Oracle® Warehouse Management

User's Guide

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Oracle Warehouse Management User's Guide, Release 11*i*

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Oracle Warehouse Management User's Guide, Release 11*i*

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Preface

This manual describes the Oracle Warehouse Management system (WMS) and explains how to set it up and use its major features.

Audience for This Guide

Welcome to Release 11*i* of Oracle Warehouse Management.

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

- The principles and customary practices of your business area.
- Oracle Warehouse Management

  If you have never used Oracle Warehouse Management, Oracle suggests you attend one or more of the Oracle Warehouse Management training classes 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's 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 Warehouse Management

- Chapter 1 introduces the Oracle Warehouse Management system and discusses its major features.

- Chapter 2 explains how to set up the Oracle Warehouse Management system.
- Chapter 3 describes the Warehouse Management system rules engine and explains its major purpose.
- Chapter 4 explains how to use the features of the Warehouse Management system that can assist and improve the management of your warehouse.
- Chapter 5 describes the Warehouse Management inbound logistics features and discusses how to perform inbound logistics tasks, using a mobile user interface.
- Chapter 6 describes the Warehouse Management outbound logistics features and discusses how to perform outbound logistics tasks, using a mobile user interface.
- Appendix A includes the navigation paths to access both standard Oracle Forms and the Mobile User Interface.
- Appendix B provides an overview of the mobile user interface and its WMS-related forms.

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Accessibility of Code Examples in Documentation

JAWS, a Windows screen reader, may not always correctly read the code examples in this document. The conventions for writing code require that closing braces should appear on an otherwise empty line; however, JAWS may not always read a line of text that consists solely of a bracket or brace.

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 Warehouse Management. If this guide refers you to other Oracle Applications documentation, use only the Release 11*i* versions of those guides.

Online Documentation

All Oracle Applications documentation is available online (HTML or PDF).

- **Online Help** - The new features section in the HTML help describes new features in 11i. This information is updated for each new release of Oracle Warehouse Management. The new features section also includes information about any features that were not yet available when this guide was printed. For example, if your administrator has installed software from a mini-packs an upgrade, this document describes the new features. Online help patches are available on MetaLink.
- **11*i* Features Matrix** - This document lists new features available by patch and identifies any associated new documentation. The new features matrix document is available on MetaLink.

Readme File - Refer to the readme file for patches that you have installed to learn about new documentation or documentation patches that you can download.

Related User's Guides

Oracle Warehouse Management shares business and setup information with other Oracle Applications products. Therefore, you may want to refer to other user's guides when you set up and use Oracle Warehouse Management.

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.

Guides Related to All Products

Oracle Applications User's Guide

This guide explains how to enter data, query, run reports, and navigate using the graphical user interface (GUI) available with this release of Oracle Warehouse

Management (and any other Oracle Applications products). This guide also includes information on setting user profiles, as well as running and reviewing reports and concurrent processes.

You can access this user's guide online by choosing "Getting Started with Oracle Applications" from any Oracle Applications help file.

User Guides Related to This Product

Oracle Inventory User's Guide

This guide explains how to set up and use Oracle Inventory.

Oracle Shipping Execution User's Guide

This guide provides information on setting up and using Oracle Shipping.

Oracle Mobile Supply Chain Applications User's Guide

This guide explains how to set up and use Oracle Mobile Supply Chain Applications.

Oracle Order Management User's Guide

Refer to this guide for information regarding the setup and use of Oracle Order Management.

Oracle Purchasing User's Guide

This guide provides information on setting up and using Oracle Purchasing.

Oracle Work In Process User's Guide

Refer to this guide for information regarding the setup and use of Oracle Work In Process.

Oracle Project Manufacturing User's Guide

This guide explains how to set up and use Oracle Project Manufacturing.

Oracle Quality User's Guide

This guide explains how to set up and use Oracle Quality.

Installation and System Administration

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 Applications-wide features such as Business Intelligence (BIS), languages and character sets, and Self-Service Web 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 Rapid Install, which minimizes the time to install Oracle Applications, the Oracle8 technology stack, and the Oracle8*i* Server technology stack by automating many of the required steps. This guide contains instructions for using Oracle Rapid Install and lists the tasks you need to perform to finish your installation. You should use this guide in conjunction with individual product user's 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 and lists database and product-specific upgrade tasks. You must be either at 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.

Maintaining Oracle Applications

Use this guide to help you run the various AD utilities, such as AutoUpgrade, AutoPatch, AD Administration, AD Controller, AD Relink, License Manager, and others. It contains how-to steps, screenshots, and other information that you need to run the AD utilities. This guide also provides information on maintaining the Oracle applications file system and database.

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 concurrent processing.

Oracle Alert User's Guide

This guide explains how to define periodic and event alerts to monitor the status of your Oracle Applications data.

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 for Forms-Based Products*. It also provides information to help you build your custom Oracle Forms Developer 6*i* forms so that they integrate with Oracle Applications.

Oracle Applications User Interface Standards for Forms-Based Products

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.

Other Implementation Documentation

Oracle Applications Product Update Notes

Use this guide as a reference 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, enhancements, and changes made to database objects, profile options, and seed data for this interval.

Multiple Reporting Currencies in Oracle Applications

If you use the Multiple Reporting Currencies feature to record transactions in more than one currency, use this manual before implementing Oracle Warehouse Management This manual details additional steps and setup considerations for implementing Oracle Warehouse Management with this feature.

Multiple Organizations in Oracle Applications

This guide describes how to set up and use Oracle Warehouse Management with Oracle Applications' Multiple Organization support feature, so you can define and support different organization structures when running a single installation of Oracle Warehouse Management.

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.

Oracle Applications Flexfields Guide

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

Oracle eTechnical Reference Manuals

Each eTechnical Reference Manual (eTRM) 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. Oracle eTRM is available on Metalink

Oracle Manufacturing APIs and 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 APIs and open interfaces found in Oracle Manufacturing.

Oracle Order Management Suite APIs and 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 API's and open interfaces found in Oracle Order Management Suite.

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.

Training and Support

Training

Oracle offers a complete set of training courses to help you and your staff master Oracle Warehouse Management and reach full productivity quickly. These courses

are organized into functional learning paths, so you take only those courses appropriate to your job or area of responsibility.

You have a choice of educational environments. You can attend courses offered by Oracle University at any one of our many Education Centers, you can arrange for our trainers to teach at your facility, or you can use Oracle Learning Network (OLN), Oracle University's online education utility. In addition, Oracle training professionals can tailor standard courses or develop custom courses to meet your needs. For example, you may want to use your organization structure, terminology, and data as examples in a customized training session delivered at your own facility.

Support

From on-site support to central support, our team of experienced professionals provides the help and information you need to keep Oracle Warehouse Management 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 Oracle8*i* server, and your hardware and software environment.

Do Not Use Database Tools to Modify Oracle Applications Data

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

Oracle provides powerful tools you can use to create, store, change, retrieve, and maintain information in an Oracle database. But if you use Oracle tools such as SQL*Plus to modify Oracle 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 Oracle Applications can update many tables at once. But when you modify Oracle Applications data using anything other than Oracle Applications, you may change a row in one table without making corresponding changes in related tables. If your tables get out of synchronization with each other, you risk retrieving erroneous information and you risk unpredictable results throughout Oracle Applications.

When you use Oracle Applications to modify your data, Oracle Applications automatically checks that your changes are valid. Oracle Applications also keeps track of who changes information. If you enter information into database tables using database tools, you may store invalid information. You also lose the ability to

track who has changed your information because SQL*Plus and other database tools do not keep a record of changes.

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, an integrated suite of more than 160 software modules for financial management, supply chain management, manufacturing, project systems, human resources and customer relationship management.

Oracle products are available for mainframes, minicomputers, personal computers, network computers and personal digital assistants, allowing 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 applications products, along with related consulting, education, and support services, in over 145 countries around the world.

Your Feedback

Thank you for using Oracle Warehouse Management and this user's guide.

Oracle values your comments and feedback. At the end of this guide is a Reader's Comment Form you can use to explain what you like or dislike about Oracle Warehouse Management or this user's guide. Mail your comments to the following address or call us directly at (650) 506-7000.

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1

Oracle Warehouse Management Overview

This chapter introduces the Oracle Warehouse Management system and describes its features including:

- ❏ Inbound Logistics on page 1-3
- ❏ Inventory, Storage, and Facility Management on page 1-4
- ❏ WMS Value Added Services on page 1-5
- ❏ Outbound Logistics on page 1-5
- ❏ Reverse Logistics on page 1-6
- ❏ Container and License Plate Management on page 1-7
- ❏ WMS Rules Engine on page 1-9

Overview of the Oracle Warehouse Management System

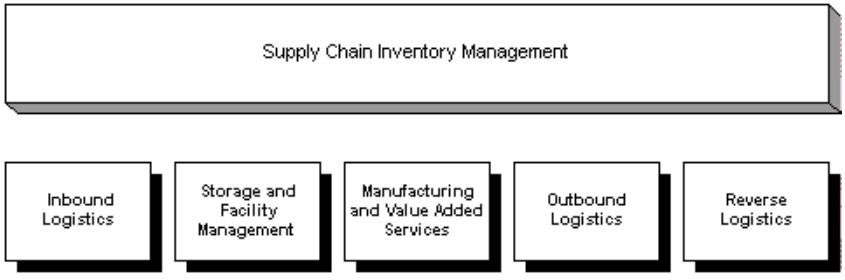
The Oracle Warehouse Management system (WMS) is a component of Oracle's Supply Chain Management and Manufacturing solution. It spans the areas of warehouse resource management, warehouse configuration, task management, advanced pick methodologies, and value added services.

Oracle WMS optimizes the material handling business processes for warehouses, manufacturing facilities, and distribution centers. Oracle WMS supports both paper-based and automated environments with material handling systems and radio frequency (RF) hand-held computers. To optimize the order fulfillment process, Oracle WMS provides advanced distribution processes, such as value-added services, cross docking, order assembly postponement, and resource and task management.

Oracle WMS also provides an easy-to-use interface for mobile, wireless hand-held computers. Mobility, process automation, and bar code scanning greatly improve the efficiency of the Supply Chain Logistics business processes.

Note: Throughout this guide, references are made to other Oracle Applications that can be utilized with Warehouse Management. Oracle Project Manufacturing as well as Oracle Quality are examples of this. Warehouse Management can be enabled in a Project Manufacturing organization and can utilize Oracle Quality at the same time. For more information on Oracle Project Manufacturing, refer to the *Oracle Project Manufacturing User's Guide*. For more information on Oracle Quality, refer to the *Oracle Quality User's Guide*.

Figure 1–1 Oracle Warehouse Management - Supply Chain



The Oracle WMS functionality spans the supply chain inventory management spectrum. Specifically, Oracle WMS addresses the following supply chain inventory management components:

- Inbound logistics: Includes receiving directly into inventory, receipt inspections, label printing, and rules-based directed put away to storage or opportunistic cross docking
- Storage and facility management: In addition to Oracle's suite of Mixed Mode Manufacturing storage and facility management module, the WMS extends intra-organization replenishments, container management, storage space optimization, cycle counting and physical inventory, and physical warehouse mapping
- Value added services: Includes labeling, packing, and kitting
- Outbound logistics: Includes picking, staging, packing, product consolidation, loading, and shipping
- Reverse logistics: Includes product returns, refurbishment, and recycling

Inbound Logistics

Oracle WMS supports receipt of purchase orders and internal requisitions, return material authorizations (RMAs) and inter-organization shipments in each of three receipt routing methods:

- Direct (receive and deliver)
- Standard (receive and later deliver)
- Inspection (receive, inspect, and later deliver)

Advanced shipment notices (ASNs) offer a form of collaboration that speeds the receiving process by enabling the receiver to check in entire inbound loads, without entering individual line information. ASNs may contain such information as purchase order number, item number, item serial number, item lot number, and so on.

After products are received, Oracle WMS can direct users to a dynamically determined staging location based on pre-defined business rules and strategies. For example, a rule might specify that an item be put away based on the temperature required for storage, hazardous storage requirements, or product velocity.

If a shortage situation occurs, the system might direct you to immediately cross dock the item, versus putting it away to a regular storage location.

The following table provides a summary of the inbound logistics tasks supported by Oracle WMS.

Inbound Logistics Tasks
Receiving with or without ASNs
Receipt check-in
Quality control inspection
Bar code printing
Directed put-away and storage optimization
Opportunistic cross docking

Inventory, Storage, and Facility Management

Oracle WMS provides advanced materials visibility and expedited material movement for inventory control. The WMS also provides license plate tracking throughout the warehouse. Also, the inventory tracking capabilities provided by Oracle Inventory, Receiving, Shipping, and Work in Process applications, Oracle WMS provides advanced lot and serial attribute tracking and visibility, material status control, and advanced space utilization capabilities.

The following table provides a summary of the inventory, storage, and facility management tasks supported by Oracle WMS.

Inventory, Storage, and Facility Management Tasks
Container and license plate management
Subinventory configuration
Advanced locator definition
Kanban replenishment management
Move orders (intra-organization transfers and issues)
LPN based WIP completions
Task dispatching
Material status control
Lot and serial genealogy and tracking
Visibility of inventory ownership

Inventory, Storage, and Facility Management Tasks
Cycle counting and physical inventory
Date coding and shelf life monitoring
ABC classification and analysis

WMS Value Added Services

All manufacturing modes supported by the Oracle Agile Manufacturing suite of products are supported in Oracle WMS. This means that with WMS you can take advantage of mixed modes of manufacturing in assembly–from Project Manufacturing to kitting and dekitting.

The following table provides a summary of the value added services supported by the system.

Value Added Services
Kitting and dekitting
Customer compliance labeling
Mixed-mode manufacturing

Outbound Logistics

Oracle WMS automates and helps manage warehouse picking tasks. These tasks include the following:

- Assigning tasks to pickers, according to various business practices
- Suggesting pick locations based on picking strategies that are configured using the WMS Rules engine
- Packing and consolidation of materials into LPNs
- Vehicle loading and LPN Shipment confirmation
- Interfacing with compliance labeling systems to generate labels according to customer- or carrier-preferred format

The following table provides a summary of the outbound logistics tasks supported by Oracle WMS.

Outbound Logistics Tasks
Wave picking
Pick methodologies
Dock assignments
Directed picking rules
Task dispatching and interleaving
Task monitoring through the WMS Control Board
Cartonization and packing
Interface with compliance labeling system
Shipment stage, consolidation, and loading
Shipment verification and close

Reverse Logistics

Oracle WMS enables you to perform the following reverse logistics tasks:

- Return Material Authorization (RMA) receiving
- Supplier returns (RTV)
- Refurbishment and recycling

Oracle WMS enables you to record and transact returns of material packed into a Licence Plate Number (LPN) using the return to vendor feature. You can also provide LPN based receiving corrections. LPN based returns can be initiated through the desktop forms or transacted through the mobile device interface by scanning the LPN to be returned. Corrections can be made directly through the desktop forms to immediately update information.

WMS offers a one step or a two step process for returns. This option is determined by the WMS:Express Returns profile option. By enabling this option you can perform a two step return process where, for example, a manager can initiate the return (step 1) and a picker can retrieve the material and deliver it to shipping (step 2). Otherwise the return transaction is initiated and completed in one step.

For more information on returns and corrections, refer to the Oracle Purchasing User's Guide.

Warehouse Configuration

Oracle WMS uses the same warehouse, resource, trading partner, and material configuration employed by the rest of the Oracle eBusiness Suite. These entities enable users to define inventory organizations, physical areas within the facility, and inventory locators, as well as material valuation cost groups–that are used to track inventory costs, departments within a facility, and the resources (both people and machines) that perform warehouse tasks, such as material movement and value added services.

The key enablers of the Oracle WMS include the following:

- Container and license plate management
- WMS Rules Engine

Container management enables you to track the contents of any containers in receiving, inventory, shipping, and in-transit inventories. The WMS rules engine enables you to set up task strategies that optimize warehouse execution and management.

Container and License Plate Management

Oracle WMS provides full visibility to inventory items that are stored in license plate numbers (LPNs). An LPN, in Oracle WMS, is any object that exists in a location and holds items. An LPN might be a container, but it does not need to represent a physical entity. It could be as simple as a label on a collection of items. Oracle WMS enables users to track, transact, and nest LPNs and their contents.

Using License Plate Numbers

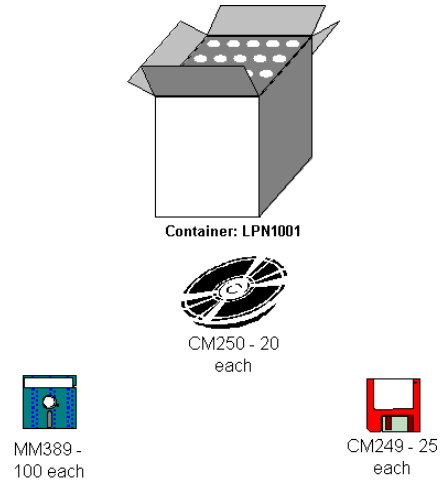
Using LPNs, you can do the following:

- Receive, store, and pick material by LPN
- View on-hand balances by LPN
- View contents of LPN, including item number, serial number, quantity, and so on
- Move multiple items in a transaction by the LPN
- Perform WIP completions into prepacked LPNs
- Complete work orderless completions or discrete job completions into LPNs
- Print labels and reports for referencing container contents

- Track nested LPNs (for example, cartons on a pallet)

The container and LPN concept enables you to identify the complete contents and transaction history of each container. In the Figure, a container LPN (LPN1001) includes three types of media, all with a unit of measure of Each, and all containing varying quantities. In this example, querying on LPN1001, would enable you to see these three media.

Figure 1–2 LPN Contents



Summary of Container Management Features

Oracle WMS container management enables you to:

- Use a unique LPN, identify a container and its contents
- Pack and unpack LPN contents
- Receive inventory into LPNs from suppliers and internal organizations
- Move, and transact inventory in LPNs
- View LPN contents
- View the on-hand quantity packed in an LPN
- Print LPN labels

WMS Rules Engine

The Oracle WMS Rules engine is a modeling tool whose repository of business practices and restrictions enable it to suggest the best process for a particular warehouse function. You can set up rules and strategies to do the following:

- Enable the system to allocate material for picking (directed picking)
- Enable the system to suggest put away locations in which to store an item (directed putaway)
- Enable the system to assign material valuation and holding accounts to received material (cost group assignment)
- Enable the system to suggest the label format and information content that are used to print a given label (compliance labeling)
- Designate warehouse task types to pending work, so that the system can dispatch work to the appropriate users and equipment.

All of these features increase your ability to manage your warehouses more efficiently.

Directed Picking and Putaway

Oracle WMS directed picking and putaway enables you to dynamically select storage locations for material that is received into the warehouse, or completed from WIP, and to allocate material for sales orders based on user defined material selection criteria.

Cost Group Assignment

If your company holds inventory on their premises, you can use the cost group assignment feature to view the ownership associated with inventory. A separate cost group is warranted whenever an item has a different account coding. Thus, a supplier's warehouse inventory can be identified, tracked, and properly costed, even if it is commingled with your company's inventory. The cost group assignment feature helps reduce physical inventory levels, while promoting higher inventory turns.

Compliance Labeling

Oracle WMS enables you to suggest a label format based on the customer, item, order type, carrier, or other entities related to the material.

The actual printing of the label is performed by a third party label printing system. Label generation and format selection are performed within Oracle WMS, either at predetermined points in the business process, or at user request.

Task Dispatching

The WMS rules engine identifies the correct task type for system generated tasks so that they can be assigned to a qualified user with the appropriate equipment.

The Remainder of This User Guide

The remainder of this guide is organized into the following chapters:

- Chapter 2: Setting up Oracle Warehouse Management
  - Cost groups
  - Warehouse organizations
  - Subinventories
  - Locators
  - Dock door to staging lane relationships
  - Items
  - Container items
  - Departments
  - Skill sets
  - Equipment types
  - Equipment items
  - Equipment serial numbers
  - Task types
- Chapter 3: Describing the WMS Rules Engine
- Chapter 4: Explaining Supply Chain and Inventory Management
  - Container management
  - Inventory management
  - Lot management
  - Storage management

  - Facility management
- Chapter 5: Performing WMS Inbound Logistics
  - Warehouse receiving
  - Put-away tasks
- Chapter 6: Performing WMS Outbound Logistics
  - Pick methodologies
  - Opportunistic cross docking
  - Replenishment
  - Directed picking process
  - Cartonization and packing
  - Shipment

2

Setting Up

This chapter discusses setting up the Oracle Warehouse Management system, including the following:

- ❏ Overview of WMS Setup on page 2-2
- ❏ Related Product Setup on page 2-3
- ❏ Oracle Warehouse Management Setup Overview on page 2-4
- ❏ Warehouse Setup on page 2-6
- ❏ Material Setup on page 2-23
- ❏ Task Management Setup on page 2-35
- ❏ Compliance Labeling Setup on page 2-49
- ❏ Cost Group Setup on page 2-62
- ❏ Inbound Setup on page 2-69
- ❏ Outbound Setup on page 2-73

Overview of WMS Setup

Setting up covers the standard setup for Oracle Warehouse Management system (WMS). The chapter is organized into the following major sections:

- Overview of Oracle Warehouse Management Setup
- Related Product Setup steps
- Setting Up the Oracle Warehouse Management system

> **Note:** This chapter assumes that you have knowledge of Oracle Inventory, Oracle Bills of Material, Oracle Receiving, Oracle Order Management, Oracle Shipping, and Oracle Project Manufacturing.

This section provides an overview of the setup requirements for Oracle Warehouse Management system (WMS). For instructions, see the detailed setup instructions that are associated with each step.

Setting up Oracle WMS includes setting up related Oracle applications, such as Oracle Inventory and Oracle Bills of Material. Therefore, you might only need to make WMS modifications specific to existing data, like existing items. Check with your implementation team to determine which setup requirements have already been fulfilled

Oracle Applications Technology and the Implementation Wizard

The setup steps in this chapter explain how to implement the parts of Oracle Applications specific to Oracle Warehouse Management.

The Oracle Implementation Wizard guides you through the entire Oracle Applications setup, including system administration. However, if you do not use the Wizard, then you need to complete several other setup steps, including the following:

- Performing system-wide setup tasks, such as configuring concurrent managers and printers.
- Managing data security, which includes setting up responsibilities to allow access to a specific set of business data and transactions, and assigning individual users to one or more of these responsibilities.

If you are implementing more than one Oracle Applications product, you might want to use the Oracle Applications Implementation Wizard to coordinate your setup activities. The Implementation Wizard guides you through the setup steps for

the applications that you have installed. The Wizard suggests logical sequences that satisfy cross-product implementation dependencies and reduces redundant setup steps. The Wizard also identifies steps that can be completed independently by several teams working in parallel to help you manage your implementation process most efficiently.

You can also use the Implementation Wizard as a resource center to graphically view the setup steps, read outline help for a setup activity, and open the appropriate setup window. By using the Wizard to record comments for each step, you can also document your implementation for further reference and review.

See Also

Implementation Wizard, *Oracle Applications Implementation User's Guide*

Oracle System Administration, *Oracle Applications System Administrator's Guide*

Setting Up Oracle Workflow, *Oracle Workflow User's Guide*

Related Product Setup

Oracle Warehouse Management system requires that Oracle Inventory, Oracle Purchasing (Receiving), and Oracle Order Management (Shipping) are installed and set up.

Oracle Inventory

Set up Oracle Inventory as described in Overview of Setting Up, *Oracle Inventory User's Guide*.

Oracle Bills of Material

Set up Oracle Bills of Material as described in Overview of Setting Up, *Oracle Bills of Material User's Guide*.

Oracle Purchasing

Set up Oracle Purchasing as described in Overview of Setting Up, *Oracle Purchasing User's Guide.*

Oracle Cost Management

Set up Oracle Cost Management as described in Overview of Setting Up, *Oracle Cost Management User's Guide*.

Oracle Order Management

Set up Oracle Order Management as described in Overview of Setting Up, *Oracle Order Management User's Guide*.

Oracle Project Manufacturing

Set up Oracle Project Manufacturing as described in Overview of Setting Up, *Oracle Project Manufacturing User's Guide*

Oracle Quality

Set up Oracle Quality as described in Overview of Setting Up, *Oracle Quality User's Guide*

Oracle Warehouse Management Setup Overview

Setup for Oracle WMS is divided into the following sections:

- Warehouse setup
  - Setting up warehouse organizations
  - Setting up warehouse-related subinventory parameters
  - Setting up warehouse-related locator parameters
  - Setting up dock door-to-staging lane relationships
- Material setup
  - Setting up item attributes
  - Setting up material statuses
  - Setting up lot and serial attributes
- Task management setup
  - Setting up resources
  - Setting up or verifying equipment items
  - Setting up equipment resources
  - Setting up warehouse task types
  - Setting up departments
  - Setting up task type assignment rules

- Labeling setup
  - Defining label formats
  - Associating label types to business flows
  - Setting up label format assignment rules
- Cost group setup
  - Defining inventory cost groups
  - Specifying the default cost group in the Organization Parameters window
  - Setting up cost group rules
- Inbound logistics setup
  - Setting up receiving parameters
  - Setting up put away rules
- Outbound logistics setup
  - Setting up cartonization
  - Defining pick methodologies
  - Setting up pick wave rules
  - Defining shipping parameters
  - Setting up picking rules

Setting Up the Oracle Warehouse Management System

This section includes a setup checklist, and the detailed setup steps for Oracle WMS. The WMS setup can be broadly classified into the following 7 setup areas:

- Warehouse setup
- Material setup
- Task Management setup
- Compliance Labeling setup
- Cost Group setup
- Inbound setup
- Outbound setup

Warehouse Setup

Warehouse configuration requires that you set up your warehouse as an inventory organization, and then select parameters that identify the organization as a warehouse. Warehouse configuration also includes defining the appropriate subinventories to represent the zones within your warehouse, as well as defining appropriate locators, and assigning dock doors to their related staging lanes.

Warehouse setup includes the following tasks:

- Setting up warehouse organizations
- Setting up warehouse-related subinventory parameters
- Setting up warehouse-related locator parameters
- Setting up dock door to staging lane relationships

> **Note:** When you set up your organization parameters, you should specify a default cost group. Therefore, you should set up the default cost group before setting up the organization.

The following list provides the new or enhanced attributes in Oracle Inventory that you set up for warehouse related organizations:

- Organization parameters
  - New warehouse tab in the Inventory Organizations Parameters form
  - Default cost group
  - License Plate Number (LPN) information
  - Default picking rule
  - WMS enabled check box
  - Capacity weight and volume unit of measures
  - Default put away rule
  - Defaults pick task type
  - Default replenishment task type
  - Cartonization option
  - Time zone

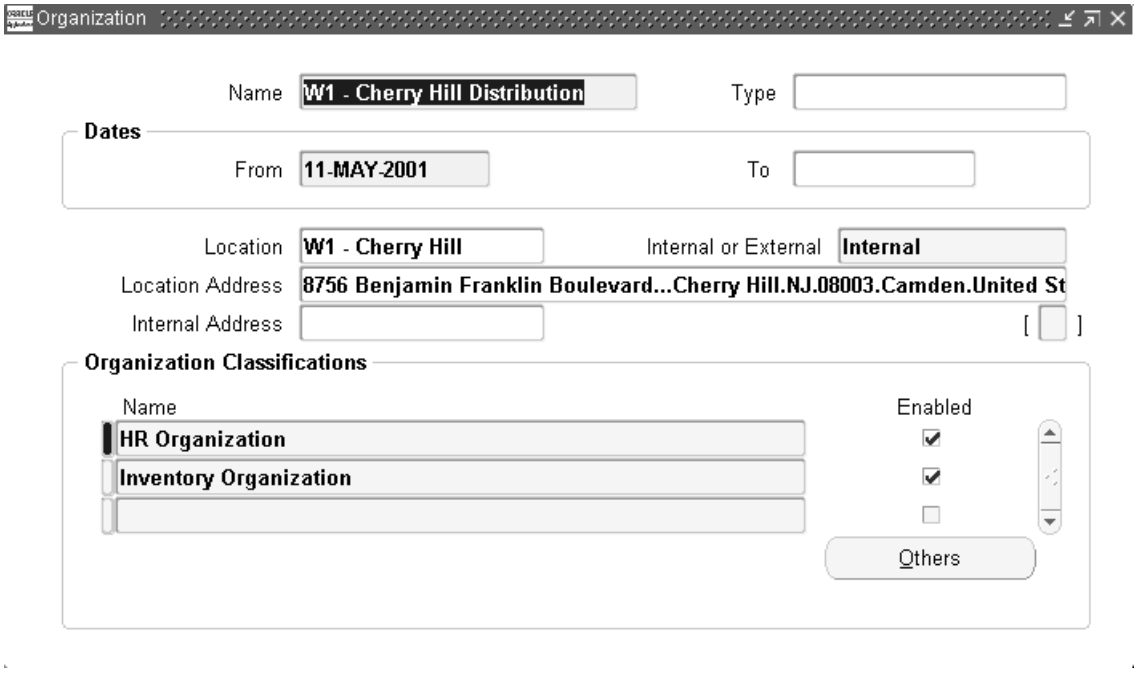
  - Default cycle count header
- Subinventory attributes
  - Subinventory status
  - Default cost group
  - Cartonization option
  - LPN controlled option
  - Locator controlled option
  - Default locator status
  - Picking unit of measure (UOM)
  - Picking order (functionality change)
- Locator attributes
  - Locator type
  - Locator status
  - Locator capacity
  - Pick UOM associated with the locator
  - Locator dimensions (length, width, and height)
  - Locator coordinates (X, Y, and Z)
- New form to define dock door to staging lane relationships

To set up a warehouse, set up an inventory organization and make modifications as described in the following instructions. For specific instructions on setting up organizations, see, the Oracle Inventory iHelp topic, Defining Default Inventory Parameters.

How to Set Up Warehouse Organizations

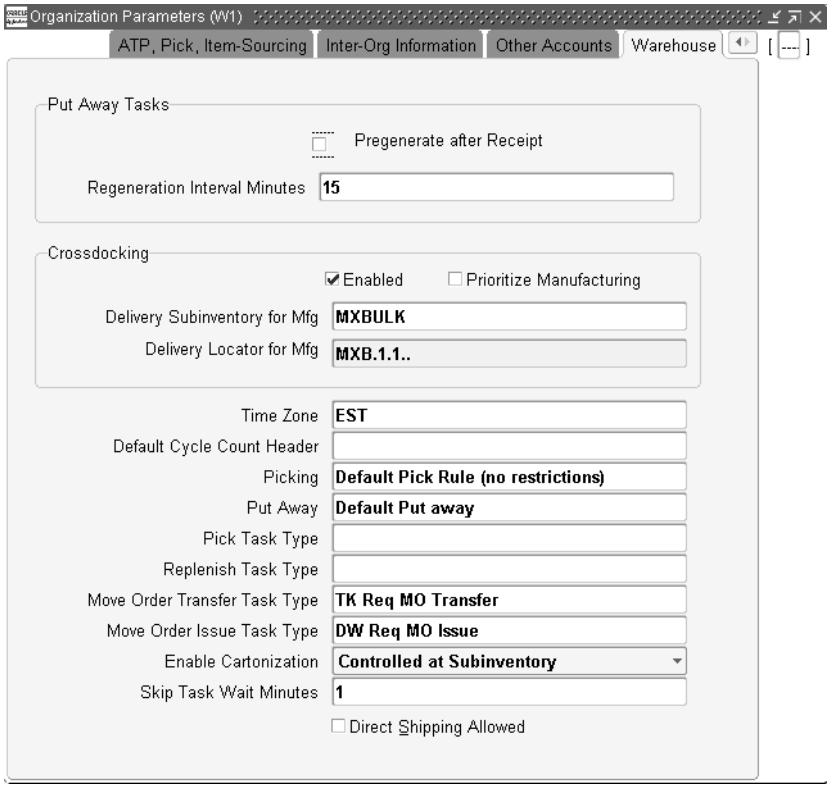
1. Navigate to the Organization setup window.

Figure 2–1 Organization Window



2. Set up your warehouse organization in the same way in which you set up a standard inventory organization. In the Organizations window, make sure to specify an organization classification of Inventory Organization.
3. After you set up standard organization information, save your work, and then navigate to the Organization Parameters window.

Figure 2–2 Organization Parameters Window



4. In addition to specifying the standard organization parameters, set up the following parameters for the Warehouse organization:
   - On the Inventory Parameters tab, select the WMS Enabled check box.

> **Note:** Specifying that the organization is a WMS enabled organization, enables you to use LPNs, task management, cost groups, rules, and other WMS functionality in this organization. If the organization is not WMS enabled, but WMS is still licensed and installed as a product, you will still be able to use the WMS-related material status, lot and serial attributes, and lot split and merge features.

– On the Costing Information tab, select a default cost group.

  If the system does not find a cost group when executing rules, or at the subinventory level, it will assign the default cost group.

– On the Revision, Lot, Serial, LPN tab, specify how you want the system to generate License Plate Numbers (LPNs).

  Note: LPNs must be unique across organizations. Setting the parameters on this tab enables the system to generate license plate numbers on demand, or through a concurrent request. As long as the number is unique, Oracle WMS also enables users to generate their own license plate numbers.

– Note the following information before you set up the Warehouse tab:

  Subinventories in a WMS enabled organization must be locator controlled (even if there is only one locator in each subinventory). You must make all subinventories in your organization locator controlled before setting the WMS enabled flag in the Organization Parameters window for a preexisting, non-WMS organization.

  Because every item in a subinventory for non-WMS organizations must have the same cost group, WMS organizations with on-balances cannot be switched back to a standard inventory organization without significant effort. It is therefore advised that you do not select the WMS enabled parameter, until you have clearly decided to implement WMS methodologies in the organization.

– On the Warehouse tab, in the Put Away Tasks region, select the Pregenerate after Receipt check box to specify whether the system should allocate space for the material when items are initially received.

  If you do not select the Pregenerate after Receipt check box, the system will allocate space only after the user initiates the put away process.

– In the Regeneration Interval field, if you elected to pregenerate put away tasks, these tasks can be regenerated at certain predefined intervals so that the suggested storage locations can be updated based on the latest space availability estimates.

– Select the Enabled check box in the Crossdocking region to indicate if you want the system to direct the user to cross dock material that was backordered.

- In the Time Zone field, use the list of values to optionally select the time zone in which your warehouse resides.
- If required by the discrepancy management workflows, in the Default Cycle Count Header field, enter the default cycle count header that will be used to request cycle counts.
- In the Picking and Put Away fields, optionally select the appropriate default picking and put away rules. If no matching strategy can be found using the pick or put away strategy search order and strategy assignments, or no strategy search order is defined for the organization, this rule will be used to allocate space or materials.
- In the Pick Task Type and Replenish Task Type, specify default picking and replenishment task types that are required for your warehouse. If no task type rule with the right system task type and all restrictions being met can be found, then this task type will be used for the task.
- In the Move Order Transfer Task Type and Move Order Issue Task Type fields, specify the default move order transfer and move order issue task types. If no task type rule with the right system task type and all restrictions being met can be found, then this task type will be used for the task.
- In the Enable Cartonization field, specify at which level you want the cartonization process to be controlled at the time of pick release. The cartonization process suggests the type of container to be used during the picking operation. This cartonization process includes three levels of control: Enable cartonization at the organization level, disable cartonization at the organization level, and enable cartonization at the subinventory level.
- Enter a value for Skip Task Wait Minutes. This is the number of minutes that a task skipped by a user will be held by the system before it is returned to the pool of pending tasks to be dispatched again.
- Select the Prioritize Manufacturing option if you wish backordered component requirements for jobs and schedules to be prioritized above sales orders when crossdocking opportunities are available for both. This is only applicable if an organization has items that are both entered on sales orders for customers and used as a component for manufacturing.
- Enter a Delivery Subinventory for Mfg and Delivery Locator for Mfg if crossdocking is enabled for the organization. A crossdocked material requirement for a push material requirement is transferred directly from receiving to WIP; from the operator's perspective, it never goes through inventory. However, a purchase order receipt and WIP issue transaction

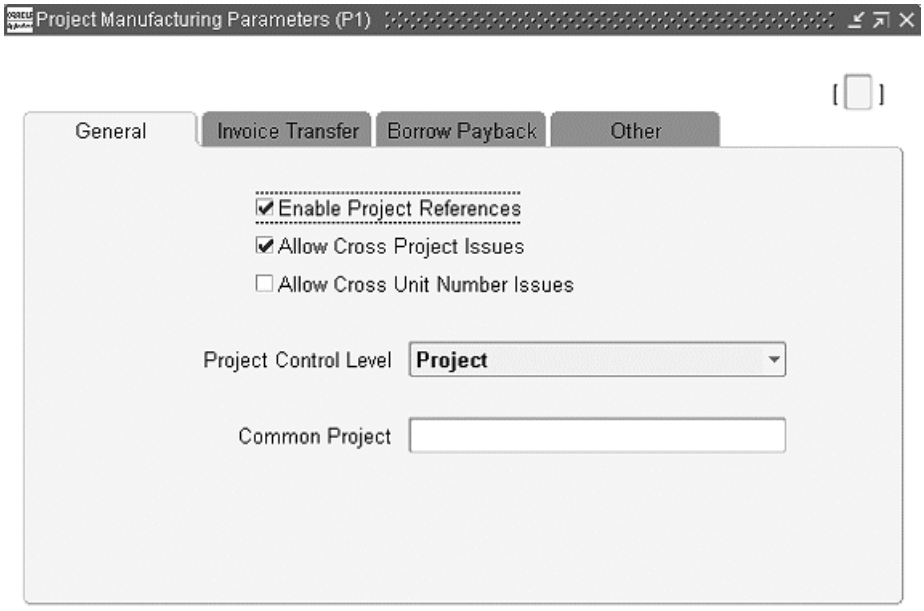
must be recorded for costing and other technical reasons. These transactions must be posted to a particular subinventory and locator. These two options are used to determine where that transaction should be posted.

5. Save your work.

Setting Up Project Manufacturing with Warehouse Management

If you are enabling Warehouse Management in a Project Manufacturing organization, specific parameters and rules need to be set up differently than the set up for Project Manufacturing without Warehouse Management. This section covers those parameters and rules.

Figure 2–3 Project Manufacturing Parameters Window



It is critical that the following parameters in the Project Manufacturing Organization Parameters window are defined for a WMS enabled Project Manufacturing organization. The parameters are as follows:

- Allow Cross Unit Issues - This parameter is used when allocating serial numbers for an item that is under unit effectivity control. If the box is unchecked, the system will only allocate serials with the same end item unit number as that specified on the sales order or WIP job/schedule. This restriction will exist regardless of the picking rules that are used. Also, if the box is checked, the system will allocate any serial number for the order based on the rules provided regardless of the end item unit number on the sales order.
- Allow Cross Project Issues - This field will govern the way allocation works in a project manufacturing organization. If the box is not checked, the system will only allocate material from the same project and task as that on the sales order or WIP job/schedule. If the sales order or WIP job is common, only common material will be allocated. This restriction will exist regardless of the picking rules used. If the box is checked, material can be sourced from any project and task regardless of the project on the sales order or WIP job/schedule. This can be further restricted by Warehouse Management picking rules. For more information refer to the topic Picking Rules for WMS Enabled Project Manufacturing Organizations in this chapter.

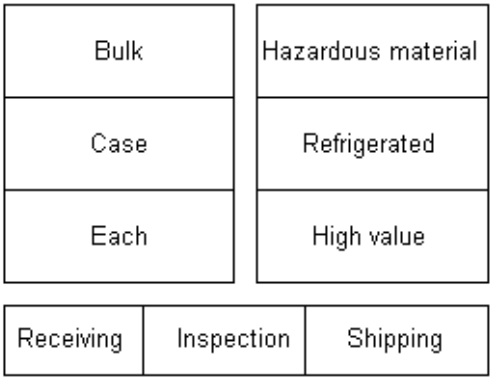
For more information on setting up a Project Manufacturing Organization, refer to the *Oracle Project Manufacturing User's Guide.*

Set Up Subinventory Parameters

See the Oracle Inventory iHelp topic, Defining Subinventories, for instructions on setting up subinventories.

