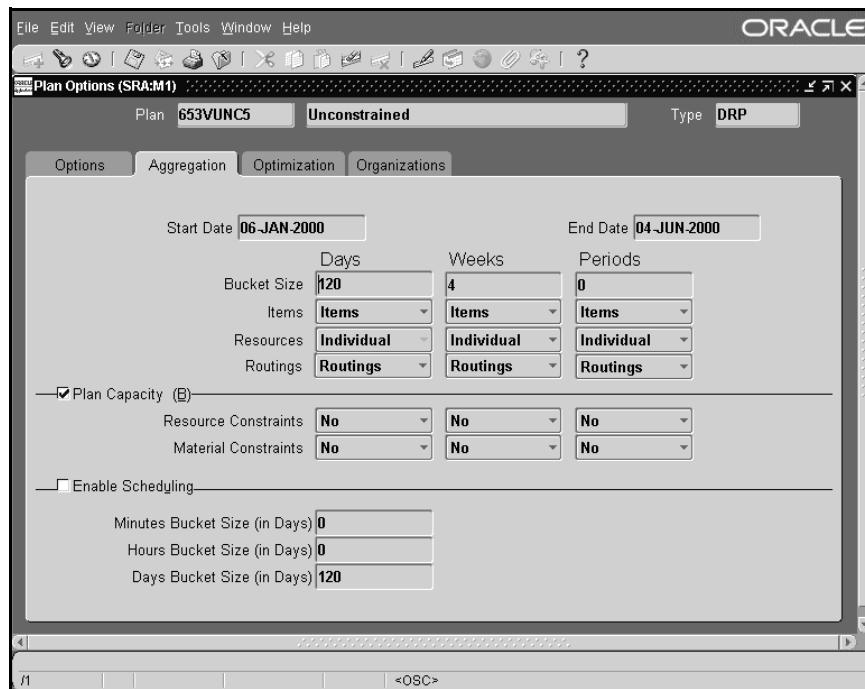
You can schedule the product at either the item level or the product family level.

Ensure items are correctly assigned to a product family and that a planning percent is specified when setting up your BOMs.

Controlling Resource Aggregation Levels

Resource aggregation level can be specified for each of the three planning time horizons in plan options.

▶▶ **To set the resource aggregation levels for a time horizon:**

1. Navigate to the Planner Workbench.

1. Choose Plan Options > Aggregation tab.

2. Enter the time horizon in days, weeks, or periods.

   You can specify different levels of aggregation in different time buckets so that detailed information is considered more frequently and less detailed information is considered less frequently.

Resources can be scheduled either individually or in aggregate. Selecting "individual" resource scheduling will generate schedules down to the individual resource level and will consider the available capacity of each resource in the schedule recommendations.

Selecting "aggregate" resource scheduling will consider the overall capacity of all resources in a "resource group" required for an item. For example, the overall capacity of a department to which the individual resources are assigned are used.

For more information, see "Defining a Resource" in the *Oracle Bill of Materials User's Guide.*

Controlling Routing Aggregation Levels

Routing aggregation level can be specified for each of the three planning time horizons in plan options.

▶▶ **To set the routing aggregation level for a time horizon:**

1. Navigate to the Planner Workbench.

1. Choose Plan Options > Aggregation tab.

2. Enter the time horizon in days, weeks, or periods.

   You can specify different levels of aggregation in different time buckets so that detailed information is considered more frequently and less detailed information is considered less frequently.

Either routings or bills of resources can be used for scheduling production. Selecting routing level aggregation will result in schedules that consider the capacity of each

resource as well as the sequencing of the resources during the production of an item. Selecting BOR level aggregation will only consider the resource requirements needed to produce an item without considering the sequencing and interdependence among the resources required for an item.

7

Planner Workbench/User Interface

Topics covered in this section include the following:

- Overview of Planner Workbench/User Interface
- General Navigation
- Tailoring the User Interface
- Tab Options and Navigation Tree

A Day in the Life of a Planner
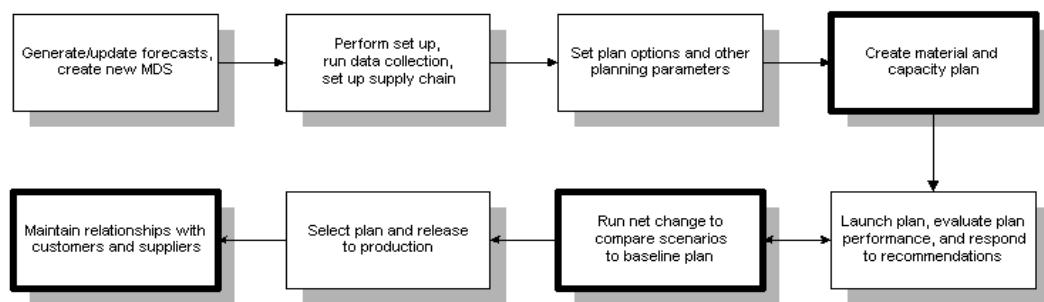
Overview of Planner Workbench/User Interface

The Planner Workbench is a powerful graphical tool that lets you perform advanced simulation, review plan performance, and take actions based on system recommendations.

See *"Advanced Graphical User Interface"* for general information on the Planner Workbench.

General Navigation

Figure 7–1   The Planner Workbench
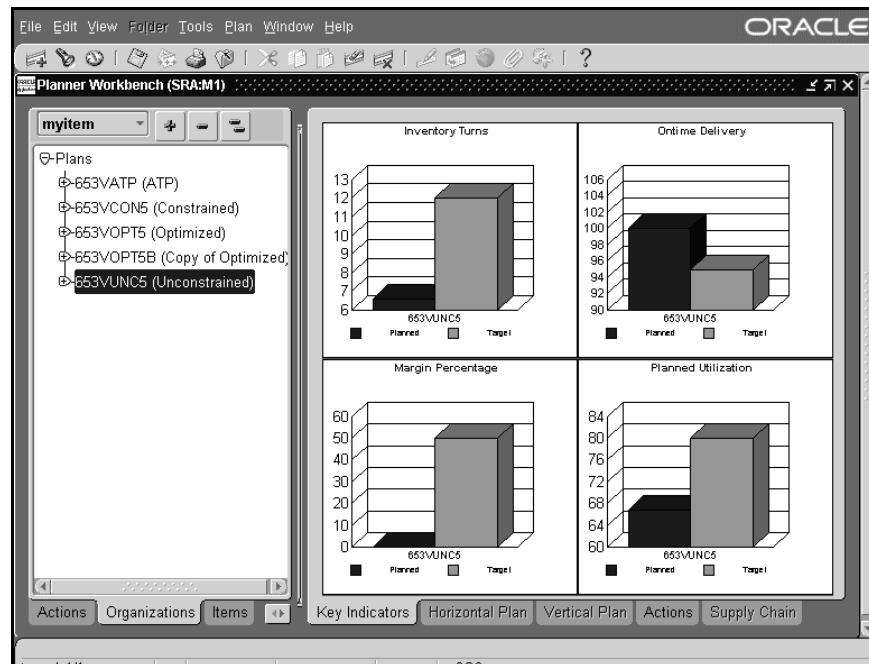
The tree controls the context that is displayed in the right pane. The information shown in the right pane is aggregated to the level of the node selected the left pane. For instance, if Organization is selected in the left pane then every tab in the right pane shows information aggregated for the organization. If the aggregated information cannot be displayed then the tab is disabled.

If you select more than one node in the left pane, the right pane displays information for both nodes selected. For instance, if you select two items in the left pane then the Horizontal Plan shows details for both items listed consecutively.

> **Note:** You cannot use multi-select to select two nodes that do not belong to the same folder, nor can you multi-select an item and a product family.

You can select multiple items using Control-Shift-Click.

Drill Down

In any window with summary information, you can drill down to more detailed information by double-clicking on an element. This feature lets you do the following:

- Drill down on action messages to view details of a particular action.

- Drill down to different levels the Items, Organizations, and Resources tabs to view details.

- Drill either down or up from a supply or demand order in the Pegging window.

- When working in the Items or Organizations tab, drill down from the Horizontal Plan to view supply/demand details. When working in the Resources tab, drill down from the Horizontal Plan to view resource availability.

- When working north Items or Organizations tab, drill down from the Vertical Plan to view supply/demand details

Navigating Through a Find Window

The Find windows allow you to control the volume of data displayed. You can set find criteria for all trees and detail windows.

Figure 7–2   The Find window
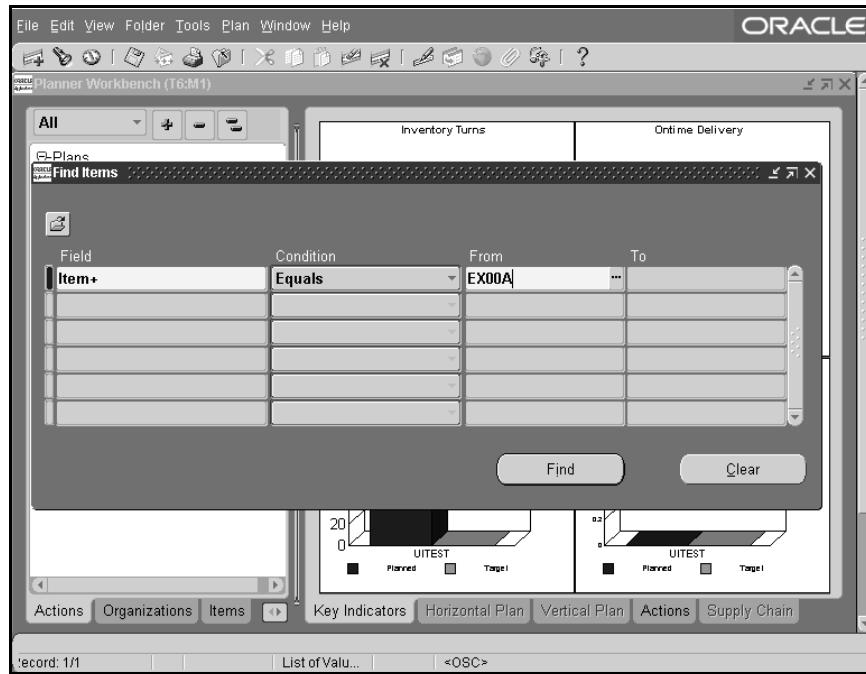
The Find Items window allows you to display basic information for the items in the current plan, plus pegging and supply/demand information.

❱❱ To display the Find window:

1. Select a plan in the Planner Workbench.

2. Choose Tools > Items > [Supply/Demand, Supply, Demand, or Resources]

    The Find window displays. You can search for the following item details:

   -   ABC Class

    -   Buyer

    -   Category

    -   Item

    -   Planner

    -   Repetitive

- BOM Item Type
- Exception Set
- Forecast Control
- Nettable Quantity
- Standard Cost
- MRP Planning Method
- Make or Buy
- Organization
- Nonnettable quantity
- WIP Supply Type

3. To retrieve all records, leave all fields blank and choose Find.

4. The retrieve a subset of records, enter a search string. You can use just one string in your search (containing a criterion, an operator, and a value), or you can enter several strings to refine your search.

5. Once you have entered at least one string, containing a field name, a condition, and (optionally) a value, choose Find to start your search.

6. Optionally, choose a folder to import a previously defined search strings and start the search.

Pull-Down Menus

Pull-down menus take context from the Planner Workbench tree.

Figure 7–3   The Planner Workbench with Tools Menus Displayed
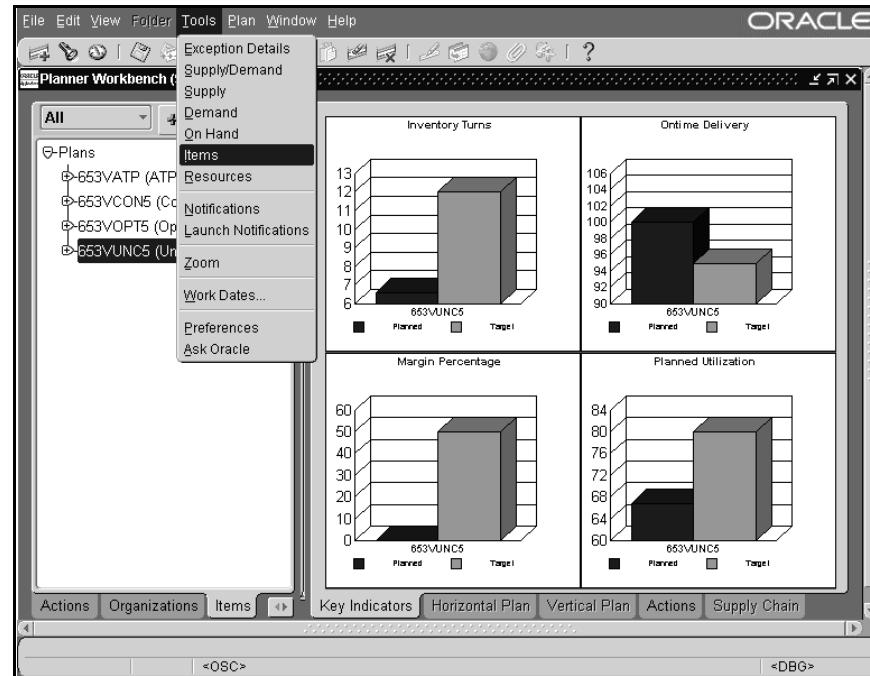
Tailoring the User Interface

Menu	Menu Option	Description
Edit	Duplicate	Duplicate a record.
	Clear	Edit the current field.
	Delete	Delete the current field.
	Preferences	Set a user profile.
View	Show Navigator	Display Navigator window.
	Find	
	Find All	
	Query by Example	Run queries for certain information.
	Record	View a record.
	Requests	Review requests.
Tools	Exception Details	View exception details for your plan.
	Supply/Demand	View supply and demand information.
	Supply	View supply information.
	Demand	View demand information.
	On-Hand	View on-hand quantities.
	Items	View items information.
	Resources	View resources information.
	Notifications	View notifications.
	Launch Notifications	Launch notifications.
	Zoom	
	Work Dates	Set up work dates for your plan.
	Preferences	Set preferences.
	Ask Oracle	Access online help.
Plan	Start Online Planner	

Menu	Menu Option	Description
	Online Replan	Run net change replan.
	Stop Online Planner	
	Online Planner Status	View online plan status.
	Batch Replan	Run replan in batch mode.
	Save Actions	Save actions related to your plan.
	Launch New Plan	
	Copy Plan	Copy your baseline plan before running a new plan.
	Plan Options	Set plan options.
	Select All for Release	Release all orders.
	Release	Release selected orders only.
	Auto Release	Automatically release orders.
	Firm All	Firm all planned orders.

You can tailor the user interface in the following ways:

Resize Windows

You can resize windows as with any windows-based application. In the Planner Workbench you can adjust the slide bars to change the relative widths of the left and right panes.

Customize Columns

You can add, hide columns, resize, and move columns on the horizontal plan and folder windows.

Defining Display Preferences

Display preferences control what horizontal material planing data, horizontal capacity planning data, supplier planning information, transportation planning information, and supply/demand detail are displayed for each item.

To define your display preferences:

1. Navigate to the Planner Workbench.

2. Choose Tools > Preferences.

3. Choose the Material Plan tab.

4. Enter Display Buckets, Independent Demand Type, Display Factor, Decimal Places, and check each type of plan information you want displayed in your material plan.

5. Choose the Capacity Plan tab.

6. Check each type of plan information you want displayed in your capacity plan.

7. Choose the Supplier Plan tab.

8. Check each type of plan information you want displayed in your capacity plan.

9. Choose the Transportation tab.

10. Check each type of plan information you want displayed in your capacity plan.

11. Choose the Other tab.

   Supply/Demand details display.

12. Enter a Cutoff Date and Job Status.

   When the Planner Workbench creates discrete jobs from implemented planned orders, it assigns the job status you enter in the Preferences window.

13. Select a Job Class.

   When the Planner Workbench creates discrete jobs from implemented planned orders, it assigns the job class you enter in the Preferences window.

14. Select a Req Group By default.

   When the Planner Workbench creates purchase requisitions from implemented planned orders, it assigns the requisition load group you enter in the Preferences window.

15. Choose Apply to use your preference selections for the current session only.

16. Choose Reset to use your previously saved selections.

Figure 7–4   Defining Display Preferences
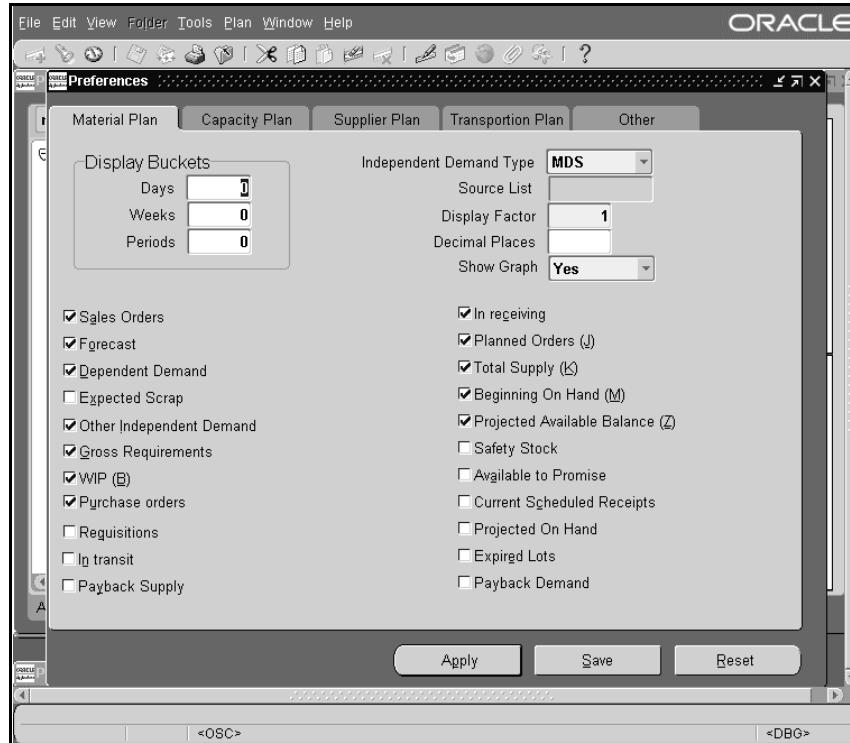
Tab Options and Navigation Tree

The Planner Workbench contains two panes with tabs. The left pane contains the hierarchical tree with the following tabs:

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

The right pane contains summary information in tables and graphs, including:

- Key Indicators

- Horizontal Plan

- Vertical Plan

- Actions

- Supply Chain

You control the context of the right pane by highlighting one or more nodes on the tree. You can also use the find window on either the left or right panes to further limit the context. From the right pane, you can drill down to more detailed information.

The tabs on the left pane change the tree layout. The following figures show the tree layout for the Organizations, Items and Actions tabs respectively.

Figure 7–5   Planner Workbench left pane tree layout for the Actions tab

```
+  Plans
   + Versions
       + Exception Groups
           + Items Exceptions
               + Exceptions
                   + Organizations
                       + Items
           + Shortages and Excess
               + Exceptions
                   + Organizations
                       + Items
           + Reschedules
               + Exceptions
                   + Organizations
                       + Items
           +Late Sales Orders and Forecasts
               + Exceptions
                   + Organizations
                       + Items
           + Projects/Tasks
               + Exceptions
                   + Organizations
                       + Items
           +Material and Resource Capacity Exceptions
```

```
                    + Exceptions
                         + Organizations
                              + Items
                   +Substitutes and Alternates Used
                         + Exceptions
                              + Organizations
                                   + Items
              + Recommendations
                    + Discrete Jobs
                         + Organizations
                              + Items
                    + Purchase Requisitions
                         + Organizations
                              + Items
                    + Flow Schedules
                         + Organizations
                              + Items
                    + Repetitive Schedules
                         + Organizations
                              + Items
```

Figure 7–6   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 7–7   Planner Workbench left pane tree layout for the Items tab

```
+  Plans
    + Product Families/Models/Option Classes
        + Items
            + Organizations
                + Components
                + Departments
                + Lines
                + Transportation Resources
            + Approved Suppliers
    + Categories
        + Items
            + Organizations
                + Components
                + Departments
                + Lines
                + Transportation Resources
            + Approved Suppliers
```

Figure 7–8   Planner Workbench left pane tree layout for the Projects tab

```
+  Plans
    + Organizations
        + Planning Groups
            + Common
                + Items
        + Items
            + Planning Groups
                + Common
```

Figure 7–9   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 7–10   Planner Workbench left pane tree layout for the Suppliers tab

```
+  Plans
    + Approved Suppliers
        + Categories
            + Items
                + Organizations
```

The Key Indicators (KPIs) Tab

The initial window of the Planner Workbench, the summary chart, provides a graphical display of the plan's Key Performance Indicators (KPIs). At a glance, you can see how the plan performs relative to the following measures:

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

Figure 7–11   The KPIs Summary Chart in the Planner Workbench
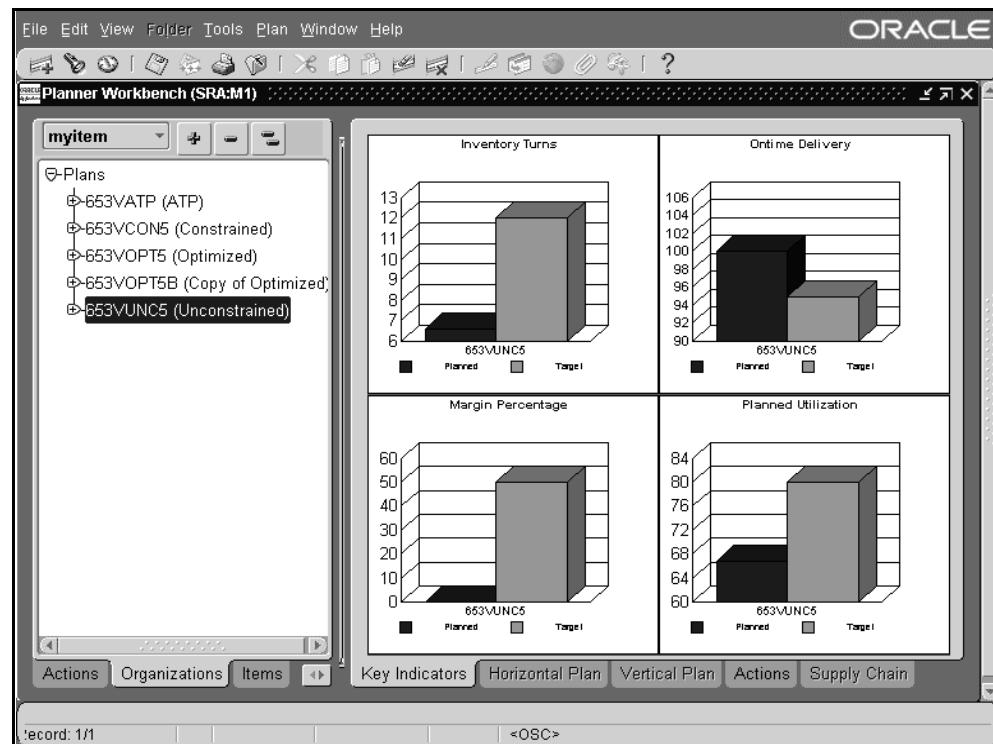
▶▶ **To view KPIs:**

1. Select an Item, Org, or Product Family from the tree in the left pane.

2. Select Key Indicators in the right pane.

3. The right pane displays KPIs for the selected Item, Org, or Product Family.

▶▶ **To view an enlarged version of a KPI graph:**

Left click on a sub-window to see an enlarged version of a KPI graph.

Figure 7–12 An Enlarged View of the Ontime Delivery KPI Bar Chart
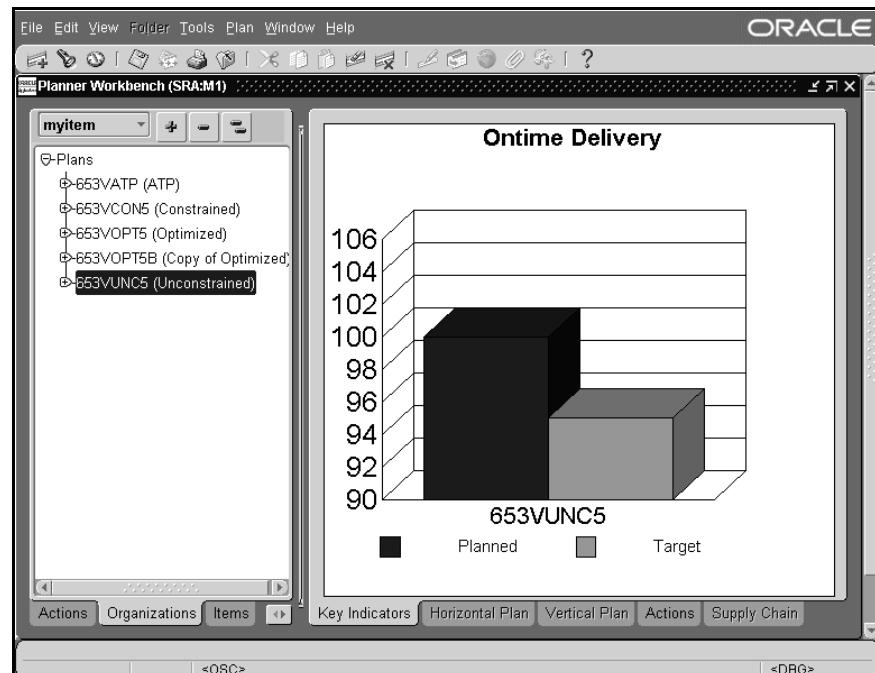
Additional display options are available by right clicking over each sub-window in the summary chart.

Inventory Turns

This graph compares the actual inventory turn values to the target values collected from the source. You can view overall inventory turns for a plan and select a node

on the tree to see the node's inventory turns. You can view the inventory turns value over time to evaluate the plan throughout the planning period.

The Inventory Turns graph is displayed at the following nodes:

- plans
- organizations
- product families
- categories
- individual items
- components
- planning groups
- projects
- tasks

Ontime Delivery

The Ontime Delivery Percentage graph is displayed at the following nodes:

- plans
- organizations
- product families
- categories
- individual items
- components
- planning groups
- projects
- tasks

Planned Utilization

The Planned Utilization percentage is available at the following nodes:

- plans
- organizations
- departments
- resource groups
- resources
- production lines
- transportation resources
- approved suppliers

Margin Percentage

This graph compares the actual margin to the target values collected from the source. You can evaluate alternate plans based on the net difference between plan revenues and costs. Plan revenues are derived from forecasts and booked sales orders while costs account for planned production schedule expenses.

Margin percentage is available at the following nodes:

- plan
- organization
- product family

Reviewing Item Planning Information

Click on the Item or Organization tab then drill down to an Item to view KPIs at the Item level.

Figure 7–13   Viewing KPIs at the Item Level
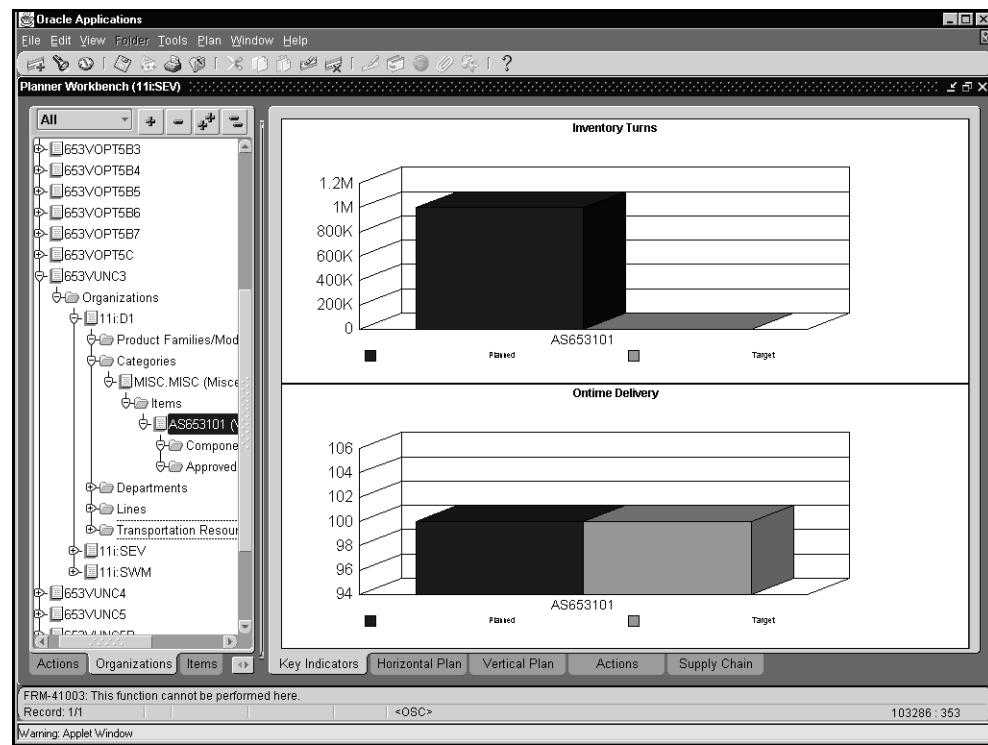
Comparing KPIs for Multiple Plans

KPIs of multiple plans can be compared in the summary chart by selecting two or more plans in the left pane.

Figure 7–14   Comparing KPIs for Multiple Plans
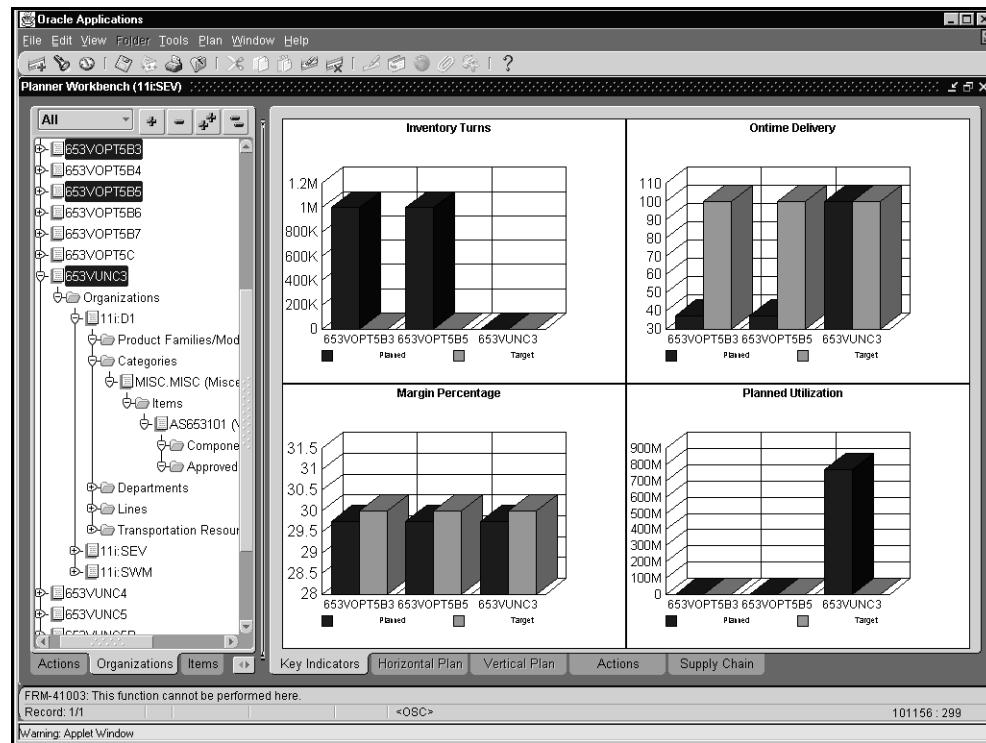
The Horizontal Plan and Vertical Plan Tabs

Vertical vs. Horizontal Display

You can display your plan information vertically or horizontally.

Figure 7–15   Vertical Display
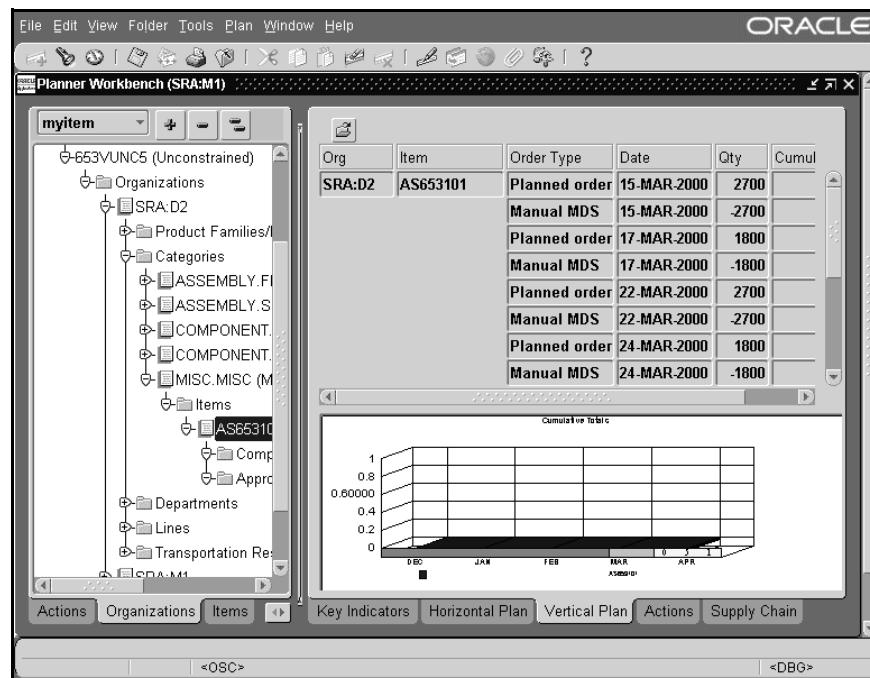
The Vertical Plan view is only enabled for an Item-Org context and it displays the activity by item over time in a vertical format (non-bucketized).

▶▶ **To display your plan vertically:**

1.   Select one or more items from the tree in the left pane.

2.   In the right pane, choose the Vertical Plan tab.

Figure 7–16   Horizontal Display
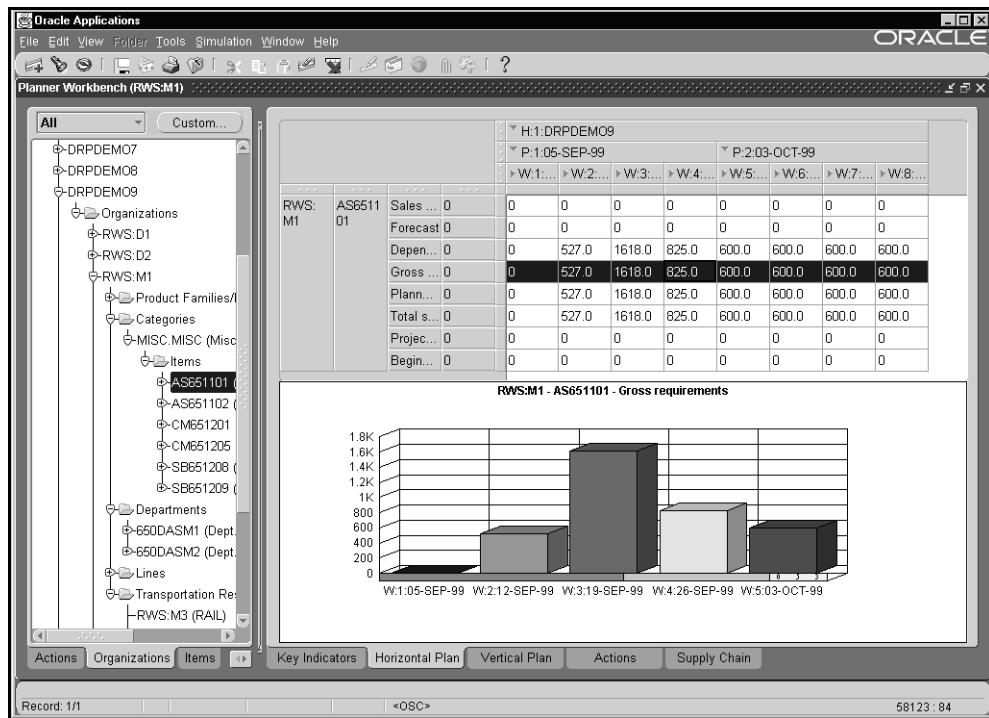
The horizontal plan information is displayed in a pivot table allowing you to drill down from years, to periods, to weeks, to days.

❱❱ **To display your plan horizontally:**

1. Select one or more items, resources, lines, transportation resources, or suppliers from the tree in the left pane.

2. In the right pane, choose the Horizontal Plan tab.

Horizontal Display Features

- Dynamically define graphs.

- Dynamically choose types of graphs.

- Hide or show graphs.

- View available capacity.

- Double-click on any cell to drill down to detail.

- Choose Tools > Preferences to define which row types to display or change at run time by right clicking.

- Left click on buckets to drill into buckets.

- Right click to switch to the Enterprise view.

Dynamically Define Graphs

Define graphs by selecting which pieces of information to graph.