With Oracle WMS, the subinventory represents the physical zones of a warehouse or facility. You need to define at least one subinventory for each warehouse organization. The following figure illustrates subinventories that you might define for a warehouse.

Figure 2–4 Warehouse Zones



Note: Unlike Oracle Inventory, for warehouse subinventories, you do not need to set up or associate any accounts with the subinventory.

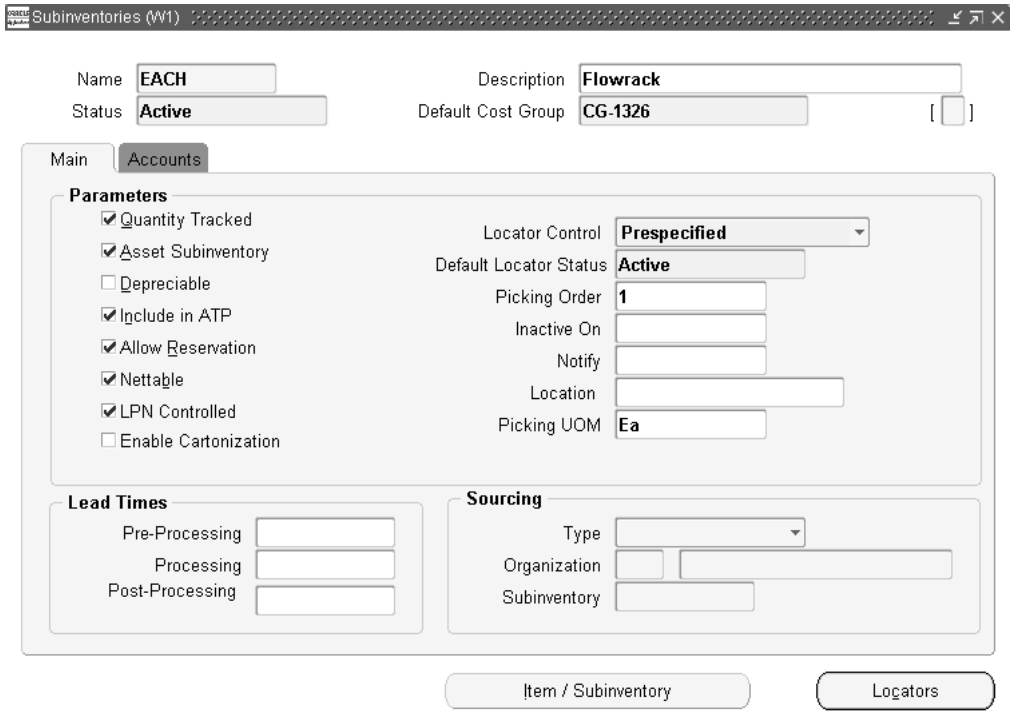
The Oracle WMS has extended the subinventory definition with the following additional parameters:

- Material status
- Default cost group
- LPN controlled option
- Cartonization flag
- Pick UOM
- Default locator status

How to Set Up Warehouse-Related Subinventory Attributes

1. Navigate to the Subinventories Window.

Figure 2–5 Subinventories Window



2. Query on or define the subinventory for which you want to define warehouse-related attributes.
3. In the Status field, use the list of values to select the material status associated with this subinventory.
4. In the Default Cost Group field, enter the default cost group for material that will be received into the subinventory.

> **Note:** If the rules engine fails to select an appropriate cost group for the newly received material, then the material will be assigned to the default cost group of the subinventory into which it is being received.

5. Selecting the LPN controlled check box enables you to specify if you want to be able to transact material using LPNs in the subinventory.

   Packing is not allowed in non-LPN controlled subinventories. If you do not select the LPN Controlled check box, LPNs transacted into the subinventory will be automatically unpacked and their contents will be delivered loose to the locator.

6. Whenever a pick comes from this subinventory, if you want the system to suggest packing configurations, and then generate labels for the suggested packed LPNs, select the Enable Cartonization check box.

   This flag is only valid when the organization-level cartonization parameter is set to Controlled at Subinventory.

7. In the Default Locator Status field, select the default material status that will be associated with each locator in the subinventory.

   You can override the default locator status for each locator.

   Note: For WMS-controlled organizations, locator control of a subinventory is restricted to Prespecified or Dynamic.

8. In the Picking Order field, enter a sequence number so that the system can determine the sequencing of the pick path through the warehouse.

   The system directs pickers to pick material in the subinventories, in the order that you specify in the subinventory's Picking Order field. Thus, these values determine the picking path through the warehouse.

9. In the Picking UOM field, select the picking unit of measure transacted from this subinventory. For example, if a your BULK subinventory holds pallets, you might select a picking UOM of Pallet.

10. When you finish defining or modifying the subinventory, save your work.

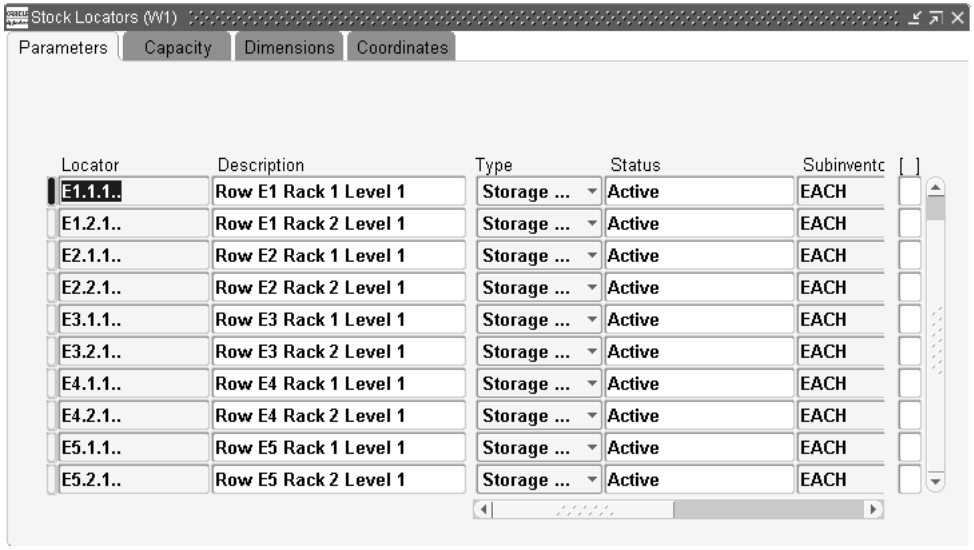
Set Up Locator Parameters

Locators identify physical areas within subinventories where you store items, such as rack/bin or aisle/row/bin locations. You also set up dock doors and staging lanes as locators. For detailed instructions on how to set up locators, see the Oracle Inventory iHelp topic, Defining Stock Locators.

How to Set Up Warehouse-Related Locator Attributes

1. Navigate to the Stock Locators window.

Figure 2–6 Stock Locators Window



2. In the Picking Order field (scroll to the right to view this field), enter the picking order for the locator.

   The locator pick sequence determines the sequence in which the system dispatches tasks to the user within a subinventory. Thus, the locator picking order defines the picking path in the warehouse.

3. In the Type field, select Storage Locator from the list of values.

4. In the Status field, select the material status associated with this locator. For example, you might select a material status that has been designed to disallows transactions and prevent any transactions against the item from the locator.

Note: Material status is explained in more detail in the chapter, Explaining Supply Chain and Inventory Management, Material Status Overview topic.

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5. If you want to specify capacity constraints for this locator, select the Capacity tab and enter the volume, weight, number of units, and capacity information that can be stored in this locator.

   The system uses three capacity constraint values to calculate the available capacity in the storage locator so that the WMS can suggest put away locations for material that have the appropriate remaining capacity. For best results, the units of measure that you enter here should be convertible into the units of measure for those items that might be stored in the locator.

6. If you want to enter a locator-specific picking unit of measure, for the locator, select the Dimensions tab, Pick UOM field, and then use the list of values to select the appropriate unit of measure.

   The picking unit of measure defaults from the unit of measure at the subinventory level, but can be changed at the locator level.

7. In the Dimensions region, specify the dimensions of the locator.

   The locator dimensions are used to calculate the available capacity in the locator so that the system can suggest storage locations for material where there is sufficient available space.

8. If you want to specify coordinates for this locator, select the Coordinates tab and enter the appropriate X, Y, and Z coordinates.

   The X, Y, and Z coordinates are used to sequence tasks for dispatching to the warehouse users, if picking orders are not specified. However, X, Y, and Z coordinates do not take into account any walls or other barriers that might exist between stock locators and a subinventory.

9. When you are finished defining or modifying the locator, save your work.

Stock Locators in a WMS Enabled Project Manufacturing Organization

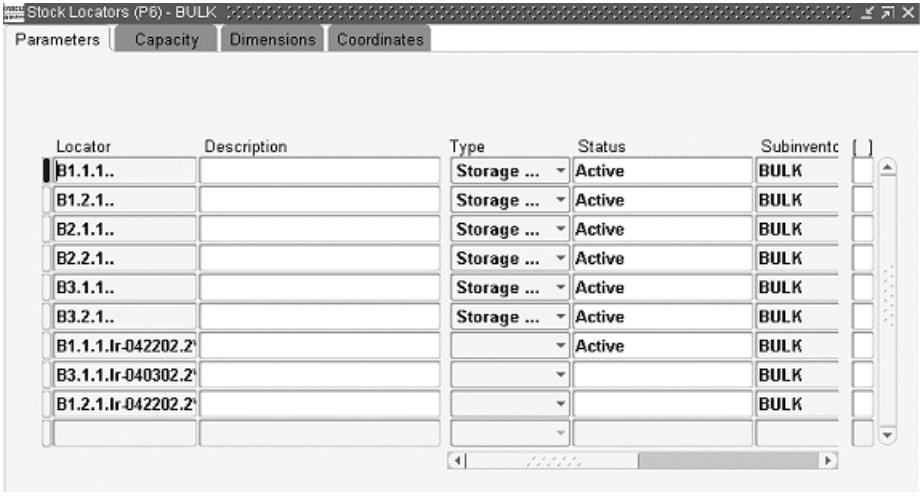
The same definition of stock locators used in Oracle Inventory is used in Oracle WMS, but it may not be feasible for Oracle WMS users to affix multiple location labels to the same physical warehouse shelf. If the material in the location is not labeled with the project and task, the user may inadvertently scan the wrong location label and pick material from an incorrect project. To alleviate this problem, Oracle WMS has removed the project and task segments from the locator field in all mobile user interfaces. Users will instead see or scan the project and task in separate fields on each page. The system will convert the physical locator scanned to the logical project and task locator behind the scenes. The transaction in Oracle Inventory will be posted with the appropriate project and task locator.

For more information on stock locators, refer to the *Oracle Inventory User's Guide*.

Oracle WMS differentiates the actual locator in Oracle Inventory from the locator that the user scans by using the term Logical Locator. Logical Locator is used to indicate the stock locator, including project and task. Physical Locator is used to indicate the stock locator without the project and task. One physical locator may have multiple corresponding logical locators if material for more than one project and task combination is stored in that location.

Defining Stock Locators with Project Manufacturing You can define a Physical Stock Locator that you want to receive project material against. When the system performs a receipt for a project into inventory, a corresponding Logical Locator with project and task information will be created. Logical Locators can be viewed in the Stock Locator form.

Figure 2–7 Logical Locator Example



The example above indicates the following:

- The Physical Locator is B1.1.1
- The Logical Locator is B1.1.1.lr-042202.2, where lr-042202 is the project number and 2 is the task

An unlimited number of project/task combinations can be associated to a single Physical Locator.

Setting Up Dock Door to Staging Lane Relationships

In Oracle WMS, dock doors and staging lanes are both defined as stock locators.

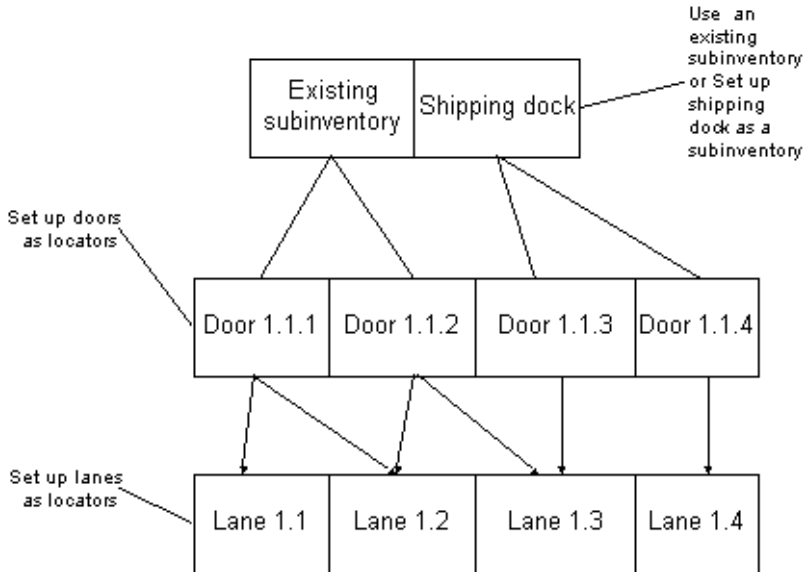
If you use Oracle Shipping Execution to plan trips for departures from your warehouse or facility, Oracle WMS enables you to schedule appointments for dock doors from which to load the LPNs for a specific trip.

The system can automatically select staging lanes near the scheduled dock door in which to stage the material prior to shipment. However, for the system to automatically select staging lanes, you must set up dock doors and staging lanes. After you set them up, you must define relationships between the dock doors and the staging lanes that service them.

Note: With Oracle WMS, whether or not you are using trips and dock door appointments, you must create at least one staging lane.

The following figure provides an example of staging lane, dock door, and shipping dock relationships.

Figure 2–8 Staging Lane and Dock Door Relationships



Note: You do not need to create a new subinventory just to define dock door and staging lane locators. You can define dock door and staging lane locators as part of another existing storage subinventory. However, defining a separate subinventory excludes the dock door-defined subinventory from cycle counts. This prevents a staged item, in the process of being loaded onto a vehicle, from being included in the cycle count. Also note that staging lanes should be assigned to a subinventory.

How to Set Up Staging Lanes and Dock Doors

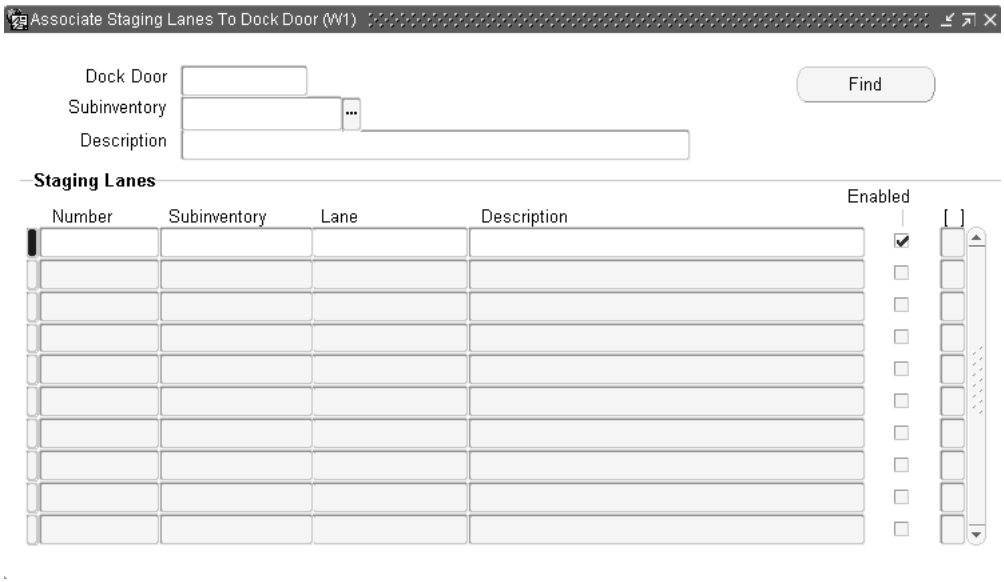
You set up staging lanes and dock doors the same as you do other subinventory locators. However, when you set them up, you specify a staging lanes and dock doors with locator types of Staging Lane and Dock Door, respectively.

Note: It is recommended that you do not set capacity constraints for staging lanes and dock doors, because material allocation processes might fail due to limited space in a staging lane.

How to Set Up Dock Door to Staging Lane Relationships

1. Navigate to the Associate Staging Lanes to Dock Door window.

Figure 2–9 Associate Staging Lanes to Dock Door Window



2. In the Dock Door field, use the list of values to select the dock door that you want to assign a staging lane.

   The system automatically populates the Subinventory and Description fields.

3. In the Staging Lanes region, Number field, enter a sequence number that represents the proximity of the staging lane to the dock door.

   When selecting a staging lane, Oracle WMS will select an available staging lane in the order of the sequence indicated here.

4. In the Staging Lanes region, Subinventory field, enter the subinventory and locator of the staging lane that serves the dock door.
5. Save your work.

Material Setup

Material setup includes the following tasks:

- Setting up item attributes and mobile UI attachments
- Setting up material statuses
- Setting up lot and serial attributes

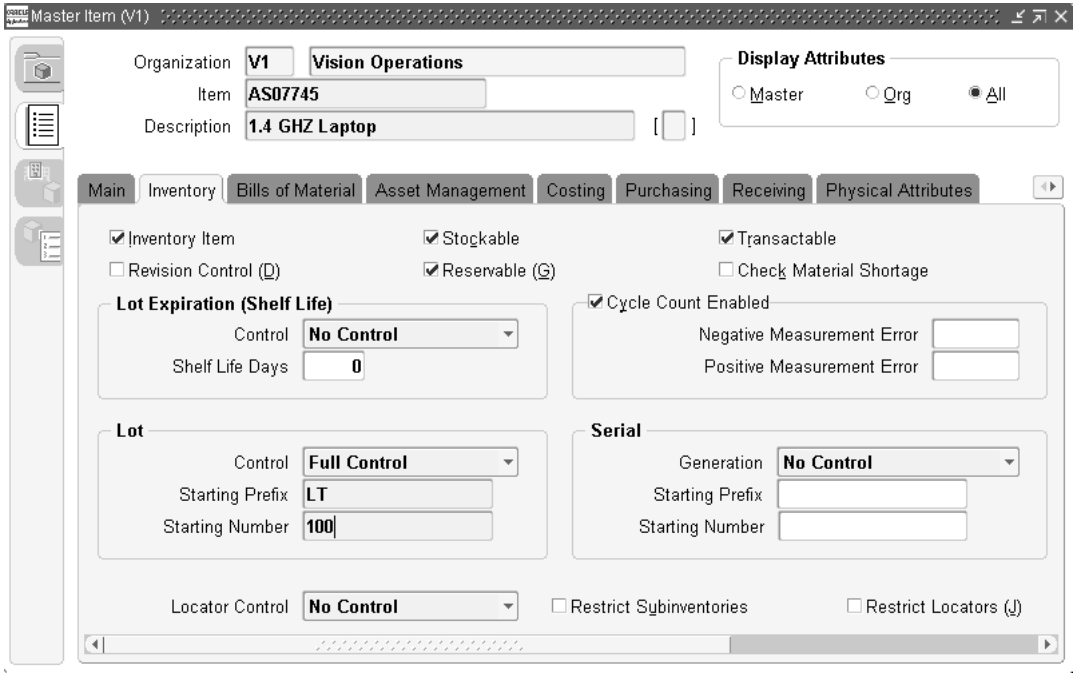
Set Up Item Attributes

In addition to setting up WMS-related item attributes, you use the same item setup steps that you do for setting up items in Oracle Inventory. For instructions on how to set up standard inventory items, see Oracle Inventory iHelp topic, Defining Items.

How to Set Up WMS-related Item Attributes

1. Navigate to the Master Items window.

Figure 2–10 Master Item Window - Inventory Tab



2. If this item will be lot controlled, select the Inventory tab and specify the following lot attributes. If this item is not lot controlled go to step 3.
   - If you want the system to automatically generate lot numbers, in the Lot Region, select Full Control, and enter a starting prefix and starting lot number.
   - In the Material Status Control region (scroll to the right to access this region), select the Lot Status Enabled check box to indicate that each lot enabled transaction can be controlled with material status.
   - In the Default Lot Status field, use the list of values to select a default material status that you want to be assigned to a newly received or created lot.

     The status that you enter in the Default Lot Status field, will be the material status that appears as default whenever new material is received. If necessary, you can override the default status.

- If this lot can be split into multiple child lots, select the Lot Split Enabled check box.
- If multiple lots can be merged into a single parent lot, select the Lot Merge Enabled check box.

3. If this item will be serial controlled, specify the following serial attributes. If this item is not serial controlled, then proceed to step 4.

   Note: Serial numbers can be pre-defined, generated at the time of receipt, or generated at the time of issue.

   - If the item is serial controlled and you want the system to generate serial numbers for the item, in the Serial Region, Generation field, select the point where you want the serial number to be generated.
   - In the Starting Prefix and Starting Number fields, enter the starting prefix and the starting number from which you want serials to be generated.
   - In the Material Status Control region, select the Serial Status Enabled check box to indicate that serial enabled transactions can be controlled with material status.
   - In the Default Serial Status field, use the list of values to select a default material status to be assigned to a newly received or created serial numbers.

     The status that you enter as the default serial status, will be the material status that appears as default whenever new material is received. If necessary, you can override this status.

     Note: Status control is not applicable to–and therefore not advised for– items that are serialized at sales order issue.

4. If you want to pick this item in bulk, select the Bulk Picked check box.

   Note: Bulk picking requires that deliveries not be created prior to pick release unless the batch only contains one delivery.

5. Save your work.

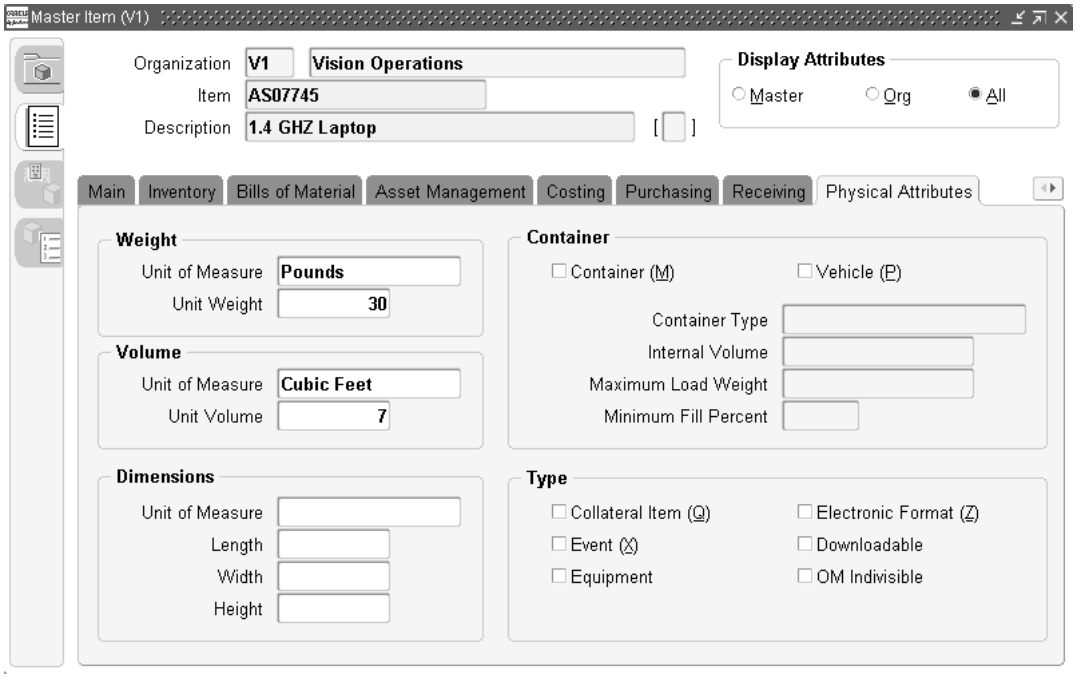
WMS enables you to enter an item's dimensions. The system uses these dimensions to calculate space availability when generating put away suggestions, and to determine the appropriate container size when making cartonization suggestions.

> **Note:** To make put away and cartonization suggestions, you must make sure that the units of measure used to indicate weight, volume, and dimensions of the item can be converted into the unit of measure that is used to indicate the locator capacity and container item capacity.

The following instructions explain how to enter physical dimensions for an item.

1. Navigate to the Master Items window, and select the Physical Attributes tab.

Figure 2–11 Master Item Window - Physical Attributes Tab



2. In the Weight region, Unit of Measure field, select the unit of measure and enter a weight for the item.
3. In the Volume region, select the unit of measure associated with the volume and a unit volume.
4. In the Dimensions region, select the unit of measure in which the length, width, and height will be measured, and enter the item's length, width, and height.
5. Save your work.
6. From the toolbar, select View then Attachments.
7. Define a sequence number or accept the default.
8. In the Category field, select the group that you want the attachment to be shown. For example, if you want the attachment to be shown to anyone that is picking this item, select To Mobile Picker.
9. Optionally, define a description, and select a Type for this attachment.
10. Enter the Attachment text, in the main body of the window.
11. Save your work.

Note: Multiple attachments can be defined for a single item. If multiple attachments are defined for the same business flow, they will be concatenated when they are displayed on the mobile user interface.

Note: You can also define attachments for categories. The process is the same as defining attachments for an item, simple navigate to the Category Codes window rather than the Master Items window.

Set Up Material Statuses

Material status codes enable you to control the movement and usage of material for portions of on-hand inventory (in the warehouse) that might have distinct differences because of grade, quality, or maturity level differences.

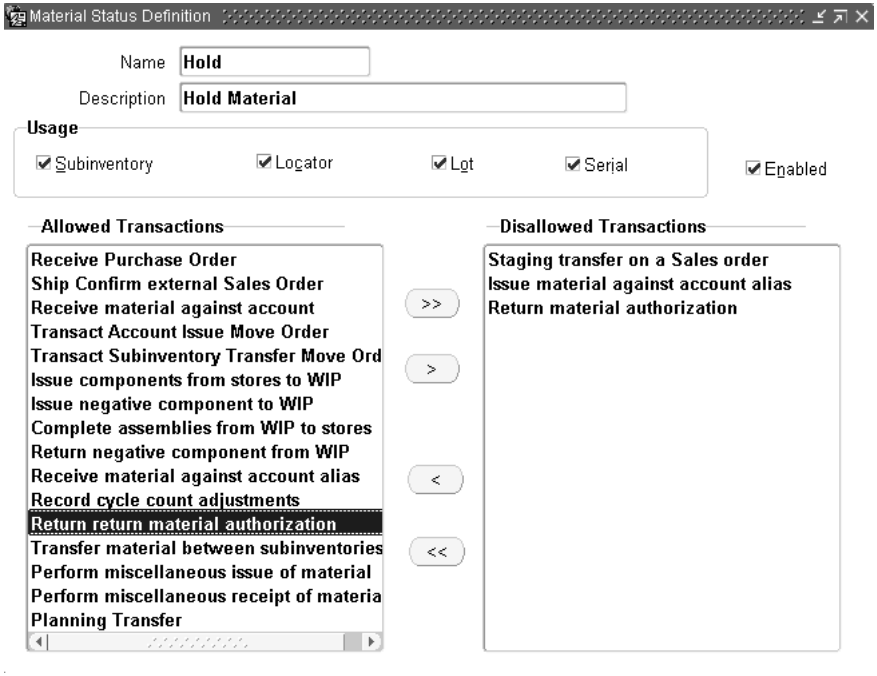
Using material status control enables you to control whether material can be picked or shipped on an internal order, picked or shipped to a customer, or can be issued for a work order. You can also specify if some material needs to be quarantined until some activity, such as inspection is performed on it.

How to Set Up Material Statuses

Note: Before you set up material status control codes, you should identify which transaction types that you want to be restricted by material status. To do this, set the Material Status Control flag in the Transaction Types window.

1. Navigate to the Material Status Definition window.

Figure 2–12 Material Status Definition Window



2. Enter a name and description for the material status.
3. In the Usage region, select or clear each check box that indicates where this material status can be used.

   For example, if you select the Subinventory check box, the system will enable you to assign the material status at the subinventory level.

4. In the Allowed Transactions column, select the transaction that you do not want to allow for the material status code, and then click the Move to Disallow List button.

   To move a transaction back to the Allowed Transactions column, select the transaction and then click the Move to Allow List button.

5. Repeat step 4 for additional transactions that you either want to allow or disallow for the material status.

6. After you finish selecting the transactions, if you do not yet want to enable this material status, clear the Enabled check box.

   Enabling a material status means that the status can by the system, and when setting up subinventories, and other system requirements. The Enabled check box defaults to selected.

> **Note:** A material status that is currently in use cannot be disabled. Enabled material statuses cannot be modified, so make sure that your material status is correctly defined before enabling it, and using it in transactions.

7. When you are finished, save your work.

Set Up Lot and Serial Attributes

Setting up lot and serial attributes includes the following tasks:

- Setting up lot and serial control
- Configuring lot and serial attribute Descriptive flexfields

Setting Up Lot and Serial Control

With the WMS, you can better control a lot item by specifying the following material status lot and serial control attributes:

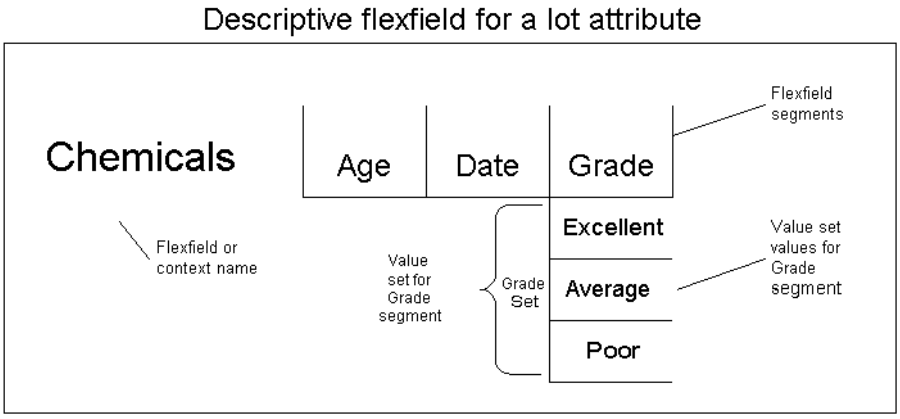
- Enabling lot control
- Specifying a default lot status
- Enabling serial control
- Specifying a default serial control

When you enable lot and serial control for the material status of an item, you can restrict or expand the item's use based on the level of material status control. You enable lot and serial control by selecting Lot and Serial Enabled check boxes on the Inventory tab of the Master Items window.

With WMS items, you can also decide whether lots can be split or merged, and whether you want an item to be bulk picked.

Lot and serial attributes track the characteristics of items, based on lot and (or) serial numbers. Descriptive flexfields enable you to configure lot and serial attribute flexfields so that you capture only those lot and serial attributes that you need to maintain. The following figure provides an example of a flexfield defined for a lot attribute called, Chemicals.

Figure 2–13 Descriptive Flexfield Example



Configuring Lot and Serial Attribute Descriptive Flexfields

Configuring lot and serial attribute descriptive flexfields includes the following tasks:

- Defining each attribute's value set
- Setting up descriptive flexfield contexts
- Setting up the segments in each context
- Compiling the flexfield

- Assigning context mapping by item category or item

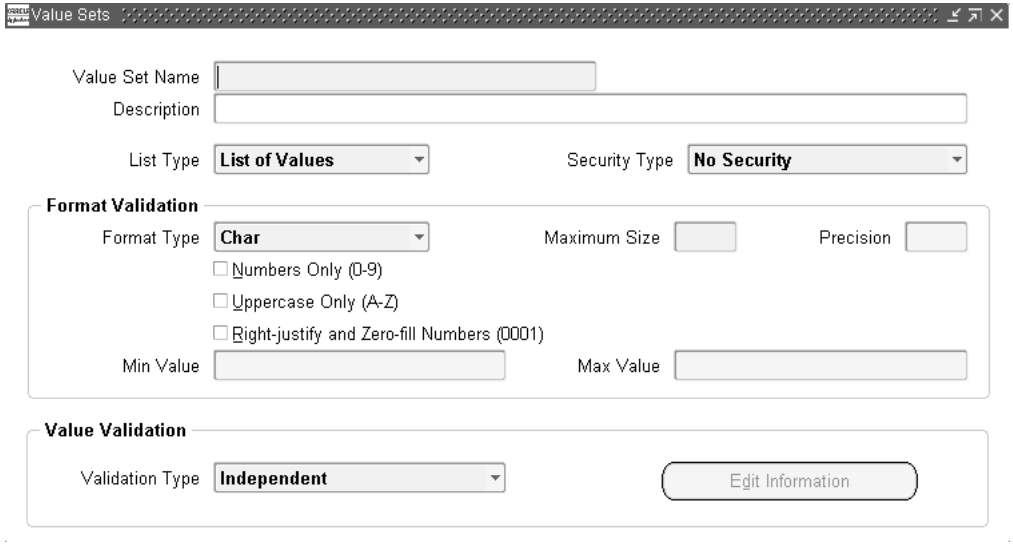
How to Define Attribute Value Sets for Lot and Serial Attributes

Value sets hold the actual values for a particular segment of a descriptive flexfield. Defining attribute value sets involves setting up the value set that is associated with a particular flexfield segment. For example, the following figure illustrates a value set for the Grade segment. In this case, the value set, Grade Set, includes three grades: Excellent, Average, and Poor.

> **Note:** Before you define the value set for an attribute, you should determine its context requirements, including the types of values required for each of the context segment.

1. Navigate to the Value Sets window.

Figure 2–14 Value Sets Window



2. Define the value sets for your lot or serial attribute segments. For instructions about how to define value sets, see the *Oracle Flexfields User's Guide*.

3. After you finish setting up the value set, navigate to the Values window and enter the actual values for the value set.

How to Set Up Lot and Serial Descriptive Flexfield Contexts

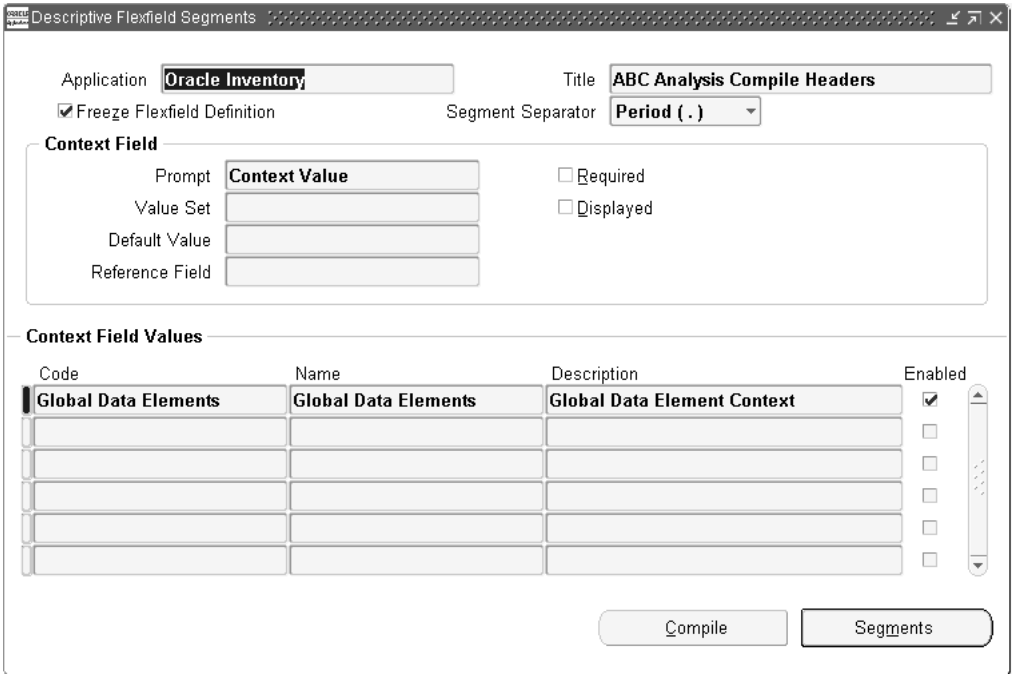
Setting up lot and serial descriptive flexfield contexts involves defining a context for each type of item that will track different groups of attributes. You should define different contexts to do the following:

- Track different attributes for different types of items
- Provide different default values for different types of items

To set up lot and serial descriptive flexfield contexts:

1. Navigate to the Descriptive Flexfields Segments window.

Figure 2–15 Descriptive Flexfield Segments Window



2. In the Title field, query on [illegible] to display the context codes that currently exist for lot attributes.

3. Set up lot and serial descriptive flexfield contexts according to the instructions in the *Oracle Flexfields User's Guide*.

How to Set Up Lot and Serial Descriptive Flexfield Segments

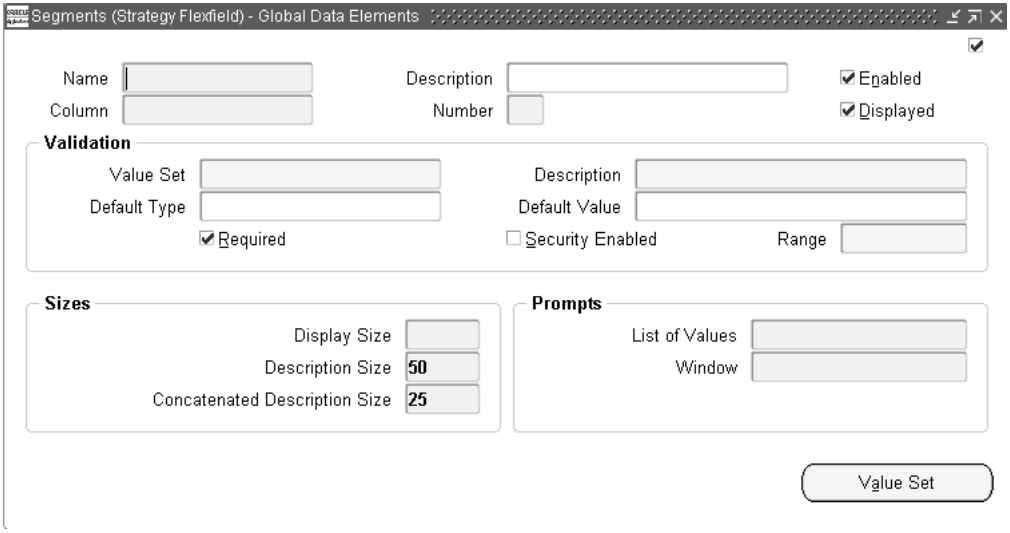
When you configure each attribute for each context, you specify the following:

- The database column in which to store the attribute. WMS supports data types of varchar, number, and date.
- Whether the attribute is required or optional
- The default value for the attribute
- The value set for the attribute. The value set determines the following:
  - The length of the attribute
  - The type of validation of the data. Attribute validation types include: no validation, independent validation, and table validation. Independent validation means that the attribute will be validated against a manually define list of values.

To set up lot and serial descriptive flexfield segments:

1. Navigate to the descriptive flexfields Segments window.

Figure 2–16 Segments Window



2. Enter segment information according to the instructions in the *Oracle Flexfields User's Guide*.

How to Compile Descriptive Flexfields

After you define your descriptive flexfield, including all of its components, such as segments and values, you must freeze the flexfield definition by selecting the Freeze Flexfield Definition check box. Freezing the flexfield automatically compiles it. However you can compile your flexfield manually, by choosing Compile.

> **Note:** To modify a flexfield, you must clear the Freeze Flexfield Definition check box.

For detailed instructions on compiling descriptive flexfields, see the *Oracle Flexfields User's Guide*.

Assigning Context Mapping by Item Category or Item

After you compile your flexfield, you need to navigate to the Descriptive Flexfield Context Mapping window and assign the attribute context to its associated item

category or item. Only categories within one category set can be used in an organization to assign attributes at the category level.

When you assign a context to an item or an item category the following occurs:

- The system prompts the user to enter the correct group of attributes for each type of item.
- Users can assign default contexts by item category or item number.
- Users can assign by categories that exist in any category set. However, by assigning an item to a context that is different than its owning category, then the item takes the attributes assigned at the item level.

> **Note:** If an attribute is assigned to an item category, then the item inherits the attribute.