Figure 7–17   Dynamically Define Graphs
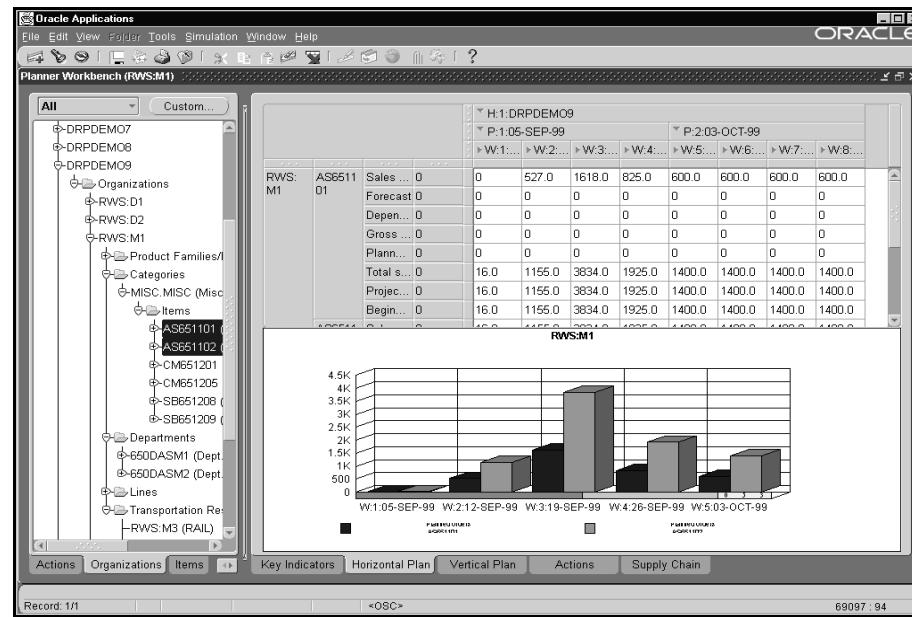
▶▶ **To define information to be graphed:**

1. In the right pane, choose the Horizontal Plan tab.

   Plan data appears in a horizontal plan.

1. Select the plan parameters you wish to graph.

   To graph two or more parameters together, hold the shift key as you select additional parameters. For example, you can graph either planned orders, gross requirements, or both. You can also choose to graph multiple items.

2. Right click to show and hide graph or save preference in the Tools > Preferences menu.

3. Right click on the Items or Organization area to display more options. Left click on Hide/Show Graph to hide the graph.

Dynamically Choose Types of Graphs

After you have graphed parameters or items (see above) you can change the chart type using the right mouse menu. For instance, if you have displayed a bar chart and you wish to display a line graph, select [right-click] > Line.

Figure 7–18   Dynamically Choose Types of Graphs
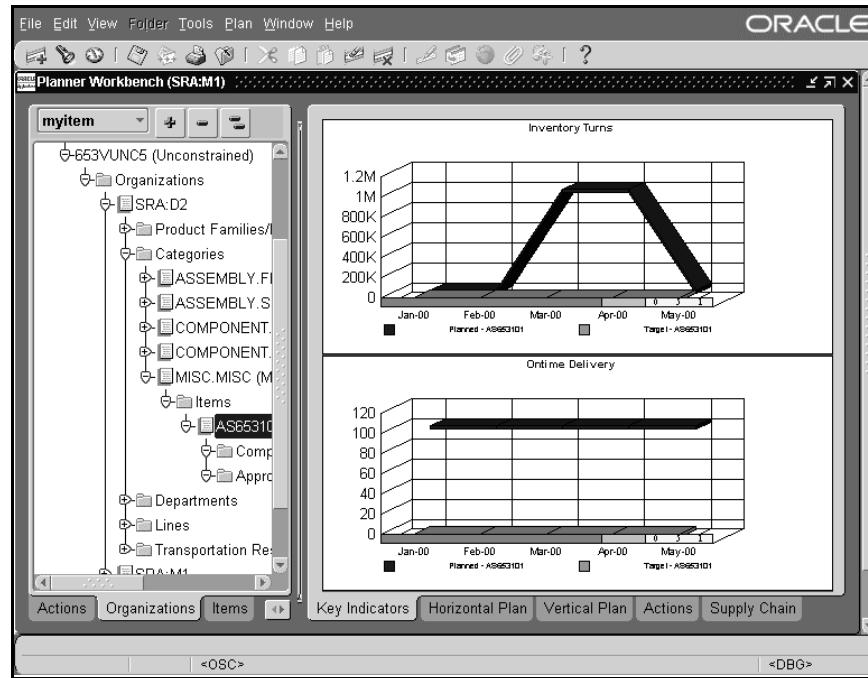
View Available Capacity

Horizontal Capacity Plan The Horizontal Plan tab displays the Horizontal Capacity Plan for resources and resource type nodes.

▶▶ **To view Resources:**

1.   Right click on an item in the navigation tree.

     The Resources window displays.

Figure 7–19   The Resources window
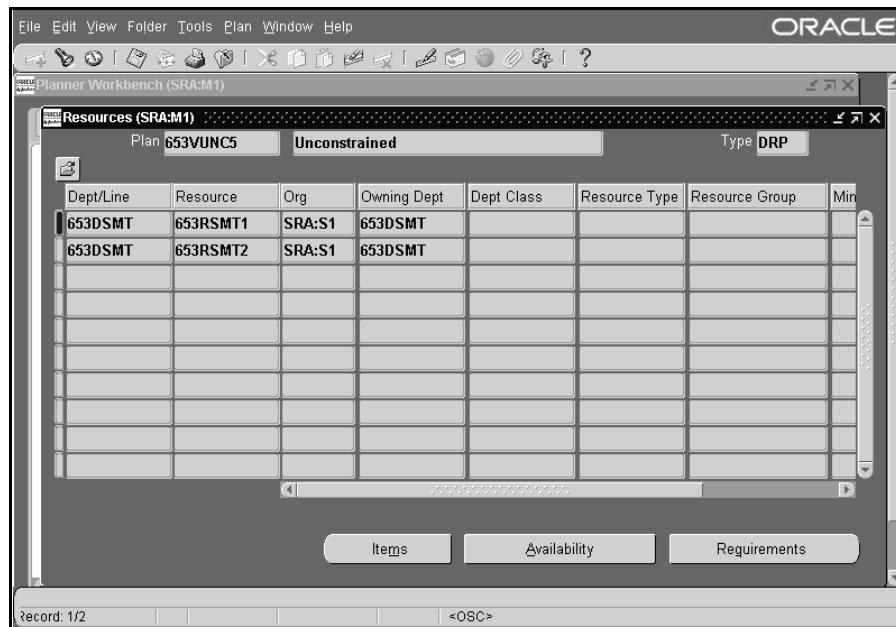
2. To view Resource Requirements, choose the Requirements button.

   The Resource Requirements window appears.

Figure 7–20   Resource Requirements window
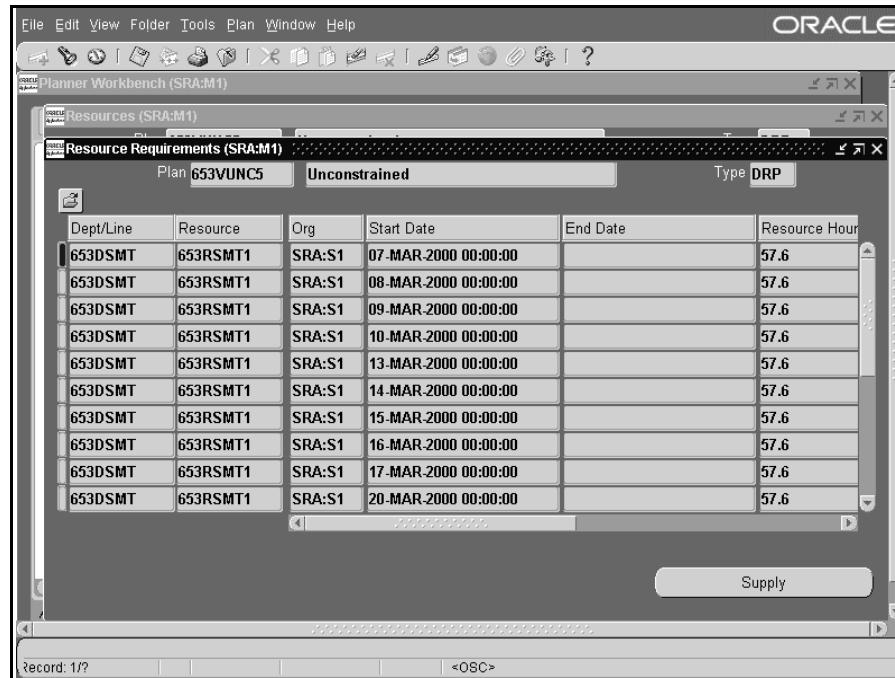
3. To view Resource Availability, choose the Availability button.

    The Resource Availability window displays.

Figure 7–21   Resource Availability window
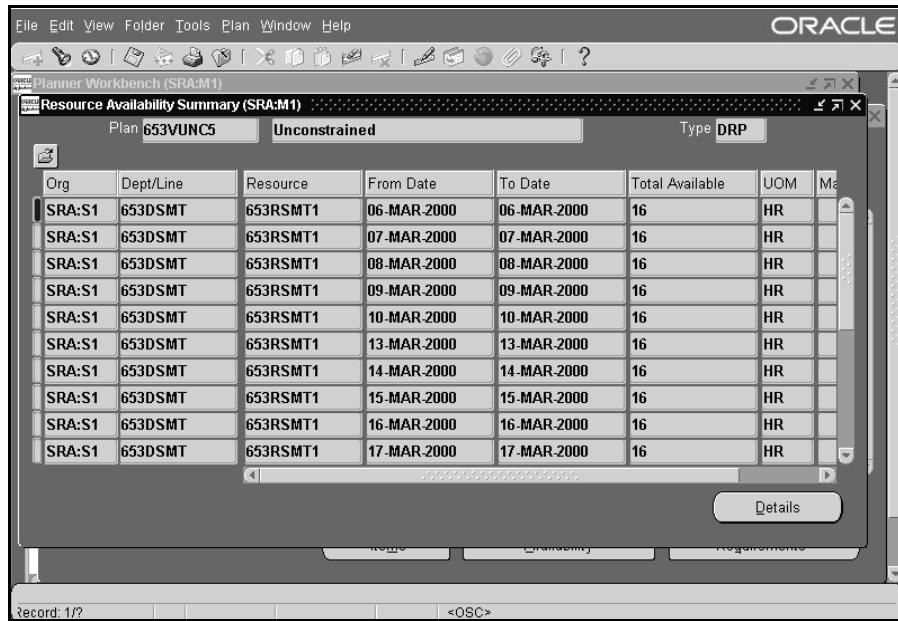
Identifying Capacity Problems Use exception messages or the horizontal capacity plan to view overloaded resources.

Actions Tab

Reviewing Planning Exceptions

The Actions tab and tree segregates all of the actions that require immediate attention. The Actions tree contains all of the recommended new orders due to be executed within a user defined time window, as well as all exception messages requiring attention.

▶▶ **To view exceptions:**

1.   Choose a plan for which to view exception messages.

**2.**   In the right pane, choose the Actions tab.

The right pane displays exception messages for that plan. You can view messages at the item level by selecting an item in the Items or Organization tab. Drill down on action messages to view details of a particular action.

Comparing Exceptions for Multiple Plans

▶▶ **To graphically compare exceptions for multiple plan scenarios:**

1. Select the plans you wish to compare in the tree navigator in the left pane.

2. In the right pane, choose the Actions tab.

3. View comparison of the exception messages.

Figure 7–22   Comparing Exceptions
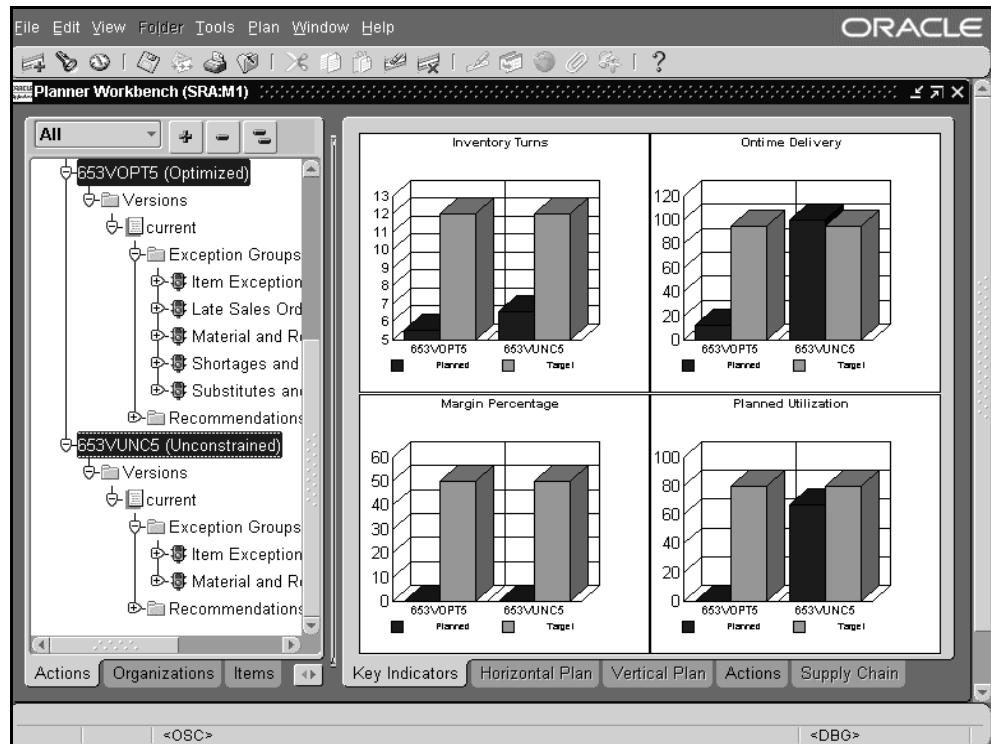

4. View details of action.

Viewing Pegging Supply and Demand Information

The Pegging window lets you trace supply information for an item to its
corresponding end demand details. You can drill up or down from any item or

component level. The Object Navigator also shows the current date and document number for a released supply order.

▶▶ **To display the Pegging window choose Tools > Pegging.**

Figure 7–23   The Pegging window
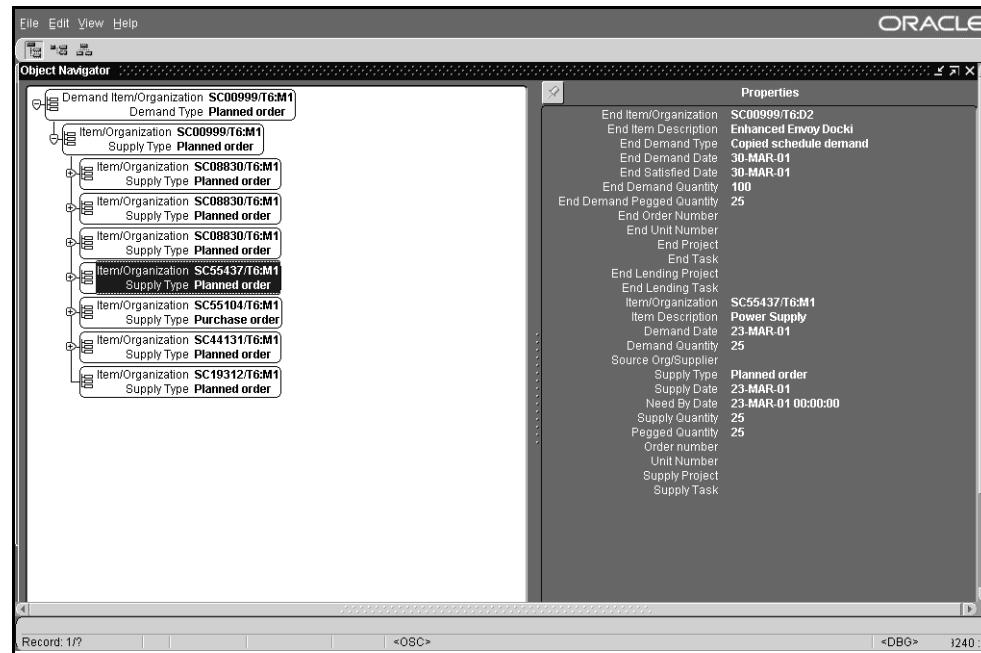
The Pegging window links the item's demand to all corresponding supply at the same time. The default display is: if you peg from demand to supply, supply order details and end item demand order information; if you peg from supply to demand, supply order details, immediate parent demand information, and end item demand information.

You can explode each node to higher level or lower level nodes.

Implementing Planning Recommendations

The Actions Summary view displays both recommendations and exceptions. The recommendations are divided into orders that need to be released and future

orders. In the Preferences window, you can specify the time frame in days for which to show recommendations.

The right mouse menu for this window includes a menu item to execute the action.

Creating and Implementing Firm Planned Orders

Accessing and Executing Planned Orders Directly You can access a subset of planned orders for a specified time period or other user defined sort criteria using the Supply ⁄ Demand window. You can also 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.