Task Management Setup

Task management setup includes the following tasks:

- Setting up resources
- Setting up or verifying equipment items
- Setting up equipment resources
- Setting up warehouse task types
- Setting up departments
- Setting up task type assignment rules

Set Up Warehouse Employee Resources

For the system to capture the skill set of each user, and then use this information to dispatch tasks to qualified users, each user defined in the system must be associated with an employee defined in Oracle Human Resources. For more information about setting up users and employees, refer to Oracle Applications System Administrator and Oracle Human Resources System user's guides.

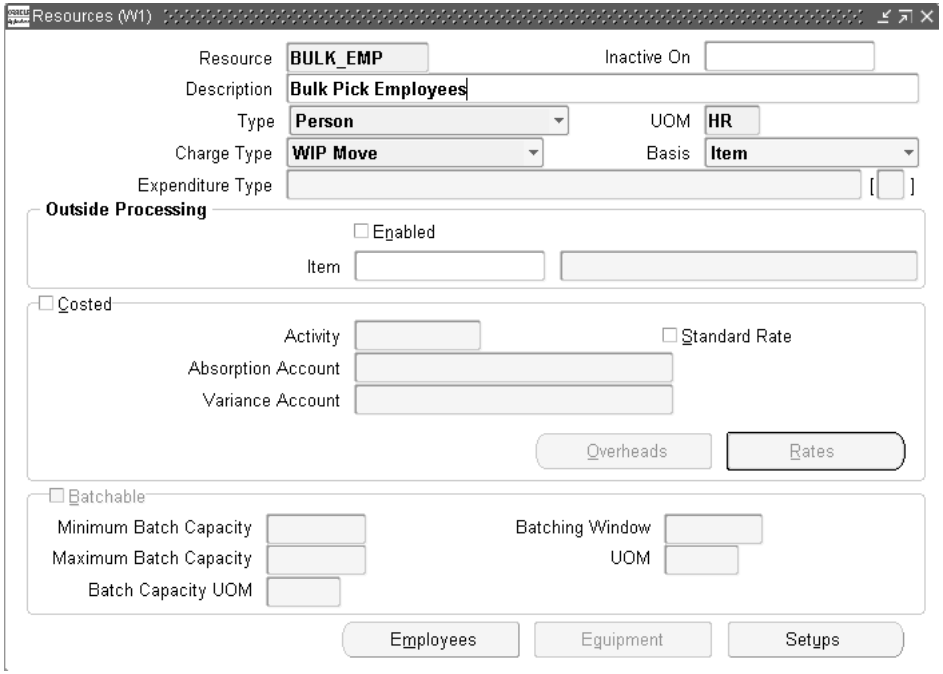
> **Note:** Only one person can be logged onto the mobile user interface, with one user name at a time. Therefore, users that will be using the system concurrently cannot share a user name.

Oracle WMS enables you to define the types of employees who work in the warehouse. The BOM resources entity is used to capture the skill sets of employees required to perform a specific task. For each task that requires a unique set of skills, define a new resource. However, if the same set of skills can be used to perform a variety of tasks, you do not need to define individual resource types. In this case, a single resource type will suffice.

How to Set Up Warehouse Employee Resources

1. Navigate to the Resources window.

Figure 2–17 Resources Window - Employees



2. In the Resource field, enter the resource (or skill set) name.
3. Enter a description.
4. In the Type field, select Person.

Note: If you select Person in the Type field the Employees button becomes enabled. If you select Machine in the Type field, the Equipment button becomes enabled. The Employees and Equipment buttons represent new functionality added to the Resources window for WMS.

5. Because they are not used by the WMS and will not affect warehouse-related processing, select any values for the following required fields:
   - UOM (typically HR)
   - Charge Type
6. Because Oracle WMS does not use the remaining fields in this window, leave them as is or blank.
7. Click the Employees to enter the warehouse employees with this resource's skill set.

Figure 2–18 Employee [Resources] Window



8. In the Employee field, use the list of values to select the employee number of the employee that you want to associate with this resource.

Note: The employees that you enter here are the employees to whom the system will dispatch tasks that require this resource's skill set. Also note that the employees that you select from the list of values are the employees that you set up in the Human Resources system.

9. Repeat step 8 to associate additional employees to this resource.
10. Save your work.

Set up or Verify Equipment Items

Equipment, such as forklifts, pallet jacks, and so on are used to perform tasks in a warehouse. In WMS, you set up equipment as a serialized item and a BOM resource. Users sign on to the serial number of the equipment and are then dispatched tasks appropriate to that equipment.

To set up equipment for use with WMS, you must do the following:

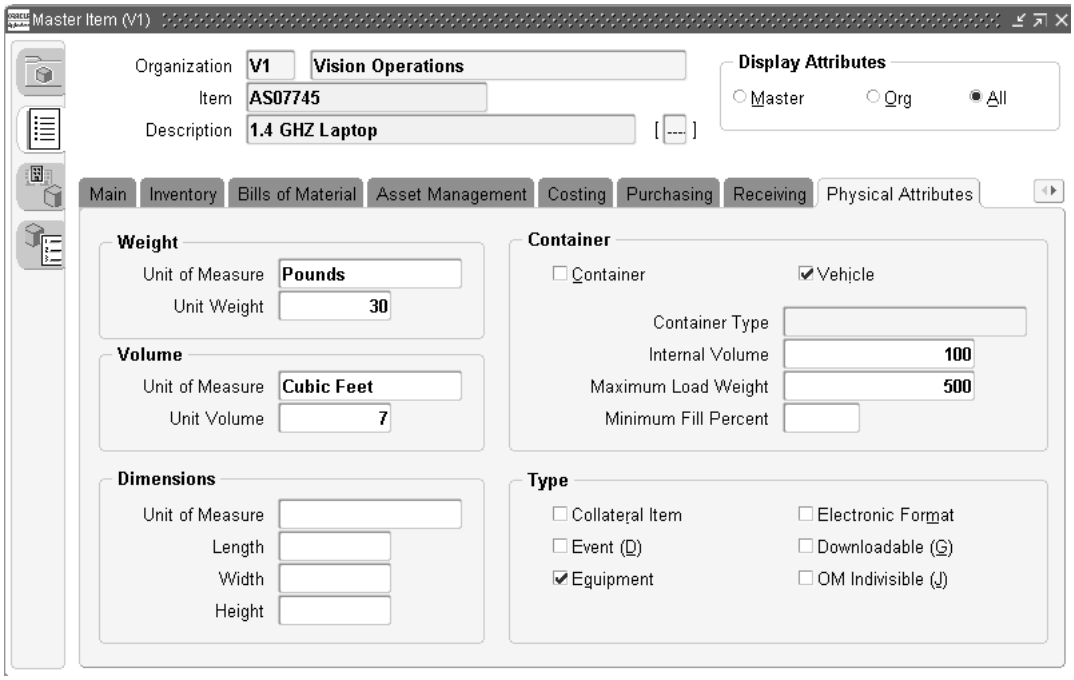
- Define the equipment as an item
- Define the item as an equipment type
- Specify the equipment as serial controlled (predefined)
- Enter the equipment's capacity (optional)
- Generate serial numbers for the individual pieces of equipment

You can apply the Equipment Item Template to your equipment items to ensure that standard equipment-item attributes are properly set. For more information about applying item templates, see the Oracle Inventory iHelp topic, Copying Item Templates.

How to Set Up Warehouse Equipment

1. Navigate to the Master Items window.

Figure 2–19 Master Item Window - Equipment Attributes



2. Enter a Name and Description for the equipment.
3. To set the equipment's standard attributes, apply the Equipment Item template to the item.
4. Save your work.
5. On the Inventory tab, verify that the Transactable check box is selected.

   Making the equipment transactable ensures that it can be received into the warehouse.
6. In the Serial region, select how you want the item's serial number defined, either At Receipt or Predefined).

   If you select Predefined, then you must enter a starting prefix and starting serial number. If you select At Receipt, you can optionally enter a starting prefix and starting serial number.
7. Enter a starting serial prefix and starting serial number in their respective fields.

8. Select the Physical Attributes tab.
9. In the Container Region, select the Vehicle check box.
10. Entering the equipment capacity enables the system to split the tasks in such a way that a single task can be handled by the smallest equipment available to perform the task.

> **Note:** If you do not specify an equipment capacity, the system assumes that the equipment has infinite capacity.

11. In the Type region, Item Type field, select the equipment check box.
12. After you set it up, assign the equipment to your organization.
13. Save your work.

Set Up Equipment Resources

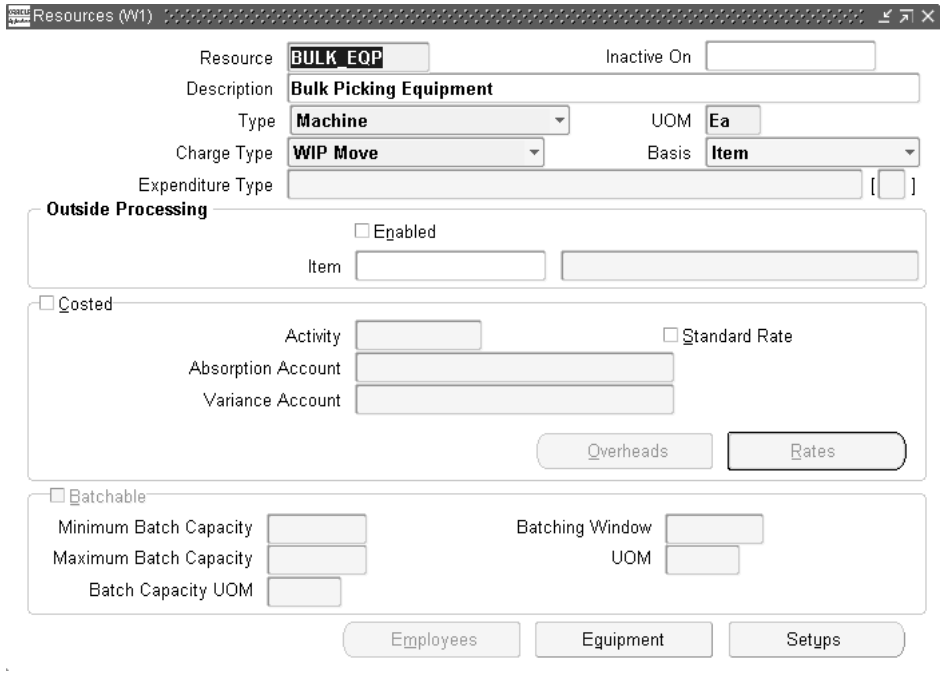
After you set up equipment items, you must set up the equipment types as resources. Equipment resources represent types of equipment. For example, you might have several items that all perform the same function and can be used interchangeably. In this case, you could create one resource and then associate each similar piece of equipment under that resource.

After you set up the equipment resource type, you would associate each piece of equipment with the resource type.

How to Set Up Equipment Resources

1. Navigate to the Resources window.

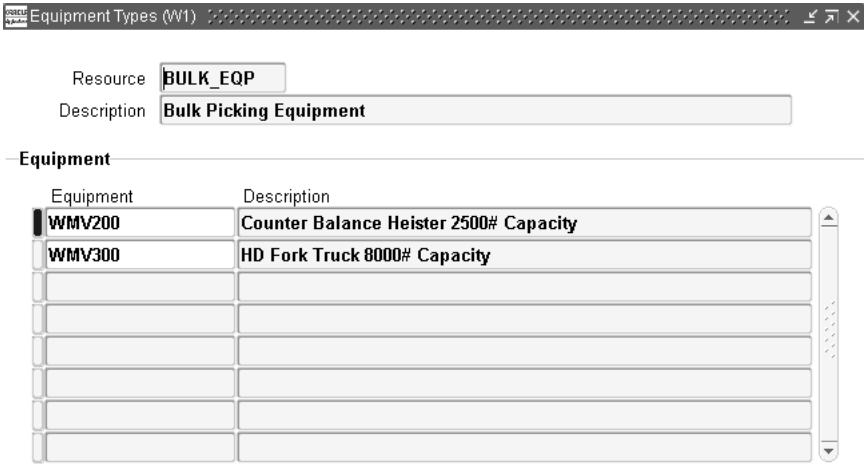
Figure 2–20 Resources Window - Equipment



2. In the Resources field, enter the name of the equipment resource.
3. Enter a description for this resource.
4. In the Type field, select Machine.

   The Equipment button becomes enabled.
5. Because they are not used by the WMS and will not affect warehouse-related processing, select any values for the following required fields:
   - UOM (typically Each)
   - Charge Type
6. Because Oracle WMS does not use the remaining fields in this window, leave them as is or blank.
7. Click Equipment to associate the equipment resources that are associated with this equipment type.

Figure 2–21 Equipment [Resource] Window



8. In the Equipment field, use the list of values to select the pieces of equipment that you want to associate to this equipment resource type.
9. Repeat step 8 to add additional pieces of equipment.
10. Save your work.

Set Up Warehouse Task Types

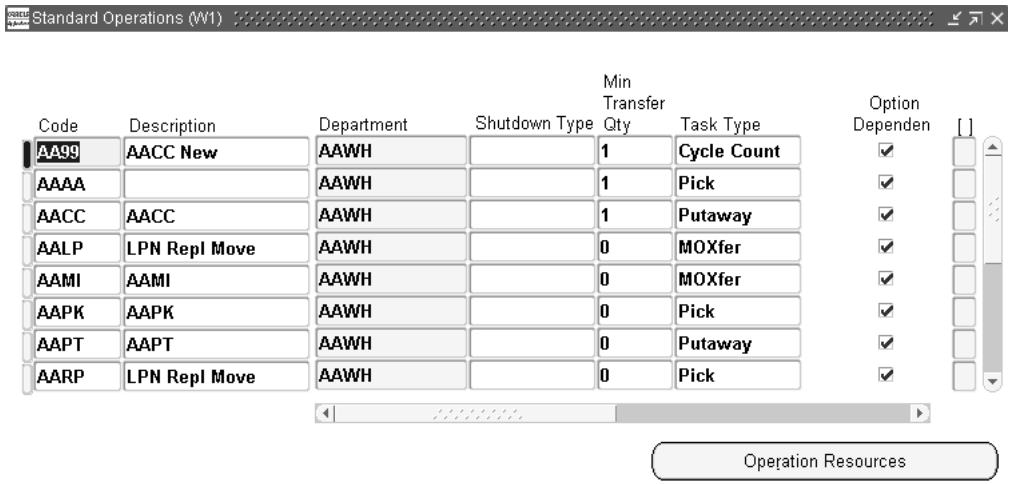
Each task generated by the system for dispatch to a user must have a task type. Task types are user-definable through the BOM Standard Operations window. For each task that requires a unique combination of human and equipment type resources, a new task type should be created.

Note: WMS requires that, at a minimum, you set up at least one pick and one replenishment task type. In addition, one cycle count task type can be defined if cycle counts should be dispatched as tasks. Do not define more than one cycle count task type for the organization.

How to Set Up Warehouse Task Types

1. Navigate to the Standard Operations window.

Figure 2–22 Standard Operations Window - Task Type Setup



2. Enter a code name for the task type.
3. Enter a description for the task type.
4. In the Department field, use the list of values to select the department responsible for the task type.
5. In the Min Transfer Qty field, enter any value, as Oracle WMS does not use this field for processing.
6. In the Task Type field, use the list of values to select the system task type for this task.

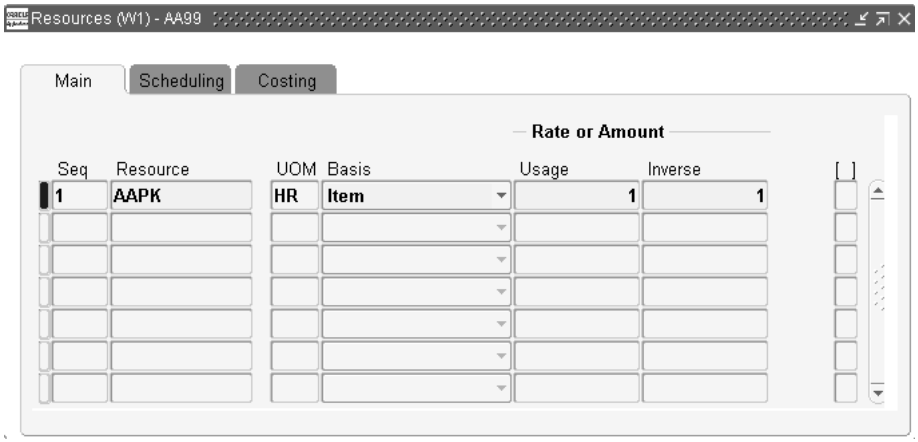
Note: Available system task types are Pick, Putaway, Cycle Count, Replenish, MOXfer (Move Order Transfer), and MOIssue (Move Order Issue).

---

7. Leave the remaining fields in this window blank, as Oracle WMS does not use these fields for processing.
8. Click Operation Resources to assign the resources (both human skill sets and equipment types) required to perform tasks of this type.

   Enter one human resource per task type and at most, one equipment resource. Every task requires exactly on human resource, but the equipment resource is optional.

Figure 2–23 Resources [Assignment] Window



9. Enter a sequence number associated with the resource.
10. In the Resource field, use the list of values to select the human resource required to perform this task.
11. Leave the remaining fields blank or enter any value, as Oracle WMS does not use these fields for processing.
12. In the next record, use the list of values to select an equipment resource, if any, required to perform this task.
13. Save your work.

Set Up Departments

A department represents a grouping of similar resources within a warehouse. For example, all of the employees and equipment that perform picking tasks might be grouped together in the Picking department.

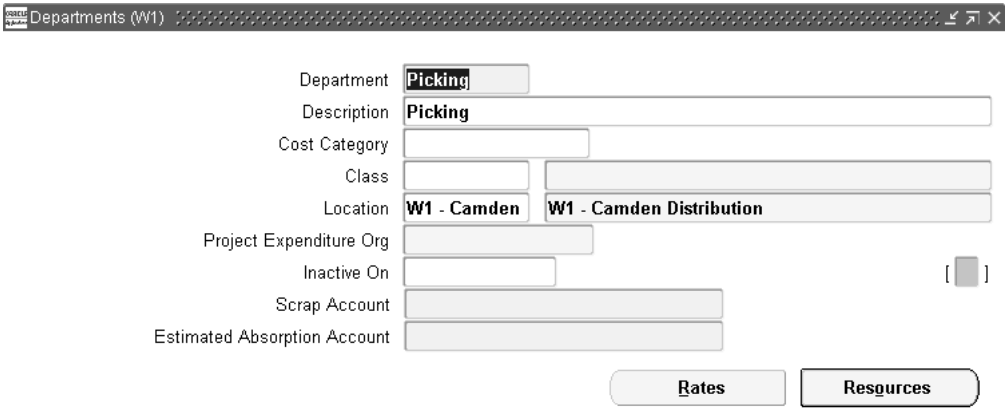
To use the task management system, you must set up at least one department. To use a human and equipment resource to perform the same task, each must be defined to the same department.Therefore, you should not implement separate departments for equipment and human resources.

The following instructions explain how to set up the department attributes necessary for Oracle WMS.

How to Set Up Departments

1. Navigate to the Departments window.

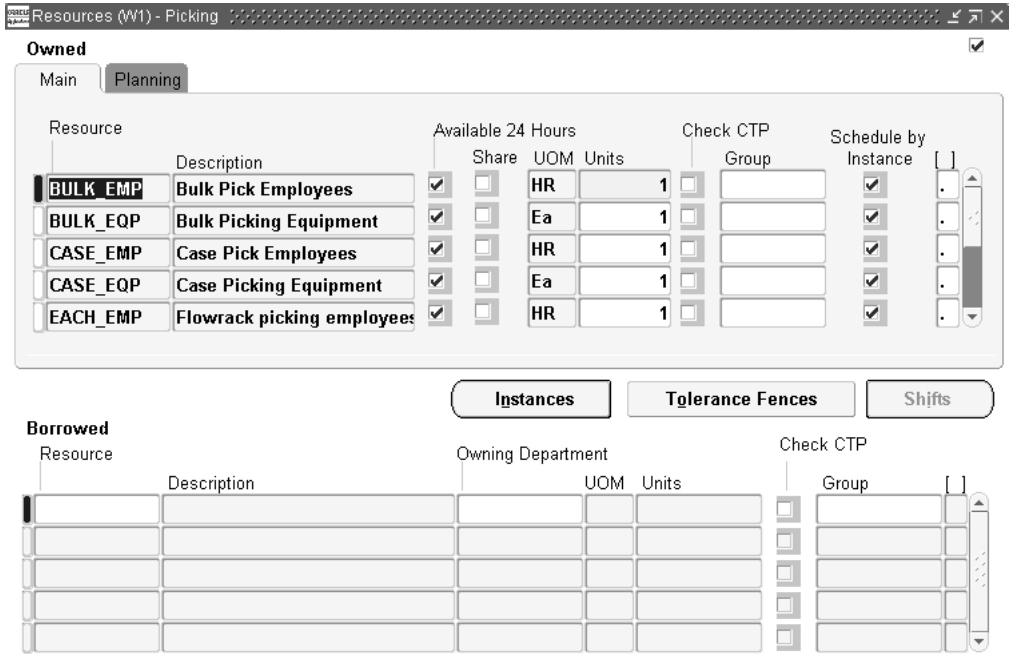
Figure 2–24 Departments Window



2. Enter a short name for the department.
3. Enter a description of the department.
4. Because Oracle WMS does not use the remaining fields in this window, you can leave them blank.
5. Click Resources to enter the resources that are used in this department.

To use a resource defined in the employee or equipment definition steps, they must be assigned to a department. If you are only setting up one department, then you must assign to it all of the resources that you want the WMS task management system to consider when assigning tasks.

Figure 2–25 [Department] Resources Window



6. In the Resource field, use the list of values to select the resource that you want to assign to this department.
7. In the Units field, enter any value as the WMS does not use this field for processing.
8. Leave the remaining fields blank, as they are not used by the WMS.
9. Repeat steps 6 through 8 for any additional resources to be added to this department.
10. Save your work.

Note: You can also assign subinventories to departments, by navigating to the Department Subinventories window, and using the list of values to select the subinventories associated with a particular department.

Set Up Task Type Assignment Rules

Task type assignment rules can be set up for pick, replenishment, move order issue, and move order transfer task types. If task type assignment rules are not set up for these four system task types, or of the rules that are set up, none of the restrictions are met in the rule, then the Rules Engine will stamp the user task type entered as the default for the system task type on the Organization Parameters form. Cycle count tasks do not require task type rules because only one cycle count task type may be used in an organization.

Recall that the rules engine can assign tasks based on the criteria specified in a task type assignment rule. For example, the system can assign tasks based on the following:

- Predefined objects and criteria
- Unit of measure of the picking line, for example case, pallet, or drum
- Characteristics of the material, for example hazardous, or refrigerated
- Lot characteristics

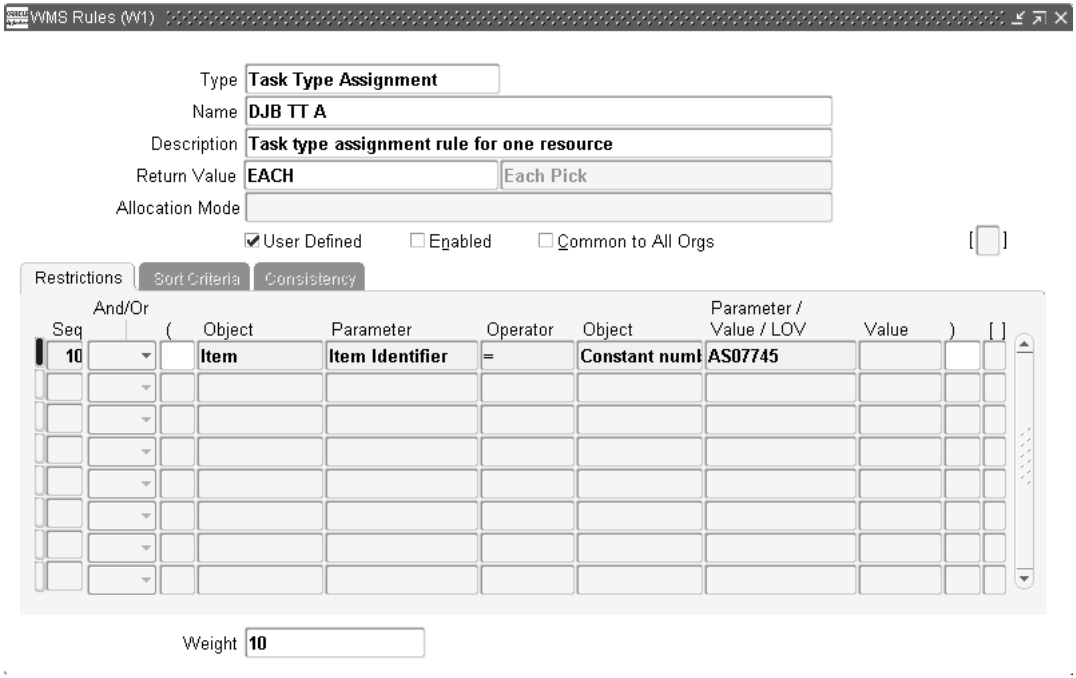
You set up task type assignment rules in the WMS Rules window.

Note: Before you set up task type assignment rules, make sure that you have already set up the task types that you want the rule to return when the rule's restrictions are met.

How to Set Up Task Type Assignment Rules

1. Navigate to the WMS Rules window.

Figure 2–26 WMS Rules Window - Task Type Assignment Rule



2. Use the list of values to select Task Type Assignment.
3. Enter a name and description for this task type assignment rule.
4. Use the list of values to select the task type that you want the system to return if the rule's restrictions are met.

   For example, assume that you are setting up a task type assignment rule that requires resources that can handle hazardous materials. In this case, you would specify a task type return value that includes the resources qualified to handle hazardous materials.
5. In the Weight field, enter a weight for the rule. The weight indicates its priority.

   For example, if you enter a weight of 20 for rule A and a weight of 10 for rule B, the system will execute Rule A before it executes rule B.
6. On the Restrictions tab, enter (or accept the default value of 10) a sequence number for this restriction.

7. In the first Object field, use the list of values to select the object that represents the entity that you want the rule to consider.
8. In the Parameter field, select the attribute of the object to which you want to apply the rule against.
9. In the Operator field, use the list of values to select the appropriate operator, such as equal to or greater than or less than.
10. In the second Object field, select the object or entity that makes up the second part of this rule restriction.
11. If the object that you specified in step 10 is Constant Character or Constant Number, in the Parameter/Value/LOV field, enter the specific value of the object. Otherwise, go to step 12.
12. If the object that you specified in step 10 is an object other than Constant Character or Constant Number, use the list of values to select the appropriate attribute of the object.
13. To enter more restrictions, repeat steps 6 through 12.
14. When you finish entering restrictions, save your work.

Compliance Labeling Setup

The WMS compliance labeling features help inventory to move more efficiently throughout the warehouse. Compliance labeling from suppliers speeds the receiving process by allowing bar code scanning of inbound purchase orders, resulting in less receipt processing time, immediate recognition of available materials, and higher receiving accuracy.

By producing customer specific labels on demand for each shipment, compliance labeling also enables your organization to easily comply with your customer's requirements for bar code labeling and advance shipment notifications (ASNs).

Compliance labeling can also be utilized in flow manufacturing. Each step in the manufacturing flow can utilize compliance labeling. There are four major points identified where labels may be commonly printed:

1. Prior to the start of the first operation - For example, a label containing routing information.
2. During any operation - Based on a special outcome of a flow operation, the location of the next assembly routing may be dynamically determined. The routing information cannot be printed beforehand, but must be printed when

determined. For example, material may need to be scrapped during an operation. A label can be printed to rout the material to the scrap subinventory.

3. After quality inspection of a flow operation - Material may not be of quality, therefore it might be sent to a prior operation, to scrap, or sent forward to the next operation.
4. At flow completion - An organization may build items to stock, in which case the finished product requires a label for stocked material. Or, an organization may assemble to order, in which case finished products are not stored in inventory, rather they are sent directly to shipping. A label can be printed with shipping instructions, address, sales order number, and so on.

The above examples define a hand full of flow manufacturing label printing ideas. Label printing can be utilized and customized to your individual business needs.

The Oracle WMS compliance labeling features enable you to do the following:

- Meet supplier-specific needs for bar code labels for both products and containers
- Meet customer-specific needs for bar code labels for both products and containers
- Produce partner-compliant shipping labels specific to the carrier, customer, and so on

Note: To design and print compliance labels, you should consult an Oracle Applications business partner, which provides label printing and design services, or use Oracle Reports.

Setting up compliance labeling includes the following tasks:

- Describing customer labeling requirements
- Setting up labels

Describing Customer Labeling Requirements

Customer labels are typically centered around the following major requirements:

- Label format
- Label data
- Bar code specifications

- Symbol content

The Oracle WMS compliance labeling features enable all of these requirements to work together to meet your customers's guidelines. The WMS supports the following label types:

- Materials label: The Material label provides information about an item, including the item's lot information, if applicable.
- Serial label: The Serial label provides information specific to a serial of an item.
- LPN label: The LPN label provides information about the License Plate Number (LPN). This label does not contain content information. You typically use the LPN label to identify LPNs as they travel throughout the warehouse.
- LPN Contents label: The LPN Contents label provides information about the LPN and its contents. You typically use this label to identify LPNs as they travel throughout the warehouse.
- LPN Summary label: The LPN Summary label provides information about the LPN and a summary view of its contents. The LPN is exploded and all of its contents are summarized. That is, if an LPN contains multiple LPNs, then all of the contents of all the nested LPNs will be summed by Item, Revision, and Lot on this label.
- Location label: The Location label provides information about specific warehouse locators.
- Shipping label: The Shipping label provides information for an outbound shipment. It does not include information about the contents of the shipment, rather it includes only addresses and information that is pertinent to the shipment itself.
- Shipping Contents label: The Shipping Contents label provides information for an outbound shipment. It includes information for all of the contents that are part of that shipment.
- WIP Content label: The WIP Content label provides information for WIP components when they are picked for a WIP job. It includes component number, serial, lot, job number, assembly number, start date, and so on.

Setting Up Labels

Setting up labels involves the following tasks:

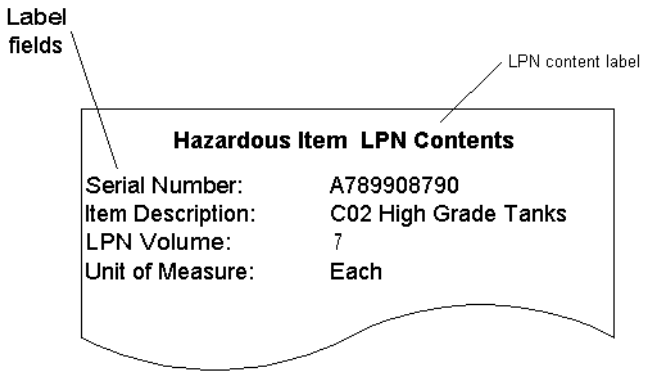
- Defining label formats

- Associating label types to business flows
- Setting up label format assignment rules

Defining Label Formats

When you define label formats, you are setting up the data fields to include on a particular label. The following figure provides an example of the data that might appear on a small hazardous items LPN content label. To define this label in the system, set up the label fields, serial number, item description, LPN volume, and unit of measure, shown in the example.

Figure 2–27 Label Example



Associating Label Types to Business Flows

After you set up label formats, you must associate them to the specific warehouse business flow where you want to use them. This association enables the label type to be printed automatically as part of that business flow.

The ability to print the same label type from different business flows with a different format used at each flow is also available. For example, many times a package is labeled with a carton label when it is picked (Shipping Contents label type at Pick Load business flow), but is then labeled with a shipping label when it is shipped (Shipping Contents label type at Ship Confirm Business flow.) Wklv#hqdedv# | r x#w#vhw#ks#d#ode ho#ir up dw#hdfk#lr q#ux dn#kdv#edvhg#r q#kh#Exvlqhvv#l or z #kdv#kh#ode ho# sulqwhg#xhvv#z dv#j hqhudwhg#ur p 1

The following table provides a list of the various business flows and the types of labels that you can associate to each flow. The horizontal header row of the table

lists the various label types available. The far left vertical column lists the warehouse-related business flow. The number in parenthesis ( ) indicates the business flow code number that is needed when defining Rules Engine format based rules. Yes, indicates that the system can generate the label type for that business flow. No means that the system does not generate that label type for the business flow.

Table 2–1 Label Types and Warehouse Business Flows

	Mat'l	Serial	LPN	LPN Contents	LPN Sum	Loc	Shipping	Shipping Content	WIP Content	Flow Content
Receipt (1)	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No
Inspection (2)	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No
Delivery (3)	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No
Put away drop (4)	Yes	No	Yes	Yes	Yes	No	No	No	No	No
LPN correction (5)	Yes	No	Yes	Yes	Yes	No	No	No	No	No
Cross- dock (6)	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No
Replenish-ment drop (7)	Yes	No	Yes	Yes	Yes	No	No	No	No	No
Cycle count (8)	Yes	No	Yes	Yes	Yes	No	No	No	No	No
Physical count (9)	Yes	No	Yes	Yes	Yes	No	No	No	No	No
Material status update (10)	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No
Cost group update (11)	Yes	No	Yes	Yes	Yes	No	No	No	No	No
Lot split/ merge (12)	Yes	Yes	Yes	Yes	No	No	No	No	No	No
Misc/alias receipt (13)	Yes	No	Yes	Yes	Yes	No	No	No	No	No
Inter-org transfer (14)	Yes	No	Yes	Yes	Yes	No	No	No	No	No

Table 2–1 Label Types and Warehouse Business Flows

	Mat'l	Serial	LPN	LPN Contents	LPN Sum	Loc	Shipping	Shipping Content	WIP Content	Flow Content
Subinventory transfer (15)	Yes	No	Yes	Yes	Yes	No	No	No	No	No
LPN generation (16)	No	No	Yes	No	No	No	No	No	No	No
Serial # generation (17)	No	Yes	No	No	No	No	No	No	No	No
Pick load (18)	Yes	No	Yes	Yes	Yes	No	Yes	Yes	No	No
Pick drop (19)	Yes	No	Yes	Yes	Yes	No	Yes	Yes	No	No
Pack/unpack /update LPN (20)	Yes	No	Yes	Yes	Yes	No	No	No	No	No
Ship confirm (21)	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No
Cartonization (at pick release) (22)	Yes	No	Yes	Yes	Yes	No	Yes	Yes	No	No
Miscellaneous /Alias Issue(23)	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No
Dynamic Locator (24)	No	No	No	No	No	Yes	No	No	No	No
Import ASN (25)	No	No	Yes	Yes	Yes	No	No	No	No	No
WIP completion (26)	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No
Put away pre-generation (27)	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No
WIP pick load (28)	Yes	No	Yes	Yes	No	No	No	No	Yes	No
WIP pick drop (29)	Yes	No	Yes	Yes	No	No	No	No	Yes	No

Table 2–1 Label Types and Warehouse Business Flows

	Mat'l	Serial	LPN	LPN Contents	LPN Sum	Loc	Shipping	Shipping Content	WIP Content	Flow Content
Inventory Put Away Drop (30)	Yes	No	Yes	Yes	Yes	No	No	No	No	No
Flow line start (31)	No	No	No	No	No	No	No	No	No	Yes
Flow line operation (32)	No	No	No	No	No	No	No	No	No	Yes
Flow/work-orderless assembly completion (33)	Yes	Yes	Yes	Yes	Yes	No	No	No	No	Yes
Replenish-ment Load (34)	Yes	No	Yes	Yes	Yes	No	Yes	Yes	No	No
WIP/Flow Put Away Drop (35)	No	No	No	No	No	No	No	No	No	Yes

Setting Up Label Formats

When you set up label formats, you must set up the following:

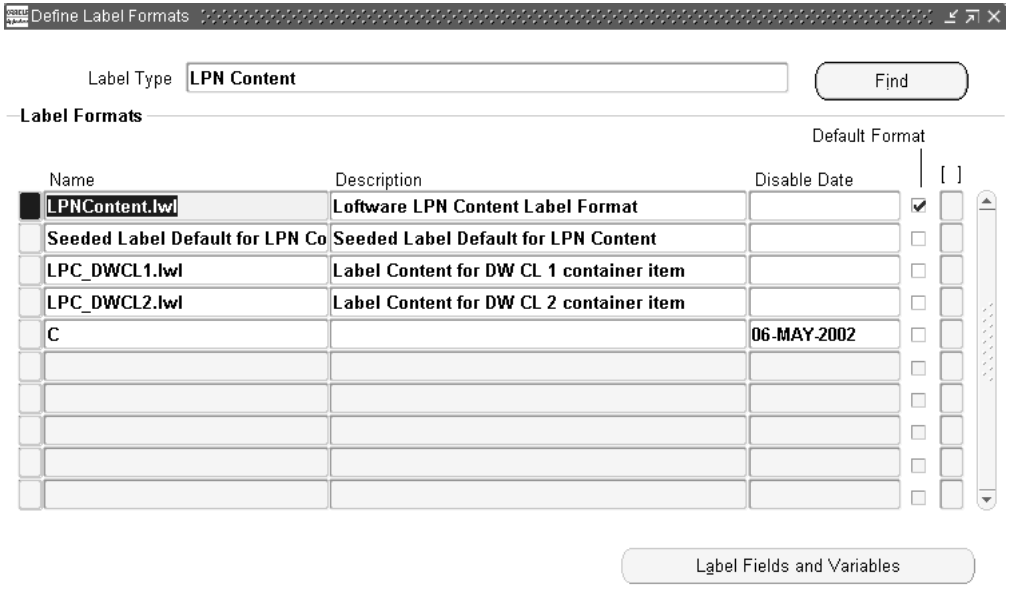
- Label formats
- Label field variables
- Label types to business flow assignments

How to Set Up Label Formats

Before you can specify label generation points and construct label format rules, you must define label formats. You define labels in the Define Label Field Variables window.

1. Navigate to the Define Label Formats window.

Figure 2–28 Define Label Formats Window



2. In the Label Type field, use the list of values to select the label type for which you want to define label formats.
3. In the Label Formats region, Name field, enter a name for the label.

   This name should be the name that is recognized by the third party printing software.
4. Enter an optional description to describe the label format.
5. In the Disable Date field, enter an optional date on which this label format can no longer be used.
6. Select the Default Label check box to identify that this label type will be used as the default label type if the system cannot find a rule that determines the label format.

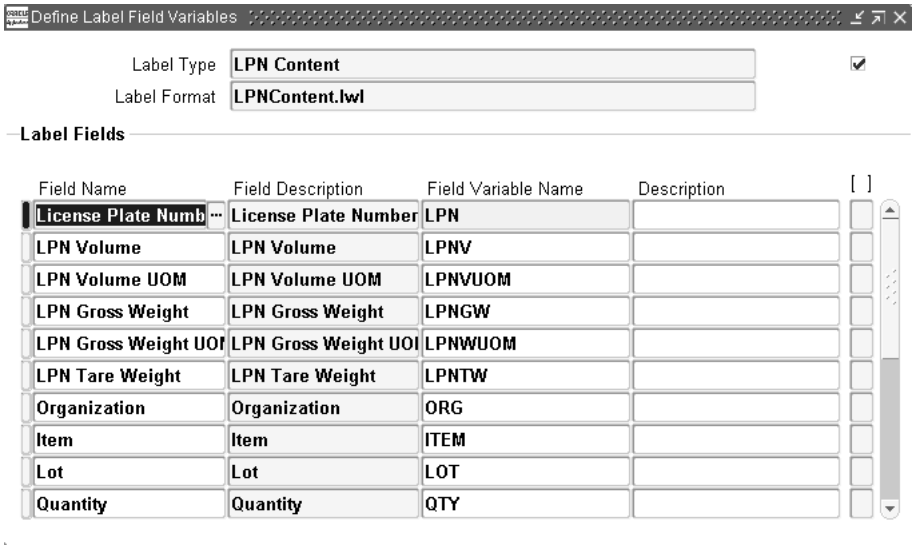
> **Note:** You can specify only one label format as the default label.

7. Save your work, and click Label Fields to open the Define Label Field Variables window.

How to Define Label Field Variables

These instructions assume that you have already defined a label format and you have clicked the Label Fields and Variables button to open the Define Label Field Variables window.

Figure 2–29 Define Label Field Variables



1. In the Label Fields region, Field Name field, use the list of values to select the data element that represents the field on the label.

   The list of values in this field is determined by the label type that you selected, for example LPN Contents, in the Define Label Formats window.

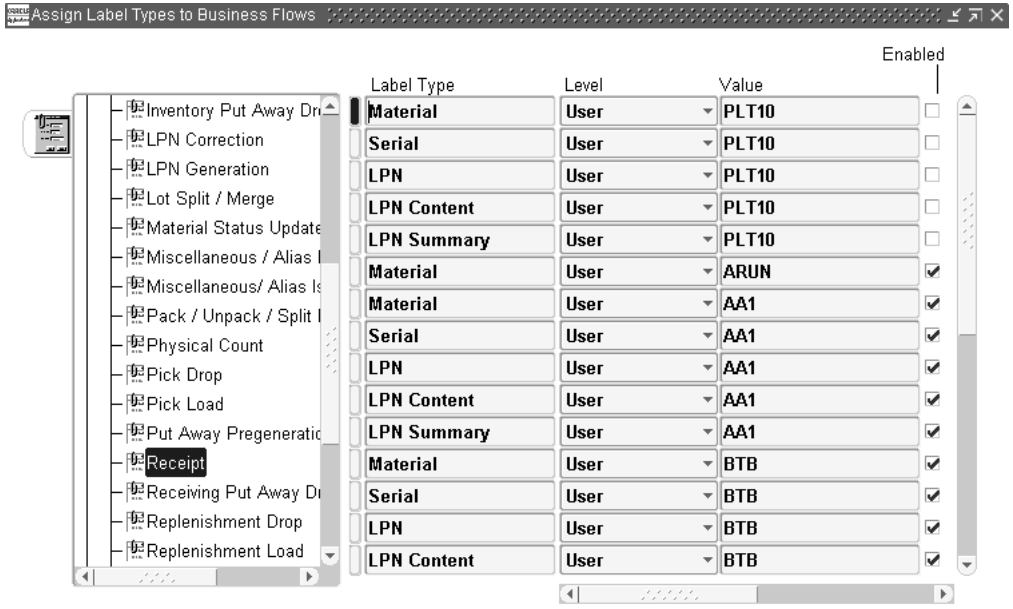
2. In the Field Variable Name field, enter a unique text string that will be used as a variable to represent the data field on the label format.
3. Enter an optional description for the field variable name.
4. Repeat steps 8 through 10 to enter additional label fields.
5. Save your work.

How to Associate Label Types to Business Flows

For a list of compatible label types for business flows, see the Assign Label Types to Business Flows window. Note that you also use this window to associate label types to business flows.

1. Navigate to the Assign Label Types to Business Flows window.

Figure 2–30 Assign Label Types to Business Flow Window



2. In the left panel of the window, Expand the Business Flows icon to display a list of business flows.
3. Select the business flow where you want to associate a label type.
4. In the Label Type field, use the list of values to select the label type that you want to associate to the business flow.

> **Note:** The list of values displays only those label types valid for the business flow.

5. In the Level field, select the level at which you want to control printing for this label type.

   Valid values are Site, Application, Responsibility, and User.

6. In the Value field, select the value for the level that you selected in step 5.

   The Value field is disabled if you selected Site as the level in step 5. If you selected Application, the list of values displays a list of valid applications, if you selected User, the list of values displays a list of valid users, if you selected Responsibility, the list values displays a list of valid responsibilities.

7. The Enabled check box is automatically selected to indicate that this label type can be used for generating the label associated with the business flow. Clearing this check box disables this association, and the label type will not be generated for the business flow.

8. Select the Print When Delivery Complete check box when you want printing postponed until the delivery has been completely staged.

   For the business flows, such as Pick Drop and Cross-Dock, the Print When Delivery Complete check box defaults to selected.

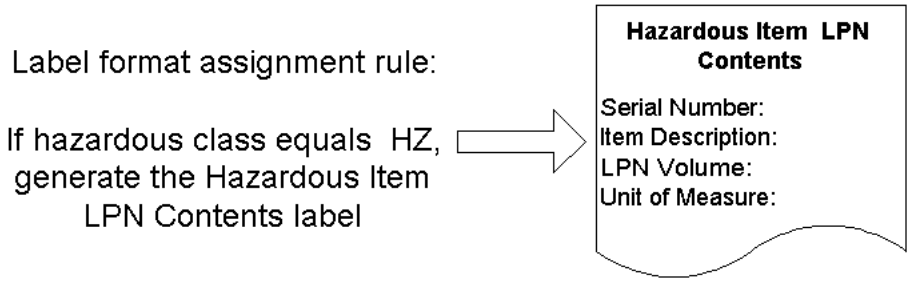
9. In the Comments field, enter any comments about the association that you just created.

10. Save your work.

Setting Up Label Format Assignment Rules

After you define label formats and associate them with the appropriate business flows, you can define label format assignment rules. Label format assignment rules associate a particular label to a business object based on the parameters and restrictions that you specify. For example, assume that you have defined a LPN Content label for small hazardous items. The following figure provides an example of a rule that you might create to generate a LPN Content label. Recall that Label Format Assignment rules have return values. When WMS executes this rule, it returns the value LPN_HAZ–if all of the rule's restrictions are met–that represents the label format for the LPN Content label.

Figure 2–31 Label Format Assignment Rule



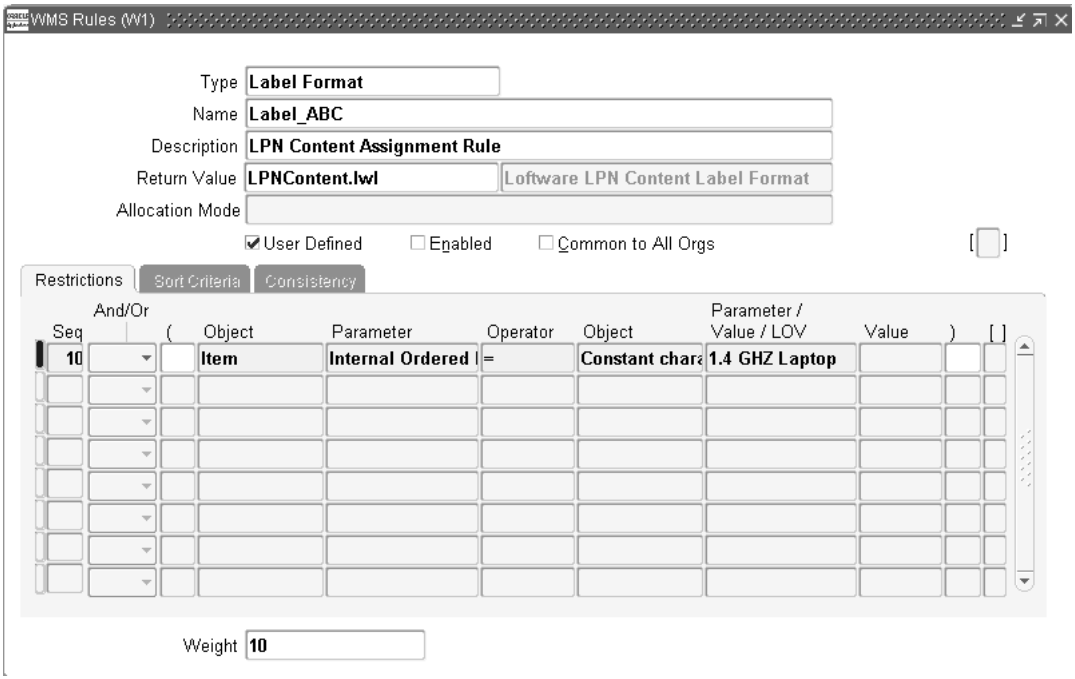
How to Define Label Format Rules

After you associate label types to business flows, you can create label format assignment rules. You use the WMS Rules window to create these rules. For more information about label format assignment rules, see Label Format Assignment Rules.

Note: Before you set up label format rules, you should manually plan and design your rule.

1. Navigate to the WMS Rules window.

Figure 2–32 WMS Rules Window - Label Format Assignment Rule



2. In the Type field, select Label Format.
3. Enter a name for the label format assignment rule.

   Note that the Sort Criteria and Consistency tabs are disabled for this type of rule.
4. Enter a description for the label format assignment rule.
5. In the Return Value field, use the list of values to select the label format that you want to the system to generate whenever the rule is executed.

> **Note:** The User Defined check boxes User Defined, Enable, and Common to All Orgs are explained following the instructions on the rule definition.

6. In the Weight field (located at the bottom of the window), enter a weight that specifies the rule's execution priority in relation to other label rule execution priorities.

   Higher weighted rules receive a higher priority and will be executed first.

7. On the Restrictions tab, in the Seq field, enter a sequence number for the first restriction.
8. In the Object field, use the list of values to select the first business object for the rule.
9. In the Parameter field, enter the value associated with the business object.
10. In the Operator field, select the operator that represents the rule conditions.
11. In the second Object field, use the list of the values to select the appropriate business object.
12. In the second Parameter field, either use the list of values or enter the parameter value associated with the second business object.
13. Repeat steps 7 through 12 to add more restrictions to your rule, however, in the Seq field, enter a subsequent sequence number and in the And/Or field, join the new restriction with the previously defined restriction.
14. If selected, clear the Common to All Orgs check box.

    Rules should not be selected across organizations, because task types, resources, and departments are all organization specific.

15. If more than one restriction is specified, select the options for the restriction.

    This determines how the restrictions should be considered during execution of the rules.

16. Select the Enabled check box if you want to enable the rule.

    Note: When you enable a rule, the system compiles the rule and checks for possible syntax errors.

17. Save your work.

Cost Group Setup

This section includes the following topics:

- Cost group overview
- Setting up cost groups, which you set up in Oracle Cost Management. For more information about cost groups, see, the Cost Management iHelp topic, Project Cost Groups.
- Setting up cost group assignment rules

Cost Groups Overview

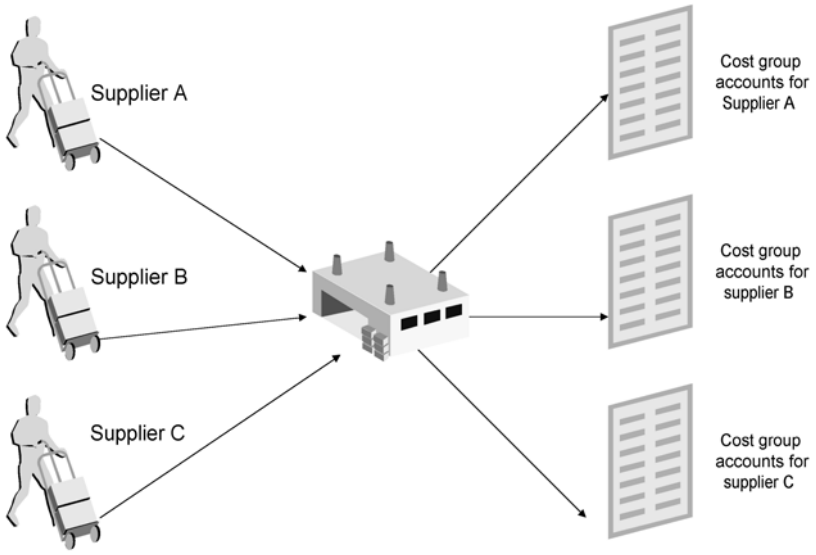
Cost groups associate account information with its related inventory item. Cost groups provide a way to track both physical and accounting attributes for a subinventory, and enable you to manage inventory that is owned by multiple owners within the same subinventory and locator. Thus, with cost groups, inventory account information no longer needs to be tracked in a separate inventory or physical location.

> **Note:** After you set up cost groups, you should update your warehouse organization to include the default cost group.

The use of cost groups improves warehouse space management and enhances the visibility of storage information.

The following figure provides an example of how cost groups might be assigned to individual suppliers. In this example the cost groups are derived based on the supplier.

Figure 2–33 Cost Groups Example



You can also set up cost groups for the following:

- Descriptive flexfields
- Customer
- Item
- Location
- Item category
- Item status

With cost groups, account information is associated and carried with the inventory.

Note: If WMS is enabled in a Project Manufacturing organization, any material received that has a project associated with it will be placed into the cost group of the project. Cost Group Assignment rules will not be used.

Setting Up Cost Groups

Cost group rules define the conditions under which a specific cost group should be assigned to a specific set of inventory. After you define cost group rules, you assign strategies that define the sequence in which a set of rules should be executed to determine the cost group.

For example, you might define a strategy that evaluates several rules to determine whether inventory is consigned from a specific supplier, and subsequently evaluate other rules to determine whether the item is of a category that should be associated with a specific account.

When you set up cost groups, you modify or add attributes to existing organizations and subinventories.

Cost group setup involves the following general steps:

1. Defining an inventory cost group for a particular organization.
2. Specifying the default cost group in the Organization Parameters window.
3. Setting up cost group rules.

   Steps 1 and 2 represent the incorporation of cost groups into the standard inventory organizations and subinventories setup. For instructions on how to set up cost groups, se the Oracle Cost Management iHelp topic, Defining Project Cost Groups. For instructions on setting up cost group rules, see the following instructions.

The WMS Rules Engine enables you to set up rules that assign items to cost groups, based on business criteria, such as the item's material status, or the item's ownership.

First, for all costing methods, accounts are determined by the cost group, not by the subinventory or the organization parameters. The cost groups allow items in the same subinventory to be held in different accounts.

For actual costing, such as Average, FIFO, and LIFO, organizations, item costs are held by the cost groups. When cost groups are assigned by item status, the cost groups hold different item costs for items of different status. In FIFO and LIFO organizations, the layer cost is maintained with the cost group.

A new transaction, called Cost Group Update, now enables the costs associated with one item to be transferred to another, without physically moving the item. In organizations with both Project Manufacturing and WMS enabled, the Project cost group overrides the WMS Cost Group.

Setting Up Cost Group Assignment Rules

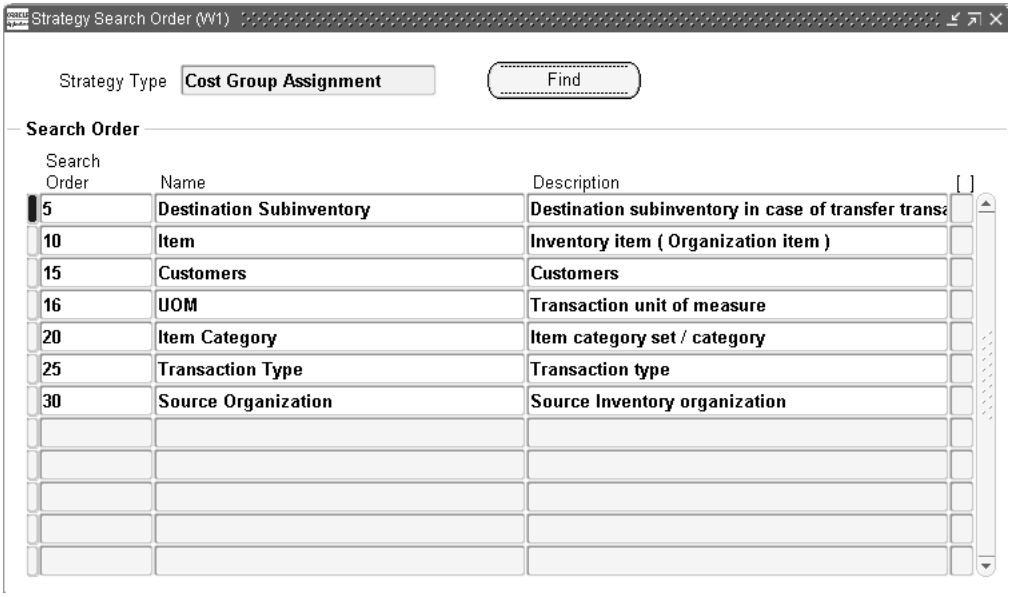
Cost group rules define the conditions under which a specific cost group should be assigned to a specific item or set of inventory. Setting up cost group assignment rules involve the following general steps:

- Set up a strategy search order for the rules. The strategy search order is the sequence in which various objects will be evaluated for associated strategies and rules.
- Define cost group rules
- Set up strategies and assign the rules to the strategies
- Assign the strategies to business objects

Setting Up a Strategy Search Order for Cost Groups

1. Navigate to the Strategy Search Order window.

Figure 2–34 Strategy Search Order Window - Cost Group Setup

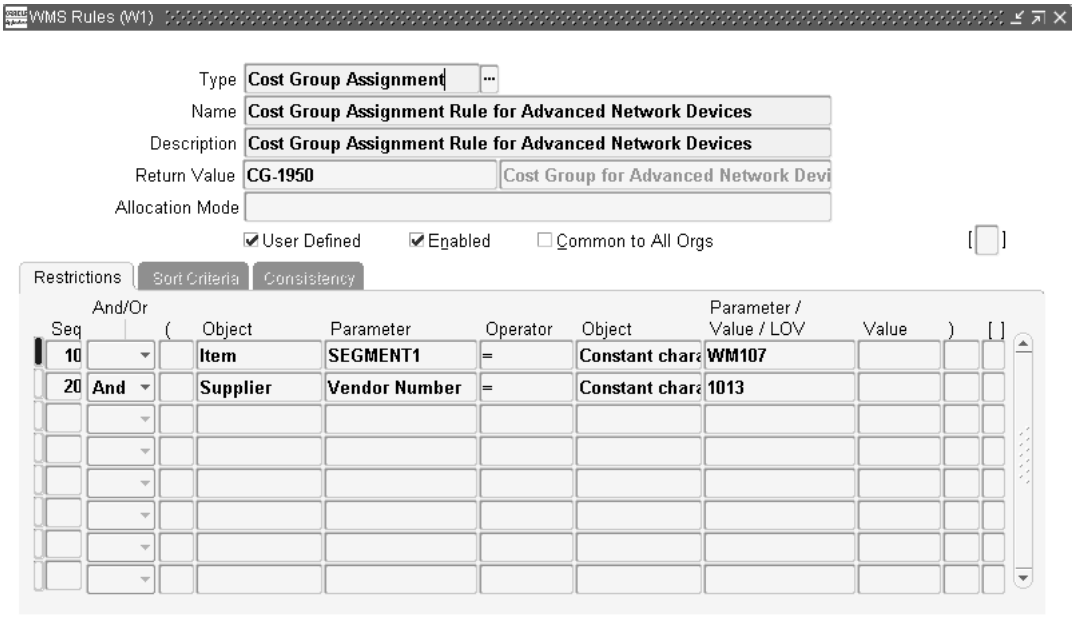


2. Define the sequence in which you want Oracle WMS to evaluate each cost group assignment strategy.

Defining Cost Group Rules

1. Navigate to the WMS Rules window to define associated cost group rules for your cost groups.

Figure 2–35 WMS Rules Window - Cost Group Setup



2. In the Type field, select Cost Group Assignment.
3. Enter a name for the cost group assignment rule.

   Note that the Sort Criteria and Consistency tabs are disabled for this type of rule.
4. Enter a description for the cost group assignment rule.
5. In the Return Value field, use the list of values to select the cost group that you want to assign to the various objects on which the rule acts.
6. On the Restrictions tab, in the Seq field, enter a sequence number for the first restriction.

7. In the Object field, use the list of values to select the first business object for the rule.
8. In the parameter field, enter the value associated with the business object.
9. In the Operator field, select the operator that represents the rule conditions.
10. In the second Object field, use the list of the values to select the appropriate business object.
11. In the second Parameter field, either use the list of values or enter the parameter value associated with the second business object.
12. Repeat steps 6 through 11 to add more restrictions to your rule.
13. Select the Enabled check box if you want to enable the rule.
14. Select the Common to All Orgs check box if you want the rule to be available for all organizations.
15. Save your work.

How to Set Up Cost Group Strategies

Cost group strategies define the sequence in which a set of rules should be executed to determine the cost group.

1. Navigate to the WMS Strategies window to define strategies sequences for the cost group rules.
2. In the Type field, select Cost Group Assignment from the list of values.
3. Enter a name for the cost group assignment strategy.
4. Enter a description for the cost group strategy.
5. In the Seq enter a sequence number (the default value is 10) for the first cost group assignment rule that you want to include in the strategy.
6. In the Rule field, use the list of values to select the cost group assignment rule for this sequence number.
7. In the Date Type field, use the list of values to select the effective date type for this rule.
8. In the Effective From and To fields, enter optional dates on which this cost group assignment rule is effective.
9. Repeat steps 5 through 8 to add more cost group rules to this strategy.

10. When you are finished adding rules to your strategy, select the Strategy Enabled check box to enable the strategy.
11. Save your work.

How to Assign Cost Group Strategies to Business Objects

1. Navigate to the Strategy Assignment window to assign strategies to business objects.
2. In the Object Type field, use the list of values to select either the system- or user-defined object type.
3. In the Object Name field, select the business object to which you want to assign the strategy.
4. In the Object Identifier field, select the specific instance of the business object, to which you want to assign the strategy.
5. In the Strategies region, Seq field, enter a sequence number for the first strategy that you are assigning to this business object.
6. In the Type field, use the list of values to select the type of strategy.
7. In the Name field, use the list of values to select the strategy that you are assigning to this business object.
8. In the Date Type field, use the list of values to select the effective date type for this strategy assignment.
9. In the Effective From and To fields, enter optional dates on which this strategy assignments effective.
10. Save your work.

When you assign the cost group strategy to a specific business object, such as a subinventory, then the assigned strategy will be executed whenever inventory is created in association with that object. For example, assume that you have a subinventory called, EACH. Whenever you receive material into the EACH subinventory, the system executes the cost group rules for the EACH subinventory.

Inbound Setup

Inbound setup involves setting up and defining the receiving options that you need to receive material or items into your warehouse. Inbound setup also requires that you set up the appropriate put away rules.

The WMS requires that you receive items into an LPN, using a hand-held mobile device or desktop telnet session. The system does not support receiving from a standard Oracle Applications form or window.

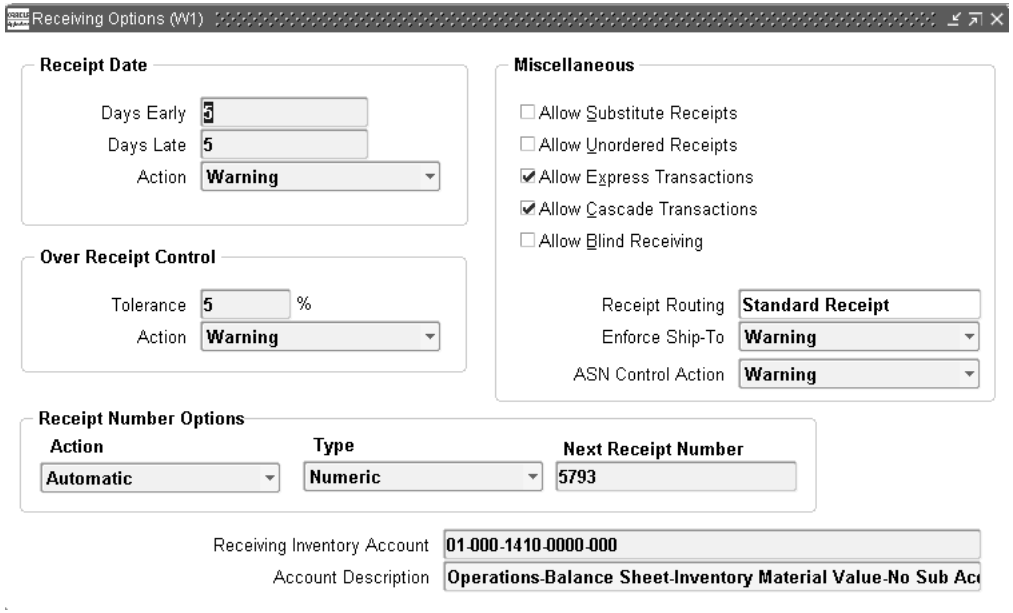
Inbound setup involves the following major steps:

- Setting up receiving parameters
- Setting up put away rules

Setting Up Receiving Parameters

Receiving parameters represent the options that you want to govern how your organization handles receipts in your system. You set up receiving options in the Receiving Options window.

Figure 2–36 Receiving Options Window



Note: Receiving options are set up at the Organization-level. However, most of the options that you set in the Receiving Options window can be overridden for specific suppliers, items, and purchase orders

For instructions on how to set up receiving parameters, see the Oracle Purchasing iHelp topic, Setting Up Receiving Options.

When setting up receiving options, you should not that Oracle WMS does not support the following:

- For receipt number options, WMS only supports Automatic, not Manual
- For miscellaneous receiving, WMS does not support unordered receipts
- The Express Transaction under Miscellaneous Receipts refer to Oracle Purchasing Express Transactions, not Oracle WMS Express Receipts
- For miscellaneous receipts, Oracle WMS always cascades transactions
- Oracle WMS does not support the concept of Blind Receiving

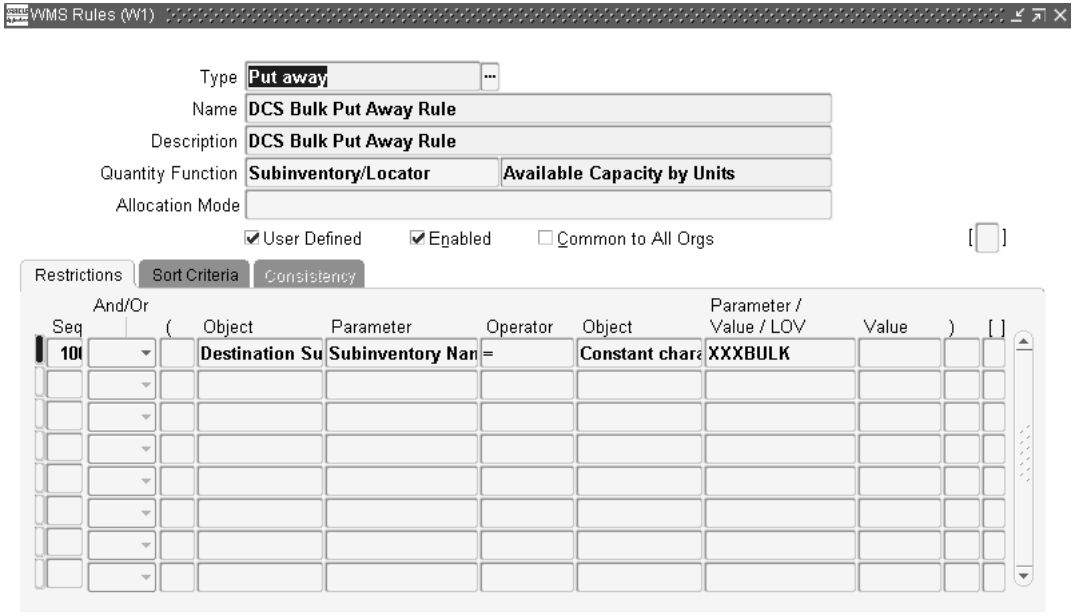
Setting Up Put Away Rules

You define put away rules in the same way that you define other WMS rules. First, you set up a strategy search order, then you define the put away rule. Next, you build a put away strategy and include your rule in that strategy. After you set up the strategy, you must associate the strategy to a business object. Finally, you create a strategy search order.

How to Set Up Put Away Rules

1. Navigate to the WMS Rules window.

Figure 2–37 WMS Rules Window



2. In the Type field, use the list of values to select Put Away.
3. Enter a name for the put away rule.
4. Enter a description for the put away rule.
5. In the Quantity Function field, use the list of values to select the equation that you want the system to use to determine the capacity of the potential locators for this put away rule.
6. On the Restrictions tab, in the Seq field, enter a sequence number for the first line of the restriction.
7. In the Object field, use the list of values to select the first business object for the rule.
8. In the parameter field, enter the value associated with the business object.
9. In the Operator field, select the mathematical operator that supports the rule conditions, for example equals or greater than.

10. In the second Object field, use the list of the values to select the appropriate business object.
11. In the second Parameter field, either use the list of values or enter the parameter value associated with the second business object.
12. To add more restrictions to your rule, repeat steps 6 through 11 on each subsequent line.
13. If you want the system to sort the locator's that will be returned by the rule, enter the sort criteria on the Sort Criteria tab, by selecting the object, parameter, and ascending/descending specification.
14. After you finish defining all of your rule restrictions and have specified the appropriate sort criteria, return to the Restrictions tab and select the Enabled check box if you want to enable the rule
15. Select the Common to All Orgs check box if you want the rule to be available for all organizations.
16. Save your work.

Outbound Setup

Outbound set up includes the following tasks:

- Setting up cartonization
- Defining pick methodologies
- Setting up pick wave rules
- Defining shipping parameters
- Defining picking rules

Setting Up Cartonization

Setting up cartonization includes the following steps:

Table 2–2 Steps for Setting Up Cartonization

Step	Description
1	Enable cartonization
2	Define cartonization groups
3	Assign cartonization groups to cartonization category sets

Table 2–2 Steps for Setting Up Cartonization

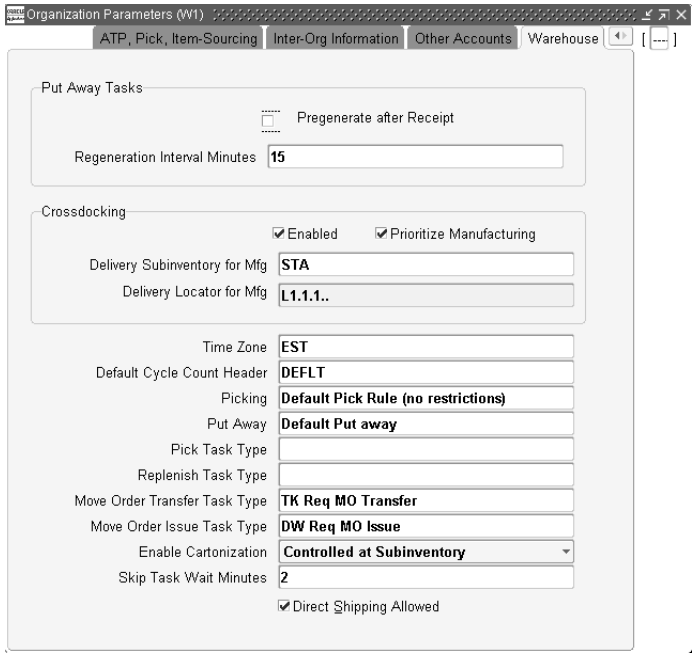
Step	Description
4	Define containers items
5	Assign containers to cartonization groups
6	Define contained item physical characteristics
7	Assign contained items to cartonization groups
8	Define container-load relationships

Enable Cartonization for Sales Order Line Picking

To enable cartonization for sales order line picking (pick release), you must select Controlled at Subinventory in the Enable Cartonization field of the Warehouse tab within the Organization Parameters window.

Controlled at Subinventory value means that cartonization is enabled for all subinventories, regardless of the cartonization flag setting at the subinventory level, and that the cartonization option will be determined at the subinventory level.

Figure 2–38 Organization Parameters Window - Enable Cartonization Flag



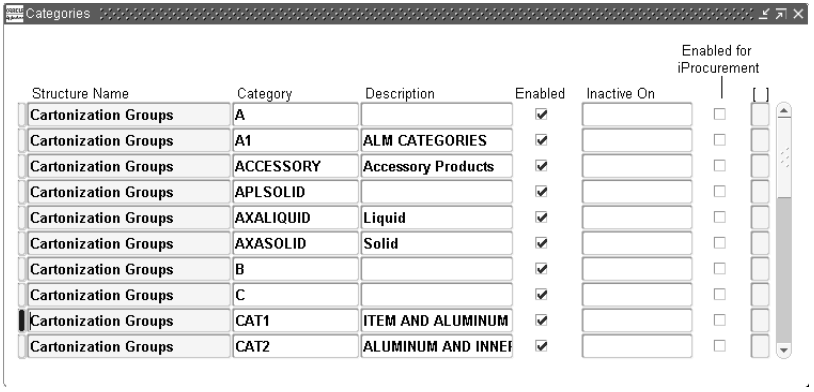
Define Cartonization Groups

A flexfield structure, called Cartonization Groups, is seeded with the system. Therefore, to define cartonization groups, you need only to select the Cartonization Groups flexfield structure and then set up a category code and description for each group.

How to Set Up Cartonization Groups

1. Navigate to the Categories window

Figure 2–39 Categories Window - Cartonization Groups



2. In the Find Categories window click New.
3. In the Structure Name field, use the list of values to select Cartonization Groups.
4. In the Category field, enter a name for the cartonization group that you are defining.
5. Enter a description for the cartonization group.
6. Save your work.

Assign Cartonization Groups to Cartonization Category Sets

After you set up the appropriate cartonization groups (also known as category codes), you assign the groups to category sets. You must assign cartonization groups to the following two category sets:

- Contained item, which represents items that are packed
- Container item, which represents the actual container, such as a box, or pallet into which items are packed.

Both the Contained Item and Container Item have been seeded with the WMS. You should assign each category code that you define to both the Contained Item and Container Item category sets.

Specifying Cartonization Control Levels

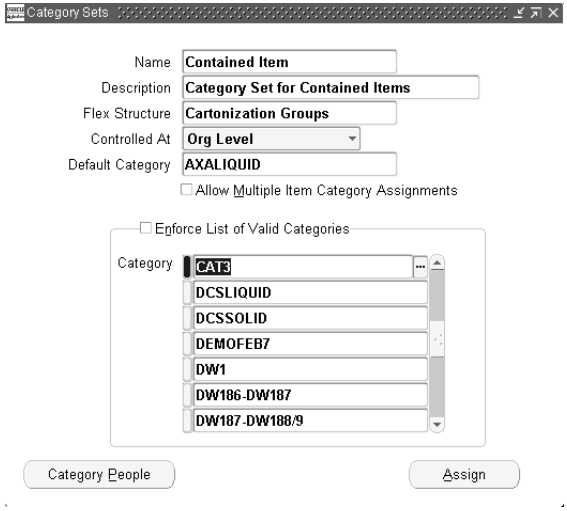
When you add a cartonization group to a category set, you must specify at which level– either the Master or Organization–that the cartonization group should be controlled. If there are organization-specific carton types, then you should specify that cartonization be controlled at the Organization level. If you do not have organization-specific carton types, then you should specific that the cartonization group at the Master level.

Controlling cartonization groups at the Organization level enables different cartonization groups to be assigned to the same item for different organizations. However, it is easier to set up and maintain cartonization groups that are controlled at the Master level, because the category assignment need not be made for each organization.

How to Assign Cartonization Groups to the Contained Item Category Set

1. Navigate to the Category Sets window.

Figure 2–40 Category Sets Window - Contained Item



2. Query the Contained Item category set.
3. Select the empty field below the last category code.

4. Use the list of values to select the item category code to assign to the category set.
5. Save your work.

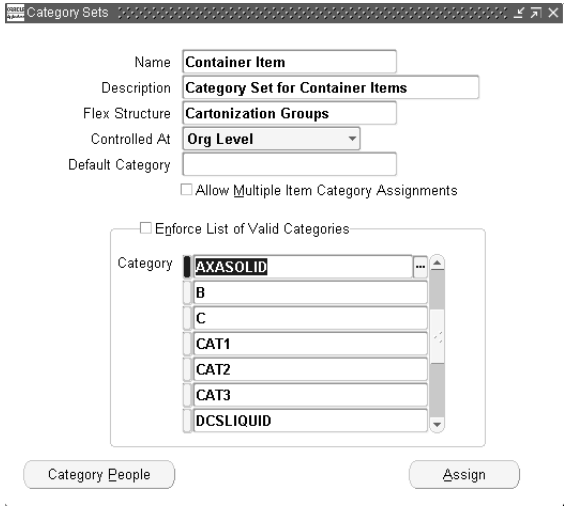
If you want a default category to be associated with the Contained Item category set, you can optionally define a default category in the Default Category field. However, an item must still be assigned to the category set for the default category code to be used. If you leave the Allow Multiple Item Category Assignments check box blank, you can restrict items to only one cartonization group.

If you select the Enforce List of Valid Categories check box, you can prevent users from selecting the inappropriate category set when they assign an item to a category set.

How to Assign Cartonization Groups to the *Container* Item Category Set

1. Navigate to the Category Sets window.

Figure 2–41 Category Sets Window - Container Item



2. Query the Container Item category set.
3. Select the empty field below the last category code.

4. Use the list of values to select the category code (which represent the various container types) to which you want to assign the category set.
5. Click Assign to complete the assignment.

If you want a default category to be associated with the Container Item category set, you can optionally define a default category in the Default Category field. However, an item must still be assigned to the category set for the default category code to be used. If you leave the Allow Multiple Item Category Assignments check box blank, you can restrict items to only one cartonization group.

If you select the Enforce List of Valid Categories check box, you can prevent users from selecting the inappropriate category set when they assign an item to a category set.

Note: Both category sets should have the same list of categories assigned to them.

Define Containers as Items

After you set up the appropriate category codes and category sets, you must define the containers and cartons into which you will later pack items. Because containers represent another type of item, you use the Master Items form to set them up.

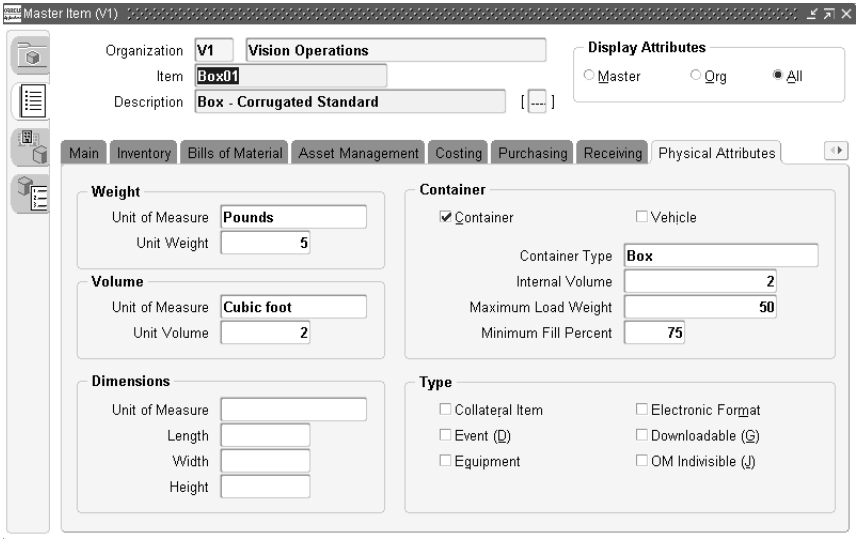
Note: You must define container items and contained item with the same unit of measure class. For example, if you have an item defined in inches, and a container defined in centimeters, the system will make the conversion from inches to centimeters (or centimeters to inches), because both units of measure are of the UOM class, Length.

The following instructions explain how to set up those attributes that specify the item as a container. For detailed instructions on setting up inventory items, see the Oracle Inventory iHelp topic, Defining Items.

How to Define Container Item Attributes

1. Navigate to the Master Item window
2. Query on or create a new item that you want to define as a container.

Figure 2–42 Physical Attributes for a Container Item



3. On the Physical Attributes tab, optionally enter the following information:

> **Note:** Physical attributes are optional, and by leaving a particular attribute blank, cartonization will assume that the item has 0 weight, volume, and dimension for the case of contents, or infinite capacity in the case of containers.

- In the Weight region, use the list of values to select the unit of measure associated with the container's weight, for example, pounds.
- In the Volume region, use the list of values to select the unit of measure that defines the volume for this container, for example, inches.
- In the Volume region, also enter the container's unit volume.

Note: The internal volume is not necessarily equal to the product of the container's length, width, and height measurements. For example, a pallet might have dimensions of 4 feet by 3 feet by 6 inches, while the internal volume (or volume capacity) of the pallet might be 50 cubic feet.

- In the Dimensions region, select the unit of measure associated with the dimensions of the container.
- In the Dimensions region, enter the length, width, and height of the container.
- In the Container region, select the Container check box to indicate that this item is a container.
- In the Container region, enter the container's internal volume and maximum load weight, in their respective fields.