▶▶ **To access and execute planned orders:**

1. Select Actions > Recommendations.

2. Drill down to Purchase Requisitions or Discrete Jobs.

3. To firm a planned order drill down to detail then select the firm checkbox.

▶▶ **To firm all planned orders:**

1. Select Actions > Recommendations.

2. Drill down to Purchase Requisitions or Discrete Jobs.

3. Select Firm All from Tools menu.

Releasing Recommendations

▶▶ **To release recommendations:**

1. In the left pane, choose Actions tab > Recommendations.

2. Drill down to Purchase Requisitions or Discrete Jobs.

3. Select the record(s) to release.

Figure 7–24   Releasing Recommendations
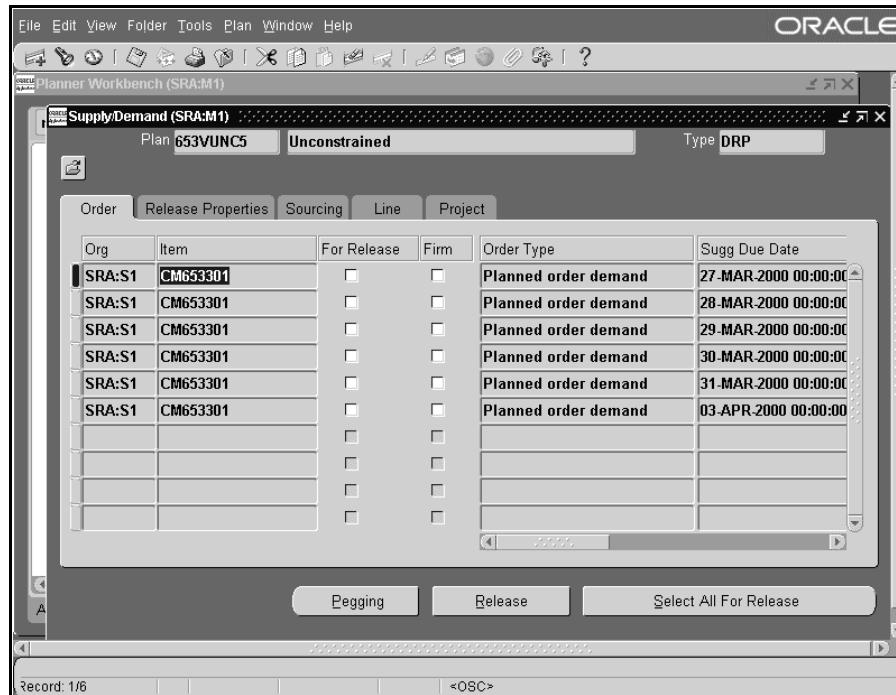
◗◗ **To modify release properties (optional):**

1. Drill down to Supply/Demand.

2. Modify release properties on Release Properties tab.

3. Select Release from the Tools menu.

Figure 7–25   Modifying Release Properties
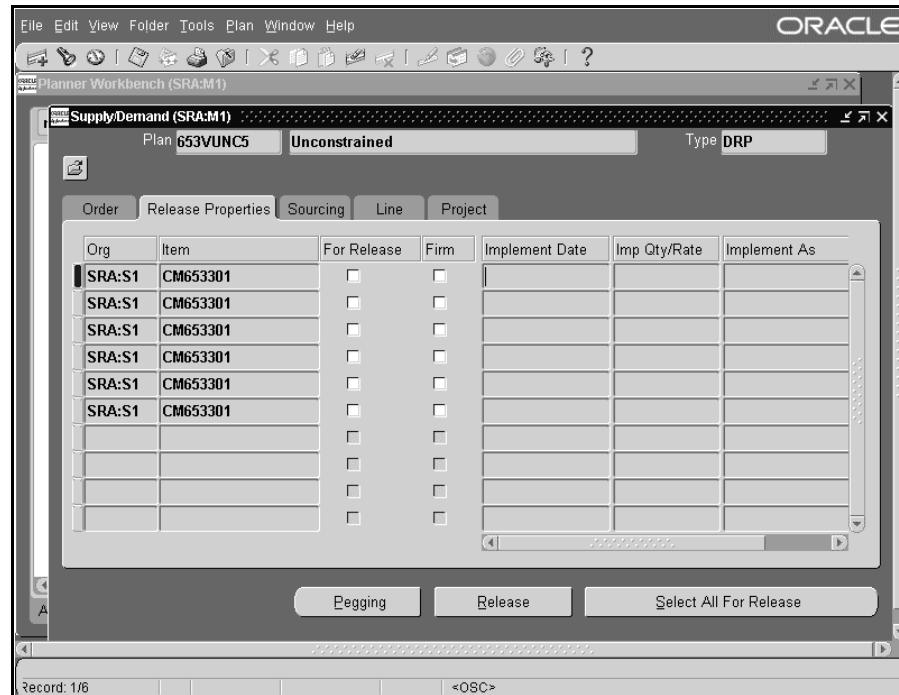
Releasing All Recommendations

To release all recommendations:

1.   In the left pane, choose Actions tab > Recommendations.

2.   Drill down to Purchase Requisitions or Discrete Jobs.

3.   Select Tools > Release All.

Reviewing and Correcting Exceptions

To review and correct exceptions:

1.   In the left pane, choose Actions tab > Recommendations.

2.   Drill down to Purchase Requisitions or Discrete Jobs.

3.   Drill down to detail.

4. Make necessary changes and save.

Reviewing a BOM or Supply Chain Bill

The tree structure makes it easy to go down levels on a bill of material. In the Organization tab, you can left click to go down a level from a department, resource, or item level to the next level down.

The supply chain map also offers the Item/Location View. This view is available only at the item nodes and is the default for these nodes. This view displays a diagrammed flow view of all the sourcing rules and bills of distribution associated with the selected item. This view also serves as the indented bill of materials.

You can use the Where User functionality in the Items window to find out where the item is used.

▶▶ **To review a BOM:**

1. In the left pane of the Navigator, choose the Items tab.

2. Choose the item for which to view a bill of materials.

3. Drill down in the Navigation tree.

8

Constraint-Based Planning

Topics covered in this section include the following:

- Overview of Constraint-Based Planning
- Constraint Types
- Enabling and Disabling Constraints
- Setting Constraints for Different Plan Types
- Rules Used in Constraint-Based Planning

A Day in the Life of a Planner
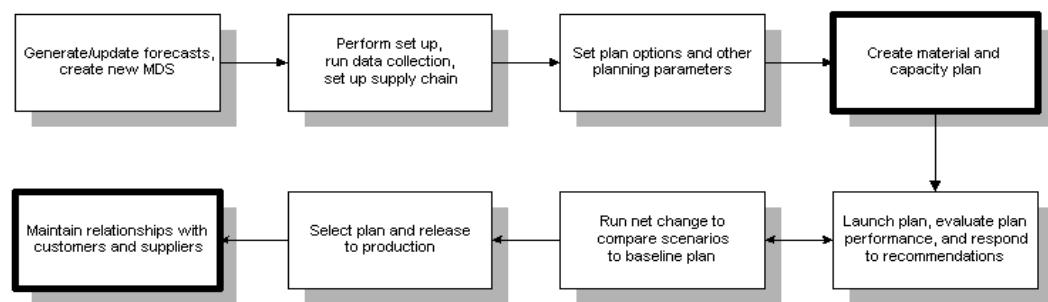
Overview of Constraint-Based Planning

Constraint-based planning and scheduling is an approach for balancing material and plant resources while meeting customer demand. It takes into account constraints at the enterprise and plant levels. Material and capacity issues are considered simultaneously, and factory, distribution and transportation issues are integrated. This complete picture of the problem provides instant and global visibility to the effects of planning and scheduling decisions throughout the supply chain.

Constraint Types

You can define constraints for materials and resources in your plan. You will also be able to specify the level of importance of these constraints depending on your business needs and the planning horizon. You can generate plans using the following scenarios:

- Plan considering material constraints only

- Plan considering resource constraints only

- Plan with respect to both material and resource constraints

See "Defining Plans" for information on defining the relative importance of constraints.

You can run a constraint-based plan based on the following:

Constraint Type	Includes
Items	BOM effectivities (process effectivity), ECOs, alternate BOMs, substitute components, byproducts, safety stocks, order modifiers, supplier-specific order modifiers, supplier-specific lead times, pegging restrictions
Manufacturing Resources	routing effectivities, alternate routings, alternate resources, resource capacities, line rates, workday calendar
Transportation Resources	carrier capacities, shipment and delivery calendars
Sourcing Constraints	sourcing effectivities, sourcing ranks, allocation percentages, supplier capacity
Suppliers	supplier capacity, supplier rank, supplier calendar, flex fences, supplier order modifier
Demands	demand priority

Items

Bills of Material

You can set effective dates for BOMs. Similarly, you can set effective dates for process effectivity. You will also be able to specify effectivities in the form of effective dates, use ups, model/unit numbers. For more information, see "Effective Date Fields" in the *Oracle Bills of Materials User's Guide.*

If components and resources are not available to build from the primary BOM, alternate BOMs will be used. For more information, see "Primary and Alternate Bills of Material" in the *Oracle Bills of Materials User's Guide.*

> **Note:** Effectivity can be set not only at the date level, but also at the unit number level.

Plan Engineering Changes (ECOs)

Oracle ASCP evaluates the engineering change orders as of their scheduled effective date. You can order material and plan resources that you need for new revisions ahead of time.

> **Note:** The planning process only suggests implementing engineering change orders when the start date of the planned order is later than the effective date. Oracle ASCP does not suggest a planned order using an ECO if the planned order needs to start before the effective date of the ECO.

For a pending ECO, you can specify whether to include the engineering changes during the planning process. Set the MRP Active Flag to Yes in the Engineering Change Order window if you want the planning process to consider the engineering changes on the ECO.

Oracle ASCP considers engineering changes when generating component requirements for planned orders and suggested repetitive schedules. The quantity specified by an engineering change order is considered if the scheduled effective

date of the ECO is before the suggested start date of the order. For example, if you have defined the following bill of material:
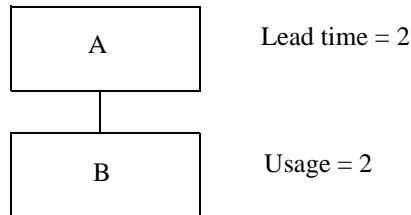
Lead time = 2

Usage = 2

Assembly A has a lead time of 2 days. Component B has a usage of 2. You defined an engineering change order that changes the usage of B to 3. The ECO has a scheduled effective date of Day 4. If the material plan for Assembly A is:

	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Gross Requirements	0	0	100	100	100	100
Planned Orders	0	0	100	100	100	100

The planned orders for Assembly A with due dates of Day 4 and Day 5 have start days of Day 2 and Day 3 respectively when offset by the lead time of 2 days. Since neither planned order has a start date that is on or after the scheduled effective date of the engineering change order, the component requirements are generated based on the current bill of material that specifies a usage of 2 Bs.

The planned orders for Assembly A with due dates of Day 6 and Day 7 have start dates of Day 4 and Day 5 respectively when offset by the lead time of 2 days. Since both planned orders have a start date that is on or after the scheduled effective date of the engineering change order, the component requirements are generated based on the revised usage of 3 Bs.

The material plan for component B is:

	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Gross Requirements	200	200	300	300	0	0
Planned Orders	200	200	300	300	0	0

Substitute Components

Substitute components are modeled similarly to alternate resources. Each primary BOM component is assumed to have a set of possible substitutes. The primary item will be used instead of the substitute when it is available.

For more information, see "Assigning Substitute Components" in the *Oracle Bills of Material User's Guide.*

Byproducts

You can define negative usages for component items on a bill of material in Oracle Bills of Material. You can add byproducts to discrete jobs using Oracle Work in Process.

Oracle ASCP includes byproducts on standard and non-standard discrete jobs and components with a negative usage on a bill of material when netting supply and demand. Oracle ASCP considers this type of component requirement as supply available on the job completion date.

> **Note:** You can manually add a negative requirement to a non-standard job in Oracle Work in Process to manage components that result in disassembly. You could use this option for repairing assembly units. It lets you track the item that is issued to the job as available supply on completion of the repair job.

Product Families

Product families improve plan performance, letting you plan further down the plan horizon. You can do the following at the product family level:

- specify demands
- run planning and scheduling
- create supplies

Safety Stock

Safety stock is a quantity of stock you plan to remain in inventory to protect against fluctuations in demand or supply. Safety stock is sometimes referred to as overplanning, forecast, or a market hedge. In the context of master scheduling, safety stock refers to additional inventory planned as protection against forecast errors or short term changes in the backlog. You can specify safety stock days together with safety stock percent as item attributes in Oracle Inventory.

You establish the default use of safety stock calculation when you define your planning parameters. You can override this option for individual material plans when you generate a MRP or MPS using the Launch window.

When launching the planning process, you can choose whether to calculate safety stock when generating suggested planned orders and repetitive schedules in the Plan Options window. If you choose to run the planning process with the safety stock option, Oracle ASCP looks at each item to determine the method of safety stock calculation. You can define safety stock methods for each item using Oracle Inventory.

MRP Planned Percent If you choose a safety stock method of MRP planned percent for an item, safety stock is dynamically calculated during the planning process. For discretely manufactured items, the safety stock quantity is dynamically calculated by multiplying the safety stock percentage you define by the average of gross requirements for a period of time defined by the safety stock days. For repetitively manufactured items, the planning process multiplies the percentage you define by the average daily demand for a given repetitive planning period.

The planning process recalculates the safety stock quantity for each repetitive period in the planning horizon.

Inventory Methods Oracle Inventory provides several different methods for calculating safety stock.

The following methods are available within Oracle Inventory for calculating safety stock and are used during the planning process if your safety stock method is Non-MRP planned:

- Mean absolute deviation (MAD)

  Calculate safety stock as the mean absolute deviation (MAD).

- User-defined percentage

  Calculate safety stock using the percentage you define times the average monthly demand.

■ User-defined quantity

Use a fixed safety stock quantity you define.

Safety stock quantities generated in Oracle Inventory according to effectivity dates are included in planning. Instead of manually changing the user-defined safety stock quantity each time a change is needed, you can now set effectivity dates for when a change in quantity takes place.

Order Modifiers

Order sizing is a set of item attributes that allow you to control the recommended order quantities for planned orders. The planning process creates planned orders using basic lot-for-lot sizing logic.

> **Note:** The planning process ignores order modifiers for items that have a phantom supply type.

> **Note:** Order modifiers for supplied items are defined by their suppliers.

Fixed Order Quantity The planning process places one or more orders for the user-defined quantity or repetitive rate.

■ For discretely planned items, when the requirement for a given date exceeds the fixed order quantity, place multiple orders.

■ For repetitively planned items, either recommend a rate equal to the fixed order quantity or a rate of zero.

Fixed Lot Multiple

The planning process places single orders in quantities that are multiples of the user-defined quantity or rate.

For example, when the fixed lot multiple quantity is 100 and the requirement equals 110 units, place a single order for 200 units.

Minimum and Maximum Order Quantity

The planning process places one or more orders for at least the minimum quantity, but no greater than the maximum quantity.

For discretely planned items, when the requirement for a given date exceeds the maximum order quantity, the planning process places multiple orders.

Fixed Days Supply

The planning process places single orders for the quantity that covers the requirements for the user-defined number of days. When suggesting planned orders, the planning process looks forward this many days and accumulates all of the demand in that time period. It then suggests a planned order to satisfy the total quantity required for that time period.

Rounding Order Quantities

You can define, for each inventory item, whether the planning process should round order quantities when the actual order quantity is calculated as a fraction. If you choose to round, order quantities are rounded to the next highest whole number.

> **Note:** By rounding up, the planning process may suggest a planned order for more than what is actually needed. This extra quantity is carried over into the next period as supply.

Manufacturing Resources

Routings

You can set effective dates for routings. If components and resources are not available to build from the primary routing, alternate routings or alternate resources may be used. You can define different routings with varying priorities. You can associate a BOM with routings. You can also define the cost of using a routing.

For more information, see "Routings" in the *Oracle Bills of Material User's Guide.*

Resources

You can define alternate resources for an operation, but not for a routing. A resource for an operation can have different alternates, each with its own priority. You can specify if two resources must be used simultaneously.

For more information, see "Defining a Resource" in the *Oracle Bill of Materials User's Guide.*

Workday Calendar

You define a workday calendar for one or more organizations, and assign an exception set to each calendar. For each workday calendar and exception set, you assign a list of holidays or workday exceptions. You then define shifts for your workday calendar, and assign any shift workday exceptions.

For more information, see "Defining a Workday Calendar" in the *Oracle Bill of Materials User's Guide.*

Transportation Resources

Oracle APS considers Transportation and Storage Capacity constraints to plan accurately while providing a strong Available/Capable to Deliver (ATD/CTD).

You will be able to define transportation capacity for a lane of a ship method. In addition, you will be able to define aggregate capacity for an intransit/destination warehouse or a storage location.

For information, see "Transportation Capacity."

Sourcing Constraints/Suppliers

You can specify the time-phased capacity of individual suppliers to specific items in Oracle Purchasing. You can allocate planned orders using the constraints of the suppliers--planned orders are assigned supplier sources in respect to their capacity. Planning uses the ranking information you specify and first attempts to source the planned orders with the primary sources. If the capacity to fulfill the demand is not available, alternative sources are used.

Table 8–1   Sourcing Table

Source	Rank	Percentage	Effective From	Effective To
Supplier 1	1	40	05/15	12/31
Supplier 2	1	60	05/15	12/31
Supplier 3	2	100	05/15	12/31

Supplier capacity is specified in units per day over a designated time period. Supplier capacity accumulates if not used on a particular day. For example, if a supplier's capacity is 100 units per day from 1/1/99 to 1/10/99 and no units are ordered from the supplier from 1/1/99 to 1/3/99, then planning considers a total of 1000 units to be available from 1/4/99 to 1/10/99.

Supplier capacity can vary by time period. You can specify one daily capacity for Period 1 and a different capacity for Period 2. Time periods are specified from a start date to an end date.

See "Supply Chain Modeling" for more information about setting supplier capacity constraints.

Tolerance Fences

You can define capacity tolerance percentages that can vary for each of your items. The tolerance fence data in Oracle Purchasing is used to adjust production according to capacity changes for item/supplier combinations when the order is placed. Tolerance fence values can be specified for the capacity fluctuation allowed for available to promise; and used to determine demand based on the amount of advanced notice given to the supplier.

See "Supply Chain Modeling" for more information about setting tolerance fences.

Demands

You can specify priority rules by ordering demands. Scheduling is performed on a demand by demand basis.

Enabling and Disabling Constraints

▶▶ **To enable and disable constraints:**

1. In the left pane, choose Plan Options > Aggregation tab.

Figure 8–1   The Aggregation Tab
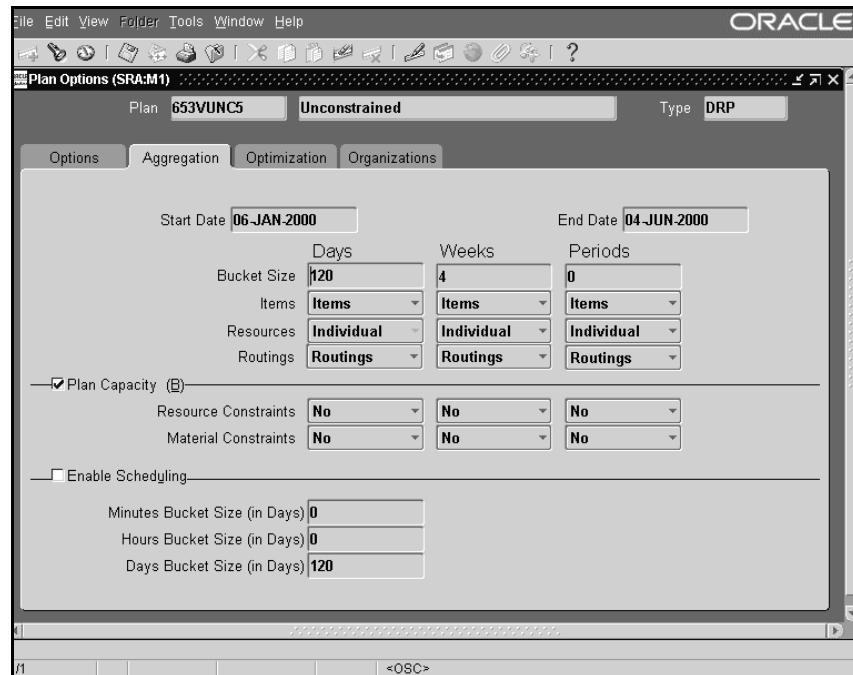
2. Using the drop-down menus, set Resource or Material Constraints to Yes or No based on your business requirements.

> **Note:**   To generate exception messages related to material resource capacity, you must select the Plan Capacity checkbox.

For more information on setting constraints prior to launching plans, see "Defining Plans."

3. Enter the time horizon in days, weeks, or periods.

You can specify different levels of aggregation in different time buckets so that detailed information is considered more frequently and less detailed information is considered less frequently.

> **Note:** You cannot update the Start Date and End Date. The End Date is calculated based on your time bucket settings.

Setting Hard and Soft Constraints

Oracle ASCP lets you prioritize how you enforce Capacity Constraints or Demand Due Dates. Whichever constraint takes precedence over the other is the "hard constraint"; the other is the "soft constraint." If you choose to enforce Demand Due Dates (setting Demand Due Dates as a hard constraint), then resources are used and possibly overloaded to satisfy demand due dates. In this case, Oracle ASCP returns overloaded exception messages.

If you choose to enforce Capacity Constraints (setting Capacity Constraints as a hard constraint), then resource are loaded to their limit to satisfy demand (if required). Unsatisfied demand are pushed to future. In this case, Oracle ASCP returns late replenishment exception messages.

> **Note:** You must choose one and only one type of constraint.

▶▶ **To set hard and soft constraints:**

4. In the left pane, choose the Plan Options.

Figure 8–2   The Options Tab
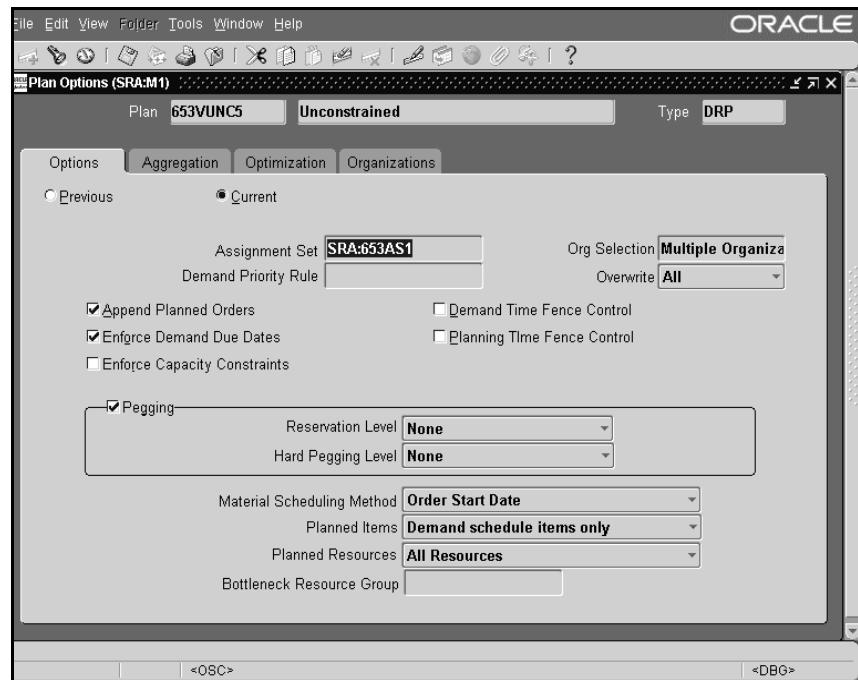
5. Check either the Enforce Demand Due Dates or the Enforce Capacity
    Constraints checkbox. The selected checkbox represents a hard constraint while
    the unselected checkbox represents a soft constraint.

Setting Constraints for Different Plan Types

The following table describes the requirements for setting constraints for various types of plans.

Plan Type	Options Tab	Aggregation Tab	Optimization Tab
Unconstrained	Enforce Demand Due Dates and Enforce Capacity Constraints checkboxes are unchecked.	Resource Constraint and Material Constraint fields are set to No. Plan Capacity checkbox is checked.	Optimization checkbox is unchecked.
Material Constrained	Depending on your hard and soft constraint requirements, check either Enforce Demand Due Dates or Enforce Capacity Constraints checkbox. **Note:** You can check one and only one checkbox.	Resource Constraint field set to No; Material Constraint field are set to Yes. Plan Capacity checkbox is checked.	Optimization checkbox is unchecked.
Resource Constrained	Depending on your hard and soft constraint requirements, check either Enforce Demand Due Dates or Enforce Capacity Constraints checkbox. **Note:** You can check one and only one checkbox.	Resource Constraint field set to Yes; Material Constraint field are set to No. Plan Capacity checkbox is checked.	Optimization checkbox is unchecked.
Material and Resource Constrained	Depending on your hard and soft constraint requirements, check either Enforce Demand Due Dates or Enforce Capacity Constraints checkbox. **Note:** You can check one and only one checkbox.	Resource Constraint and Material Constraint fields are set to Yes. Plan Capacity checkbox is checked.	Optimization checkbox is unchecked.

Plan Type	Options Tab	Aggregation Tab	Optimization Tab
Optimized	Depending on your hard and soft constraint requirements, check either Enforce Demand Due Dates or Enforce Capacity Constraints checkbox. **Note:** You can check one and only one checkbox.	Either or both Resource Constraint Material Constraint fields are set to Yes. Plan Capacity checkbox is checked.	Optimization checkbox is checked.

Rules Used in Constraint-Based Planning

When running a constrained but not optimized plan, the following rules are used:

■ Demand Priorities are respected

> **Note:**   When Demand Priorities are not specified, the default priorities of the various demand types are (in order): sales order, forecast, and safety stock.

■ Alternate BOMs will not be considered

■ Alternate routings will not be considered

■ Substitute items will not be considered

9

Optimization

Topics covered in this section include the following:

- Overview of Optimization
- Optimization Objectives
- Setting Penalty Factors
- Comparing Different Optimization Runs

A Day in the Life of a Planner

```
┌─────────────────────┐   ┌─────────────────────┐   ┌─────────────────────┐   ┌─────────────────────┐
│ Generate/update     │→  │ Perform set up,     │→  │ Set plan options    │→  │ Create material and │
│ forecasts,          │   │ run data collection,│   │ and other planning  │   │ capacity plan       │
│ create new MDS      │   │ set up supply chain │   │ parameters          │   │                     │
└─────────────────────┘   └─────────────────────┘   └─────────────────────┘   └─────────────────────┘

┌─────────────────────┐   ┌─────────────────────┐   ┌─────────────────────┐   ┌─────────────────────┐
│ Maintain            │←  │ Select plan and     │←  │ Run net change to   │←  │ Launch plan,        │
│ relationships with  │   │ release             │   │ compare scenarios   │   │ evaluate plan       │
│ customers and       │   │ to production       │   │ to baseline plan    │   │ performance, and    │
│ suppliers           │   │                     │   │                     │   │ respond to          │
└─────────────────────┘   └─────────────────────┘   └─────────────────────┘   │ recommendations     │
                                                                               └─────────────────────┘
```

Overview of Optimization

Oracle ASCP incorporates advanced optimization techniques. Solver and optimization technology has been incorporated to 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.

The new algorithm is used to optimize plans based on financial and other enterprise strategic objectives. It helps determine optimal sourcing decisions, production, and distribution plans for each of your facilities.

You can choose to optimize your plans to meet one or more of the following objectives:

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

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.

Optimization Objectives

Multiple optimization objectives can be met by assigning weights to each. This is done using the Optimization tab, assigning weights to each optimization objective.

For more information on the Optimization tab, see "Defining Plans."

Figure 9–1   The Optimization Tab
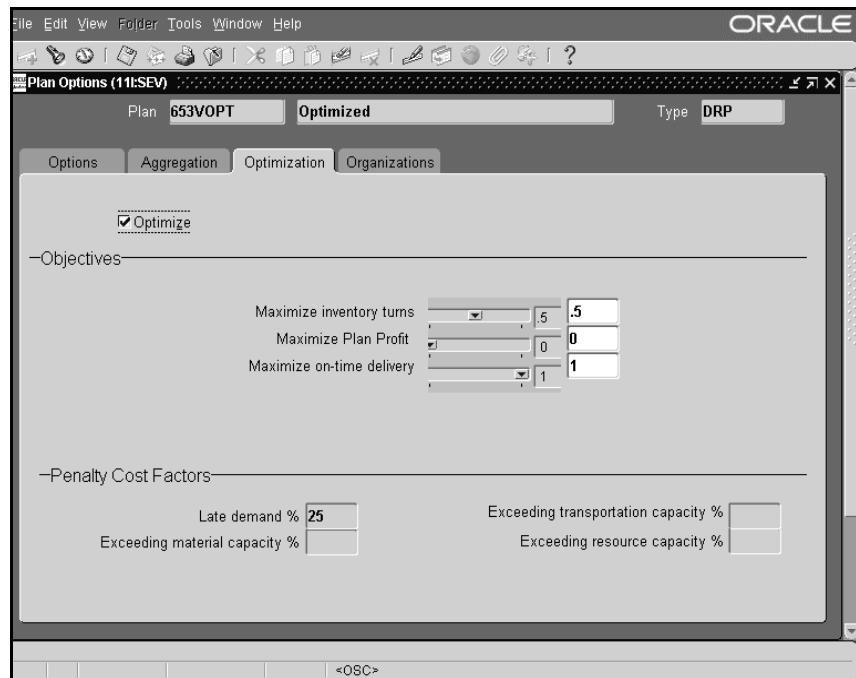
Following are descriptions of the various optimization objectives:

Maximize Inventory Turns This objective is achieved by minimizing the total inventory for the plan duration.

Maximize Plan Profit The following are considered:

- Item cost
- Resource cost
- Inventory carrying cost
- Transportation cost

Maximize Ontime Delivery This maximizes ontime delivery by trying to ensure that all demand is met ontime. Penalty factors specify the relative importance of demands when maximizing ontime delivery.

Setting Penalty Factors

Oracle ASCP depends a great deal on data related to costs, penalties, and priorities above and beyond what is available from the ERP system. You can set penalty factors at different levels using flexfields, plan options, or profile options. Flexfields let you set penalty factors at the most discrete level. For example, you can set the Penalty Factor for Late Demand at the Demand, Item, or Org level using flexfields. Plan options and profile options let you set the same penalty factor at the plan level and site level, respectively.

Following are hierarchies for setting Penalty Factor for Late Demand, Penalty Factor for Exceeding Material Capacity, and Penalty Factor for Exceeding Resource Capacity.

> **CAUTION:** **Penalty costs are different from penalty factors. Penalty costs are the product of the penalty factor and some other variable (for example, list price, item cost, resource cost, or transportation cost).**

For more information on setting penalty factors, see "Oracle ASCP Profile Options" and "Oracle ASCP Flexfields."

Figure 9–2   Hierarchy for Setting Penalty Factor for Late Demand
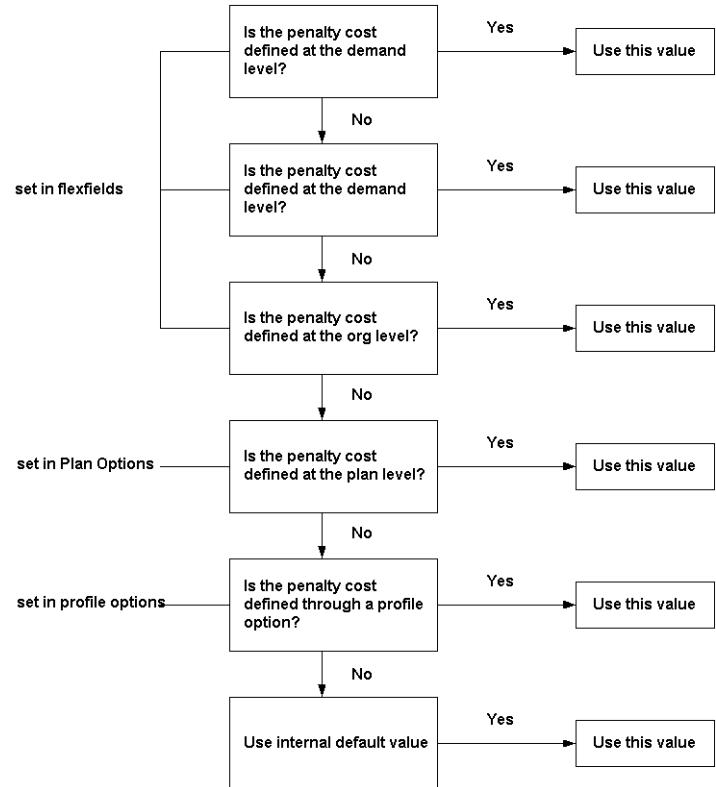
If the data is not available at a given level, Oracle ASCP will check for available data at the next level in the hierarchy and so on.

Figure 9–3   Hierarchy for Setting Penalty Factor for Exceeding Material Capacity
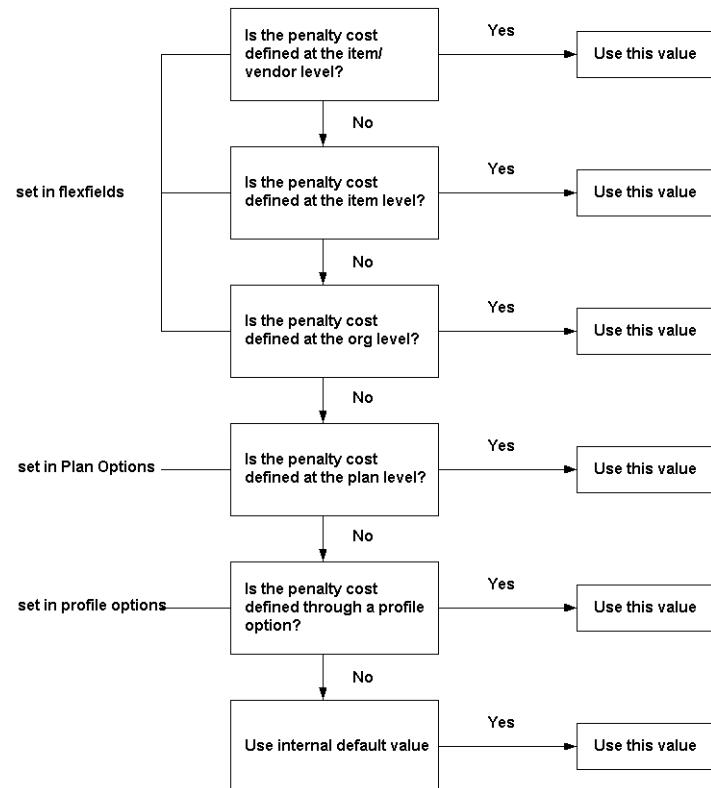
If the data is not available at a given level, Oracle ASCP will check for available data at the next level in the hierarchy.

Figure 9–4   Hierarchy for Setting Penalty Factor for Exceeding Resource Capacity
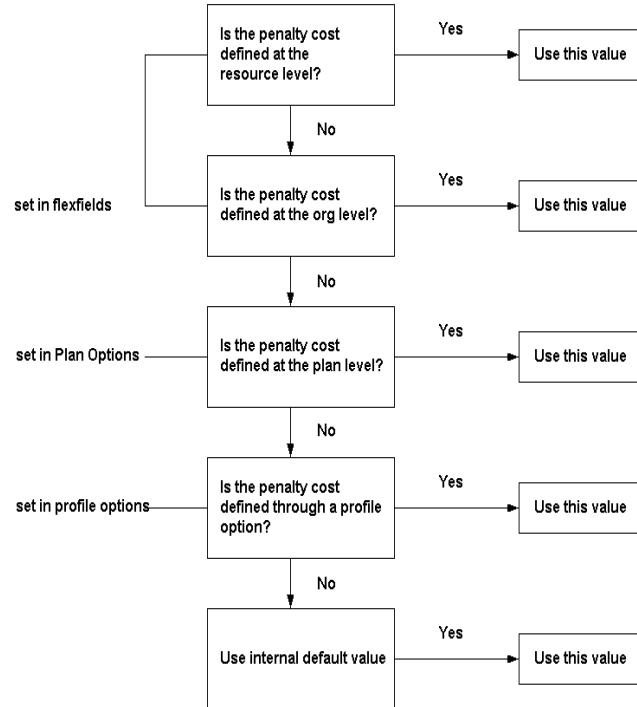
If the data is not available at a given level, Oracle ASCP will check for available data at the next level in the hierarchy.

Setting Penalty Factors Using Plan Options

There are four penalty factors that can be set in the Optimization tab. For more information on the Optimization tab, see "Defining Plans."

- Penalty Factor for Late Demand

- Penalty Factor for Exceeding Material Capacity

- Penalty Factor for Exceeding Transportation Capacity

- Penalty Factor for Exceeding Resource Capacity

Penalty Cost for Late Demand

The penalty factor for late demand is equal to:

For forecasts and sales orders,

(penalty factor) x (list price)

Penalty Cost for Exceeding Material Capacity

The penalty cost for exceeding material capacity is equal to:

(penalty factor for exceeding material capacity) x (item cost)

Penalty Cost for Exceeding Transportation Capacity

The penalty cost for exceeding transportation capacity is equal to:

(penalty factor for exceeding transportation capacity) x (transportation cost)

Penalty Cost for Exceeding Resource Capacity

The penalty cost for exceeding resource capacity is equal to:

(penalty factor for exceeding resource capacity) x (resource cost)

> **Note:** Unit costs (list price, item cost, and so on) play an important role in determining penalty costs.

Setting Penalty Factors Using Optimization Profile Options

These profile options can be used to specify default values necessary for optimization.

> **Note:** For detailed information on setting these and other profile options, see "Oracle ASCP Profile Options."

Penalty Factor for Late Demand

Use this profile option to define a penalty factor common to all demands. The demands include sales orders and forecasts.

Penalty Factor for Exceeding Material Capacity

Use this profile option to define a global penalty factor for exceeding material capacity. This value will be common to all items in the plan.

Penalty Factor for Exceeding Resource Capacity

Use this profile option to define a global penalty factor for exceeding resource capacity. This value will be common to all manufacturing and transportation resources in the plan.

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.

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.

Comparing Different Optimization Runs

You can generate an optimized and executable plan based on your plan objectives as well as material, resource, and transportation constraints. Oracle ASCP provides online interactive simulation planning so you can rapidly simulate changes and respond to changing conditions. For example, you could compare two optimized plans with different objective weights and compare the results based on performance indicators.

For more information on simulations see "Simulations." For more information on evaluating plan performance and comparing multiple plans, see "Performance Management."

10

Simulations

Topics covered in this section include the following:

- Overview of Simulations
- Simulation Scenarios
- Simulation Modes
- Running Net Change Replan Simulations
- Comparing Scenarios Quantitatively

A Day in the Life of a Planner
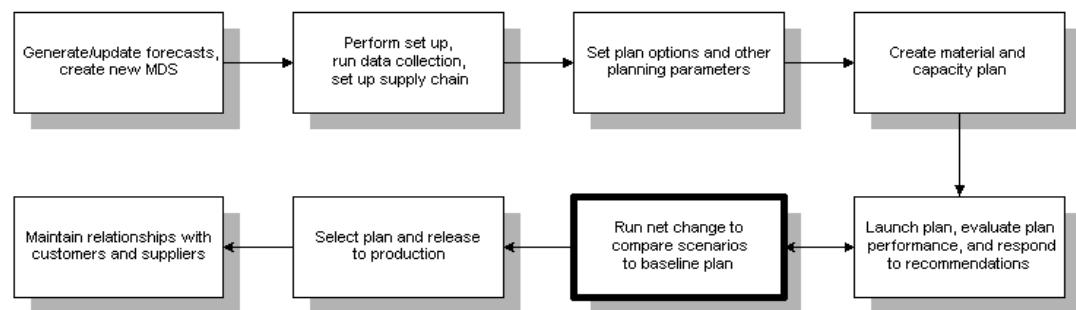
Overview of Simulations

Oracle ASCP provides online interactive simulation planning so you can rapidly simulate changes and respond to changing conditions. Simulations can be run by changing plan inputs and parameters and rerunning the new, simulated plan. The new simulated plan can be saved as a new plan and compared to the original (baseline) plan. You can copy and version your plan, save and compare exceptions, and visually highlight changes.