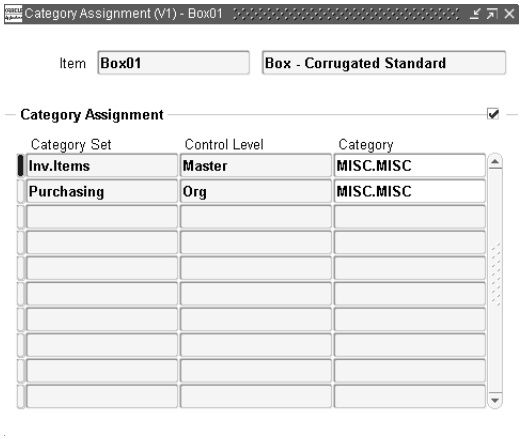
Assign Containers to Cartonization Groups

After you set up container items, you must assign them to the appropriate cartonization groups. You designate this assignment at the Master item level or at the Organization item level, depending on the definition of the category set. For example, if the category set to which you want to assign a container item is controlled at the Master level, then when you assign the container item to the category set, you should specify that it be controlled at the Master level.

How to Assign Container Items to Cartonization Groups (or Categories)

1. Navigate to the Master Item window.
2. Query on the container item to assign it to a cartonization group.
3. Select Categories from the Tools menu, to open the Category Assignment window.

Figure 2–43 Category Assignments Window - Container Item



4. In the Category Set field, use the list of values to select the Container Item category set.
5. In the Category field, use the list of values to select the cartonization group (or category) to which you want to assign the container.
6. Save your work.

Define Contained Item Physical Characteristics

After you set up appropriate category codes and category sets, you must modify or update the attributes of the items for which you want the system to suggest containers. For cartonization to work properly, you must update the following item attributes:

- Item's category set from the Contained Item category set
- Physical dimensions of the item: weight, volume, and dimension

> **Note:** Optionally, you may specify a weight, volume, and dimension, and corresponding UOMs for items in which you want the system to suggest cartonization, otherwise, cartonization will assume that the item has 0 weight, volume, and dimension for the case of contents, or infinite capacity in the case of containers.

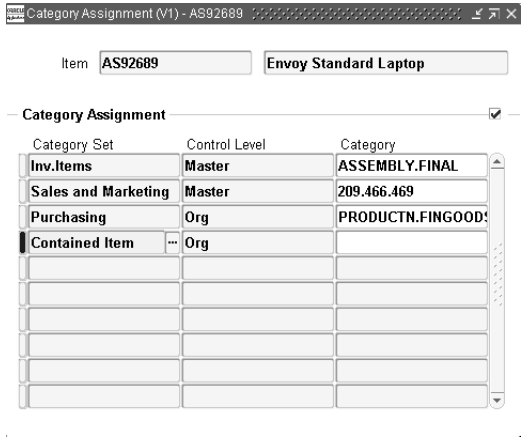
How to Define Contained Item Physical Characteristics

1. Navigate to the Master Items window.
2. Query on the item for which you want to define weight, volume, and dimensions.
3. On the Physical Attributes tab, in the Weight region, use the list of values to select the unit of measure for the item, and then enter its weight.
4. In the Volume region, use the list of values to select the unit of measure associated with the volume, and then enter the unit volume.
5. In the Dimensions region, use the list of values to select unit of measure for the item's dimensions, then enter the item's length, width, and height.
6. Save your work.

Assign Contained Items to Cartonization Groups

1. Navigate to the Master Items window.
2. Query on the item that you want to assign to a cartonization group.
3. Select Categories from the Tools menu, to open the Category Assignment window.

Figure 2–44 Category Assignments Window - Container Items



4. In the Category Set field, use the list of values to select the Contained Item category set.
5. In the Category field, use the list of values to select the cartonization group (or category) to which you want to assign the container.
6. Save your work.

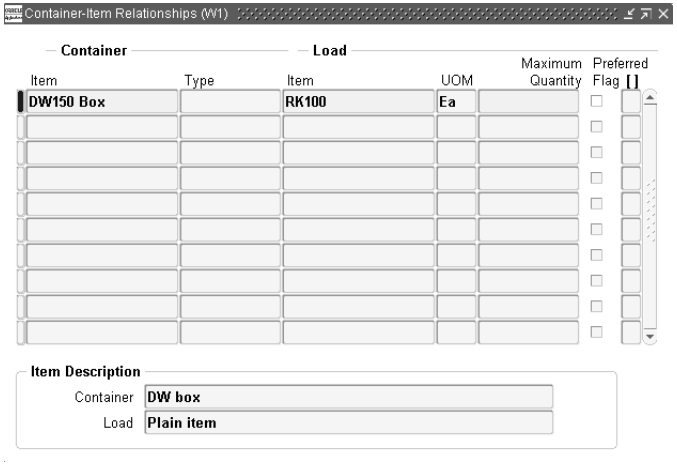
Define Container-Load Relationships

Recall that container-item relationships direct the system to suggest packing an item into a specific container, and override cartonization.

How to Define Container-Load Relationships

1. Navigate to the Container-Item Relationships window.

Figure 2–45 Container-Item Relationships Window



2. In the Container region, Item field, use the list of values to select the container that you want to associate with a specific item.
3. In the Load region, Item field, use the list of values to select the item that you want to be packed in the container item that you selected in the previous step.
4. Save your work.

Defining Pick Methodologies

Pick methodologies refer to the different ways that you might select to fulfill a group of orders. For example, you might select to pick an order by itself, or to pick multiple orders at the same time. The type of picking methodology that a warehouse uses depends on the kinds of operations that they run. A high volume warehouse that is concerned with picking speed might not use a Bulk Picking option.

Oracle WMS supports the following pick methodologies:

- Order picking: The system assigns picks for one order at a time to a user. Thus, when a user accepts a task for the first line on a sales order, all other picking tasks associated with that order are automatically assigned to the user as well, regardless of the task type or subinventory.
- Cluster picking: The system dispatches tasks line by line, regardless of the subinventories in which those tasks are picked from or to whom the line on the order has been dispatched to.
- Zone picking: The system assigns picks for a given order in a given subinventory to a user. Thus, if a user accepts a task for the first line on a sales order, all other lines on that order that are sourced from that subinventory are assigned to the user.
- Bulk picking: The system groups tasks to pick the same items that are sourced from the same subinventory and locator, so that the user only sees one task that might represent picks for several orders.
- Paper-based picking: Users pick according to a paper pick slip that is printed at pick release. This enables a user to dispatch tasks to themselves when working in a paper-assisted environment.
- Pick and Pass picking: LPNs are generated by the system during cartonization and the labels are printed prior to picking. Thus, in order to pick, the user scans the LPN, and is dispatched the picking task that is associated with that LPN. The user can then "pass" the LPN to the next user or continue picking all material for the LPN and will not be prompted to drop the LPN in the staging lane until all of the lines have been picked.
- User- defined pick grouping: See Oracle Shipping Execution iHelp topic, Defining Pick Slip Grouping Rules.

In the WMS, you set up pick slip grouping rules to specify different ways where a warehouse might choose to fulfill a groups of orders. For example, warehouse operators might choose to pick an order across multiple subinventories, or they

might decide to pick by bulk. Pick slip grouping rules enable warehouse managers to specify the type of picking methodology used to pick orders.

To set up pick slip grouping rules in WMS, you use the standard Oracle Shipping Pick Slip Grouping Rules window. However, instead of specifying a user-defined grouping rule, you can use several system-defined options. Oracle WMS includes the following picking methodologies: order picking, bulk picking, cluster picking, and zone picking.

Setting Up Pick Wave Rules

Setting up pick wave rules includes the following tasks:

- Setting up pick slip grouping rules
- Setting up release sequences
- Setting up release rules

How to Set Up Pick Slip Grouping Rules

You use the Pick Slip Grouping Rules window to set up WMS pick methodologies. For Zone Picking pick slip grouping rules, you must also associate the rule with the subinventory to which it applies. Instructions for associating Zone picking rules to subinventories follow the instructions on setting up pick slip grouping rules.

For instructions on setting up pick slip grouping rules see, the Oracle Shipping Execution iHelp topic: Defining Pick Slip Grouping Rules.

How to Set Up Release Sequences

You use the Release Sequence Rules window to set up rules that specify the priority in which you want the system to consider pick line releases. You can prioritize picking lines by the following criteria:

- Order number
- Outstanding invoice value
- Departure date
- Schedule date
- Shipment priority

For instructions on setting up release sequence rules, see the Oracle Shipping Execution, iHelp topic: Defining Release Sequence Rules

How to Set Up Release Rules

You set up release rules to specify the release criteria that you want the system to consider during pick release. Release rules specify the following release criteria:

- Order, either for all, backordered, or unreleased orders
- Shipping, including specifying the carrier and ship from location
- Inventory, including specifying the warehouse and pick slip grouping rule

Use the following instructions to set up release rules.

1. Navigate to the Release Rules window.
2. Enter the name of the release rule.
3. In the Release Criteria region, Order tab, select the type of order (either All, backordered, or unreleased) to which this rule applies.
4. Specify any optional order information, such as order type, in the remaining fields on this tab.
5. Select the Shipping tab.
6. On the Shipping tab, enter optional shipping information, such as the carrier and ship-from location.
7. Select the Inventory tab.
8. On the Inventory tab, enter optional inventory information, such as the Ship-from warehouse, and pick slip grouping rule.

> **Note:** Although optional, if you want the system to consider your warehouse and pick slip grouping rule, you should at least complete these fields, on the Inventory tab.

9. Save your work.

Defining Shipping Parameters

You use the Shipping Parameters window, which is part of the Oracle Order Entry module, to enter the shipping parameters for your warehouse.

For instructions on setting up the Shipping Parameters window, see the Oracle Shipping Execution, iHelp topic: Defining Shipping Parameters.

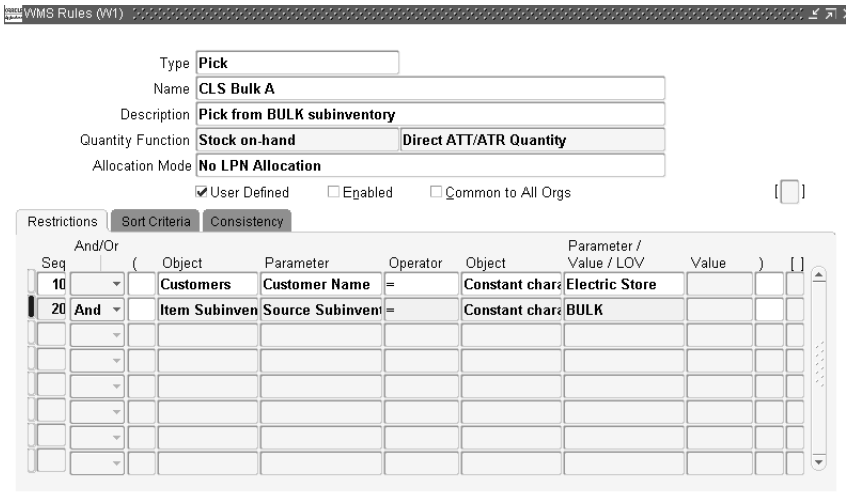
Setting Up Picking Rules

A picking rule stores the criteria that the system uses to select sales orders for release. If trips are not scheduled for dock doors, the release rule also determines the staging lane to which the material should be delivered. The release rule enables the user to select orders based on a variety of criteria.

How to Set Up Picking Rules

1. Navigate to the WMS Rules window.

Figure 2–46 WMS Rules Window - Picking Rule



2. In the Type field, use the list of values to select Picking.
3. Enter a name for the put away rule.
4. Enter a description for the put away rule.
5. In the Quantity Function field, use the list of values to select Stock on-Hand, which is the default quantity function for picking rules.

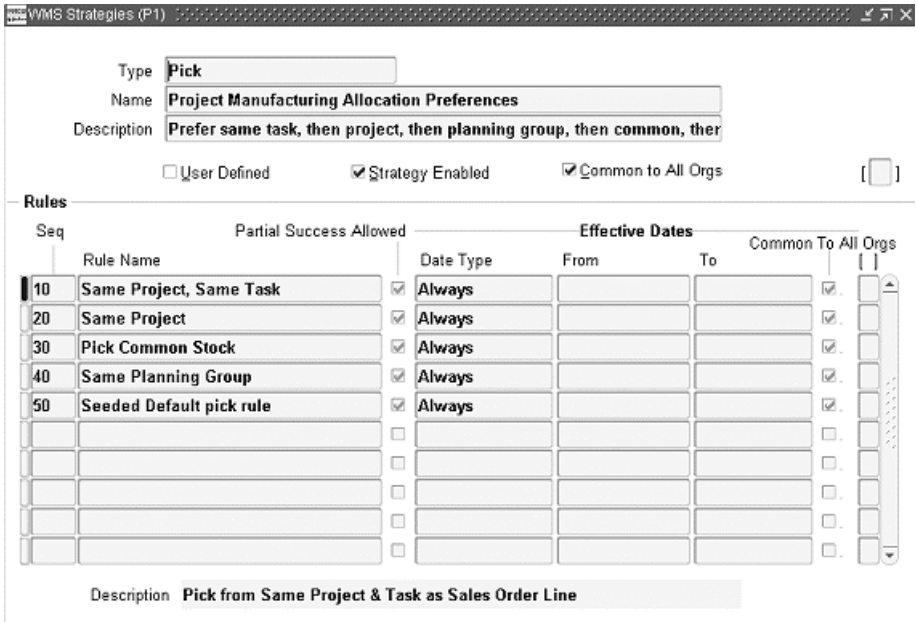
   Specifying a stock on-hand quantity function enables the system to suggest picking tasks based on the available quantity in a particular location.
6. On the Restrictions tab, in the Seq field, enter a sequence number for the first line of the restriction.

7. In the Object field, use the list of values to select the first business object for the rule.
8. In the parameter field, enter the value associated with the business object.
9. In the Operator field, select the mathematical operator that supports the rule conditions, for example equals or greater than.
10. In the second Object field, use the list of the values to select the appropriate business object.
11. In the second Parameter field, either use the list of values or enter the parameter value associated with the second business object.
12. To add more restrictions to your rule, repeat steps 6 through 11 on each subsequent line.
13. If you want the system to sort (or prioritize for picking) the rule's return values, On the Sort Criteria tab, use the list of values to select the appropriate sort order criteria.
14. Use the Consistency tab if you want specify that the pick allocation lines have the same value for a particular attribute.
15. After you finish defining all of your rule restrictions, and have specified the appropriate sort criteria and consistency options, return to the Restrictions tab and select the Enabled check box if you want to enable the rule
16. Select the Common to All Orgs check box if you want the rule to be available for all organizations.
17. Save your work.

Picking Rules for WMS Enabled Project Manufacturing Organizations

To support environments where cross project picking is required but intelligent allocation is desired, four picking rules and one picking strategy have been seeded with Oracle WMS. Refer to the Project Manufacturing Organization Parameters section of this chapter. When an existing WMS organization is enabled for Project Manufacturing, or when a Project Manufacturing organization is WMS enabled, the seeded strategy, Project Manufacturing Allocation Preferences, will be assigned to the organization in the strategy search order. Thus, picking will work according to this strategy, out of the box.

Figure 2–47 Seeded Picking Strategy for Project Manufacturing



When allocating a work order or sales order this strategy searches for material in the following order:

1. It attempts to find on hand material in the same project and task as that on the sales order or WIP job/schedule
2. It will attempt to find material in the same project, without regards to the task
3. It will attempt to allocate material from common (non-project and task) inventory
4. It will attempt to allocate material from another project where the project assigned to the inventory is the same planning group as the project on the sales order
5. Failing all of the above, the strategy will allocate any available material regardless of project or task

Note: This strategy can also be useful if a sales order or WIP job/schedule, without a project reference (common), is pick released. The strategy will first try to allocate common material and failing that, it will allocate any available inventory regardless of project. This is because rule sequences 10, 20, and 40 will not return any results, but rule sequences 30 and 50 will execute properly.

This strategy uses four seeded picking rules. These rules can be used 'as is' within a user-defined strategy. No modifications are necessary to make these rules behave, as defined below, as restrictions. All of the four rules are applicable for Project Manufacturing organizations only.

1. Same Project, Same Task

   This rule ensures that only material that is for the same project and task as that on the move order line is allocated.

   Note: The project and task on the move order line comes from the project and task on the sales order or WIP job/schedule for which the move order was created.

2. Same Project

   This rule ensures that only material that is for the same project as that on the move order line is allocated. The task on the sales order or WIP job/schedule and the task on the on-hand inventory will not be taken into account.

3. Pick Common Stock

   This rule will only allocate material in a locator with no project and task (regardless of the project and task on the sales order or WIP job/schedule.)

4. Same Planning Group

   This rule will allocate material n a project whose planning group is the same as that of the project on the sales order or WIP job/schedule.

3

The WMS Rules Engine

This chapter discusses the Oracle Warehouse Management Rules Engine, including the following:

- ❏ Overview of the Oracle WMS Rules Engine on page 3-2
- ❏ Overview of Rules Setup on page 3-12
- ❏ WMS Rules Engine Setup Windows on page 3-12
- ❏ Explaining the WMS Rules Engine Simulator on page 3-31
- ❏ Run-Time Rules Execution Trace on page 3-38
- ❏ Rules Engine Summary on page 3-44

Overview of the Oracle WMS Rules Engine

The Oracle Warehouse Management system (WMS) rules engine provides a repository for restrictions and business policies related to your warehouse. You define and implement rules, directly from standard Oracle Applications forms, without having to write custom code. Instead, you can compose rules, by selecting various elements from lists of values. Special security features have been included in the rules engine to prevent modification of rules that are currently in use.

For more information about the WMS rules engine, see Rules Engine Capabilities and Rule Types.

Rules Engine Capabilities and Rule Types

Based on the restrictions that you define, the WMS rules engine performs the following activities:

- Enables directed picking
- Enables directed put away
- Assigns tasks to a resource with the appropriate training and equipment
- Assigns cost groups to received material
- Ensures customer compliant labeling

Rules can be based on nearly any attribute in the database, including user-defined flexfields. Each of the capabilities listed above can be broken into the following rule types:

- Directed put away
- Directed picking
- Task type assignment
- Cost group assignment
- Label format assignment

Directed Put Away Rules

Directed put away directs operators to put newly received material into the most appropriate location. Based on virtually any business process, the rules engine provides intelligent suggestions for put away locations of new material. Some typical processes that put away rules are capable of modeling include the following:

- Minimizing item fragmentation by directing an item to be putaway in the same locator where some of that item is already stored
- Prohibiting commingling of different items or different lots of the same item in a single locator
- Avoiding lot commingling in a locator
- Basing the put away location on inspection results, the type of purchase order, or item category

Put aways to intelligent locations suggested by the rules engine can also be performed for any items anywhere in within the warehouse.

Directed Picking Rules

Directed picking makes material allocations and directs operators to pick material from specific locations. To ensure proper stock rotation, you can set up picking rules to allocate material using FIFO (First In, First Out) or FEFO (First Expired, First Out). You can also set up the rules engine to meet customer requirements, such as stock condition or quality. Furthermore, you can set up different rules to deplete a locator to free up additional warehouse space, or to pick by cost group ownership for particular customers.

Task Type Assignment Rules

Based on user-defined criteria, such as the source subinventory, locator, or item attributes, the rules engine can identify the task type for each task that is generated by the system.

Task type assignment captures the skill sets and equipment required for a warehouse task, so that task is assigned to the appropriate users. Warehouse operators can sign onto a mobile radio frequency (RF) device, optionally specifying the equipment that is available to them. Based on the operator's skill set, the equipment requirements, and the equipment's capacity, the rules engine can then assign tasks to the appropriate users and equipment. In some cases, tasks are also assigned based on the subinventory in which the task occurs.

For example, the rules engine would assign hazardous tasks to personnel that have had hazardous material handling training. Another task assignment example, might include limiting put aways to top racks to those operators who have signed on with a high-reach forklift.

Cost Group Rules

Cost groups capture the material valuation accounts that are necessary for tracking inventory value. For example, you might set up different accounts for refurbished versus new goods, or for consigned goods that might have cost groups that are tied to the owning company. When material is received into the warehouse, the rules engine can automatically determine the "owning" cost group.

The rules engine automates cost group assignment decisions, thus removing the complexity of making this decision from the warehouse floor. For example, the rules engine can make a cost group assignment based on sales channel by assigning different cost groups to internet orders and in-store orders. Or perhaps the rules engine can make a cost group assignment by inspection results, assigning an item that fails inspection to a "Hold" cost group. The rules engine can also assign cost groups by vendor site, item category, or even by item. If a cost group rule has not been set up for a particular item, then the system uses the default cost group of the item's storage subinventory.

Label Format Assignment Rules

The rules engine selects the appropriate label format and content for the business need. With the compliance labeling feature, labels with the required information, bar-code symbols, and layout can be generated for each item, container, and so on.

Components of the Rules Engine

Before you set them up, you should become familiar with the following components that make up the Rule Engine:

- Business objects
- Objects
- Strategy search orders
- Rules
- Strategies
- Strategy assignments

Describing Business Objects

A *business object* is an entity that you specify in a strategy search order, such as an item, item category, organization subinventory, or customer. You also assign strategies to business objects. The rules engine comes seeded with the most

common business objects. For greater flexibility, you can also create user-defined business objects. Some common business objects include the following:

- Item
- Item category
- Organization
- Subinventory
- Customer

Describing Objects

Objects are the entities that you use within a rule. They roughly correspond to tables and their attributes (or columns). The WMS also seeds two objects that you can use to specify constant values: Constant Character and Constant Number.

You select constant character or constant number when you want to specify a specific parameter value for an object. For example, you might set the parameter item number equal to the constant number, 23454. In this case, the constant value would be 23454, and represents the item number

Describing Strategy Search Order

The strategy search order indicates the entities in your organization that take precedence when the system makes a suggestion. You set up strategy search orders based on levels of increasing exceptions; the level that has the most exceptions should be searched first.

For nearly all organizations, the Organization business object represents the most general strategy search order level. The Organization level typically serves as the default; if there is not a strategy that is more specific to the situation, then the system applies the default strategy defined at the Organization-level.

Determining other levels in the strategy search order depends on the specific requirements of your organization. For example, when allocating material for picking, many organization's customer requirements take the highest priority for material allocations. For other organizations there might be restrictions at the item or item category level that take precedence over customer demands. For example, a strategy that suggests putting refrigerated items into the COOLER subinventory might take precedence over a general organization policy to fill the lowest racks first, regardless of subinventory.

Prioritizing Business Objects in a Strategy Search Order

Prioritizing business objects refers to defining a strategy search order that represents the order in which you want the system to search for applicable strategies assigned to specific business objects. This hierarchy determines the order in which the rules engine will search for an applicable strategy. You set up search orders only for picking, put away, and cost group strategies. Task type and label assignment rules do not require strategies or strategy search orders.

Deciding subsequent levels in the strategy search order depends on your company's individual situation. In some organizations, the Item Category might be the next level in the hierarchy. In other organizations, business objects such as Freight Carrier, Order Type, or Item might represent subsequent levels of the strategy search order.

Note: You do not need to assign all available business objects to the strategy search order. To reduce maintenance complexities, you should use the minimum number of business objects necessary for each hierarchy.

How the Rules Engine Uses Strategy Search Orders

The rules engine uses strategy search orders by starting at the highest priority sequence number, and searching for an applicable strategy. The search stops as soon as a matching strategy if found.

Table 3–1, "Strategy Search Order Example", provides an example of a strategy search order. In this example, the system first searches for applicable strategies defined at the highest priority sequence, 10 - Item level, and then continues searching until it reaches an applicable strategy or the lowest priority level, 30 - Organization.

Table 3–1 Strategy Search Order Example

Sequence Number	Strategy Search Order Level	Restrictive
10	Item	Most restrictive
20	Item Category	More restrictive than Organization, but less restrictive than Item
30	Organization	Least restrictive

Note: The highest sequence number applied to a strategy search order level is the least restrictive; the lowest number applied to a strategy search order is the most restrictive. Thus, a sequence number of 10 is more restrictive than a sequence number of 30.

After you define the hierarchy of business objects, you must determine the strategies that should be applied to each level. The strategies that you define will later be applied to various business objects.

To determine the strategies to apply to a business object, you should consider questions such as what is the general policy that your company uses to fulfill its picks, or where are received items typically put away? Answering these types of questions, can help you to define your strategy search orders. To define subsequent search order levels, you should ask and answer similar questions for the business object that you are considering for a particular level.

Describing Rules

A *rule* is one or more restrictions that must be fulfilled to satisfy a business or customer requirement. For picking and put away rules, you assign a sort criteria that determines in which order the system uses a rule to suggest an allocation. Picking and put away rules also have a *quantity function* that specifies the quantity considerations used to determine the material available for picking, or the space available for put away. Cost group, task type, and label assignment rules have a *return value*, that returns a value, based on the type of rule that you define. If all of the restrictions are met for a particular cost group, task type, and label assignment rule, then the return value provides the name of the task type, label format, or cost group.

Examples of Quantity Functions

- Picking rule: available to reserve
- Putaway based on locator weight capacity only
- Putaway: use a custom function to determine the destination locator capacity

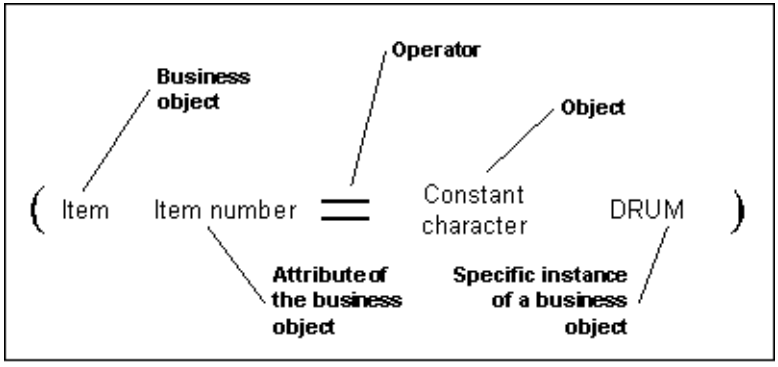
Examples of Return Values

Return values are used in cost group, task type, and label format rules. If the rule restrictions are met, then the rules engine returns the value specified. For example,

If an item has a HAZMAT code, then the return value for a task type might be "Hazardous." In this case, the system would assign the task to a resource that is qualified to handle hazardous materials. Likewise, if all of the items in an EACH PICK subinventory should be assigned the same cost group, you might specify a rule that returns the cost group associated with the EACH PICK subinventory. For example if the cost group value is EP100, then every time an item is put away into the EACH PICK subinventory, the system returns the cost group value of EP100. This cost group is then assigned to the item being put away into the subinventory.

The figure below provides an example of a picking rule. In this example, you can review the various components that make up a rule.

Figure 3–1 Picking Rule Example



Describing Strategies

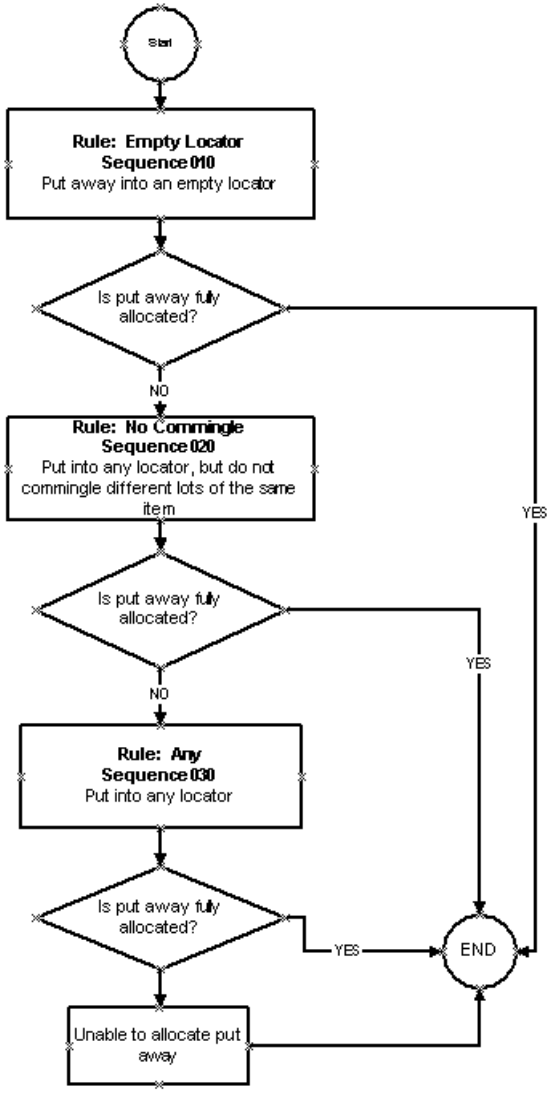
A *strategy* is an ordered sequence of rules that the system uses to fulfill complex business demands. The rules of a strategy are selected in sequence until the put away or picking task is fully allocated, or until a cost group that meets the restrictions is found. When you define strategies, you also specify the date or range of dates on which the strategy is effective. When setting up strategies, you also specify whether you want the system to use a rule if it can only allocate some of the material or space required by that allocation. This concept is referred to as, "partial success allowed," and is explained in more detail later in this chapter.

Note: Strategies are not used for task type and label format assignments.

Examples of Strategies

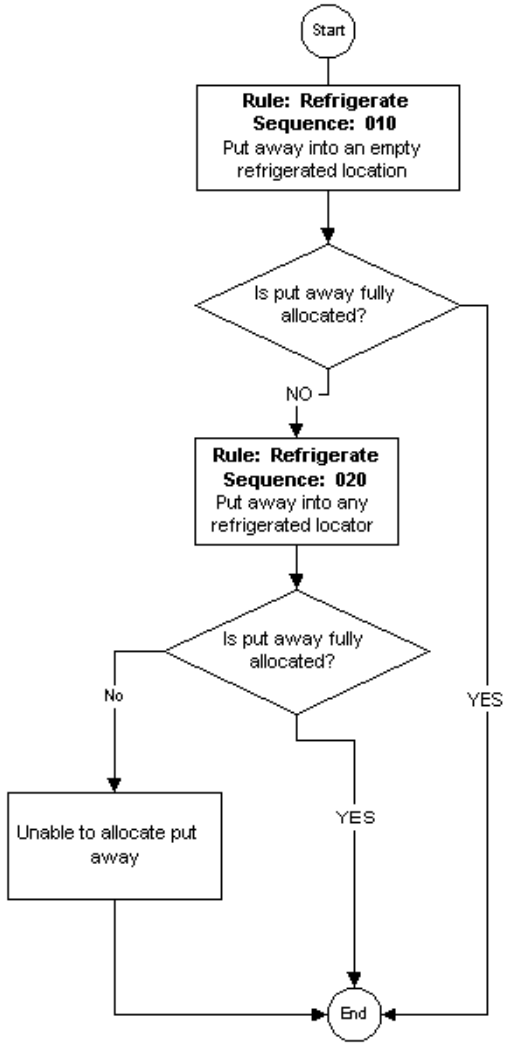
The following figures provide examples of different strategies that you might define for a particular business scenario. The figure below provides a graphical example of a strategy you might define for a default put away strategy. In this example, three rules have been defined. Each rule has been sequenced accordingly in a strategy called the "Default Put Away Strategy." The rules engine applies the rules in the sequence defined.

Figure 3–2 Default Put Away Strategy Example



The figure below provides a graphical example of a simple strategy that includes two rules: a rule that specifies to put the item away to an *empty* refrigerated location, and a rule to put away to *any* refrigerated location.

Figure 3–3 Multiple-Rule Put Away Strategy



Describing Strategy Assignments

A *strategy assignment* is a strategy that you assign to an instance of a particular business object. An instance is specified by naming both the type of business object,

for example Item Category, and the name of the instance, for example, Winter Seasonal. Some examples of strategy assignments include the following:

- For the organization Warehouse 1, whenever there is a put away task, use the *Default Put Away strategy* shown in the previous example of a default put away strategy.
- For items in the perishable item category, use the *Refrigerated strategy* shown in the previous example of a refrigerated strategy.
- For the item AS5867, whenever there is a put away task, use the *Never Commingle strategy.*
- For items in the category, Summer Seasonal, use the *On Season* strategy if it is *March to September*; Use the *Off Season* strategy if it is October to February.

Overview of Rules Setup

You use a series of WMS rules to set up the various rules for your warehouse. Although you use the same forms to set up all rules, the setup required for Cost Group, Picking, and Put Away rules is slightly different than the setup required for a Task Type and Label Format Assignment rules. You do not assign task type and label format rules to strategies, rather the rules engine automatically links these types of rules directly to the organization when the rules are enabled. The search order is determined by a weight applied to each rule. These setup differences are noted throughout the applicable sections of this user's guide.

In addition to providing rules setup windows, WMS provides the following inquiry windows where you can query on a variety of rules-related information.

Table 3–2 WMS Rules Inquiry Windows

Window Name	Purpose
WMS Strategy Where Used	Shows the Object type, name, and identifier information to which a strategy is associated
WMS Rules Where Used	Shows the strategies in which a rule is used

For instructions on setting up rules, see the topic, WMS Rules Engine Setup Windows.

WMS Rules Engine Setup Windows

You use the following windows to set up rules:

- Strategy Search Order window
- Rules window
- Strategies window
- Strategy Assignments window
- WMS Rules Where Used
- Strategy Where Used

For specific instructions on how to set up a particular rule type, see the chapters to which the rule applies (see Table 3–3, "Rule Type Setup Instructions")

Table 3–3 Rule Type Setup Instructions

Rule Type	Setup Chapter
Pick	Outbound Setup
Put Away	Inbound Setup
Cost Group	Cost Group Setup
Task Type	Task Management Setup
Label Format	Compliance Labeling Setup

Note: All of the rules engine windows are organization-specific, so make sure that you select the appropriate organization before defining your rules.

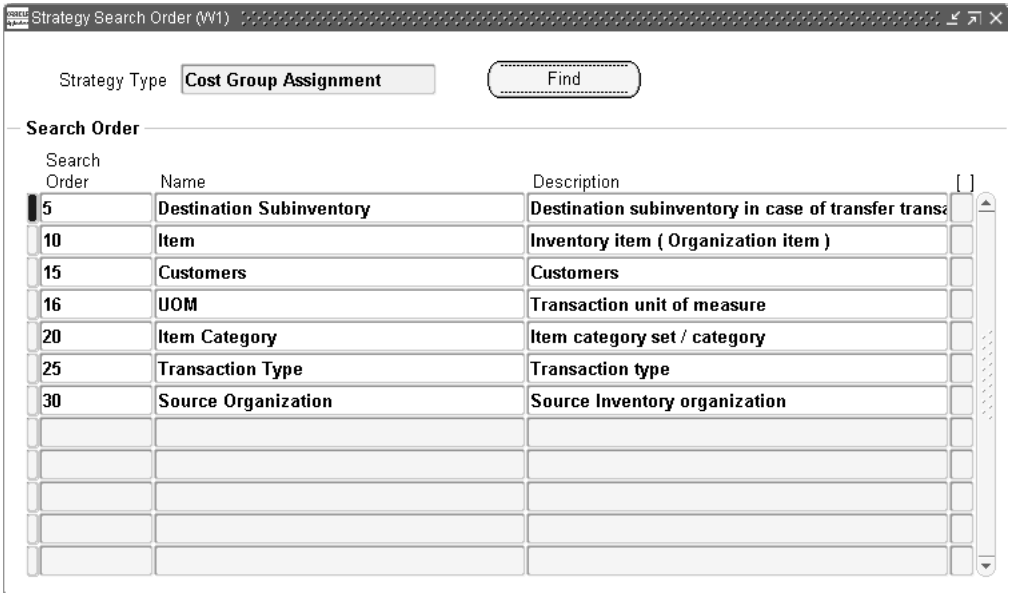
Describing the Strategy Search Order Window

You use the Strategy Search Order window to set up strategy search orders, that are organization-specific. In this window, you can set up strategy search orders for the following types of rules:

- Picking
- Put away
- Cost group

Figure 3–4, "Strategy Search Order Window", provides an example of the Strategy Search Order window.

Figure 3–4 Strategy Search Order Window

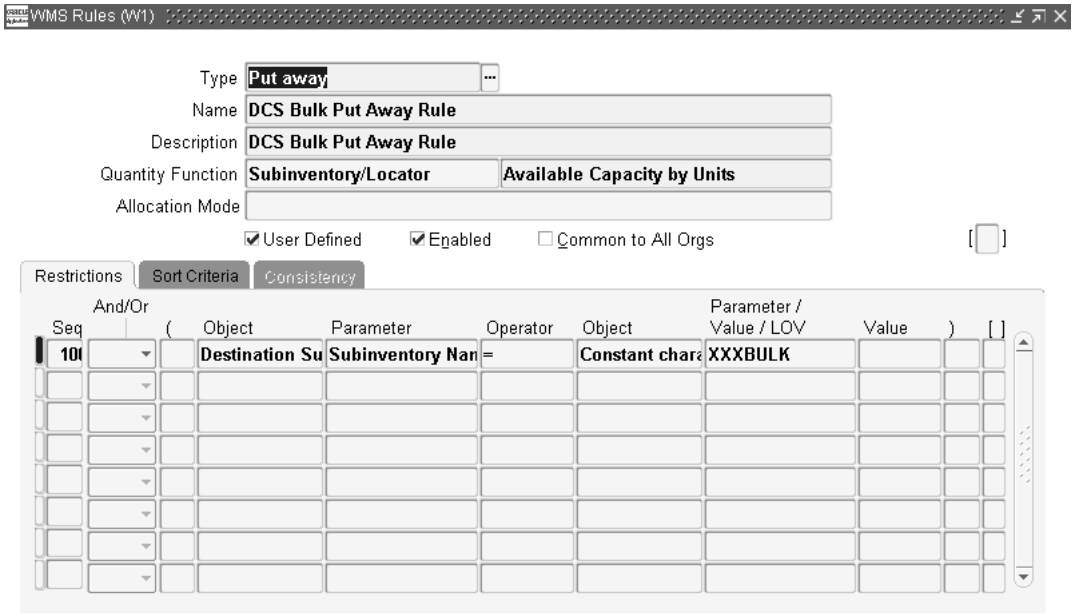


In this window, you select a the type of strategy that you want to define, and then select the specific business objects to which you want to apply the strategy. You sequence each business object, based on the order in which you want the rules engine to search for applicable strategies.

Describing the WMS Rules Window

You define rules in the in the WMS Rules window. Figure 3–5, "Rules Definition Window"

Figure 3–5 Rules Definition Window



You use the WMS Rules window to set up any of the five rules types:

- Picking
- Put away
- Cost group
- Task type
- Labeling

Setup for picking and put away rules is slightly different than the setup for cost group, task type, and label assignment rules. Picking and put away rules require a quantity function and use an optional sort criteria, while the assignment-type rules require a return value. Picking rules also have optional consistency requirements as well as the choice of allocation modes which are detailed further in this chapter.

In the header section of the WMS Rules window, you select the type of rule that you want to define. You also specify a name and description for the rule, and the rule's

quantity function or return value. In the case of a Picking rule, you also specify the allocation mode for the rule.

You must also enable the rule, if you want the system to consider for use in a strategy. After you enable it, the system also checks the rule for proper syntax.

Note: After you enable a rule, you cannot change it. Furthermore, rules that you assign to a strategy cannot be disabled. To modify a rule already assigned to a strategy, you must disable the strategy and then disable the related rule. If an enabled rule has not been assigned to a strategy and you need to modify it, clear the Enabled check box

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You can optionally specify if you want to make the rule available to all of the organizations in your company. Making a pick, put away, or cost group rule available to all organizations does not mean that the rule will actually be used in all organizations, rather it means that other organizations can include the rule for use in their strategies. However making task type and label format rules available to all organizations means that all organizations will use that rule, as there are no strategy or business object assignments for these types of rules.

The rules engine comes seeded with several basic rules. For seeded rules, the User Defined check box is clear. Seeded rules cannot be edited, but they can be copied, using the rule copy function, which is available in the Rules window tool bar.

Describing Picking Rule Allocation Modes

The Allocation Mode field is available only for picking rules. There are four allocation modes available for picking rules, including the following:

- No LPN Allocation
- No LPN Allocation, Prioritize Pick UOM
- Allocate LPN and Loose
- Allocate Entire LPN Only

No LPN Allocation

Rules with this allocation mode allocate packed or loose material, but the allocation is not made to the LPN level. That means, subject to the restrictions and sort criteria defined in the rule, both loose and packed material is considered equal. No LPN is suggested to the operator who performs the task. If there is both loose and packed

material available in the suggested locator, the choice is left to the operator to determine how the pick should be performed.