Simulation Scenarios

You can simulate changes to material and resource capacity simultaneously. You can also simulate changes to the objectives and weights used for optimization or simulate changes to demand priorities. In addition, you can simulate the effects of changing planned orders.

Item Supply and Demand

To simulate item supply changes, you can adjust a supplier's material capacity (for example, change daily capacity from 100 units to 200 units) over a specified time frame.

To simulate demand changes, you can modify quantities and due dates for independent demand (MDS entries)

Resource Availability

You can modify how much resources are available over user defined time frame. Resource constraints includes available machine hours, available worker hours, adding or removing shifts.

Order Sources

To simulate order changes, you can:

- Change work order quantities and dates
- Change work order component and resource quantities and dates
- Change work order status - ('firm')
- Change purchase order quantities and dates
- Change purchase order status - ('firm')

- Change planned order quantities and dates

- Change planned order status - ('firm')

Optimization Objectives

You can decide the relative importance of the many objectives Oracle ASCP tracks, according to your business or industry sector. These will provide the basis for Oracle ASCP in optimizing the plan. For example, for some industries, inventory turns are a much more important performance indicator than cycle time. The following objectives are supported by Oracle ASCP:

- maximize inventory turns

- maximize plan profit

- maximize ontime delivery

You can also modify the weights that you have assigned for each objective and have the system generate an optimal plan based on the new objectives.

Demand Priorities

You can alter the demand priority of any demand. Oracle ASCP then modifies the existing schedule to accommodate changes to demand priority.

Simulation Modes

You can use the Planner Workbench to replan manual changes to specific orders, the addition of new supply and demand records, and all items affected by those changes. Net change replan simulation is a powerful What If analysis feature that lets you update a material plan by planning just the items you have changed in the Planner Workbench. The replanning is based on the snapshot data gathered during the original planning run and the changes you have made with the Planner Workbench. No other transactions, such as receipts in Oracle Inventory, are considered in the replanning process. You also have the ability to implement the changes recommended by net change replan.

Net Change Replan

Net change replan generates only those plan outputs that have changed compared to a baseline plan. It allows evaluation of plans within seconds when minor changes

are made in the plan. When running net change replan you can run either batch mode replan or online planner.

Batch Mode Planner

Batch mode lets you communicate directly with the database while making and replanning your changes. While frequent replanning can place an excessive load on system resources, batch mode gives other users access to the plan while you are performing simulations.

Batch mode is particularly useful when you want to complete a single replanning cycle.

Online Planner

The online planner lets you simulate and replan manual changes to supply and demand records without increasing database traffic. Starting an online session loads all planning data into memory, afterwards, you can make changes to that data, then replan the changes to see their effect on the rest of the plan. You can implement and release your changes from within the session, or you can make changes and replan as many times as necessary before the release.

As a simulation tool, the online planner quickly lets you see the effect of the changes you make in the Planner Workbench. As an implementation tool, it reduces unnecessary database transactions and offers rapid plan revision and execution. As a monitoring tool, it generates the full set of exception messages following a replan it also lets you save the exceptions generated by previous sessions, offering you feedback on successive planning decisions.

The online planner is particularly useful when performing frequent simulation on a single plan. In online mode, you can do this without suffering a significant loss in performance.

However, there are restrictions to using the online planner. With the exception of optimization weights, you cannot make changes to item attributes or plan options. The online planner will lock all other users out of the plan while the session is active.

Running Net Change Replan Simulations

You have two options for running net change replan simulations:

- Batch replan
- Online replan

Running Batch Replan

> **Note:** Save and make a copy of your baseline plan before running batch replan (make modifications only to the copy). Otherwise, you will lose visibility to your baseline plan.

▶▶ **To run a batch replan:**

1. Select a plan in the Planner Workbench.

2. Make the desired changes to the plan.

3. Run your plan again by choosing Plan > Batch Replan.

4. Make a note of the concurrent request ID and choose OK.

5. Verify that the replanning process is complete.

6. Re-query the plan to review your changes.

7. If you are not satisfied with the replan results, repeat steps 2 through 6 as needed.

Running Online Replan

> **Note:** Save and make a copy of your baseline plan before running online replan (make modifications only to the copy). Otherwise, you will lose visibility to your baseline plan.

▶▶ **To run online replan:**

1. Select a plan in the Planner Workbench window.

2. Choose Plan > Start Online Planner.

3. Click OK to acknowledge that starting this session will prohibit access to the plan by other users.

4. Make a note of the concurrent request ID and choose OK.

   While the online planner loads the data into memory, you will see the Online Planner Status window. This window displays the progress of the loading and signals you when the session is ready for planning.

5. When the status window informs you that the session is ready for planning, close the window to return to the Planner Workbench. Your online planner session is now active.

6. Make the desired changes to your plan.

7. Save the plan.

8. Choose Plan > Online Replan.

▶▶ **To check the status of an online planner session:**
Choose Plan > Online Planner Status.

▶▶ **To stop an online planner session:**
1. Choose Plan > Stop Online Planner.

2. Click OK to confirm your choice.

> **Note:** Do not stop the online planner until all simulations are complete.

▶▶ **To save your actions:**
Choose Plan > Save actions.

A pop-up window indicates the version number of your saved actions. Note this version number if you wish to view your actions later.

▶▶ **To view your actions:**
Select the Actions tab (left pane) then scroll down to the desired version.

Comparing Scenarios Quantitatively

Simulation lets you compare Key Performance Indicators (KPIs) of multiple plans and make necessary changes to reach your goals. Standard KPIs available in Oracle ASCP are:

■ Inventory Turns

■ Ontime Delivery

■ Planned Utilization

■ Margin Percentage

You will be able to quantify the results of simulation scenarios and graphically compare the results of multiple scenarios to help you choose the plan that best meets you performance objectives.

▶▶ **To compare scenarios quantitatively:**

1. Navigate to the Planner Workbench.

2. Select the baseline plan.

3. While holding the shift key, select the simulated plan.

   KPIs for both plans show side by side.

11

Performance Management

Topics covered in this section include the following:

- Overview of Performance Management
- Key Performance Indicators (KPIs)
- Tracking Plan Performance Using KPIs
- Making Improvements Based on KPIs
- Exception Messages
- Making Decisions Based on Exceptions

A Day in the Life of a Planner
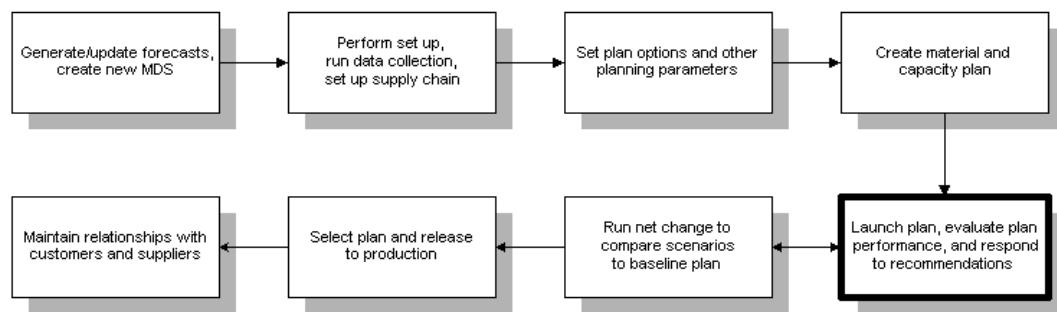
Overview of Performance Management

Oracle ASCP is integrated with the Oracle Business Intelligence System (BIS) performance management system. BIS lets you set the organizational objectives

> **Note:** These objectives, known as *Performance Measures* in 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 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.

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:

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

Average inventory between time period t_1 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.

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:

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

Average Utilization = $\dfrac{\Sigma_i \ \text{Utilization for } R_i}{\Sigma_i}$

Ontime Delivery

Customer service level or delivery performance are calculated as follows:

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

Tracking Plan Performance Using 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, Ontime 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 Ontime Delivery."

Increasing Ontime Delivery

- Ontime 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.

12

Oracle Global ATP Server

Topics covered in this section include the following:

- Overview of Oracle Global ATP Server
- ATP, CTP, and CTD
- Oracle Global ATP Server
- Data Collection
- Oracle Global ATP Server Profile Options
- Sources of Supply and Demand
- Enabling Multi-Level Supply Chain ATP, CTP, and CTD
- Supply Chain
- ATP Logic
- ATP Inquiry

Overview of Oracle Global ATP Server

Oracle APS includes Oracle Global ATP Server, a tool that enables sophisticated, fast, accurate, and flexible order promising.

Oracle Global ATP Server can be deployed in a distributed environment, where multiple order entry systems can access a "global" statement of availability. Delivery dates can be committed to customers based on material availability at all levels of the bills of material.

The order committing decision can also be made based on supply chain material and resource availability. The decision can also be made relative to transportation resources and transportation time necessary to meet a delivery date.

Apart from determining if a requested item and quantity will be available at a specified date, Oracle Global ATP Server also helps determine the earliest date when the customer's request can be fulfilled.

Oracle Global ATP Server offers multi-level supply chain Available to Promise (ATP), Capable to Promise (CTP) and Capable to Deliver (CTD). In earlier versions of Oracle Applications, ATP checks were for a single level (top level) of the bills of material and resources. Oracle Global ATP Server now offers multi-level bills of material and resource checks. In addition, while earlier versions provided ATP and CTP checks for a single instance only, Oracle Global ATP Server offers ATP, CTP, and CTD using multiple Oracle Applications instances as well as legacy systems.

ATP, CTP, and CTD

ATP refers to the ability to promise availability based on a pre-defined statement of current and planned supply.

CTP considers the production capacity that is uncommitted and the supplier capacity that is uncommitted in addition to the above.

In addition to ATP and CTP, CTD considers the transportation resources and transit time necessary to meet your customers' delivery needs.

The ATP Flag and ATP Component Flag must be set to enable ATP/CTP and CTD checks for various levels in the bills of material.

Oracle Global ATP Server

Oracle Global ATP Server supports distributed order promising besides centralized order promising. Data can be consolidated from multiple instances and different versions of Oracle Applications. If you are running Oracle Applications Release 10.7 or 11.0, you need not upgrade your applications.

Oracle ATP Server can be accessed by multiple order entry systems.

Oracle Global ATP Server can be deployed on a dedicated server to reduce contention with the transactional server.

Data for ATP server can be collected from legacy applications via interface tables. The API can be used to enable ATP from non-Oracle order entry systems.

Data Collection

Data should be collected from selected instances to the ATP Server before running the ATP inquiry.

Data can be collected from multiple operational sources. These could be different versions/instances of Oracle Applications or other legacy systems. The data collection program collects the data from these sources and moves them to Oracle Global ATP Server. It stores them in the Operational Data Store (ODS) of Oracle Global ATP Server. This acts as the input for the snapshot portion of the planning process. Once plans are run in Oracle Global ATP Server, all planned output data is stored in the Planning Data Store (PDS). PDS contains all data encompassing ODS as well as all the output data from running plans.

Global ATP Server ensures that new sales orders are immediately reflected in the ODS as and when they are entered and confirmed in each instance of the global network. This ensures that the changes to demand stays current and the ATP results are accurate.

▶▶ **To start data collection choose ATP > Collection.**

This process can be scheduled in net change mode depending upon how frequently Oracle Global ATP Server requires the latest snapshot of the supply/demand picture. A complete refresh must be run if there are changes to Master data such as item attributes, suppliers and customers. This must be scheduled separately.

See "Running Collections" for more detailed information.

Oracle Global ATP Server Profile Options

Profile options are used to specify the data that is used to calculate ATP.

The site level profile option INV: Capable to Promise, determines which ATP program will be used for ATP Check. Oracle Global ATP Server uses Profile Options 4 and 5 which reference data from the PDS and ODS respectively. Profile Options 1, 2 and 3 are for a single instance multi-organization ATP and not for Oracle Global ATP Server.

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

To run ATP based on planned output, use Profile Option 4. This option uses data from the PDS and lets you obtain multi-level supply-chain ATP results from a plan.

Profile Option 5 is used for ATP inquiries based on collected data from the ODS. This does not use planned output. This can be used to do a ATP check based on multiple instances. This option cannot provide a multi-level ATP check.

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

Set profile options using the System Administrator responsibility in the Profile menu.

Sources of Supply and Demand

You can calculate ATP quantity based on all supply and committed demand for your items. You can choose supply and demand sources for ATP calculations via plan options (net WIP, net reservation, and so on) if planning output is the base for ATP supply demand information. You can customize supply and demand sources via ATP rules if your ATP supply demand information is derived from collected data independent of planning output. This process is described below.

ATP from PDS: Plan Options

When running ATP from PDS (Profile Option 4), you can set supply and demand sources to be included in the ATP calculation.

▶▶ **To set supply and demand sources:**

1. From the Navigator window, choose Advanced Supply Chain Planning.

2. Select a [MPS, MRP, or DRP] > Names.

   The [MPS, MRP, or DRP] Names window appears.

3. Click the Options button.

4. Choose the Organization tab.

Figure 12–1   The Organizations Tab
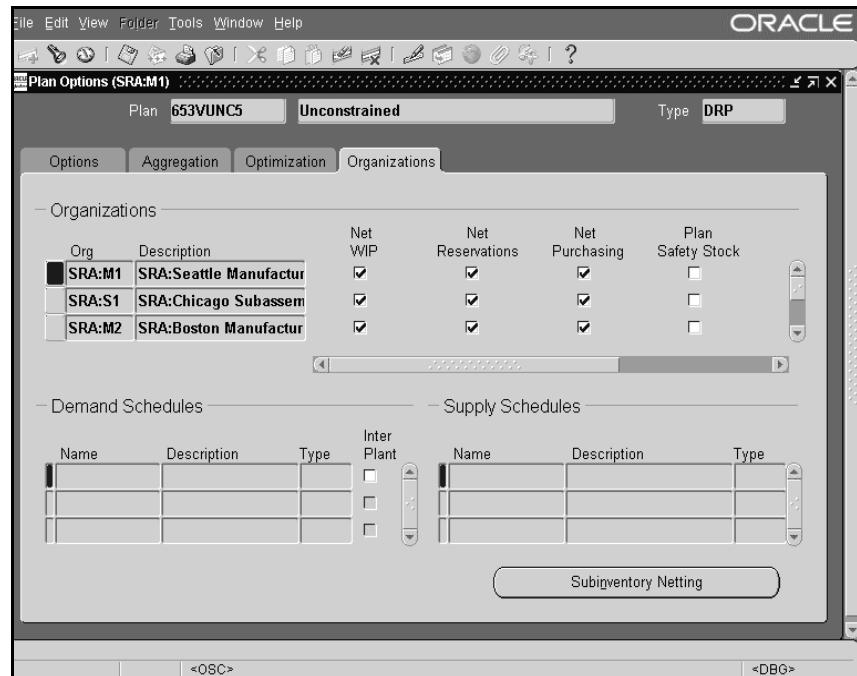
5. Enter the organizations for which to plan. For each organization choose whether to enable the following options for netting:

- Net WIP
- Net Reservations
- Net Purchasing

    Oracle Global ATP Server considers supply and demand based on these selections.

▶▶ **To specify supply and demand schedules for the plan:**

1. Enter the Supply and Demand Schedules you wish to include in the plan at the bottom portion of the screen.

    Multiple Master Demand Schedules (MDS), Material, or Manufacturing plans can be used to specify demand. Multiple Material, Manufacturing or Distribution plans can be used to specify supply.

2. Choose the Inventory-ATP checkbox for one plan at a time.

ATP from ODS: ATP Rules

ATP Rules are used for running ATP from ODS (Profile Option 5). Each ATP Rule is a combination of ATP computation options, time fence options, and supply and demand sources to use during ATP inquiry. When running ATP from ODS, forward consumption is not possible and there is no accumulation window.

You can perform single-level ATP using ODS. The following supply and demand sources are considered:

Supply Sources The supply sources that can be chosen for consideration are:

Discrete MPS, repetitive MPS, discrete WIP, repetitive WIP, available QOH, non-standard WIP, internal requisitions, vendor requisitions, purchase orders, in-transit shipments, user-defined supply.

Demand Sources The demand sources that can be chosen for consideration are:

Sales Orders, internal orders, discrete WIP demand, repetitive WIP demand, non-standard WIP, flow schedules demand, and user-defined demand.

Demand Classes You can enter desired demand classes in the ATP Criteria window. ATP picks up supply and demand associated with demand classes.

For further information on how to set ATP Rules, see "ATP Rule Options" in the *Oracle Inventory User's Guide.*

Enabling Multi-Level Supply Chain ATP, CTP, and CTD

This section describes the various setting that need to be ensured to enable Multi-level Supply Chain ATP, CTP, and CTD functionality. The profile option should be set to "Enable PL/SQL based ATP with Planning Output" (see Profile Option 4). All items being considered for ATP must be included in the plan. After defining the supply chain, the manufacturing environment, suppliers, and transportation capacity set in the following flags:

- ATP flag

- ATP component flag

- ATP flag in Oracle Bills Of Materials

- CTP flag in Oracle Bills Of Materials

ATP and ATP Component Flags

The combinations of ATP flag and ATP components flag of the request item determine the level of the ATP check. This combination lets you specify key components and bottleneck resources at each level.

These flags must be checked at the Item attributes/Org level:

ATP and ATP components flag determine the complexity of the ATP inquiry.

ATP Flag

The value of ATP flag indicates what kind of ATP check you want to perform at the level of this item or higher. The possible choices are:

- Material Only – Check material availability for this item at this level.

- Resource Only – Check transportation resources availability for shipping this item to the destination.

- Material and Resource – Check both material and transportation resource availability for this item.

- None – No need to check ATP at this level.

ATP Component Flag

The value of ATP components flag indicates what kind of ATP check you want to perform at the component level. The possible choices are

- Material Only – Check availability of the components in the bill for this item.

- Resource Only – Check availability of the resources required to assemble this item.

- Material and Resource – Check availability of both materials and resources required to assemble this item.

- None – No need to check ATP for this item at the component level.

ATP Even if the ATP components flag indicates that a component check is required, the ATP flag at the bill level can override the setting in the ATP components flag.

For example,

A

B(1)   R(1)

A is an end item which has B as the component. R is the resource required to build A. Assume that shipping A to Customer1 requires transportation resource TR 3 units per A. Assume the ATP flag at bill level is Yes.

Suppose Customer1 request A for quantity 10. The values of ATP flag and ATP components flag could have following combinations:

Legend

- N = None

- Y = Material Only

- R = (Transportation) Resource Only if it is for ATP flag

  (Manufacturing) Resource Only if it is for ATP components flag

- C = Material and (Transportation) Resource if it is for ATP flag

  Material and (Manufacturing) Resource if it is for ATP components flag)

ATP Flag	ATP Component Flag	Meaning
N	N	No need to do ATP check
N	Y	Check ATP at component level. Check the availability of the materials required to assemble the end item. => check B for quantity 10.
N	R	Check ATP at component level. Check the availability of the resources required to assemble the end item. => check R1 for quantity 10.

ATP Flag	ATP Component Flag	Meaning
N	C	Check ATP at component level. Check the availability of the materials and resources required to assemble the end item. => check B for quantity 10 and R1 for quantity 10.
Y	N	Check ATP at end item level and don't go to component level even if not enough supply. => check A for quantity 10.
Y	Y	Check ATP at end item level first. If not enough supply, go to component level to check the availability of the materials required to cover the shortage. => check A for quantity 10. If not enough supply (suppose the shortage is S), check B for quantity S.
Y	R	Check ATP at end item level. If not enough supply, go to component level to check the availability of the resources required to cover the shortage. => check A for quantity 10. If not enough supply (suppose the shortage is S), check R1 for quantity S.
Y	C	Check ATP at end item level. If not enough supply, go to component level to check the availability of the materials and resources required to cover the shortage. => check A for quantity 10. If not enough supply (suppose the shortage is S), check R1 for quantity S and B for quantity S.
C	N	Check availability of transportation resources. Check material availability at end item level only. Don't go to component level even if not enough supply. => check TR for quantity 30 and A for quantity 10.
C	Y	Check availability of transportation resources. Check material availability at end item level first. If not enough supply for the item, go to component level to check the availability of the materials required to cover the shortage. => check TR for quantity 30 and A for quantity 10. If not enough supply for A (suppose the shortage is S), check B for quantity S.
C	R	Check availability of transportation resources. Check material availability at end item level first. If not enough supply for the item, go to component level to check the availability of the resources required to cover the shortage. => check TR for quantity 30 and A for quantity 10. If not enough supply for A (suppose the shortage is S), check R1 for quantity S.
C	C	Check availability of transportation resources. Check material availability at end item level first. If not enough supply for the item, go to component level to check the availability of the materials and resources required to cover the shortage. => check TR for quantity 30 and A for quantity 10. If not enough supply for A (suppose the shortage is S), check R1 for quantity S and B for quantity S.
R	N	Check availability of transportation resources. => check TR for quantity 30.

ATP Flag	ATP Component Flag	Meaning
R	Y	Check availability of transportation resources. Check the availability of the materials required to assemble the end item. => check TR for quantity 30 and B for quantity 10.
R	R	Check availability of transportation resources. Check the availability of the resources required to assemble the end item. => check TR for quantity 30 and R1 for quantity 10.
R	C	Check availability of transportation resources. Check the availability of the materials and resources required to assemble the end item. => check TR for quantity 30, B for quantity 10, and R1 for quantity 10.

Note: The value R in ATP flag always means transportation resources for shipping this item. The value R in ATP components flag always means manufacturing resources for assembling this item.

Note: If you are using Profile Option 5, "Enable PL/SQL based-ATP without Planning Output," ATP flags can only be set to Y or N; ATP Component Flag can be set only to N. The Items window validates ATP Flags and ATP Component Flags for other exceptions such as phantom items and planning items.

This implies that

Note: CTP and CTD calculations are not applicable to Profile Option 5.

ATP Flag in Oracle BOM

When you define a bill of material for an item, check ATP flags for the components you wish to consider in the multi-level ATP calculation. This flag lets you control the depth of the BOM considered in the calculation.

▶▶ **To set the ATP flag:**

Choose Bills of Material > Bills > Bills.

CTP Flag in Oracle BOM

Set this flag for each resource for which Capacity needs to be checked.

▶▶ **To set the CTP flag:**

Choose Bills of Material > Routings > Department > Resources.

Supply Chain

You can define the supply chain using Bills of Distribution, sourcing rules, and assignment sets. For more information, see "Supply Chain Modeling" in this document and "Defining Sourcing Rules" in the *Oracle Master Scheduling/MRP and Oracle Supply Chain Planning User's Guide.*

Manufacturing Capacity

Manufacturing capacity is determined by the resources used in Routings for each manufactured item. For an MPS item, ATP considers the bill of resources.

Supplier Capacity

You can define time-phased supplier capacity and capacity tolerance percentages of individual suppliers to supply specific items. Supplier Capacity is used for the Capable to Promise calculation. See "Supply Chain Modeling" for detailed instructions on defining supplier constraints.

Transportation Capacity and Transit Time

You can define transportation capacity for a lane of a ship method. You can define the transit time necessary to meet customer delivery requirements. Intransit Time and Transportation Capacity are used in the CTD calculation.

◗◗ **To define transit time and transportation capacity:**

Choose Inventory > Setup > Organization > Inter-Location Transit Times.

Define weight and volume for each item at the Organization Item level for each item. These values are used to determine whether transportation capacity is reached.

◗◗ **To define weight and volume for each item:**

Choose Inventory > Items > Organization Items > Physical Attributes.

ATP Logic

ATP logic for a single-org ATP and a multi-level supply-chain ATP is illustrated in "ATP Logic" using examples.

ATP Inquiry

ATP, CTP and CTD quantities can be viewed by item/resource and date.

You can view the available quantity for the date you requested. You can view the request date ATP quantity, or the earliest date beyond the requested date that the request quantity is available. For PDS you can view the pegging tree and the horizontal ATP.

ATP Criteria

ATP criteria lets you enter parameters for the desired ATP check.

◗◗ **To enter ATP criteria:**

1. Choose ATP > ATP Inquiry.

   The ATP Criteria window displays.

Figure 12–2   ATP Criteria
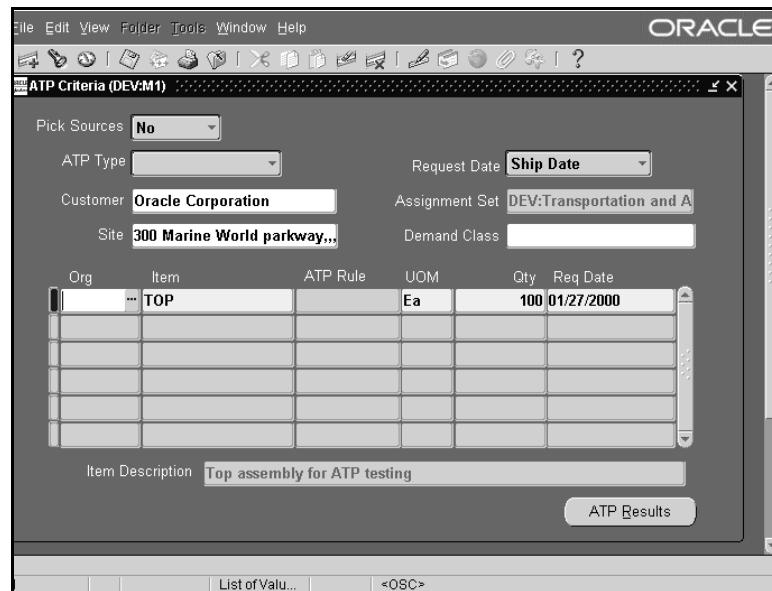
2.   Complete the following fields and options in this window:

Field	Description
Pick Sources	Choose Yes to manually specify the sources for the ATP inquiry. Choose No to let ATP return the best sources based on your supply chain's sourcing rules, bills of distribution, and assignment sets.
ATP Type	Choose from Ship Set or Arrival Set or [Blank]
Customer	Enter the customer name
Site	Enter the customer site
Request Date	Choose Ship Date or Arrival Date
Assignment Set	The assignment (view-only)
Demand Class	Choose the demand class from a list of values.
Org	Specify the organization(s) to consider in the ATP calculation.
Item	Specify the items to consider in the ATP calculation.

Field	Description
ATP Rule	If the ATP calculation is based on ODS, the ATP rule appears.
UOM	Enter the unit of measure.
Qty	Enter the quantity.
Req Date	Enter the request date.

3. Choose the ATP Results button

The ATP Workbench window displays ATP results and the pegging tree.

Figure 12–3   ATP Workbench
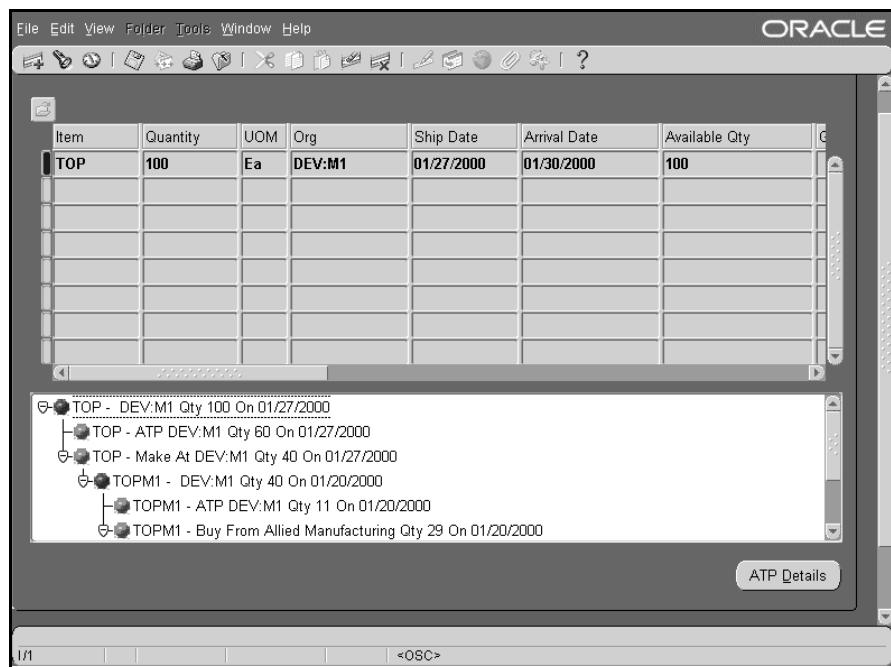
> **Note:**   This window displays the ATP quantity for the specified date as well as the date by which the full quantity will be available.

The pegging tree shows how demand is being met. Red bullets indicate demand; green bullets indicate supply.

4. Select a line of the pegging tree.

5. Choose the ATP Details button

    The ATP Detail window displays.

Figure 12–4   ATP Detail window (Supply and Demand tab)
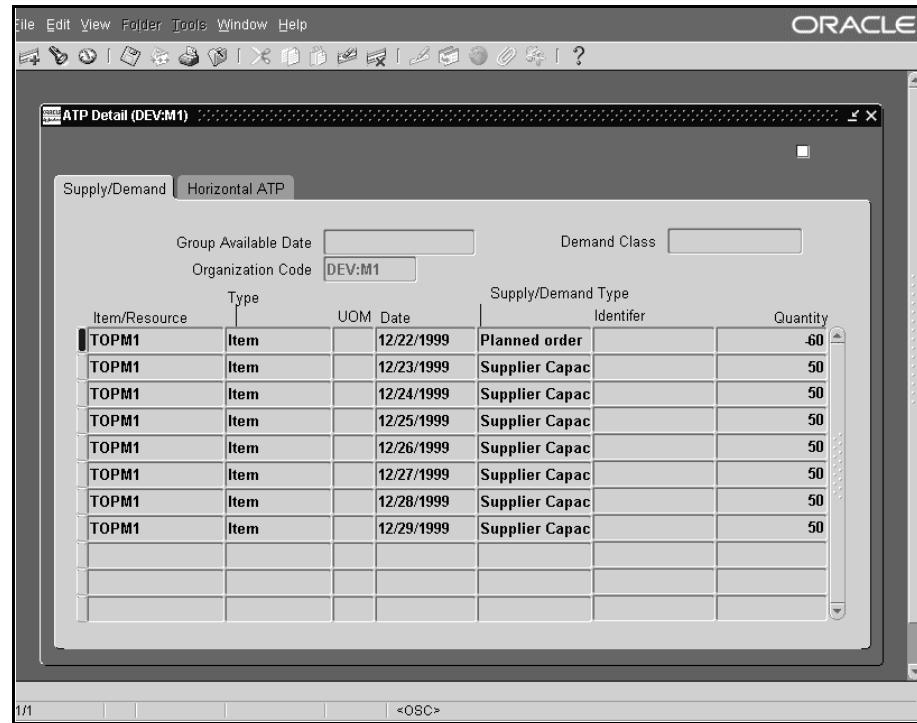
This window shows supply and demand for the selected line of the pegging tree.

6. Choose the Horizontal ATP tab.

Figure 12–5   ATP Detail window (Horizontal ATP tab)
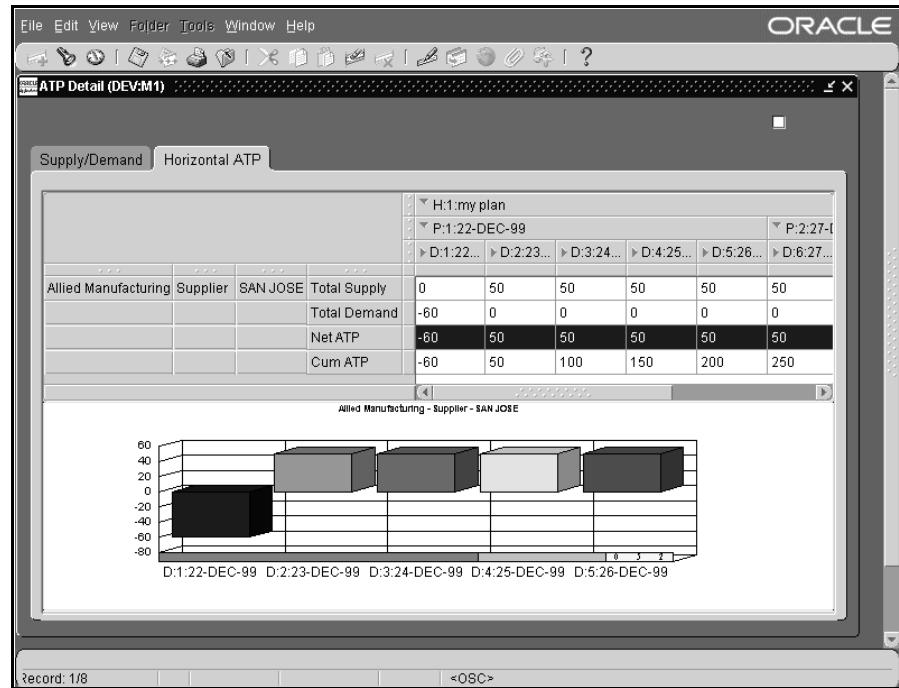
7. This tab shows ATP details in a horizontal time scale. It shows total demand, total supply, net ATP, and cumulative ATP.

Viewing Multi-Level Supply Chain ATP

You can check availability for an item or a set of items across bills and/or across organizations. You can perform a multi-level component and/or resource availability check across your supply chain for the end items you specify, and view the ATP results at the best sources (organizations/suppliers).

Figure 12–6   Multi-level ATP
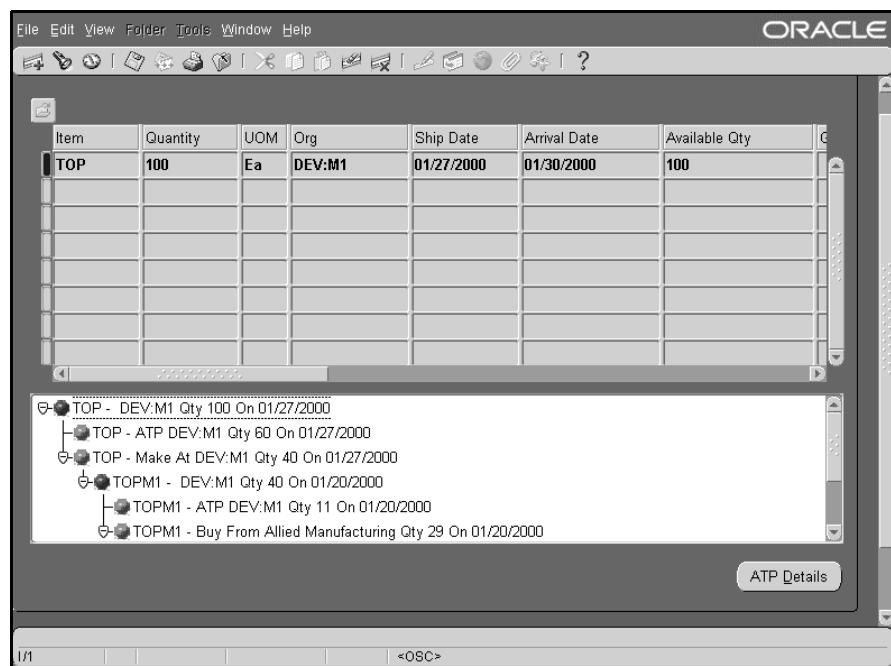
Viewing Supply and Demand

Figure 12–7   Supply and Demand
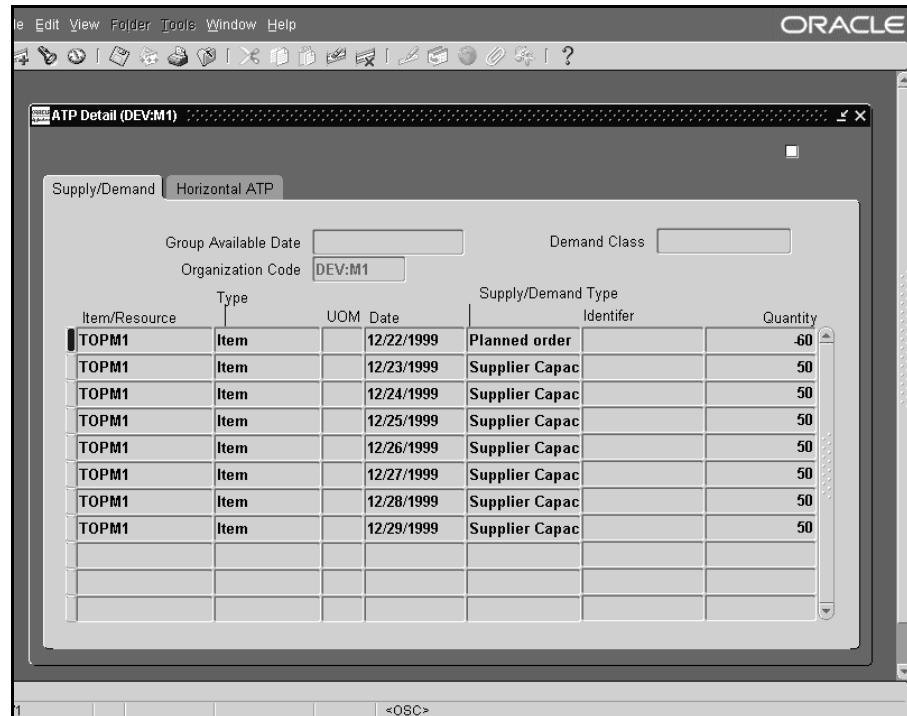
Viewing Horizontal ATP

Figure 12–8   Horizontal ATP
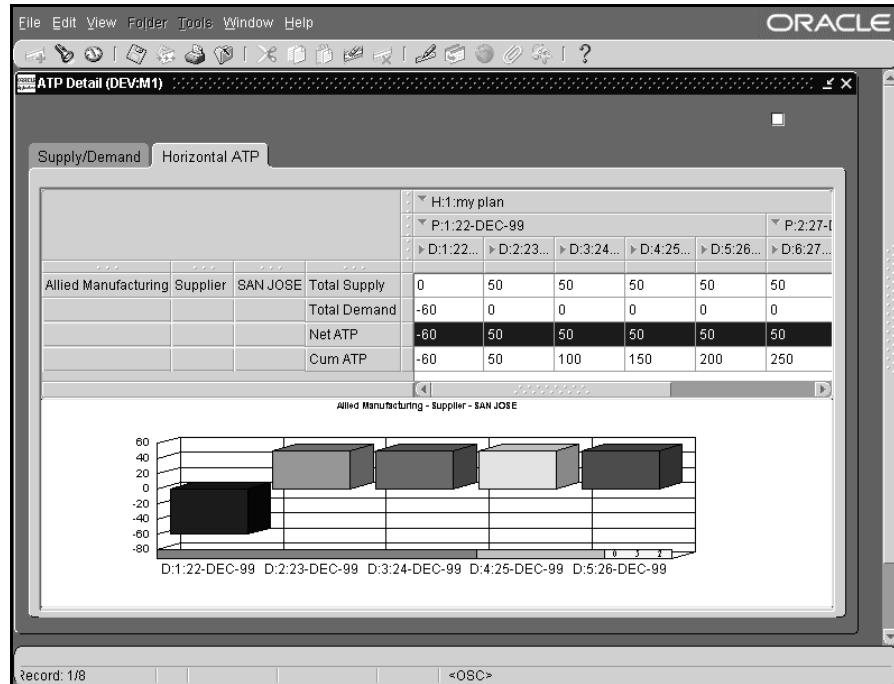
Viewing by Product Family

You can check the availability of an item at the product family level and promise against it. Based on the setting of ATP flags on the product family and product family members, you can do regular ATP or product family ATP for your product family members.