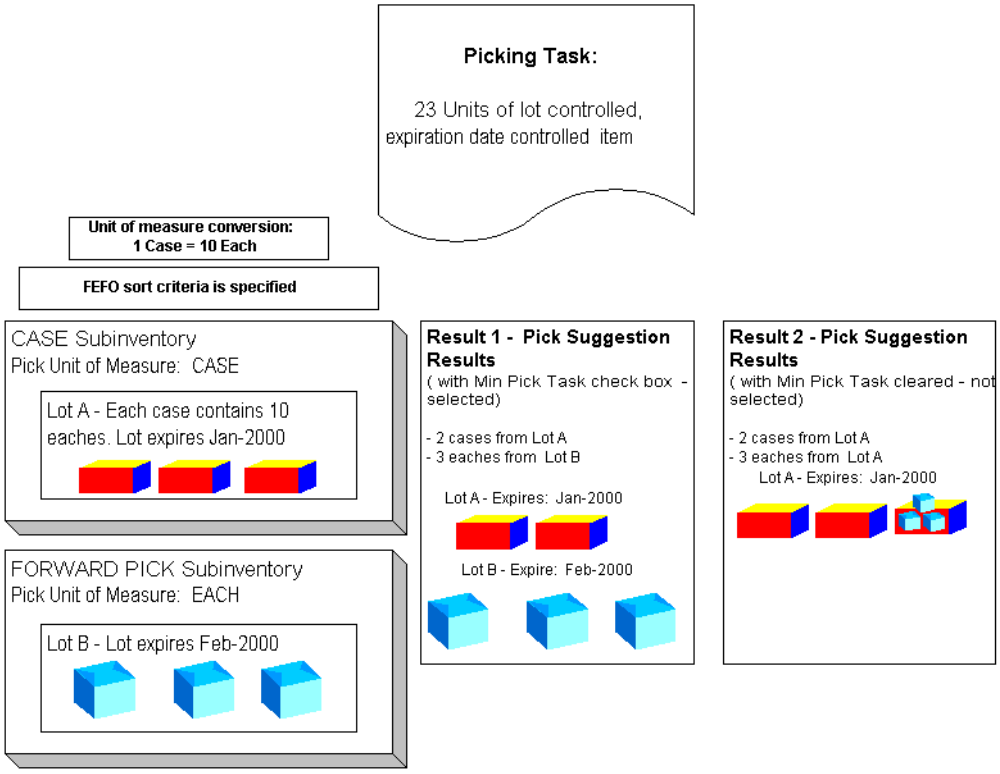
Note: If an LPN is reserved for a particular sales order, then the allocation will be made to the LPN detail level, so long as the rule restrictions and consistency requirements are met, even if the allocation mode is No LPN Allocation.

No LPN Allocation, Prioritize Pick UOM

Similar to rules made in the No LPN Allocation mode, this allocation mode does not allocate to the LPN detail level. Loose and packed material is considered equally, subject to the sort criteria and restrictions, and it is left to the operator to determine which combination of loose and packed material from a suggested locator should be used to fulfill the allocation. However, this allocation mode honors the Pick Unit of Measure for a subinventory before it considers the sort criteria in the rule. The figure below provides an example of the results of selecting this allocation mode for a picking rule.

Note: This allocation mode works best for material that is not lot or revision controlled, and when either LPNs are not used or all LPNs are of a standard pack size which is defined as the Pick Unit of Measure. Also, if an LPN is reserved for a particular sales order, the allocation will be made to the LPN detail level, so long as the rule restrictions and consistency requirements are also met, even if the allocation mode is No LPN Allocation, Prioritize Pick UOM.

Figure 3–6 Example of No LPN Allocation, Prioritize Pick UOM



Assume that a picking task requires 23 units of a lot controlled, expiration date-controlled item. Also assume that the sort criteria for the rule specifies picking by the first expired, first out (FEFO) method.

In this example, two subinventories exist from which to fulfill the pick: a CASE subinventory and a FORWARD PICK subinventory. If No LPN Allocation, Prioritize Pick UOM is selected, the rules engine prioritizes the picking task by the pick unit of measure specified at the subinventory (Result 1). In Result 1, which assumes that No LPN Allocation, Prioritize Pick UOM is selected, the system suggests picking two cases from the CASE subinventory and three eaches from the EACH subinventory.

In Result 2, which assumes No LPN Allocation, Prioritize Pick UOM is not selected, the rules engine prioritizes the pick task based on the sort criteria defined for the

rule. In this result, the system suggests picking the full order from Lot A, which expires before Lot B.

Allocate LPN and Loose

This allocation mode is useful when the system should suggest particular LPNs to allocate. Using this allocation mode, both loose and packed material is considered equally. However, if material that has been allocated resides in an LPN, then that LPN will be indicated on the allocation record, and the task will be for that particular LPN. In other words, instead of leaving it to the operator to select one of potentially many LPNs that contain the required item, the Rules Engine chooses a particular LPN.

Rule restrictions can be built based on details of an LPN, for example only LPNs that are associated with a particular container item are allocated for particular customers, or only LPNs that do not have mixed items, mixed revisions, or mixed lots are allocated. In addition, sort criteria can be used to indicate that packed, or loose, material should be preferred by the system. This allocation mode will allocate loose material, partial LPNs, multiple partial LPNs, or full LPNs subject to the sort criteria and restrictions and LPN availability.

Only the innermost LPNs that contain the items are allocated, so when LPNs are nested the allocation will be made to the innermost LPN only.

Allocate Entire LPN Only

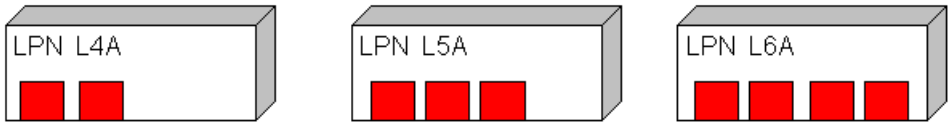
This allocation mode will allocate only LPNs that can be entirely consumed by the allocation. This allows a warehouse to take full advantage of the way material is already packed in the warehouse, particularly when LPNs contain mixed lots. Using this allocation mode, customer exclusions or inclusions based on lot attributes or other restrictions can be honored while selecting the single (or multiple) best LPNs that meet the customer requirements.

This allocation mode only considers packed material. It also does not consider any LPNs which can not be fully allocated for a single move order line, so LPNs that contain mixed items, that are partially reserved or allocated to other requirements, or that have a quantity greater than the allocation quantity are immediately discarded.

This allocation mode is best used when the LPNs are all a standard size, because the Rules Engine does not perform any best fit algorithm.

Consider the following example:

Figure 3–7 Allocate Entire LPN Only Example



Suppose a sales order for 5 of an item were placed, and there are 9 pieces available in 3 LPNs. The LPNs are as follows: L4A qty 2, L5A qty 3, and L6A qty 4.

Suppose the Rules Engine allocated LPN L6A first, either because that is the LPN that the Rules Engine happens to come across first or because of the sort criteria that are indicated in the rule. There is a qty of 1 left to be allocated, but neither L4A nor L5A can be entirely consumed by the task so the remaining quantity of 1 is backordered.

The Rules Engine does not have visibility to the fact that L4A and L5A would make an exact fit; it only allocates in the sequence determined by the sort criteria, or in the absence of a sort criteria that differentiates different material or LPNs, in an arbitrary sequence. While a sort criteria indicating to sequence LPNs by ascending order of their on-hand quantity would produce the 'correct' results in this example, there are other examples in which this sort criteria would not produce the 'correct' results.

Consistency requirements impose an 'all-or-nothing' requirement on the allocations. If the item in the example above were a lot controlled item, all 9 were of the same lot, and the rule with Allocate Entire LPN Only allocation mode also indicated consistent lot, then the nothing would be allocated, because as in the example above, the Rules Engine would be unable to allocate all 5 required.

Only the innermost LPNs that contain the items are allocated, so when LPNs are nested the allocation will be made to the innermost LPN only.

Describing the Restrictions Tab

You use the tabbed forms in the window to define the details of the rule. On the Restrictions tab, you specify the business objects, their related parameters, and the restrictions of the rule. Each line in corresponds to a restriction. You use the AND and OR operators to join multiple lines of restrictions. You use the open and close parenthesis to create complex compound statements. The Sequence Number field in this window, enables you to specify the sequence in which the restrictions are linked together.

Note: When you set up restriction sequence numbers, consider a numbering scheme, such as 10, 20, 30. This enables you to easily add more restriction lines, if necessary.

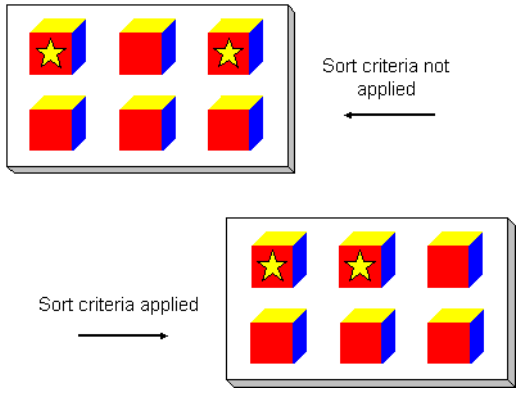
Describing the Sort Criteria Tab

The Sort Criteria tab enables you to impose an order on the criteria returned that meet the restrictions in your rule. The figure below provides an example of the results of applying a sort criteria to a picking rule. In the example, assume that you want to pick cases of an item in stock. In this case, also assume that multiple cases of the item are in stock. To determine how the items that meet your rule's restrictions should be picked, you specify a sort criteria based on FEFO (first expired, first out).

If the blocks with stars in them represent cases of items that will be expiring within the next week, and the blocks that do not include stars represent cases that will expire at the end of the month, the system would suggest picking based on the order that you specified in the sort criteria.

In this example, the first set of blocks shows the unsorted items that meet the rule's restrictions. The second set of blocks shows this same set of items, but with the sort criteria applied to them. If the pick task required that three cases be picked, the system would suggest picking the two expiring cases first, and one of the cases that expires later in the month.

Figure 3–8 Example of Sort Criteria



You can specify multiple sort criteria. To break any ties that might occur at a level, the system considers subsequent sort criteria in ascending order.

Describing the Consistency Tab

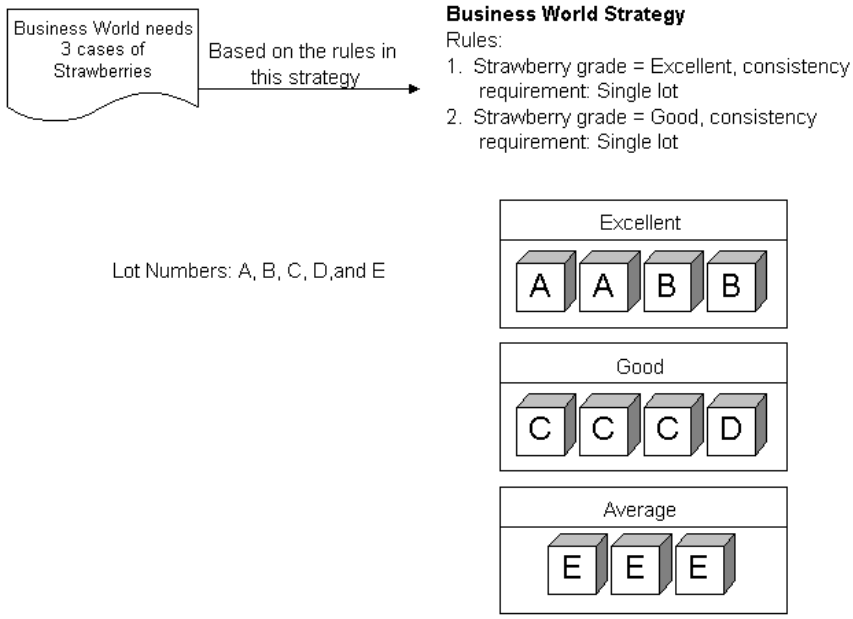
A consistency requirement is used to indicate that all allocations for a particular line must have a common criteria. The most typical use of consistency requirements is a customer that requires that for a particular item, they will only accept a single lot; thus, in this scenario, a quantity of mixed lots, would be unacceptable. Consistency requirements can also be used for lot attributes and for many other attributes of an allocation.

The Consistency tab enables you to specify that all of the allocation lines must have the same value for a particular attribute. For example, you might decide that the specific lot that gets allocated to a customer is not important, so long as their order for 1000 items gets filled by exactly one lot. Specifying consistency requirements can help you to optimize your warehouse. For example, you can set up a consistency requirement that allocates a pick to just one locator, or just one revision, or one subinventory, and so on.

The following figures provide a three-part example of the effects of using a consistency option.

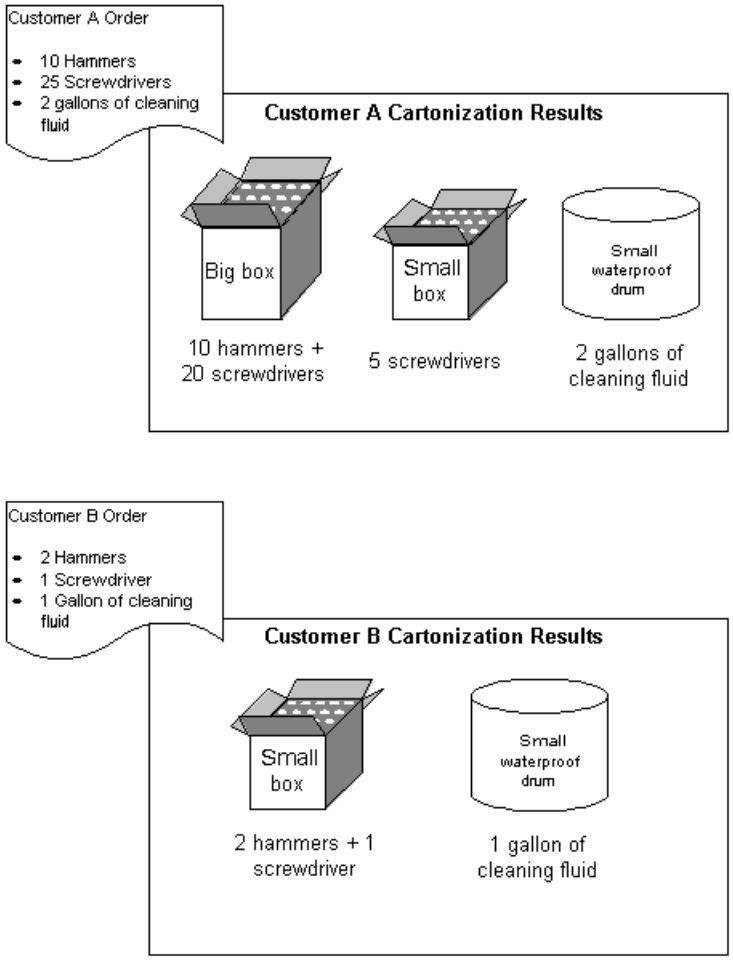
Assume that a customer, Business World requires that although they prefer Excellent-grade strawberries over Good-grade strawberries, it is more important that all of their order come from a single lot of strawberries. Also assume that Business World has just submitted a sales order for three cases of strawberries. The following figure shows the rules associated with this example, and the available quantity in each of the three grade categories, Excellent, Good, and Average.

Figure 3–9 Consistency Example, Part I of III



The following figure shows the how each rule in the Business World rules strategy, and its associated consistency requirement is applied to the available quantities of strawberries.

Figure 3–10 Consistency Example, Part II of III

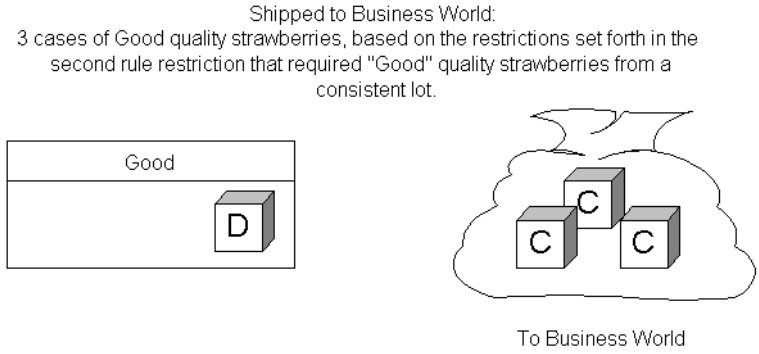


The WMS first applies the rule restrictions to the available strawberries. Business World will not accept Average-grade strawberries so those quantities are not considered. The first rule in the restriction states "Excellent Only" and a consistency requirement of "Single Lot." Because there are not enough Excellent-grade strawberries in a single lot to satisfy the first restriction, the WMS Rules Engine proceeds to the next rule in the strategy.

The second rule specifies "Good Only" and a consistency requirement of "Single Lot." There are enough Good-grade strawberries in a single lot (lot C), to satisfy the requirements of the second rule's restrictions.

So, the rules engine allocates three cases from lot C. The following figure illustrates the results of this allocation.

Figure 3–11 Consistency Example Part III of III



Note: In this example, Business World valued receiving a single lot over receiving Excellent-grade strawberries. However, it is also possible to model other preferences. For example, another scenario might have illustrated that Business World preferred to receive Excellent-grade strawberries–from mixed lots–before it considered accepting Good-grade strawberries. You can model all of this using the WMS Rules Engine.

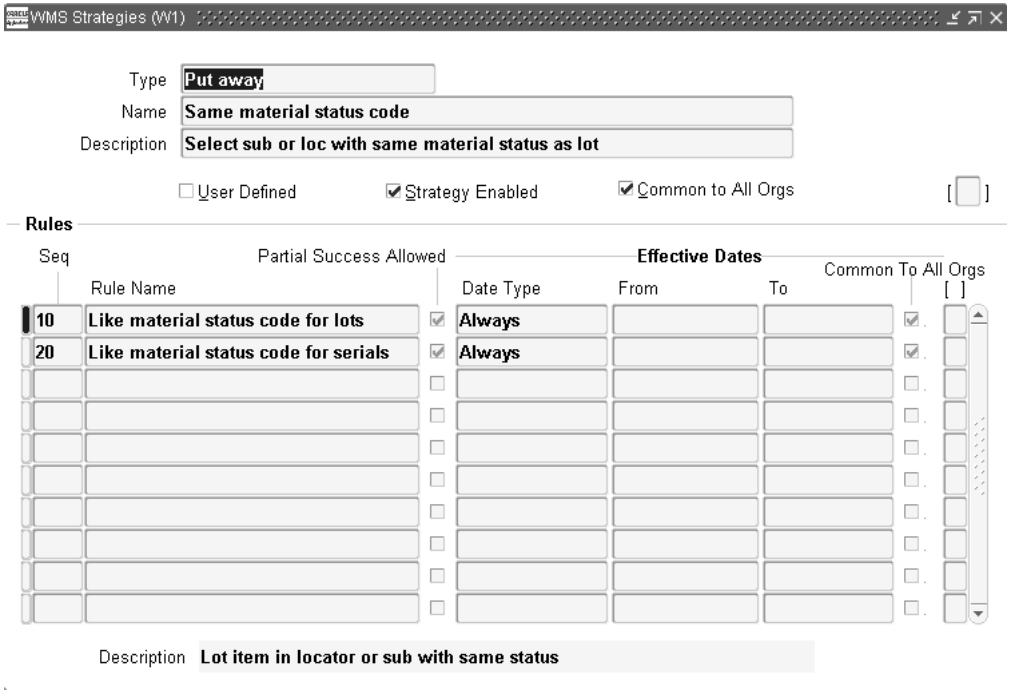
Describing the WMS Strategies Window

After you define your rules, you must set up a strategy and then associate the applicable rules. After you assign rules to a strategy, the rules engine can execute the strategies on any objects to which the strategy applies. The rules engine executes each subsequent rule in your strategy until an allocation is completely filled.

After the rules engine finds a strategy, it will not continue to another strategy if the task cannot be fulfilled based on the first strategy. Therefore, unless you want the strategy to fail if specific restrictions are not met, the last rule in your rule strategies

should be a default rule that includes no restrictions. You set up strategies in the WMS Strategies window. Figure 3–12, "WMS Strategies Window" provides an example of the rules Strategies window.

Figure 3–12 WMS Strategies Window



When you define strategies, verify that the User Defined check box is selected; for seeded strategies, the User Defined check box is clear. You cannot modify system defined strategies, however you can copy them using the strategy copy function located in the window's tool bar.

You should make sure that you enable the strategy so that the strategy can later be assigned to a business object. To add rules strategy, you specify a sequence number in which you want the rule to be considered (within the strategy) and then use the list of values in the Rule Name field to select the rule that you want to add.

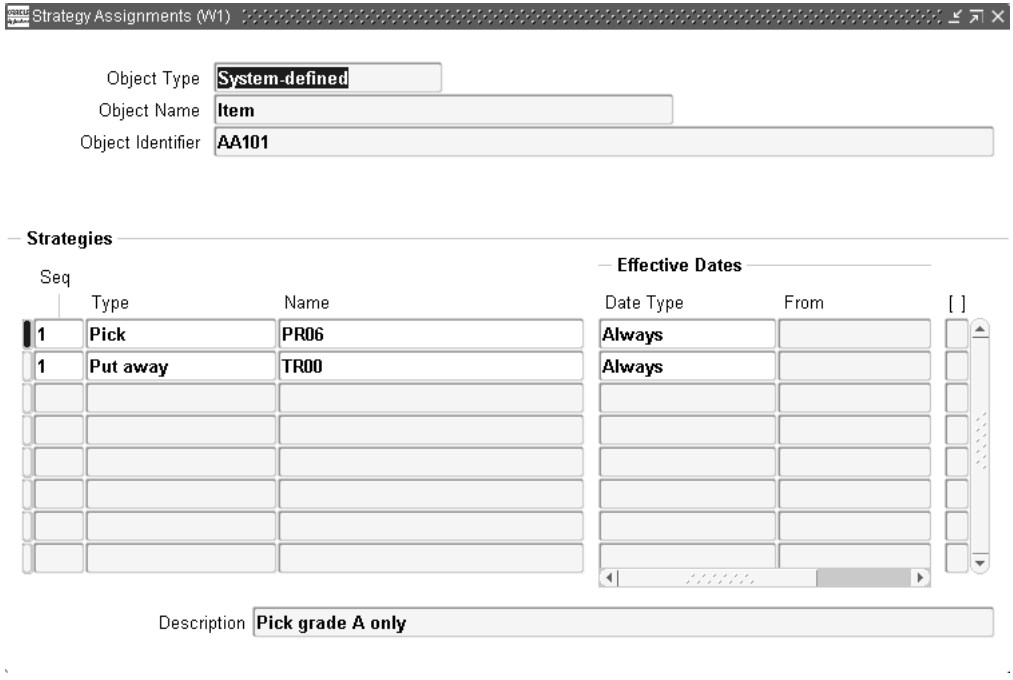
The Partial Success Allowed check box enables the system to only partially fulfill the requirements of a rule's allocation, and then move onto the next rule in the strategy.

Note: Enabled strategies cannot be modified. To modify a strategy, you must disable the strategy by clearing the Strategy Enabled check box.

Describing the WMS Strategy Assignments Window

After you define your strategies, you must assign them to business objects. You use the Strategy Assignments window to assign strategies to business objects. After you assign a strategy to an object, the rules engine can execute the strategy for the object specified. As with other rules windows, you specify sequence numbers when assigning strategies to the object so that rules engine can execute the strategies in the order that you specify. Also, you must enable the strategy assignment before it can be used by the system. Figure 3–13, "WMS Strategies Assignments Window" provides an example of the Strategy Assignments window.

Figure 3–13 WMS Strategies Assignments Window



When assigning strategies to business objects, you should typically select system-defined in the Object Type field. Choosing the system-defined option enables you to select seeded business objects. If you have user-defined objects to which you want to apply strategies, then select user-defined for the Object type.

The Object Name refers to the business object to assign the strategy, and the Object Identifier represents the specific instance of the object to which the strategy will be assigned. For example, in the following figure, the Object selected is Item and the specific instance of the item is DW100–which is shown in the object identifier field.

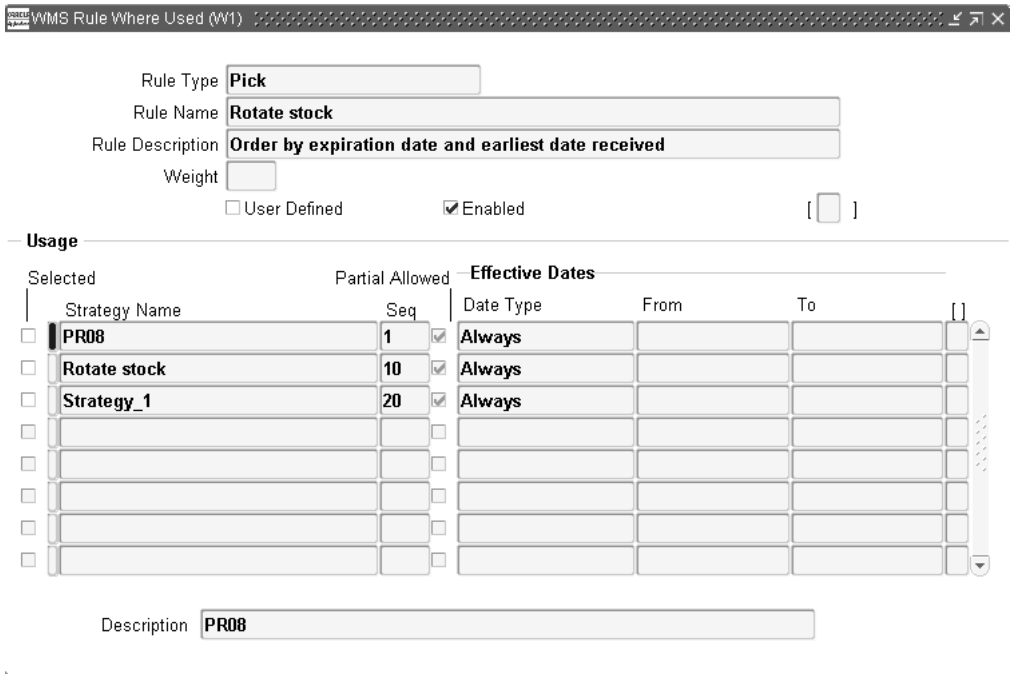
After you specify the business object information, you can select the strategies that you want to assign to it. As you select each strategy, you must enter a sequence in number that specifies the order in which the rules engine is to execute the strategy. The sequence number is only relevant when multiple strategies of the same type are assigned to a strategy, and the earlier strategies have an effective date other than ALWAYS.

In the Effective Dates region, you can specify the time frame for the strategy assignment to be effective.

Describing the Rule Where Used Window

The Rule Where Used window provides a view of all strategies that utilize a particular rule, within a particular organization. If a rule is made common to all organizations, then this check must be performed within each organization that may be using that rule.

Figure 3–14 WMS Rule Where Used Window



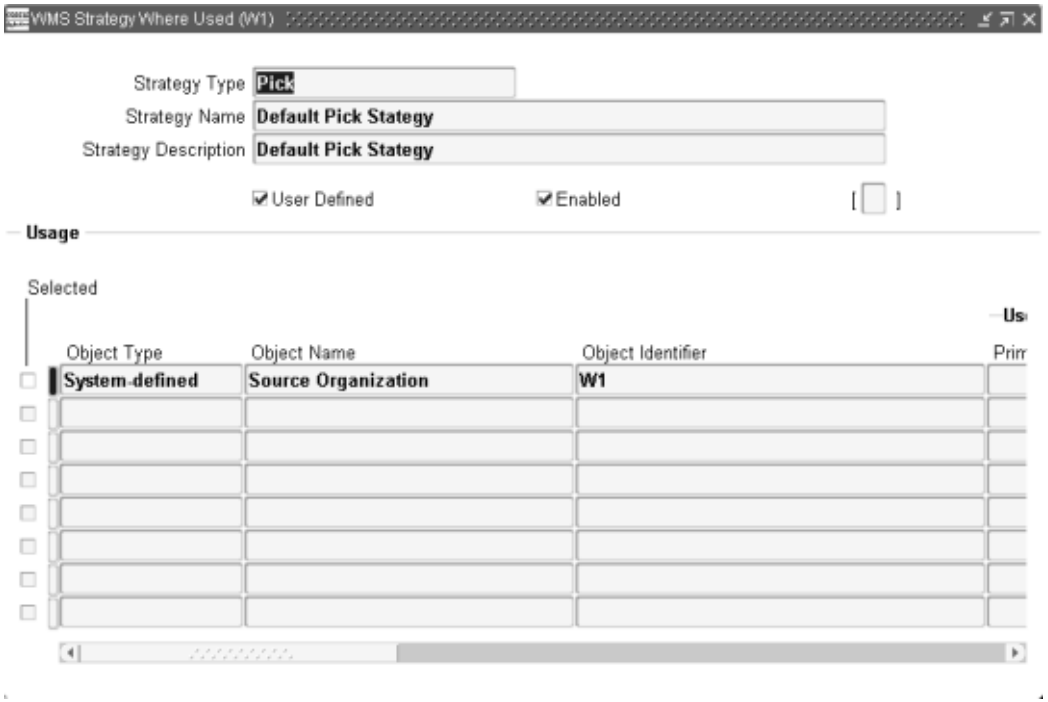
A Find Rules window enables you to utilize lists of values to easily search for the rule type, rule name, rule description, and so on.

Describing the Strategy Where Used Window

The Strategy Where Used window provides a view of the Object type, Object name, and Object identifier information to which a strategy is associated. You can also view the effective dates associated with the object.

A Find Strategies window enables you to utilize lists of values to easily search for the strategy type, strategy name, strategy description, and so on.

Figure 3–15 WMS Strategy Where Used Window

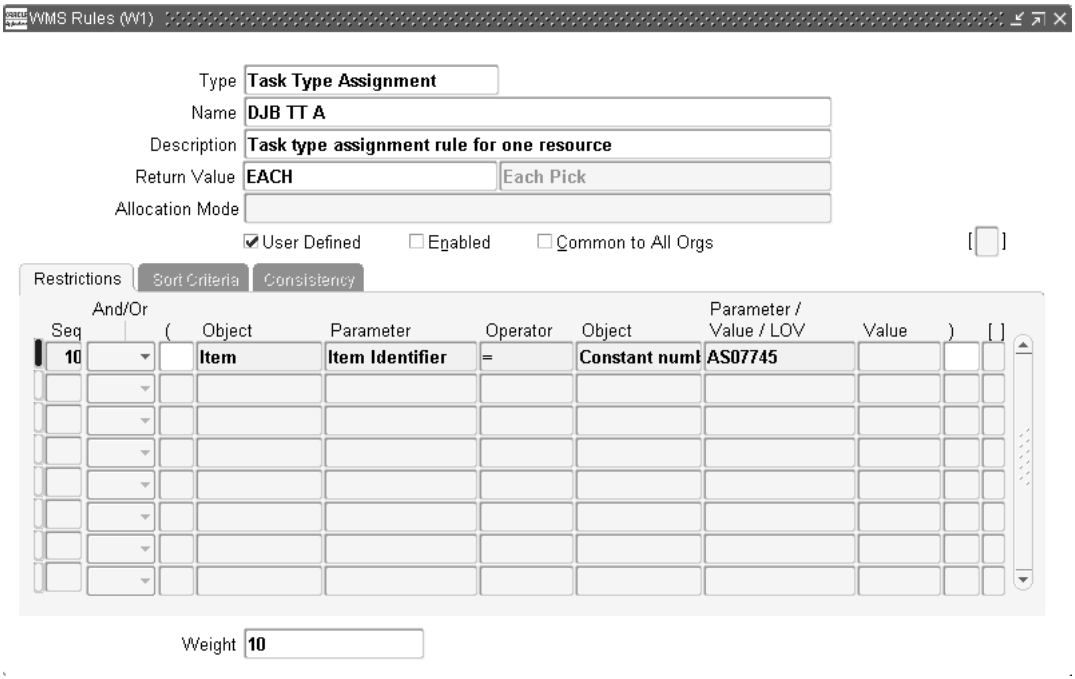


Explaining Task Type and Label Format Assignment Rules

You use only the WMS Rules window to set up task type and label assignment rules. These types of rules do not require strategies and their related strategy search orders. However, they do require that you assign them a weight. Later, the system uses this weight to evaluate which rule it will execute first.

Figure 3–16, "Task Type Assignment Rule" provides an example of a typical task type assignment rule. Notice that for this type of rule, both the Sort Criteria and Consistency tabs are disabled. Also note the Weight field at the bottom of the window.

Figure 3–16 Task Type Assignment Rule



Explaining the WMS Rules Engine Simulator

The WMS Rules Engine Simulator enables you to create and debug the picking and putaway setup for the rules engine. Individual rules or strategies, as well as the entire process including strategy selection, can be performed for allocation of material for picking, allocation of space for putaway, or both. The Simulator enables you to select a rule, strategy, or entire process, and then select a move order line to simulate against. Any existing move order is eligible for simulation. The output is displayed in tabular format, including which lot numbers, revision numbers, and serial numbers were allocated, if applicable.

The Rules Engine Simulator has several modes. These modes determine which part of the rules engine processes that you want to simulate, which in turn determines which types of move orders are valid. You can simulate the following:

- Picking rule - You indicate which rule should be used in order to allocate material for a move order. If the move order cannot be filled in its entirety

by this rule, then only the quantity that can be fulfilled is shown in the results.

- Picking strategy - You indicate which strategy should be used in order to allocate material for a move order. The Simulator then traverses the rules in that strategy, in sequence, as the rules engine would do. If the move order cannot be filled in its entirety by this strategy, then only the quantity that can be fulfilled is shown in the results.
- Picking process - You can simulate the entire material allocation process, including the strategy search order. The Simulator traverses the strategy search order until it finds a picking strategy, and then executes the rules in the strategy in sequence, as is done by the rules engine.
- Put away rule - Same as a picking rule.
- Put away strategy - Same as a picking strategy.
- Put away process - Same as a picking process.
- Entire process - You can simulate the entire picking and put away process, including both strategy search orders.

Any move order that allocates material can be selected to simulate a picking rule, a picking strategy, or the picking process. These include move order transfers, move order issues, and picking lines from a sales order. In addition, a put away rule, a put away strategy, or the put away process can be simulated on move order transfers, picking lines from a sales order, put away from WIP, or receiving. The type of move order that can be simulated is dependent on the type of simulation. There are three types to simulate:

- A pick simulation (rule, strategy, or process) can be performed for any unallocated move order that requires material, such as a replenishment move order, a manual move order or a sales order picking move order.
- A put away simulation (rule, strategy, or process) can be performed for any unallocated move order that requires only material to be put away, such as a WIP completion, or a purchase order receipt.
- A simulation of the pick and put away entire process can be performed for any unallocated move order for which there is a material movement of both a pick and put away, including sales order staging transfers, replenishments, and manual move orders.

In order to perform a simulation, the Rules Engine Simulator requires a move order that has not yet been allocated. An unallocated move order can be obtained in several ways, including the following:

- For a pick wave move order, release the sales order with the Auto-Allocate flag disabled on the Inventory tab of the Pick Release window
- For a put away move order from receiving, perform a purchase order receipt of a standard, or inspection, purchase order but do not perform the actual put away transaction
- For a WIP completion move order, perform a WIP completion into an LPN without the drop step on the mobile device
- For a manual move order, do not allocate the move order through the Transact Move Orders or through any other method

The output of the Rules Engine Simulator is the list of suggestions. In the case of picking or when the entire process is simulated the following data is displayed:

- Source - What subinventory/locator the material came from
- Cost group - Which cost group the material was allocated from
- Lot - If the material is lot controlled, which lots were allocated and information about the lots
- Revision - If material is revision controlled, which revision was allocated
- Serial - If material is serial controlled, and serial allocation is enabled for the organization, which serials were allocated and information about the serials
- Rule used - Which rule was used for each allocation line
- Strategy used - Which strategy was used for the process
- Object used - Which strategy assignment was used to find the applicable strategy

In the case of put away or when the entire process is simulated, the following data is displayed:

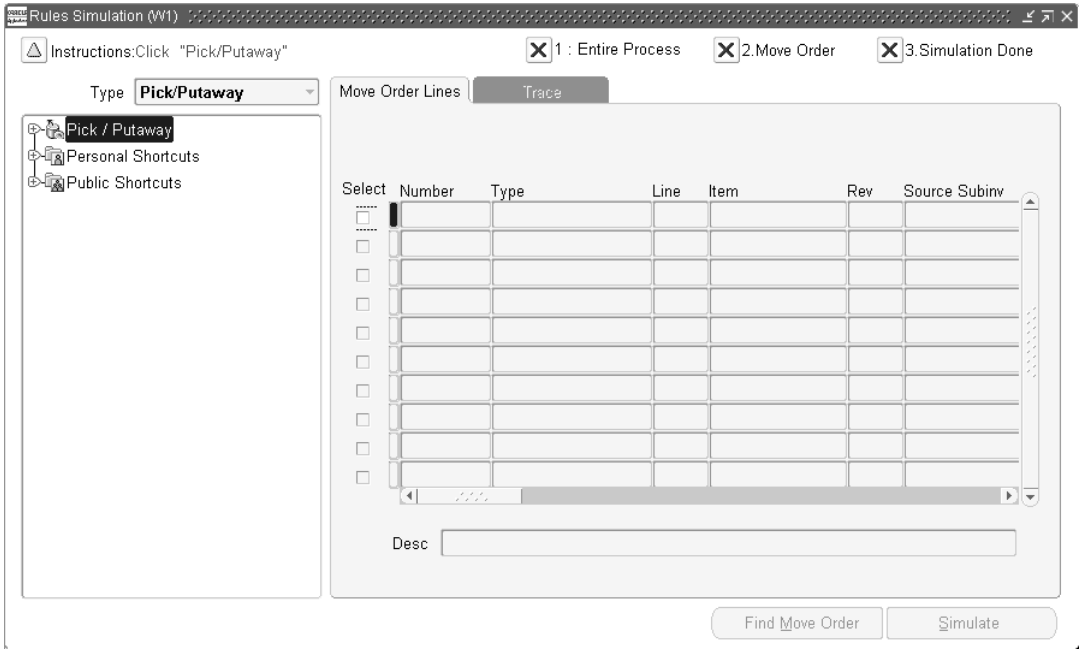
- Destination - What subinventory/locator the material is going to
- Rule used - Which rule was used for each allocation line
- Strategy used - Which strategy was used for the process
- Object used - Which strategy assignment was used to find the applicable strategy

Performing a Simulation

The Simulator window contains four unique guidance tools. The first tool is the Instructions. You will notice, in the top left corner of the window, an icon that is titled Instructions. This area of the window will help to guide you through the necessary steps needed to perform a simulation. The second tool is at the top middle and right of the window. These icons are labeled 1 Entire process, 2 Move Order and 3 Simulation Done. These icons will change from a red X to a green check mark when each task has been completed. For example, when you select the type of process you want to simulate, the Entire Process icon will change to a green check mark. When you have selected the move order, the Move Order icon will changed to a green check mark and so on.

1. Navigate to the Rule Simulation window

Figure 3–17 Rules Engine Simulator Window



2. Select the simulation mode that you want to use by selecting the appropriate node on the tree. (Disabled rules or strategies cannot be simulated and are indicated on the tree with a different icon.)

3. Select Find Move Order. This will enable you to find all move orders that meet your selected criteria. (Only unallocated move orders are available.)
4. Select which move order, returned by the query criteria, should be simulated. (Only one move order can be simulated at a time.)
5. Select Simulate. This will begin the simulation process.

The output of your simulation is displayed on several tabs including:

- Source loc, which displays where the material comes from
- Destination loc, which displays where the material is put away to
- Lot, which displays lot information if applicable
- Serial, which displays serial information if applicable
- Search order, which displays the object that is used to find the strategy, and which strategy was used.

The initial move order tab is still displayed so that you can switch to other move orders that you want to simulate. Or, if conditions have changed in the warehouse, you can select Simulate again to re-simulate the move order without having to reset the Simulator window. For example, these changes may include receiving additional material into the warehouse or changing the rule definition. Note that the data displayed on the move order tab is all the data that is included on the move order before any allocations have been made. This data will not be changed by the Simulator, and all suggestions provided by the rules engine must match the data already on the move order.

Note: The output on the Simulator is displayed in the same order that the rules engine allocated the material. There is a one-to-one relationship between the lines on the various tables. For example, if you are simulating a transfer and line 1 of the source locator tab is from locator A, quantity 100, then line 1 of the destination locator tab is for that entire quantity, and line 1 of the lot tab is for that material movement.

Explaining Rules Trace

After a simulation has been successfully completed, trace details of the Rules Engine execution are available for further information on why specific material was excluded from consideration. The trace output provides this information in an easy-to-use format.

Follow these instructions to perform a rule trace.

1. Complete a rule simulation.
2. Select the Trace Node at the top of the tree in the Rules Engine Simulator window.

Figure 3–18 Rules Trace Window



3. Examine the output of the trace.

The following explains the differences between a trace performed on a rule simulation, strategy simulation, and an entire process simulation:

- If a rule was simulated, the tree will have only the rule in the tree, and that rule will be marked by a green check mark to indicate that it was used.
- If a strategy was simulated, the tree will display the strategy and the rules under it. Any rules that were used for allocating the move order will be marked with a green check mark, while any rules for which material met the restrictions but was rejected for other reasons will be marked with a red "X". Rules that returned no material, or which were not used at all are not marked with an icon.

- If the entire process was simulated, the tree will display the strategy search order, strategy assignments, strategy, and rules. The strategy search order object selected, as well as the strategy assignment that made the match, will be marked with a green check mark. The strategy and rules within the strategy will be marked as described above.

When a rule that was used by the simulation (as indicated by the check mark) is highlighted in the tree, the pre-suggestions used by the Rules Engine in making the allocation are displayed. Pre-suggestions are on-hand records that met the rule restrictions, but then must go through additional validation before they are actually confirmed as an allocation by the Rules Engine.

The set of checks is displayed in the Constraints section on the right-hand side, and the constraints are different for picking rules and putaway rules. Validations that pass are marked with a check mark, while validations that fail are marked with an "X". Validations that are not applicable to the particular allocation are not marked at all. Highlight any pre-suggestion in the form to view the outcome from its validations. The pre-suggestions that pass the additional validations are marked as selected, and the suggested quantity is indicated in the row.

The following is a brief description of each of the validations used for picking rules:

- Available Qty - All of the item that is on-hand in that locator has been allocated or reserved for other transactions.
- Pick UOM - The rule has pick unit of measure enabled. When pick unit of measure is enabled, the system attempts to make a best fit of full units of measure. A full unit of measure could not be allocated of this material because there are not enough left to be allocated and a smaller unit of measure may make a better fit.
- Consistency - The rule has one or more consistency requirements defined. All allocations using this rule must have some common attribute, as defined by the rule. There is not enough matching quantity available to make the allocation of this material.
- Sort Criteria - The rule has pick unit-of-measure enabled. This material was not allocated because there is other material which is deemed better by the sort criteria defined in the rule. This material is displayed here because of the how pick unit of measure processing occurs internally.
- Serial Num Used - The serial number has already been allocated to a different transaction. Because availability of particular serial numbers is not stored in the same way as availability of non serialized material, this verification must be made in addition to the availability check.

The following is a brief description of each of the validations used for picking rules:

- Same Subinv & Locator - This subinventory and locator will not be considered because that is also the source of the material. For all move orders except pick wave move orders, the system will not suggest a putaway to the same locator from which the material was picked.
- Material Status - Either the material status of the destination subinventory or locator disallows putaways, or the lot or serial status (if applicable) disallows putaways.
- Comingle Cost Groups - The material being put away has one cost group while the destination has material of another cost group. There are no characteristics (revision, lot, serial, or license plate) which would differentiate these two groups of material. The system does not allow cost group commingling where the cost group cannot be identified by some physical characteristic.
- Locator Capacity - The locator does not have sufficient capacity to hold the material being put away.

Messages similar to these descriptions are displayed in the comments region on the trace output. Note that the validation check will only fail if the entire quantity fails for that reason. If, for instance, the entire quantity of a pre-suggestion is not allocated because only some of it was available, the pre-suggestion will not be considered to have failed the "Available Qty" check.

Note: Material status check is not part of the trace output for a picking rule. The material status validation for picking rules is performed prior to generating the pre-suggestions, so that if material is not available to pick because of material status, then it will not even be displayed as a pre-suggestion. The material status check for put away, however, is performed after the pre-suggestions have been made.

Run-Time Rules Execution Trace

The Rules Engine Simulator can be used to help fine-tune the rules setup during implementation. The Simulator is helpful for verifying how the Rules Engine behaves for each move order individually. However, a manager may wish to understand why the Rules Engine allocated a particular lot for picking or a particular locator for putaway after the move order has been allocated and potentially, even transacted. The Run-Time Rules Execution Trace feature provides

the ability to view all the details the Rules Engine Simulator provides, at some point after a move order has been allocated.

Capturing the data required for run-time trace is expensive and thus should only be enabled when necessary. To enable the data capture, navigate to Help -> Diagnostics -> Preferences from the toolbar, ensure that the checkbox is enabled for Runtime Logging, and save the preferences. After debugging has been completed, disable the runtime logging through the same window so that performance is not unnecessarily reduced.

The trace data generated for picking and put away rules when the rules engine is invoked is provided by move order allocation of the following transactions:

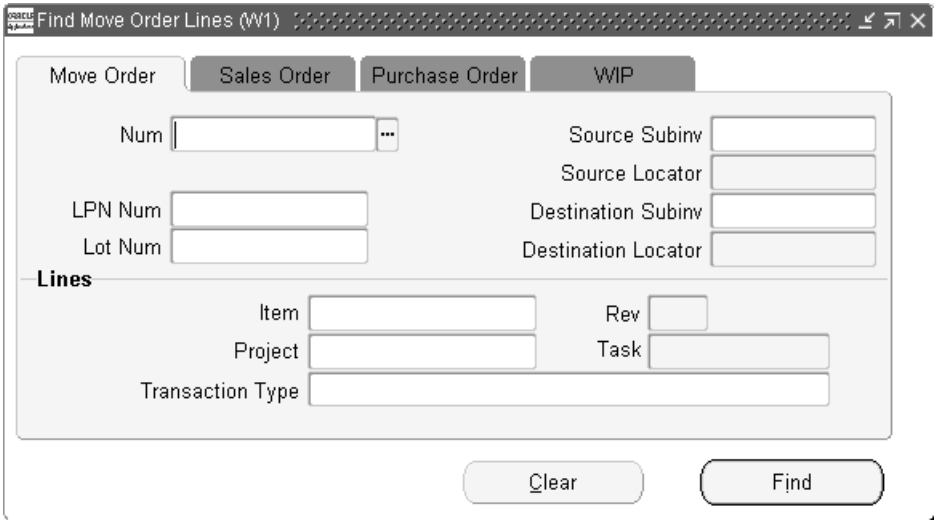
- Pick release of sales orders
- Component pick release for WIP jobs
- Directed put away of LPNs
- Completion with drop from WIP jobs

Follow these instructions to perform a Run-time rules execution trace.

1. Navigate to the Rules Engine Execution Trace window.
2. The Find Move Order Lines window will appear on top of the Rules Engine Execution Trace window. Find the move order that you want to trace.

Note: To find move orders, you can utilize the sales order number, item number, batch number, purchase order number, and so on.

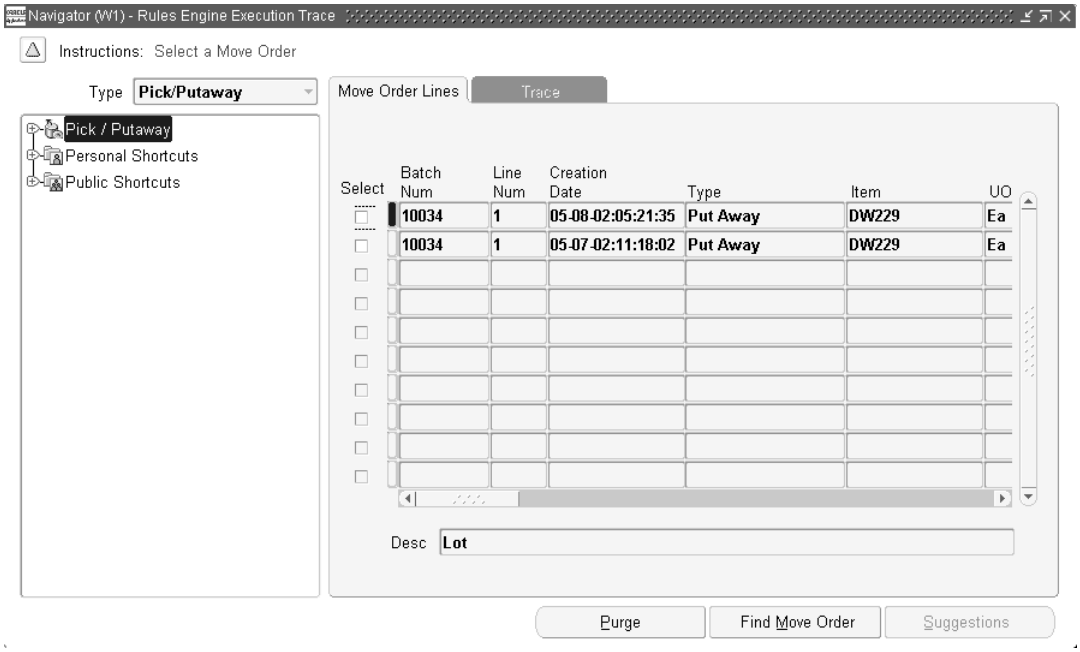
Figure 3–19 Find Move Order Lines Window



3. The search criteria entered in the Find Move Order Lines window, batch number for example, may return multiple move orders. Select the move order that you want to trace.

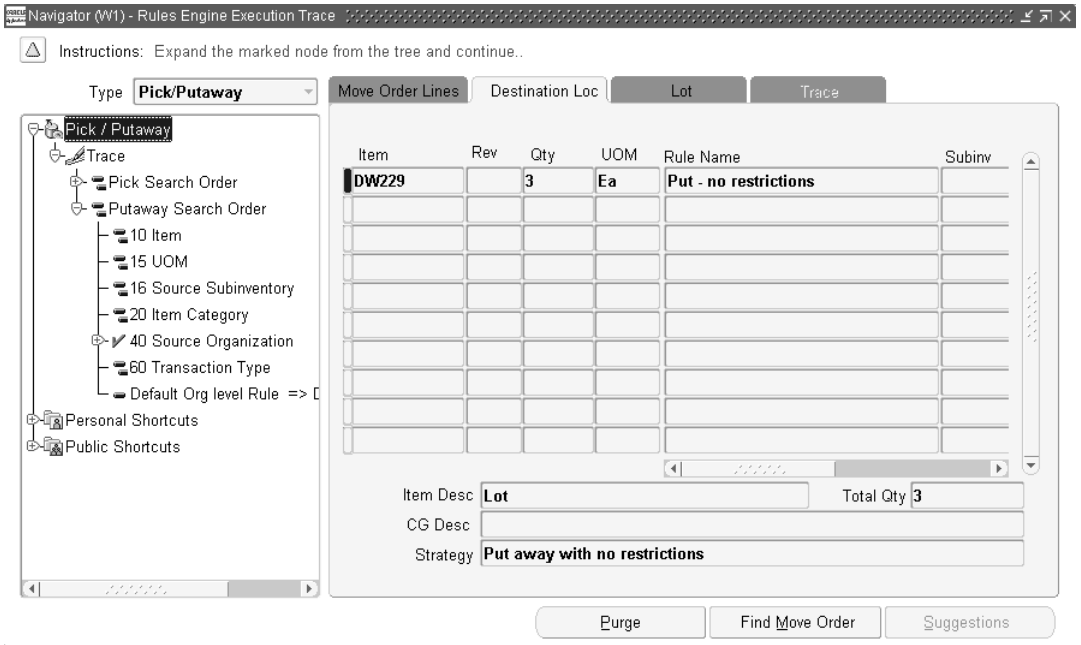
Note: The Rules Engine Execution Trace window displays instructions that will help in utilizing this feature. You can follow these instruction throughout the trace process.

Figure 3–20 Rules Engine Execution Trace Window



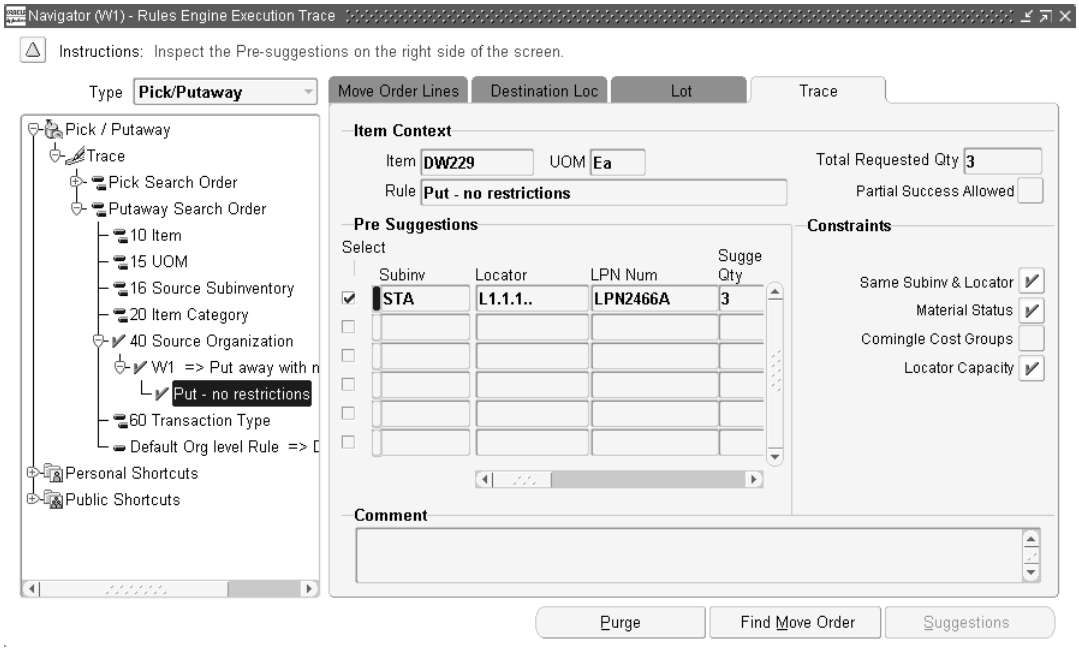
4. After you have selected the move order select Suggestions.
5. Expand the Pick/Putaway node located as part of the tree on the left side of the window.
6. Expand the Trace node.
7. Depending on your particular trace, expend either the Pick Search Order or the Putaway Search Order node.
8. Select the check marked node.

Figure 3–21 Rules Engine Execution Trace Window Tree Expanded



9. Continue by selecting the check marked nodes that expand off of the tree.
10. You can now inspect the Pre-suggestions that the trace generated.

Figure 3–22 Rules Engine Execution Trace Window Trace Generated



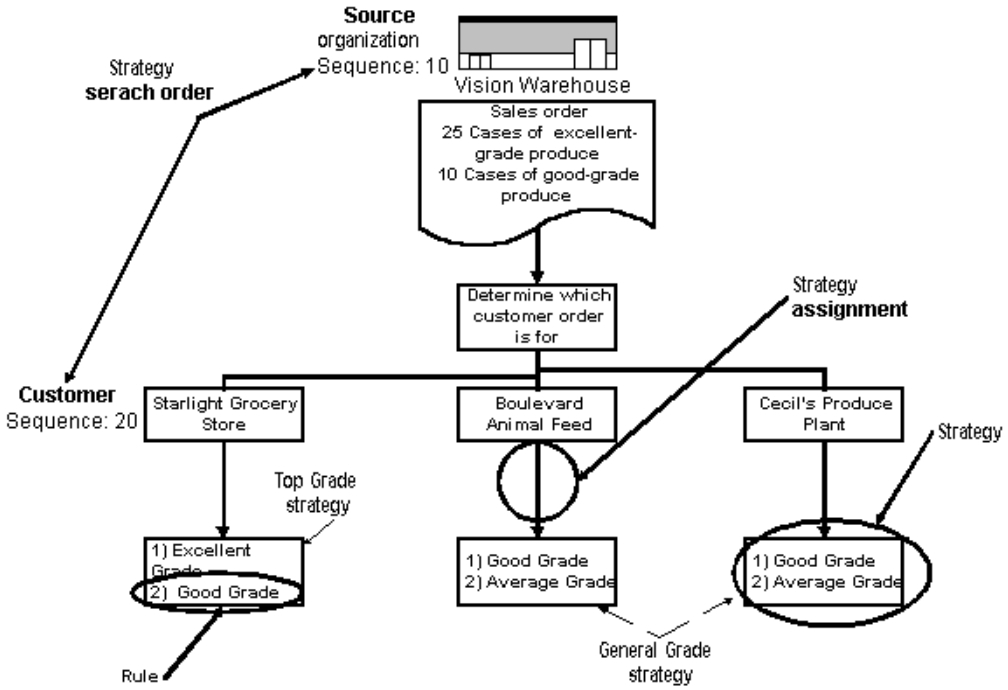
The information on the Trace tab displays pre-suggestions based on constraints defined in the rule. The constraints for the rule are also available on the Trace tab. The allocated space and quantity can be seen on the selected row in the Pre-Suggestions area of the Trace tab. Lot and serial information is shown on the Lot and Serial tabs. Detailed comments on why an allocation could not take place will be displayed in the Comments area of the Trace tab.

Additionally, move order lines can be purged after the trace output has been analyzed. All the data captured from the debugging is stored in several tables in the database. This data should be periodically purged, as data from move orders that are no longer required is not unnecessarily stored. The purge button can purge all move order trace data for a particular move order batch, or for all move orders allocated in a particular date range. Note that this purges only the trace data created when Runtime Logging is enabled; it does not purge the move order lines or move order allocations.

Rules Engine Summary

The figure below summarizes the rules concepts discussed in this chapter.

Figure 3–23 Strategy Search Order Example



In this example, the strategy search order is comprised of the Customer and Organization. The search order business object, either Customer or Organization, would dictate where the system searches for applicable strategies. In this case, the WMS searches for applicable strategies at the customer-level, because its sequence number of 20 is higher than the sequence number of 10 defined at the organization-level.

The lines between the customers, such as Boulevard Animal Feed, and the strategies represent the strategy assignments. For example the Top Grade strategy (that contains two rules) has been assigned to the Starlight Grocery Store customer object. The General Grade strategy is assigned to two different customer objects: Boulevard

Animal Feed, and Cecil's Produce Plant. As shown in the example, a single strategy can be assigned to more than one instance of a business object.

Each strategy is made up of one or more rules. In this example, the Starlight strategy includes two rules: Excellent grade and Good grade. The General Grade strategy includes the rules: Good Grade and Average Grade.

Summary of Rule Properties

The following table provides a summary of the properties associated with each rule type.

Table 3–4 Rule Properties

Property	Picking	Put Away	Cost Group	Task Type	Label
Uses restrictions	Yes	Yes	Yes	Yes	Yes
Uses sort criteria	Yes	Yes	No	No	No
Uses consistency restrictions	Yes	No	No	No	No
Has a return value	No	No	Yes	Yes	Yes
Assigned to a strategy	Yes	Yes	Yes	No	No
Assigned a weight, but no strategy	No	No	No	Yes	Yes
Uses the quantity function	Available quantity	Available capacity	Not applicable	Not applicable	Not applicable
Allows partial quantities	Yes	Yes	No	No	No
Uses effective dates	Yes	Yes	Yes	No	No
Use Allocation Mode	Yes	No	No	No	No

4

WMS Supply Chain and Inventory Management

This chapter explains Oracle Warehouse Management supply chain and inventory management features, including the following:

- ❏ Supply Chain and Inventory Management Overview on page 4-2
- ❏ Explaining License Plate Management on page 4-2
- ❏ Explaining WMS Inventory Management on page 4-14
- ❏ Explaining Facility Management on page 4-49
- ❏ Explaining WMS Task Dispatch and Assignment on page 4-65
- ❏ Describing WMS Inquiry Windows on page 4-71

Supply Chain and Inventory Management Overview

Oracle WMS supply chain and inventory management consists of managing logistics and tasks within your warehouse. This chapter covers the following topics:

- Explaining license plate number (LPN) management
- Explaining WMS inventory management
- Explaining WMS facility management

> **Note:** Many of the transactions described in this chapter include instructions on how to use the mobile user interface. Most of the forms in the mobile user interface include a <Cancel> option. Selecting this option cancels the action (or transaction) that you want to perform. Also, wherever instructions say to "select a value", then a list of values (LOV) is available for that field.

Explaining License Plate Management

Oracle WMS provides full visibility to inventory items that are stored in LPNs. An LPN in Oracle WMS is any object that exists in a location and holds items. Although LPNs are associated with containers, they do not need to represent a physical entity, such as a box. Thus, a LPN might be defined as just a label or a collection of items. Oracle WMS enables you to track, transact and nest LPNs and their contents.

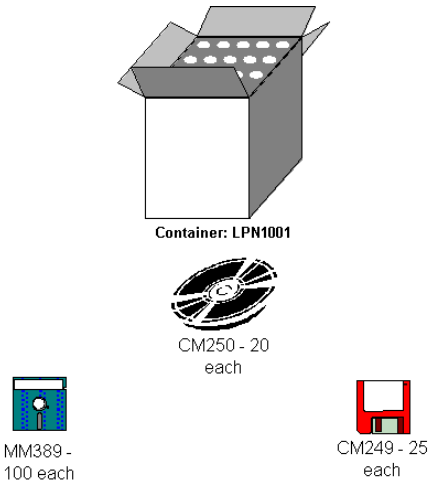
Using License Plate Numbers

The Oracle WMS LPN features enable you to do the following:

- Receive, store, and pick material by LPN
- View on-hand balances by LPN
- View contents of LPN, including item number, serial number, quantity, and so on
- Move many items in a transaction using the LPN
- Print labels and reports for referencing container contents
- Track nested LPNs (for example, cartons on a pallet)
- Pack, unpack, consolidate, split, and update LPNs

As shown in the following figure, the container and LPN concept enables you to identify the complete contents and transaction history of each container. In the Figure, LPN1001 includes three types of media, all with a unit of measure of "each," and all containing varying quantities.

Figure 4–1 LPN Contents



The remainder of this section covers the following topics:

- Explaining multi-level nesting support
- Viewing LPNs
- Generating LPNs
- Submitting requests to generate LPNs
- Generating an LPN using a mobile device
- Maintaining LPNs

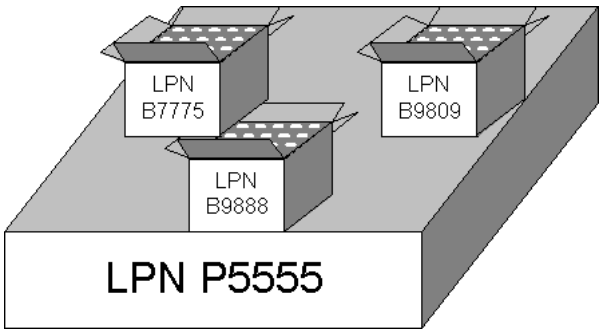
Explaining Multi-level Nesting Support

WMS enables you to nest LPNs. For example, a pallet that contains three packed boxes might be nested as shown in the figure below. In this example, the pallet, LPN P5555, includes three nested LPNs. In the system, you would see the LPN that is

associated with the pallet as the top-level LPN. Each of the three box LPNs would fall under the parent pallet LPN.

Note: If WMS is enabled in an Oracle Project Manufacturing organization, comingling of project/task material is not allowed in an LPN at any level of nesting. Also, project/task material cannot be mixed with non-project/task material in an LPN.

Figure 4–2 Nested LPNs



Viewing LPNs

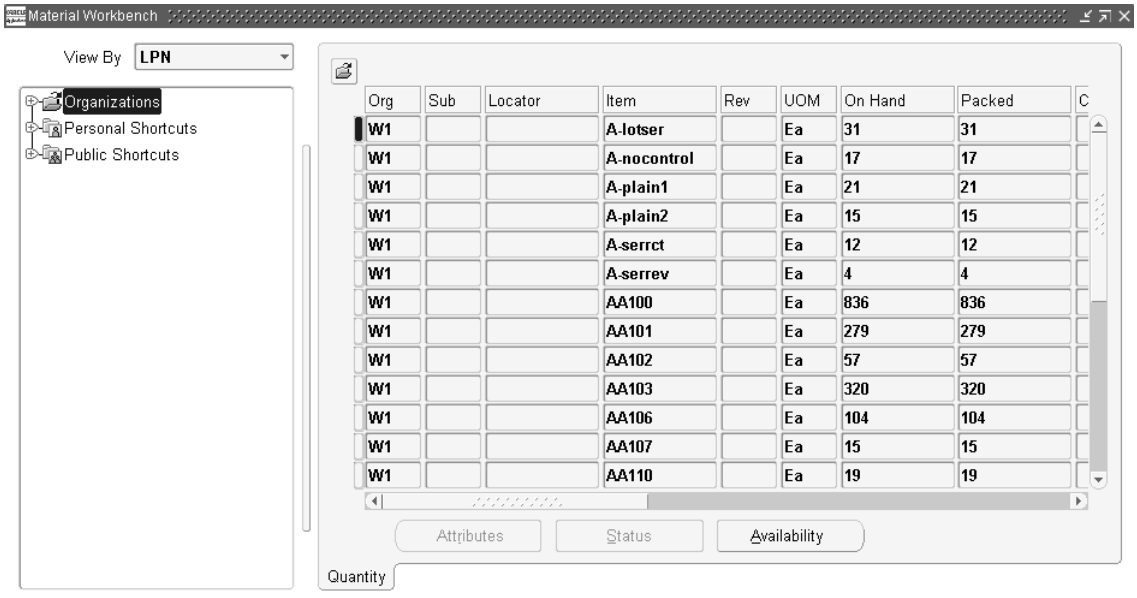
You can view the contents of an LPN using the Material Workbench, or through the mobile user interface.

Viewing LPNs Using the Material Workbench

In the Material Workbench, you can view the attributes of a particular LPN. Use the following instructions to view the contents of a LPN.

1. Navigate to the Material Workbench window.

Figure 4–3 Material Workbench Window



2. In the View By field, select LPN from the list of values.
3. Expand the Organizations folder to display a list of LPNs for the organization.
4. Select the LPN that you want to view.

   The system displays the LPNs contents in the right panel of the window. You can also expand an LPN in the left column to view its specific contents. Continue expanding the LPN to see increasing levels of detail.
5. When you are finished, close the Material Workbench to return to the navigator.

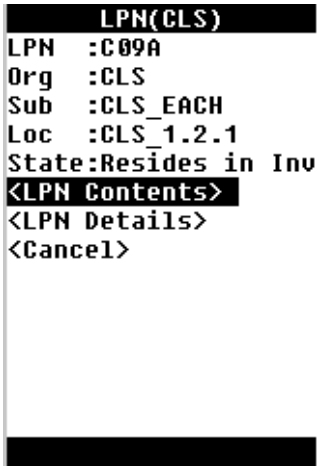
Viewing LPNs with the Mobile User Interface

1. Log into the mobile user interface under the Warehouse Management responsibility.
2. From the Whse Mgmt menu, select Inquiry.
3. From the Inquiry menu, select the LPN option.
4. In the LPN field, enter the LPN or select it from the list of values.

5. Select Find LPN.

As shown in the following figure, the system displays the LPN and provides you with options to view the LPN contents and LPN details.

Figure 4–4 Mobile User Interface - Viewing LPNs



Generating License Plate Numbers

You can generate LPNs using one of the following methods:

- Submit a concurrent request to generate a group of LPNs
- Generate LPNs using the mobile device

Submitting a Request to Generate LPNs

You can submit a concurrent request to generate multiple LPNs. These LPNs might be associated with a particular container item, or they could be simply labels with no physical container association. They can be generated at the subinventory and locator, or they could have no location until they are packed.

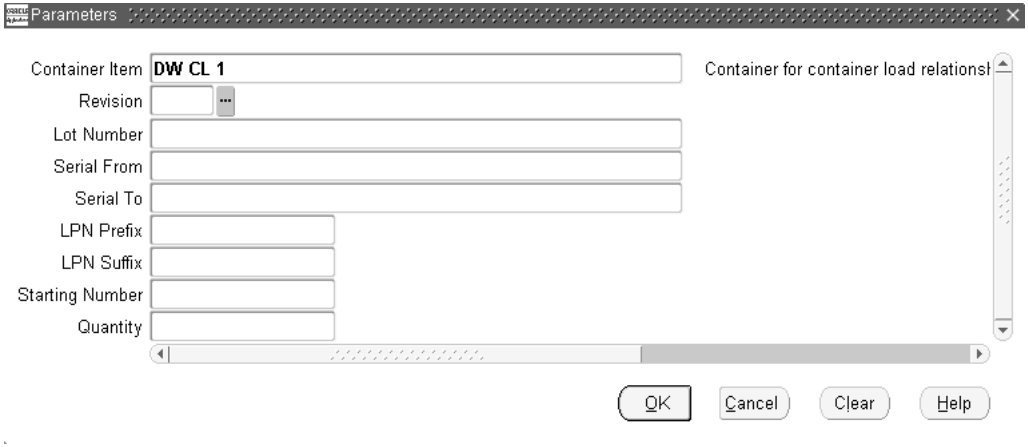
For example, assume that you want to assign LPNs to large boxes that will be stored in a particular subinventory and locator. In this case, you can submit a request to direct the system to generate the number of LPNs that you need, based on the

parameters that you specify in the concurrent request. In another example, a warehouse manager might pregenerate hundreds of LPN labels and distribute these preprinted labels to the warehouse operators. This way, whenever an operator needs a new LPN, he or she can peel off the next label and use it, rather than having to print a label with each new transaction.

To submit the LPN generation request, you must select the Generate License Plates option from the WMS Navigator. Next, select Generate LPN as the request that you want to submit, and then indicate the appropriate LPN generation parameters in the Parameters window.

The following figure provides an example of the LPN request Parameters window.

Figure 4–5 Parameters Window - LPN Generation Request



This request generates the specified number of LPNs based on the starting prefix, suffix, and start number specified either in the request, or at the organization level. Labels for these LPNs will be printed, provided that your label printing hardware and software have been set up accordingly.

Using the Mobile User Interface to Generate LPNs

LPNs can be generated at their point of use in mobile receipt and task forms. When the cursor is in the LPN field, press Generate to automatically generate the LPN. The system default shortcut key, for Generate is [CTRL]+[G]. This can be customized for each mobile device. The actual key mapping is stored in the

default.ini file. For more information about key mapping, see Oracle Applications System Administration Guide.

The following figure provides an example of an LPN generated for a miscellaneous receipt into inventory.

Figure 4–6 Generating LPNs Using Mobile Devices



In the above example, a miscellaneous receipt is being performed. The LPN, L2659A, was automatically generated by pressing [CTRL]+[G].

Maintaining LPNs

WMS enables you to maintain your LPNs by utilizing the following:

- Packing LPNs
- Consolidating LPNs
- Unpacking LPNs
- Splitting LPNs
- Updating LPNs

Packing LPNs

You can pack items into a newly generated LPN or into an existing LPN that resides in inventory.

Use the following instructions to pack an LPN.

1. Log onto the mobile device.
2. Navigate to the Pack LPN screen.

Figure 4–7 Mobile User Interface - Pack LPN



3. Generate a new LPN or enter an existing LPN to pack items into.
4. Select the subinventory and locator of the existing item to be packed.
5. Select the item number to be packed. The UOM will populate with the item.
6. Enter the quantity of the item to be packed.
7. Select <More> to pack more items, or select <Pack> to pack this LPN.

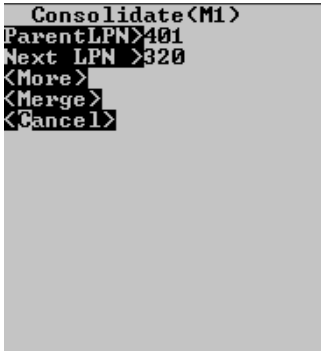
Consolidating LPNs

You can consolidate an existing LPN (residing within inventory) with another existing LPN (residing within inventory) or you can consolidate an existing LPN (residing within inventory) with a newly generated LPN.

Use the following instructions to consolidate an LPN.

1. Log onto the mobile device.
2. Navigate to the Consolidate LPN screen.

Figure 4–8 Mobile User Interface - Consolidate LPN



3. Select an existing LPN as the Parent LPN.
4. Select an existing LPN as the Next LPN.
5. Select <More> to add more LPNs to the parent, or select <Merge> to complete the consolidation.

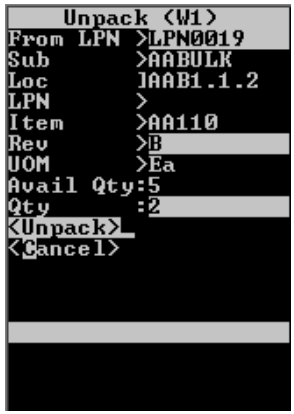
Unpacking LPNs

You can unpack items from an existing LPN or you can unpack an LPN within another LPN.

Use the following instructions to unpack an LPN.

1. Log onto the mobile device.
2. Navigate to the Unpack LPN screen.

Figure 4–9 Mobile User Interface - Unpack LPN



3. Select the LPN number that you want to unpack items or LPNs from.
4. Select either the LPN number that you want to unpack or the Item number that you want to unpack from your LPN.
5. Select the quantity to unpack.
6. Select <Unpack> to complete the transaction.

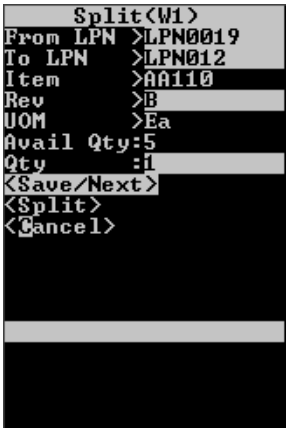
Splitting LPNs

You can split an existing LPN into multiple LPNs.

Use the following instructions to split an LPN.

1. Log onto the mobile device.
2. Navigate to the Split LPN screen

Figure 4–10 Mobile User Interface - Split LPN



3. Select the LPN that you want to split an item from.
4. Select the LPN that you are moving your item into.
5. Select the quantity.
6. Select <Save/Next> to continue with another split, or select <Split> to complete this transaction.

Updating LPNs

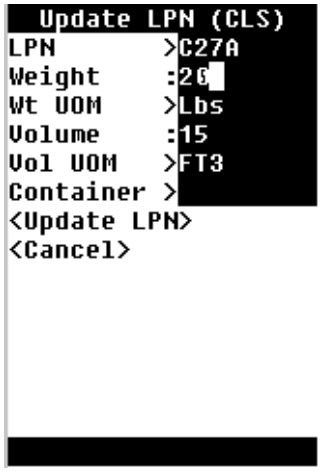
You can update the attributes of a LPN including:

- Weight UOM
- Volume UOM
- Volume content
- Container item

Use the following instructions to update a LPN.

1. Log onto the mobile device.
2. Navigate to the Update LPN screen.

Figure 4–11 Mobile User Interface - Update LPN



3. In the LPN field, enter or select the LPN whose attributes you want to update.
4. Update each of the following optional fields as appropriate:
   - Weight: This is the weight of the LPN. It defaults to the current weight of the LPN.
   - Wt UOM: This is the unit of measure for the weight. It defaults to the current weight unit of measure of the LPN.
   - Volume: This is the total volume of the LPN. It defaults to the current volume of the LPN, which is the maximum of the content volume and the container item volume–if one is available.
   - Vol UOM: This is the unit of measure for the volume. It defaults to the current volume unit of measure of the LPN.
   - Container: This is the container item that is associated with this LPN. It defaults to the current container associated with the LPN. Thus, you could not associate an LPN to a container item, if there are none of that item in the location, or if there are containers but they are all already associated to other container items. After a LPN has been associated with a container item, it cannot be disassociated or changed.

5. After you update the attributes of this LPN, select <Update LPN> to save your changes to the LPN's attributes.

Explaining WMS Inventory Management

This section covers WMS inventory management features. Inventory management includes the following topics:

- Performing inventory transactions with LPNs
- Explaining how to split and merge lots
- Using material status control
- Explaining how to perform cycle and physical count with WMS

Performing Inventory Transactions with LPNs

With Oracle WMS, you can pack LPNs with any grouping of material into a locator. You can then transact the material in the LPN by entering the LPN that you wish to transact. All contents of the LPN, including the contents of any LPN nested within the LPN, will be transacted. You can associate LPNs with the following inventory transactions:

- Miscellaneous issues
- Subinventory transfers
- Direct inter-organization transfers
- Move order transactions

For more information about inventory transactions, see Overview of Inventory Transactions in the *Oracle Inventory User's Guide*.

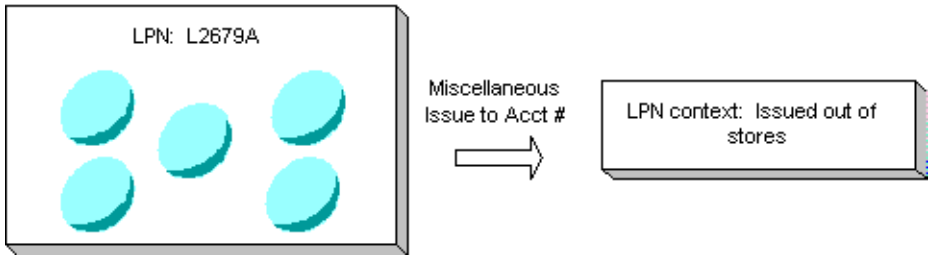
You perform these LPN inventory transactions using the mobile user interface. When WMS is enabled, these transaction forms enable users to enter the LPN or the item information for each transaction. If the LPN is entered, the system will transact all contents, if no LPN is to be used, the user can bypass the LPN field, and enter the item, quantity, source locations, and all necessary revision, lot, and serial information.

Note: You must use the mobile user interfaces to transact material in LPNs. The desktop transaction forms do not include LPN fields. Furthermore, the availability value in the forms has been adjusted to reflect only quantities that have not been packed.

All inventory transactions update the weight, volume, and units stored in the locators. These values are used by the WMS Rules Engine to determine the capacity available in the locator for future put away suggestions. The weight and volume of a container item assigned to an LPN is also used to update the weight and volume of the locator. The locator is updated by the gross weight of the LPN, which is the net (weight of contents) plus tare (weight of container). The volume of the LPN is approximated by the maximum of the volume of the contents and the volume of the LPN defined on the container item.

Example of a LPN Inventory Transaction You can use the mobile device to perform miscellaneous issues for an LPN. The following figure provides an example of what occurs when you perform a miscellaneous LPN issue. In this example, assume that LPN L2679A contains five items. When you perform a miscellaneous issue for the LPN, the system allocates all of the items in the LPN. Thus, this transaction includes issuing the five items included in the LPN.

Figure 4–12 Miscellaneous Issue Using a LPN



The following instructions explain how to perform LPN inventory transactions through the mobile user interface.

Note: Because only WMS-enabled organizations use LPNs, organization transfers can only be performed using LPNs if the destination organization is also WMS-enabled. If the destination is not WMS-enabled, the LPN must be unpacked, and the individual contents must be transferred.

How to Perform a Miscellaneous LPN Issue

1. Log onto the mobile device.
2. Navigate to the Miscellaneous Issue form.

Figure 4–13 Mobile User Interface - Miscellaneous Issue Form



3. In the Acct field, enter or select the account that should be used as the adjustment account for the issue and corresponding receipt.
4. In the LPN field, enter the LPN to be transacted.

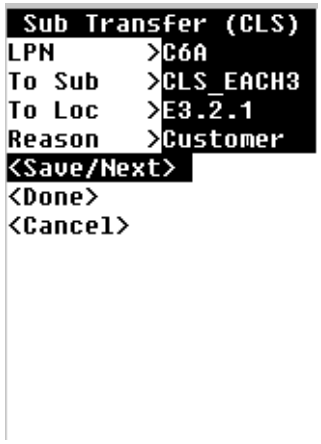
Note: The LPN must be on hand in the current organization.