ATP Override

Figure 12–9   If you are viewing ATP results from Oracle Order Management, you can override the schedule date recommended by ATP engine for items which have check ATP set to Yes. You can schedule your order/line on the schedule date you specify no matter you have availability or not.

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:

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

ATP Logic

This section describes how ATP requests are processed.

ATP Pseudo Logic

1. If both ATP flag and atp_components_flag are None, no need to do ATP check.

    If ATP flag for the item is None and atp_components_flag is not None, assume the shortage for the item is the request quantity. Go to step 2(b).

    If ATP flag is Materials, check ATP for the item on the request date. If successful, done. If not successful, go to step 2.

2. If atp_components_flag is None, ATP fails to satisfy this request. Go to step 6.

    If atp_components_flag is not None, simulate a new supply to cover the shortage of this end item. Explode bill of material to get next level component and resource requirements to assemble the end item. Go to step 3.

3. Check availability of resources if resource requirements exist. If successful, go to step 4.   If not successful, ATP fails for this request. Go to step 6.

4. 4. Check availability of material components if component requirements exist. If successful, done. If not successful, go to step 5.

5. If atp_components_flag is not None, recursively simulate new supplies for the shortage, explode bill of material, and check availability at next level. If still not successful and cannot go down to next level for the shortage, go to step 6.

6. ATP fails to satisfy this request. From sysdate, try forward scheduling for this request. Find the earliest date that you can get the shortage available (in each level, compare the results of building the shortage from next level and single level ATP). The earliest date is the ATP date.

    > **Note:**   If planning output is used for ATP, you can perform multi-level ATP. If Planning output is not used (that is, execution system data or ODS data are used), you will be performing single-level ATP.

Multi-Level ATP Examples

Assume assembly A has the following bill in Org1.
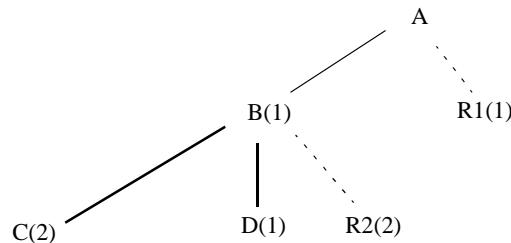
Lead time information for A and B is as follows

Item	Fixed Lead Time	Variable Lead Time
A	0	0.1
B	1	0.01

The routing information for A and B is as follows:

Item	Op Seq	Resource	Usage	Lead time offset
A	1	R1	1	
B	1	R2	2	20%

Planning information for A and B from an MRP run on Date1 is as follows:

	Item A	Item B	Item C	Item D
Sales Orders	10	5	50	40
Forecasts	100	10	75	60
Dependent Demand	0	145	270	135
Scheduled Receipts	5	25	50	50
Planned Order	105	135	345	185
ATP	100	10	75	60

Suppose we have the cumulative ATP quantities from the MRP run as follows:

Item	Date0	Date1	Date2	Date3	Date4	Date5	Date6
A	100	100	110	110	150	160	170
B	10	10	10	200	255	260	270
C	10	75	85	85	85	90	100
D	50	60	60	60	60	65	70

Resource	Date0	Date1	Date2	Date3	Date4	Date 5	Date6
R1	16	16	16	16	20	22	24
R2	16	16	16	16	22	24	26

The values of ATP flag and ATP components flag of the request item will determine the level of the ATP check, which may cause different results for the same request. Assume ATP flag at bill level is Yes for all items.

Example 1: Request 100 of Item A on Date3 in Org1

Item	ATP flag	ATP components flag
A	Materials	None

1. We do have ATP quantity 100 on Date3. ATP date is Date3.

Example 2: Request 120 of Item A on Date3 in Org1

Scenario 1

Item	ATP flag	ATP components flag
A	Materials	None

1. We do not have ATP quantity 120 on Date3.

2. ATP components flag is None. We cannot go to next level. ATP fails for this request.

For A, we can have 110 on Date3 and 120 on Date4. ATP date is Date4.

Scenario 2

Item	ATP flag	ATP components flag
A	Materials	Materials
B	Materials	None

1. We don't have 120 of A on Date3.

2. The ATP components flag is Materials. The shortage is 10 for A. Explode the bill to the next level. The lead time to build 10 A is one day. So, we need 10 of B on Date2 to build this simulated supply 10.

3. We do have 10 B on Date2. So ATP date is Date3; use 110 of A on Date3 and 10 of B on Date2.

Scenario 3

Item	ATP flag	ATP component flag
A	Materials	Materials and Resources
B	Materials	None

1. We don't have 120 of A on Date3. The shortage is 10.

2. The ATP component flag of A is Materials and Resources. Simulate a supply of A for quantity 10. Explode the bill to the next level. The lead time to build 10 A is one day. We need 10 B on Date2 and 10 R1 on Date2 to build these 10 A

3. We do have 10 R1 on Date2.

4. We do have 10 B on Date2.   So ATP date is Date3; use 110 of A on Date3, 10 of B on Date2, and 10 of R1 on Date2.

Example 3: Request 165 of Item A on Date4 in Org1

Scenario 1

Item	ATP flag	ATP component flag
A	Materials	Materials and Resources
B	Materials	Materials
C	Materials	None

Item	ATP flag	ATP component flag
D	No	None

1. We don't have 165 of A on Date4. The shortage is 15.

2. The ATP component flag of A is Materials and Resources. Simulate a supply of A for quantity 15. Explode the bill to the next level. The lead time to build 15 A is two days. We need 15 B on Date2 and 15 R1 on Date2 to build 15 A.

3. We do have 15 R1 on Date2.

4. However, we only have 10 B on Date2, and the shortage is 5.

5. The ATP components flag of B is Materials. Simulate a supply of B for quantity 5. Explode the bill to the next level. The lead time to build 5 B is two days. We need 10 C on Date0 and we do have it (Note: We don't need to check the availability of D since the ATP flag of D is No). So ATP date is Date4 and the way we satisfy this request is to use 150 of A on Date4, 10 of B on Date2, 15 of R1 on Date2, and 10 of C on Date0.

Scenario 2

Item	ATP flag	ATP component flag
A	Materials	Materials and Resources
B	Materials	Materials and Resources
C	Materials	None
D	Materials	None

1. We don't have 165 of A on Date4. The shortage is 15.

2. The ATP component flag of A is Materials and Resources. Simulate a supply of A for quantity 15. Explode the bill to the next level. The lead time to build 15 A is two days. We need 15 B on Date2 and 15 R1 on Date2 to build 15 A.

3. We do have 15 R1 on Date2.

4. However, we only have 10 B on Date2, and the shortage is 5.

5. The ATP components flag of B is Materials and Resources. Simulate a supply of B for quantity 5. Explode the bill to the next level. The lead time to build 5 B is two days. We need 10 C and 5 D on Date0,and 10 R2 on Date1 (Date2-CEIL((1+0.01*5)*80%)).

6. We do have 10 R2 on Date1.

7. We do have 10 C and 5 D on Date0. So ATP date is Date4; use 150 of A on Date4, 10 of B on Date2, 15 of R1 on Date2, 10 of C on Date0, 5 of D on Date0, and 10 of R2 on Date1.

Example 4: Request 130 of Item A on Date2 in Org1

Item	ATP flag	ATP component flag
A	Materials	Materials and Resources
B	Materials	None

1. We don't have 130 of A on Date2.

2. The ATP components flag of A is Materials and Resources. Simulate a supply of A for quantity 20. Explode the bill to the next level. The lead time to build 20 A is two days. We need 20 B on Date0 and 20 R1 on Date0 to build 20 A.

3. We don't have enough R1 on Date0. ATP fails for this request on request date.

4. We can only make 16 A since we only have 16 R1 available on Date0.

5. We can only make 10 A since we only have 10 B available on Date0 although we have 16 R1 available on Date0. The request date ATP quantity is 120.

6. Do forward scheduling from sysdate (Date0) for A with quantity 10.

7. The earliest date we can have another 10 R1 is Date4 (the supply picture of R1 has been changed since we have used 10 R1 in Date0 to build 10A).

8. The earliest date we can have 10 B is Date3 (the supply picture of B has been changed since we have used 10 B in Date0 to build 10A).

9. Considering lead time, the earliest date we can have 10 A built is Date5 (= max(Date3 + 1, Date4 +1)

10. If we don't build 10 A, we can have 130 A on Date4. Date4 < Date6. ATP date is Date4. We can provide 130 on Date4.

Supply Chain ATP Examples

Every item is assumed to have a supply chain bill. For an item with no associated sourcing information, an implicit sourcing rule is assumed which is source type "make at" in the current org.

An ATP request will be processed by the system as follows.

1. Choose the Org/Supplier with highest rank. If source type is "buy from", check availability from sourcing. If source type is "make at" or "transfer", go to step 2.

2. Check ATP for the end item at that org (refer to Single Org ATP for the ATP calculation), and the transportation resources required based on the ATP Flag and ATP Components Flag. Explode the supply chain bill to get next level component requirements for the shortage of the end item based on ATP components flag. Consider resource and materials requirements from supply chain bill based on the flags. If successful, this is the ATP date.

3. If not successful, find the ATP date in this org/vendor by forward scheduling from sysdate (typically today). Go to the org with next highest rank. Repeat Step 2.

4. If not successful, recursively, using the rank on the sourcing rule, evaluate the remaining sources for availability.

    Assume that Customer1 has the following sourcing rule with assembly A:

	Org	Supplier	Rank	Shipping Lead Time	Transportation Resource Required
make at	Org1		1	1 day	TR(5 units per lot)
transfer from	Org2		2	2 days	TR(1 units per lot)
buy from		Supplier1	3		

The supply chain bill is:

Figure A–1   Supply Chain bill
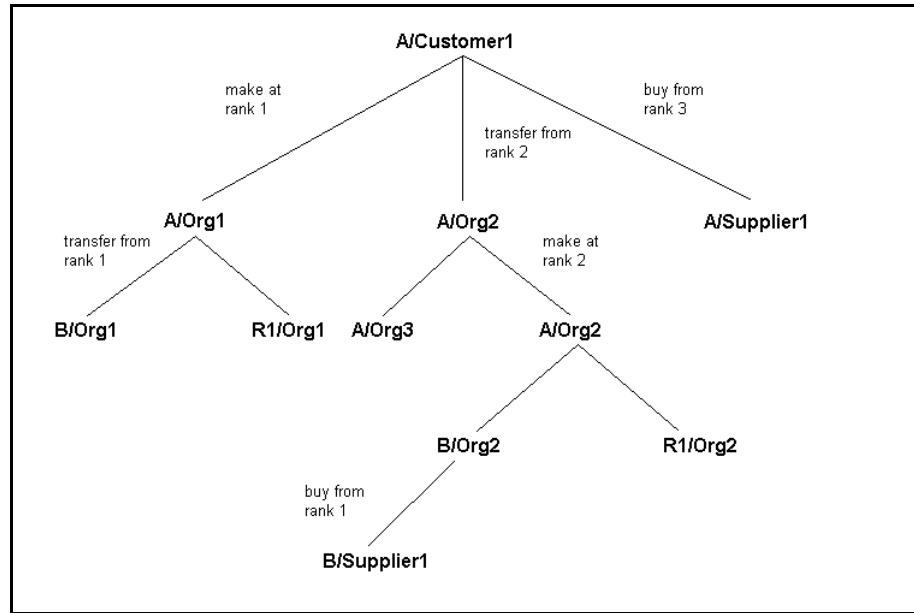
Transportation Resource Cum Availability					
Resource	Date0	Date1	Date2	Date3	Date4
TR	16	16	16	16	16

Org1

The bill, routing, and ATP information for item A in Org1 is the same as the information provided in the Examples section in Single Org ATP.   No sourcing information is defined for item A in Org1. We assume item A in Org1 has an implicit supply chain bill which is:

A/Org1   ---make at -------------------- A/Org1

           rank 1

Org2

The supply chain bill for item A in Org2 is:

A/Org2   ---make at------------------- A/Org2

        rank 2

        --- transfer from--------- A/Org3

        rank 1

        shipping lead time 1 day

        required TR 3 units per unit.

Item A in Org2 use the common bill from item A in Org1. Fixed lead time of A is 0 and variable lead time is 0.1 day.

Item B is a buy item and it sources from Supplier1with lead time 0 day. Assume Supplier1 can provide 100 B for Org2 from Date0 to Date10.

The cumulative ATP quantities in Org2 are:

Item/Res	Date0	Date1	Date2	Date3	Date4
A	100	100	120	120	150
B	10	10	40	50	60
R1	16	16	16	16	16

Org3

The cumulative ATP quantities in Org2 are:

Item	Date0	Date1	Date2	Date3	Date4
A	20	20	20	20	30

> **Note:** Assume ATP flag at bill level for all items in every org is Yes.

Example 1 Customer1 requests 100 of item A with delivery date Date4.

Item	Org	ATP flag	ATP components flag
A	Org1	M+R	None
A	Org2	M	None

Check at Org1. Check availability of 100 A on Date3 and 5 TR on Date3 since shipping lead time is 1 day. This is successful (refer to the Example 1 in Single Org ATP section). Therefore, ATP date is Date3 from Org1 and Customer1 will receive it on Date4. The way we satisfy the request is to use 100 of A on Date3 in Org1 and 5 of TR on Date3.

Example 2 Customer1 requests 120 of item A with delivery date Date4

Item	Org	ATP flag	ATP components flag
A	Org1	M	None
A	Org2	M+R	M+R

1. Check at Org1. Check availability of 120 A on Date3. We cannot satisfy the request of 120 A on Date3 in Org1 (refer to the Scenario1of Example 2 in Single Org ATP section). Fail in Org1 to meet the delivery date. We can have 120 A on Date4. ATP date in Org1 is Date4 and Customer1 will receive it on Date5. The way we satisfy the request is to use 110 A in Org1 on Date3 and total of 120 A in Org1 on Date4.

2. Check at Org2. Check availability of 120 A on Date2 and 1 TR on Date2. This is successful. ATP date is Date2 from Org2 and Customer1 will receive it on Date4. The way we satisfy the request is to use 120 of A in Org2 on Date2 and 1 of TR on Date2.

Example Customer1 request 120 of Item A with delivery date Date4

Item	Org	ATP flag	ATP components flag
A	Org1	M+R	None
A	Org2	M+R	M+R
A	Org3	M+R	None

1. Check at Org1. Check availability of 130 A on Date3 and 5 TR on Date3. Although we have 5 TR on Date3, we cannot satisfy the request of 130 A on Date3 in Org1. So it fails to meet the delivery date in Org1. We can have 130 A on Date4. ATP date in Org1 is Date4 and Customer1 will receive it on Date5. The request is satisfied by: 110 A in Org1 on Date3 and total of 130 A in Org1 on Date4.

2. Check at Org2. Check availability of 130 A on Date2 and 1 TR on Date2. We have 1 TR on Date2. There is not enough of A and the shortage is 10.

3. The ATP components flag is Material and Resources. Simulate a supply of A for quantity 10. Explode the supply chain bill to the next level and the org with the highest rank is Org3. Check at Org3 and try to transfer A for quantity 10 to cover the shortage. We need 10 A from Org3 on Date1, and 30 TR on Date1 (note: checking transportation requirements is based on the "R" in ATP flag of A in Org3). We do not have 30 TR on Date1. So we only can get 5 A from Org3. So the shortage is 5.

4. Check at Org2 and try to make A for quantity 5 to cover the shortage. We need 5 B and 5 R1 on Date1. We have 10 R1 on Date1.   We have 10 B on Date1. ATP date is Date2 from Org2 and customer will receive it on Date4. The way we satisfy the request is using 120 of A in Org2 on Date2, 1 of TR on Date2, 5 of A in Org3 in Date1 and 15 of TR on Date1, 5 of R1 in Org2 on Date1, and 5 of B in Org2 on Date1.

Example 4 Customer1 request 130 of item A with delivery date Date4

Item	Org	ATP flag	ATP components flag
A	Org1	M+R	None
A	Org2	M+R	M+R
A	Org3	M	None

1. Check at Org1. Check availability of 130 A on Date3 and 5 TR on Date3. Although we have 5 TR on Date3, we cannot satisfy the request of 130 A on Date3 in Org1. Fail in Org1 to meet the delivery date. We can have 120 A on Date4. ATP date in Org1 is Date4 and Customer1 will receive it on Date5. The way we satisfy the request is to use 110 A in Org1 on Date3 and total of 130 A in Org1 on Date4.

2. Check at Org2. Check availability of 130 A on Date2 and 1 TR on Date2. We have 1 TR on Date2. We don't have enough A and the shortage is 10.

3. ATP components flag is Material and Resources. Simulate a supply of A for quantity 10. Explode the supply chain bill to the next level and the org with the highest rank is Org3. Go to Org3 and try to transfer A for quantity 10 to cover the shortage. We need 10 A from Org3 on Date1 (note: no need to check transportation requirements since the ATP flag of A in Org3 is Materials). We do have 10 A on Date1. ATP date is Date2 from Org2 and Customer1 will receive it on Date4. The way the request is satisfied is to use 120 of A in Org2 on Date2, 1 of TR on Date2, 10 of A in Org3 on Date1.

Index

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