5. To complete the transaction and enter additional transfers, select <Save/Next>, otherwise select <Done>.

How to Perform a Subinventory LPN Transfer

1. Log onto the mobile device.
2. Navigate to the Sub Transfer form.

Figure 4–14 Mobile User Interface - Subinventory LPN Transfer



3. In the LPN field, enter or select the LPN from which you want to perform the transfer.
4. In the To Sub field, enter or select the subinventory to which you want to transfer the LPN.
5. In the To Loc field, enter or select the destination locator to which you want to transfer the LPN.
6. In the Reason field, optionally enter or select the reason for the subinventory transfer.
7. To complete the transaction and enter additional transfers, select <Save/Next>, otherwise select <Done>.

How to Perform a Direct Inter Organization Transfer

1. Log onto the mobile device.
2. Navigate to the Org Transfer window.

Figure 4–15 Mobile User Interface - Org Transfer



3. If not already logged into the organization, select or enter the organization from which you want to perform the transfer.
4. In the To Org field, enter or select, from the list of values, the destination organization.

> **Note:** LPNs can only be transferred to WMS-enabled organizations.

5. In the Txn Type field, enter or select, from the list of values, the transaction type that refers to this direct-inter organization transfer.
6. In the LPN field, enter or select the LPN from which you want to perform the transfer.

> **Note:** After you enter the LPN or item, the system displays the To Sub and To Loc. fields (not shown in the above figure).

7. In the To Sub field, enter or select the destination subinventory from the list of values.

8. In the To Loc field, enter or select the destination locator from the list of values.
9. Enter or select the subinventory to which you want to transfer the LPN.
10. Select <Save/Next> or <Done> to complete the subinventory transfer.

    To cancel the transaction, select Cancel.

How to Perform Move Order Transactions

WMS dispatches tasks associated with move orders, both move order transfers and move order issues, directly to the mobile user. Move order subinventory transfers utilize the unique system task type of MOXfer, while move order issues utilize the unique system task type of MOIssue.

> **Note:** Requisition move order can no longer be performed through the desktop forms in a WMS enabled organization, however the allocations are visible.

A move order task can be fulfilled with a different LPN than the one that was allocated, or via loose material. The allocated subinventory or locator can be overridden. The task can be underpicked, which will leave the missing quantity on the move order line as unfulfilled; the missing quantity on the move order can be automatically picked up by the next Move Order Pick Slip report and re-allocated (and a new task created), or the move order line can be manually closed. The allocated lots, and if serial allocation is enabled, serials cannot be overridden.

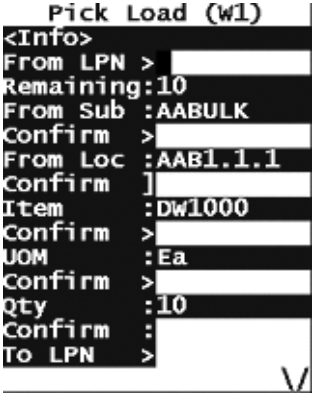
Refer to the Setup chapter of this guide for more information on setting up tasks and task types.

> **Note:** Move orders are restricted to transactions within an organization.

Performing Move Order Subinventory Transfer

1. Log onto the mobile device.
2. Assuming the next task in queue is a move order task, accept the next task.
3. Selecting the <Info> button displays a separate screen with the Move Order Header and Move Order Line information.

Figure 4–16 Mobile User Interface - Pick Load Move Order

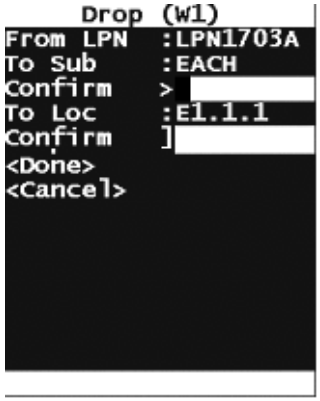


4. If the material to be moved is in an LPN, scan or enter the LPN.
5. Confirm the subinventory, locator, item, UOM, and quantity.
6. Generate a new LPN to load or drop the material into.
7. Load or Drop the material.

> **Note:** Move order issues cannot be loaded, they must be dropped. Move order transfers can either be loaded or dropped.

When drop is selected, the Drop screen is displayed.

Figure 4–17 Mobile User Interface - Move Order Drop



8. Confirm the subinventory and locator that the material is being dropped into.
9. Select <Done>.

When Load is selected, the mobile device will display the Task Menu.

In the case of a generated move order for an account issue, Drop is the only option after confirming all necessary fields on the Pick Load screen. The Drop screen that is displayed for an account issue displays the Account Number. Select <Done> to complete the issue.

Figure 4–18 Mobile User Interface - Move Order Issue Drop



Describing Lot Split, Merge, and Genealogy

The WMS includes sublot features to split and merge lots, and to track a lot's genealogy. The system creates sublots by splitting a single lot into multiple resulting lots. Alternatively, the system can merge multiple lots into a single resulting lot.

> **Note:** This section does not cover serial genealogy, a feature which has been supported by Oracle Inventory since Release 11*i*. For more information about serial genealogy, see Viewing Serial Genealogy in the *Oracle Inventory User's Guide*.

Describing Lot Splitting Lot splitting enables you to split a *parent* lot into multiple *child* lots. This can be performed when some quantity of the lot no longer shares the same attributes or material status as the rest of the lot. After the lot has been split, you can change the attributes or status of the resultant child lots independently of one another.

You can also split a lot when a portion of the lot has different characteristics. For example, if a lot is stored in multiple locations, and damage occurs to one of the lots, then the lot could be split, and the damaged quantity of the lot could be assigned new quality characteristics.

Describing Lot Merging Lot merging enables you to track when lots are stored together, and the identity of the individual lots can no longer be maintained. For example, you might use lot merging to store material of different lots that must all be stored in a single vat or silo.

Describing Lot Genealogy Lot genealogy keeps track of the relationship between lots and sublots and provides lot traceability that results from inventory transactions, including all lot splits and merges.

> **Note:** Although Oracle Shop Floor Management (OSFM) transactions are visible in the WMS genealogy form, the reverse is not true. Transactions performed through the WMS mobile user interfaces will not be visible in the OSFM genealogy form. So if you are using both applications for lot transactions (split/merge/translate) you must use the WMS genealogy inquiry form.

Restricting Lot Split and Merge

For some items, lot split and lot merge should not be allowed. Even if lot split and merge is allowed for an item, there might be particular lots for which these features should be disabled.

When the system splits a lot, the lot attributes of the split lot inherit the attributes from the starting lot. Before saving the newly split lots, you can update the inherited lot attributes. Lot attributes of a merged lot inherit the attributes of the largest lot merged. If two lots of the same quantity are merged then the lot attributes inherit from the first lot specified in the transaction form.

Oracle WMS provides the following levels at which you can restrict lot splitting and merging:

- Item level control
- Lot level control

Describing Item-Level Lot Restrictions To control whether lot splitting should be allowed for an item, you select (or clear) the Lot Split Enabled check box, located on the Inventory tab, in the Master Items window. The WMS will split lots only for those items in which you enable lot splitting. To control whether the system will consider the item as a lot merge candidate, you can also select (or clear) the Lot Merge Enabled check box, also located on the Inventory tab, in the Master Items window.

Describing Lot-Level Restrictions Lot split and lot merge are transaction types. As transactions, lot split and lot merge can be disallowed for certain material statuses. If the lot, locator, or subinventory in which the lot is located, has a material status that disallows lot split, then the system cannot perform a lot split for subject lot. Similarly, if the lot, locator, or subinventory in which the lot is located, has a material status that disallows lot merge, then the system cannot perform a lot merge on the lot. For more information about material statuses, see Describing Material Status Control.

Explaining Full Versus Partial Lot Merge A full lot split consists of splitting the entire quantity of a starting lot into resulting lots. A partial split consists of splitting only a portion of the starting lot into resulting lots, leaving remaining quantity in the starting lot.

Describing Sublot Features With Oracle WMS, a sublot is a lot that has a child relationship to another lot, known as the parent lot. When the system splits or merges a lot, the parent-child relationship between the two lots is stored. Modeling sublots as lots enables sublots to have the same depth of functionality that exists for lots. The parent-child sublot architecture supports an unlimited number of parent-child levels. Therefore, a lot can be split numerous times.

Note: A reserved lot cannot be merged or split.

Describing LPN Lot Support The WMS supports splitting and merging both loose and packed material. The system can split lots within LPN, or it can pack the split lots into new LPNs. A subinventory transfer that moves resulting lots (and LPNs, if applicable) to a new subinventory and locator, can also be performed at the same time as lot split or lot merge.

Describing Manual and Automatic Lot Splits When the system splits a lot into a small number of resulting lots, you can manually specify the resulting lot numbers and lot quantities. When a lot is split into a large number of resulting lots, you can specify the number of resulting lots or the appropriate quantity of the resulting lot that you want the system to automatically create. For example, you might specify that a batch of 100 pallets to be split into 100 sublots of 1 pallet per sublot. In this case, the system automatically creates a new lot and the resultant lot quantity, and then uses the parent lot attributes as the default attributes for the resulting lot.

Tracing Lot Genealogy

Lot genealogy includes an online inquiry window that displays the parent-child relationships between the lots an sublots. Lot genealogy also shows lot attributes, the transaction history of a lot, and the current on-hand quantities of a lot.

In the Lot Genealogy window, you can view the following information:

- Lot source genealogy: The system displays lot source genealogy in a tree structure that shows all of the component lots that have been used in making a particular lot. In the Lot Genealogy window, you can also view lot attributes by lot.
- Where used genealogy: The system displays a tree structure on the Where-Used tab that shows all of the subsequent lots that have used a lot as an ingredient or components.

> **Note:** In the genealogy tree structure, the profile option, "INV: Genealogy Prefix or Suffix" determines whether the item number should be displayed with the lot number. The three possible settings for this profile option are: None (the item number is not displayed), Prefix (the lot number is displayed before the item number), and Suffix (the lot number is displayed after the item number). The profile option “INV: Genealogy Delimiter" determines the delimiter between the item number and the lot number.

Lot transactions performed using the Oracle Shop Floor Manufacturing (OSFM) desktop forms are also visible on the Lot Genealogy window, so that lot transactions may be performed either using the WMS mobile forms or the OSFM desktop forms.

Sublot Third Party Integration

Oracle WMS Sublot functionality includes all of the application program interfaces (APIs) to integrate with 3rd party systems. Through the use of APIs to create new lots and to import lot splitting transactions, third-party systems will be supported. The following APIs are currently provided:

- Completion of assembly and product
- New lot creation
- Lot split

- Populate lot genealogy

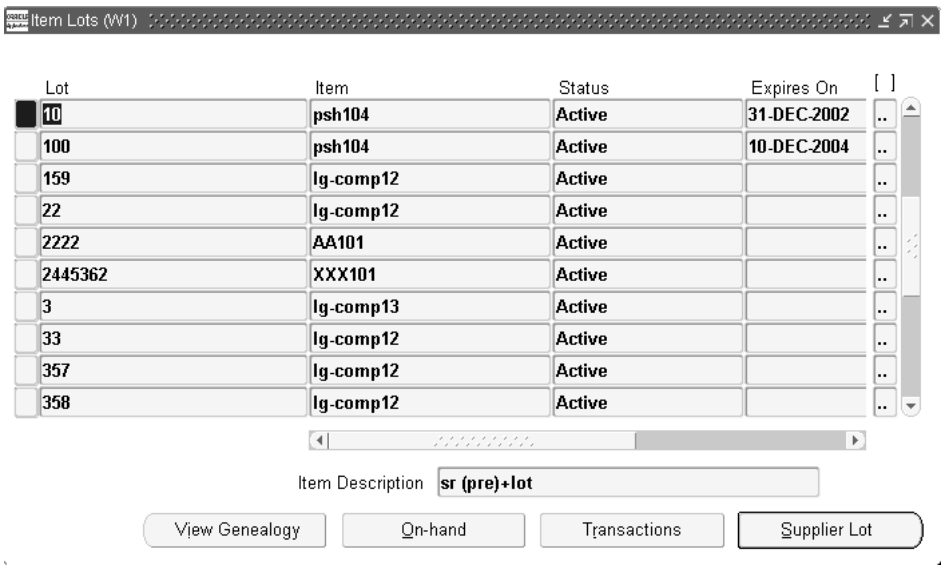
Completion of assembly/product and lot split are also supported through a transaction interface.

Viewing Lots

You can view the characteristics of lots, including the lot's genealogy, and where the lot is used, by logging into the Item Lots window.

1. Navigate to the Item Lots window.

Figure 4–19 Item Lots Window



2. In the Find Lots window, enter or select the lot that you want to view.
3. Click one of the following buttons to view details about the lot.
   - View Genealogy: The Where Used tab shows the item and material status associated with the lot. The tree structure on the Lot Source tab shows all of the ingredient or component lots that have been used to make a particular lot. The Lot Source tab also shows a summary of transactions associated with the lot. To view the attributes of a lot, select that lot on the tree and click on the Attributes field (located to in the Lot Details region).

The Where Used tabs shows all subsequent lots that have used a lot as an ingredient or component.

Note: the profile option, INV: Genealogy Prefix or Suffix, determines whether the item number should be displayed along with the lot number in the genealogy tree structure. The profile option, INV: Genealogy Delimiter, determines the delimiter between the item number and the lot number.

The transaction region displays all material transactions performed on that lot, including its original source and final destinations. For example, you can view from which supplier and purchase order a component lot originated. You can also view to which customers or other distribution centers sales orders for finished product lots have been shipped.

Clicking View On-hand enables you to view whether there is still on-hand quantities associated with a lot. You can then change the material status of the remaining lot, or move the lot into another locator.

- On-hand: Shows the on-hand quantities, subinventory and locator attributes associated with the lot.
- Transactions: Shows the transaction details associated with a particular lot.
- Supplier Lot: Shows the suppliers of the subject lot.

How to Split a Lot

1. Log onto the mobile user interface.
2. Navigate to the Lot Split form.

Figure 4–20 Mobile User Interface - Starting Lot Split Form



For a Project Manufacturing organization, Project and Task fields are displayed on the start Lot and resulting lot screens.

3. In the LPN field, enter the lot's LPN number and press the [Enter] key.

   The lot subinventory, locator, on hand, and available quantities will default from the LPNs current location. Project and Task fields will also default if the lot is in a Project Manufacturing organization.

At this point the user can select <Save/Result> to perform a Manual split, or they can perform an auto split by moving on to step 4.

4. Enter the quantity of the lot to split in Split Qty.

   For example, if a lot includes 50 items and you want to split, 20 of the 50, enter 20 in the Split Qty field.

5. Enter either one (but not both) of the following:

   - Num Lots field, enter the number of resulting lots
   - Ea Lot Qty field, enter the quantity that you want in each of the resulting lots

6. Select <Auto Split> to perform the split.

   The resulting Lot Split window opens and displays the resulting lot number, UOM, quantity, subinventory, locator, project, and task, all defaulted from the starting lot split form.

Figure 4–21 Mobile User Interface - Resulting Lot Split Form



7. Press [Enter] to confirm the lot attributes.
8. In the resulting Lot Attributes window, select <Accept Defaults> to accept the new lot attributes.
9. Back in the Lot Split window, in the LPN field, press [CTRL] + [G] to generate a LPN for the new lot.
10. Select <Done> to complete the transaction.

> **Note:** If you specified that multiple lots be generated from this lot split, the system will automatically generate the subsequent lot numbers.

11. Navigate to the mobile user interface LPN Inquiry window, and search on Item or LPN to review the results of your split transaction.

    You can also navigate to the standard forms, Lot Genealogy, and the Control Board windows to view the results of lot split transactions.

There are additional considerations when splitting a lot in a WMS enabled Project Manufacturing organization, including the following:

- The resulting lot split form defaults the project, task, subinventory, and locator from the starting split lot form. The defaulted values can be edited except the project and task

- If an LPN is entered, the associated project, task, subinventory, locator, on-hand quantity, and available quantity will be defaulted from the LPN, but the result lot split project and task will be non-editable. Project and Task fields are only editable from the starting lot split form
- If the starting lot split Project and Task fields are not populated, the transaction will be entered against common stock. Therefore, the Result Project and Result Task fields will not be displayed. The new lots will also be common

How to Merge a Lot

1. Log onto the mobile user interface.
2. Navigate to the Lot Merge form.

Figure 4–22 Mobile User Interface - Starting Lot Merge Form



3. In the Lot field, enter or select the starting lot number to merge.

   The system displays the item and item description associated with the lot as well as the Project and Task if the lot is in a Project Manufacturing organization.
4. Enter either the LPN or Subinventory/Locator combination for the lot.

   The system displays the UOM and on-hand and available quantities of the lot.

Note: You can only merge available quantities.

5. In the Lot Qty or the Total Qty fields, enter the quantity of the lot to merge.
6. In the resulting Lot Merge window, enter or select the starting lot to merge.

There are additional considerations when merging a lot in a WMS enabled Project Manufacturing organization, including the following:

- Only lots from the same project/task can be merged
- If the starting lot Project and Task fields are not entered, the result lot Project and Task fields will not be displayed. The system will merge lots held in common inventory and the resulting lot will be common
- If an LPN is entered, the associated project, task, subinventory, locator, on-hand quantity, and available quantity will be defaulted from the LPN, but the result lot project and task will be non-editable. Project and Task fields are only editable from the starting lot form
- If the Project and Task fields are not entered in the starting lot, they will not be displayed for the resulting lots

Figure 4–23 Mobile User Interface - Following Lot Merge Form



7. Enter either the lot–to which you want to merge–LPN or the lot subinventory/locator combination in the LPN and Sub, Loc fields, respectively.

8. In the Lot Qty field, enter the quantity of this lot to merge with the original lot that you previously entered.
9. If you want to merge additional lots, select <Save/Next>, and then enter additional lots and their related quantities as appropriate. Otherwise, go to step 10.
10. To verify and save the results of this lot merge transaction, select <Save/Merge>.

    The system displays the results of the lot merge transaction.

Figure 4–24 Mobile User Interface - Resulting Lot Merge Form



11. In the Res Lot field, press [CTRL] + [G] to generate a new lot number for the merged lot.
12. Press [Enter] to access the Lot Attributes form, and then change or select <Accept Defaults> to change or accept, the resulting lot attributes.

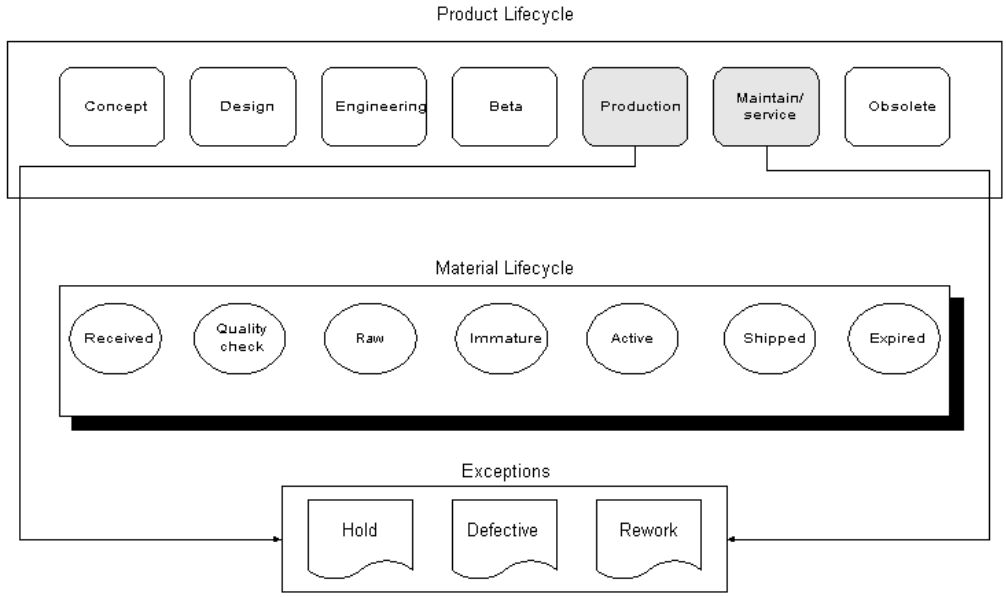
    The system re-displays the lot merge results form.
13. If you want to generate a LPN for the resulting lot, in the LPN field, press [CTRL] + [G].
14. Select <Done> to complete the lot merge transaction.
15. Navigate to the mobile user interface LPN Inquiry window, and search on the Item or LPN to view the results of your split transaction.

You can also navigate to the standard forms, Lot Genealogy, and the Warehouse Control Board windows to view the results of lot split transactions.

Describing Material Status

In many manufacturing systems, there are two distinct product life cycles: the product life cycle and the material life cycle. The product life cycle represents the progression of the product from its initial conception and design, through its obsolescence. Alternatively, the product's material life cycle represents the progression of material in your warehouse, from the point it is received to the point that it is shipped or useless. The material life cycle might also include exceptions that occur during the time that material is in your warehouse, including holding, marking as defective, or reworking the material. The following figure provides an illustration of the stages of both the product and material life cycles.

Figure 4–25 Product and Material Life cycles



Oracle WMS Material Status Features The WMS material status features include the following:

- User-defined material statuses
- Assignment of material statuses to business objects, such as subinventories and lots
- Validation of transactions against the status of material being transacted
- Material status query features
- Material status reports including:
  - **Material Status History Report** that provides a history of every material status change that has occurred on a given serial, lot, locator, or subinventory. If no lot number is entered, but a lot controlled item is entered on the report parameters, then the history of all lots of that item will be included on the report. Similarly, if no serial number is entered, but the serial controlled item is entered on the report parameters, then the history of all serials of that item will be included on the report.
  - **Material Status Where Used Report** that provides a detailed list of serials, lots, locators, and subinventories that have been assigned a particular material status

The remainder of this section covers the following topics:

- Describing material status control
- Describing the uses of material status
- Validating material status transactions
- Reviewing Material Status Setup

Describing Material Status Control

Material status control makes it possible to control the movement and usage of portions of on-hand inventory that might have distinct differences because of grade, quality, or maturity level. Material status control also enables you to specify whether a transaction for a particular portion of inventory is allowed or disallowed.

With the standard Oracle Inventory module, the item status attribute enables you to specify whether the item can be transacted in inventory. The item status attribute also enables you to specify the documents on which the item can be used, for example the bill of materials, sales, and purchase orders, and invoices. While the item status is associated with a particular item, the material status is related to the particular instance of the item. Thus, different material statuses can be assigned to different lots or serials of an item and effectively restrict the transactions that can

occur to the material in the warehouse. You can apply material statues to the following levels:

- Subinventory
- Locator
- Lot (applied at the item level)
- Serial (applied at the item level)

A material status is defined by the list of transaction types that it allows. The following table provides examples of material statuses that you might set up for your organization. In this example, each status either allows or disallows certain transactions. For example, the material status of Active allows all transactions, and disallows no transactions. Conversely, the material status of Immature allows picking and shipping for internal customer orders, but disallows these transactions for external customer orders.

Table 4–1 Example Material Statuses

Status	Active	Hold	Immature	Almost mature
Disallows	Nothing	Picking, shipping, and production	Picking and shipping for external customers	Shipping for customer
Allows	Everything	Sub transfers	Picking and shipping for internal customers	Picking for customer

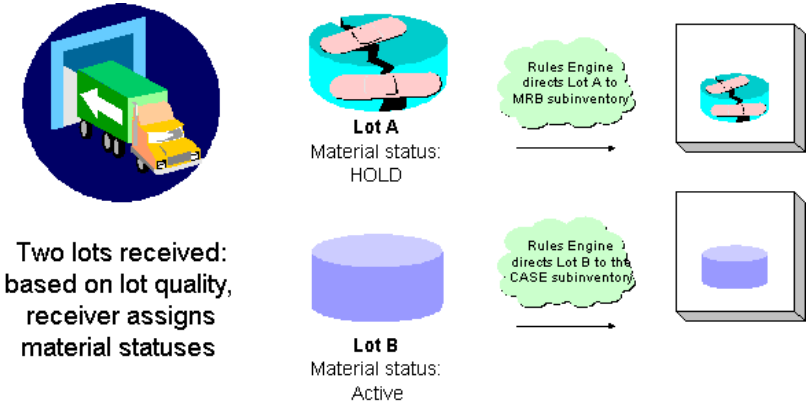
Describing the Uses of Material Status

Material status control supports a variety of business scenarios. For example, material that has potential quality issues can be assigned a material status that prevents the use of the material. In this case, shipping to customers and issuing the material to production will not be allowed for that material until it clears inspection and the material status is changed. Material status control prevents these transactions. Note however, that even though the material cannot be shipped or issued to production, it is still reservable, nettable, and available to promise–all attributes that are controlled at the subinventory in which the subject material exists. Because these attributes are controlled at the subinventory level, material that is on quality hold must be placed in a subinventory with attributes that prevent reservations.

The following figure provides a business example of the application of material statuses. In this example, assume that two lots arrive at the receiving dock. The receiver notices quality problems on one of the lots, and assigns the defective lot a status of HOLD. This status prevents picking, shipping, and production for this lot. Thus, the lot cannot leave the warehouse until some additional action, such as an inspection, is performed on it, and the material status is updated. The second lot, has no quality problems, and so the receiver assigns it a material status of ACTIVE.

Next, based on their assigned material statuses, the rules engine, can be used to direct the defect to a Quality hold subinventory, where the material can be further inspected.

Figure 4–26 Material Status Assignment Example



There are three methods through which material within inventory can take on a material status.

- Assign a status to the lot or serial upon receipt. In order to do this, the item must be status controlled.
- Move or receive the item into a subinventory or locator with that status.
- Update the material status of the serial, lot, subinventory, or locator through the mobile user interface or desktop forms.

Note: The disallowed transactions are cumulative. Thus, if a lot of a given status resides in a locator with a different status, you cannot perform any of the transactions disallowed by the status of the lot and the status of the locator.

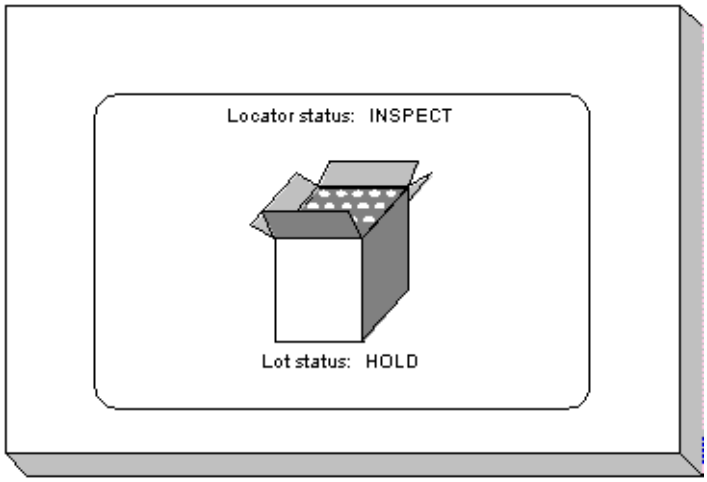
Validating Material Status Transactions

When an item is being transacted, the system checks all of the material statuses assigned at every level that a status might apply to the item. If the system finds a status that disallows the desired transaction, whether at the serial, lot, locator, or subinventory levels, then the transaction fails. The combination of all disallowed transaction types for statuses that apply to that material will be disallowed.

If the material exists within an LPN, then all of the contents of that LPN will be checked before the LPN is transacted. If any of the contents is under a disallowed status, then the entire LPN transaction will fail.

The following table provides an illustration of the transaction validation. In this example, although the subinventory material status is ACTIVE, the system prohibits transaction types that are disallowed by the HOLD and INSPECT statuses.

Figure 4–27 Transaction Validation Example



The system prohibits transaction types disallowed by the HOLD and INSPECT statuses

Reviewing Material Status Setup

Setting up material status requires that you do the following:

- Determine the transactions that will be status controlled
- Define material statuses
- Determine the items that will be lot or serial status controlled
- Assign material statuses

After you set them up, you can also update material statuses.

Determining the Transactions that will be Status Controlled

When defining inventory transactions, you can determine if any material status can restrict that transaction. This is determined in the Transaction Types form. There is a check box for each transaction, called Status Controlled. If this check box is clear, the transaction will not be available in the list of transactions that a status may disallow, and therefore, this transaction will always be permitted regardless of the status of the material.

Defining Material Statuses

For instructions on defining material statuses, see Set Up Material Statues.

Determining the Items that will be Lot or Serial Controlled

On the Inventory tab, in the Master Items window, if the item is lot or serial controlled it can also be lot or serial status enabled. If the item is lot or serial status enabled, then each lot or serial unit of the items must have a status. The default status must be specified on the item master, but it can be overridden at the receipt and can be changed any time. For more information about setting up lot and serial control, see Set Up Lot and Serial Attributes.

Performing Cycle and Physical Counting with WMS

Oracle WMS enables you to perform both cycle and physical counts, using the mobile device. The WMS offers the following enhancements to standard inventory cycle counting:

- Mobile device enabled
- You can scan information about material
- You can enter count quantities real-time
- The system automatically matches count information to the cycle count request (If no matches are found, the system creates an unscheduled cycle count. The system will create an unscheduled count only if you allow unscheduled entries while defining the cycle count.)
- Provides you the choice of counting the LPN or the LPN quantities
- Cycle counts can either be dispatched as tasks or user directed

This section includes the following topics:

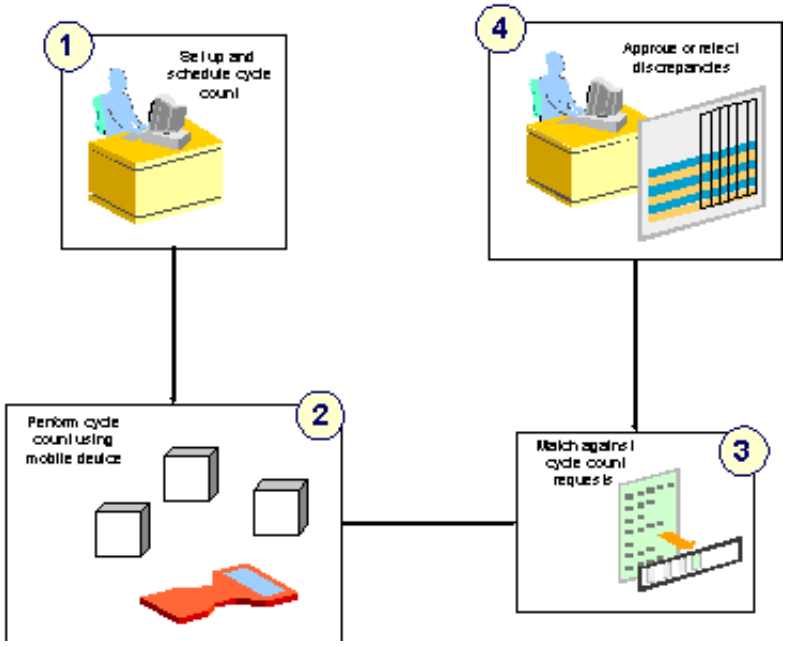
- Describing the WMS Cycle Counting Process
- Using WMS Cycle Counting Features
- Setting Up and Performing Cycle Counts

Describing the WMS Cycle Counting Process

The process of defining and scheduling cycle counts are documented in the *Oracle Inventory User's Guide*. However, with WMS installed, additional cycle count header values have been added to control license plate discrepancies.

The following figure provides an example of the cycle counting process, using the WMS and the mobile device.

Figure 4–28 Mobile Cycle Counting Process



As shown in the example, the first step in the schedule and generate cycle count process is scheduling and setting up the cycle count. You perform these activities using desktop forms.

Optionally, the following can be defined:

- Set up an employee and assign that employee to the user who will perform the cycle counting task.
- Define a department, or use an existing department, for cycle counting.
- Create a new resource of type Person, and assign the employee, that is associated with the user who will perform the cycle counting tasks, to the resource.

- Define a standard task type for cycle counting, and assign your cycle counting department to the task type.
- Assign a task type of Cycle Count.
- Assign the resource, that was created for cycle counting, in operational resources.

The next step in the process requires that the operator log into the mobile user interface and start entering counts for warehouse items. The organization name, cycle count name, subinventory, locator, cost group, project, task (with a WMS enabled Project Manufacturing organization), and any other attributes are all captured using the mobile device. At this point, the count can either be task dispatched or user directed.

After the count is performed, the system automatically matches the cycle count results against the cycle count request. If the cycle count results do not match the cycle count request, then the system creates an unscheduled cycle count.

After the matching process, authorized personnel can approve the counts and make adjustments.

Using WMS Cycle Counting Features

Before you can perform cycle counting in WMS, you must have completed the following:

- Defined workday calendar: You must define and assign the work day calendar to a cycle count. The system uses this calendar for scheduling automatic counts. Depending on the holidays and other exception days, the system can automatically schedule cycle counts.
- Compiled the ABC analysis: The system can also perform cycle counting, based on an ABC compile. An ABC compile can then be assigned to a cycle count, at which time the cycle count can be performed.
- Defined ABC classes: You must define ABC classes before performing a cycle count. All of the items that are included in a cycle count must belong to one of the classes. Items can be individually assigned to classes. A class assignment for a particular item can be changed.

Setting Up and Performing Cycle Counts

Setting Up and performing cycle counts includes the following:

- Defining the scope of the cycle count, either at the organization- or subinventory level
- Defining ABC classes
- Defining items
- Scheduling cycle counts
- Generating cycle count requests
- Entering count results
- Making approvals and adjustments
- Generating and viewing reports

> **Note:** With the exception of entering the count quantities through the mobile device, all of the activities of cycle counting occur on the desktop forms. For more information on setting up a cycle count or performing a cycle count through the desktop forms, refer to the *Oracle Inventory User's Guide.*

How to Perform Cycle Counts Using the Mobile User Interface

After setting up cycle count headers (through Oracle standard forms) and generating cycle count requests, you can perform actual cycle counts using the WMS mobile user interface.

> **Note:** Before you can perform cycle counts using the mobile device, you must have already set up Oracle Inventory ABC classes and groups, and must have submitted a request to generate count requests. Also note that new fields have been added to the Cycle Count Header form (in Oracle Inventory) that support the discrepancy options related to LPNs.

1. Log into the mobile user interface and navigate to the Cycle Counting form.

Figure 4–29 Mobile User Interface - Cycle Counting Form



2. In the Name field, enter or select the name of the cycle count header.
3. In the Project field, enter, select, or scan the project associated with count. (Only visible in a WMS enabled Project Manufacturing organization.)
4. In the Task field, if applicable, select the task associated with the project. (Only visible in a WMS enabled Project Manufacturing organization.)
5. In the Sub field, enter, scan, or select the subinventory to perform the cycle count.
6. In the Loc field, enter, scan, or select the location to perform the cycle count.
7. In the ParentLPN field, optionally enter, scan, or select the parent LPN to perform the cycle count.

   Recall that LPNs can be nested inside other LPNs. The parent LPN is the outermost LPN.
8. If you did not enter an LPN, in the Item field, enter, scan, or select the item to count.

   The Desc and UOM fields default to the item's description and unit of measure.
9. In the Qty field, enter the count for the item.
10. Select <Done> to save and complete the transaction.
11. Select <Save/Next Item> to count more items in this subinventory.

In the case of a WMS enabled Project Manufacturing organization, project and task details serve as part of the unique identification of a Storable Unit of inventory, in a similar manner to Lot, Revision, Serial Number, or LPN. This unique identification is carried through the entire counting process. A separate Cycle Count request or Physical Inventory Tag is generated for each unique combination of Item, Lot, Revision, Serial Number, LPN, Locator, Project, and Task.

For cycle counts where unscheduled entries is not allowed, the project/task is restricted to only those locators that have been defined in the schedule request. For example, suppose a subinventory has projects P1, P2, and P3 defined. The material that the counting is to be performed on is in project P1 and P3 only. In this case the project list of values will only show projects P1 and P3.

Entering Summary Cycle Counts Using the Mobile User Interface

Rather than scanning each item in a LPN, summary counts refer to performing a cycle count by scanning only the LPN. When you perform a summary cycle count, the system assumes that the contents that are supposed to be in the LPN actually exist. Summary counts reduce the amount of time that you would spend scanning each item in the LPN.

Note: You can set up a mobile user interface menu option that enables the operator to choose whether a summary count or a detail count is performed, or depending on the form function parameters, the page will be displayed with only the detail count, or only summary count options.

Note: Both a summary and a detailed cycle count can be performed either through user directed or task dispatched cycle counting and can be performed in a standard WMS organization or a WMS enabled Project Manufacturing organization.

How to Perform Task Dispatched Cycle Counts

Cycle counting can be dispatched directly to qualified mobile users so that they need not be aided by a paper cycle count report to determine their tasks. Cycle count tasks can be interleaved with picking and replenishment tasks if the same operators that are qualified to do cycle count tasks are also qualified for other tasks, or the system can be set up so that cycle count tasks get dispatched only to certain dedicated counters.

When cycle counts are scheduled, if a cycle count task type has been defined, then tasks will automatically be generated for cycle counts. For a given cycle count header, one task is generated for each item, revision, subinventory, and locator; a single task will be generated for multiple serials or lots. If a count has been performed on the desktop, or via a user directed count on the mobile device, then the task will no longer be available. In addition, only counts that are not past their due date are available as tasks.

The operator can skip tasks after entering partial information. This can be performed using the hot key <ESC-K>. If the task is skipped, it will be dispatched to the operator after a specific time, which is defined as one of the organization parameters. If the task is completed after it was skipped then it will not reappear as a task in the operators queue.

Note: WMS cycle count only supports one cycle count task type.

The system assigns the first cycle count task type defined in the organization to the task, so only one cycle count task type should be defined. If the organization does not wish to use dispatched cycle count tasks, then do not define a cycle count task type.

Follow these instructions to perform a task dispatched cycle count.

1. Log into the mobile user interface and navigate to the Task Menu.
2. Select Acc Next Task.
3. If the operator is qualified, and the cycle count task type is defined, a cycle count task will be dispatched to the operator.
4. Confirm each field as necessary.

Note: If WMS is enabled in a Project Manufacturing organization, two additional fields will be visible: Project and Task. The rest of the procedure is the same as shown here.

5. In the case of a discrepancy, confirm the actual quantity.
6. Skip the task if the count is unable to be made. For example, if an obstacle is preventing the operator from counting.

Describing Cycle Count Reports

Oracle Inventory provides a variety of cycle counting reports. These reports are briefly described in the following table.

Table 4–2 Cycle Count Reports

Report Name	Report Description
Cycle Count Listings	Shows all of the scheduled requests for a specified time period. This report includes both manually and automatically scheduled items.
Cycle Count Pending Approval	Shows those counts that were entered and are currently pending approval. The supervisor or manager with the authority to approve cycle count adjustments would typically run this report to monitor the approval queue.
Cycle Count Entries and Adjustments	Shows all cycle count entries for a specified time period. It analyzes the number of cycle counts transactions that you make against an item, and the number of units that you actually adjust. This report also calculates the value, in your functional currency, of the adjustments to inventory.
Cycle Count Hit/Miss Analysis	Shows, for each cycle count class, the total number of count entries and the number of counts outside the limits of the user-specified hit/miss tolerances. The report also calculates the overall accuracy percentage, broken down by cycle count class and subinventory. This report is based on the first count only, not recounts.

Describing Physical Inventory

Recall that a physical inventory is a periodic reconciliation of system on-hand balances with physical counts in inventory. You perform a physical inventory whenever you choose to verify the accuracy of your system on-hand quantities. You can perform a physical inventory for the entire organization, or for specific subinventories within in an organization.

When you perform physical inventories, you use physical inventory tags. A tag is tool for recording the on-hand quantity of a specific item in a particular location.

With WMS, physical inventory is also supported through the mobile user interface. You can perform all physical count entries through the mobile user interface. Using the mobile user interface to enter physical counts reduces data entry time and increases the accuracy of the count.

Setting Up a and Performing a Physical Inventory

Setting Up and performing a physical inventory includes the following tasks:

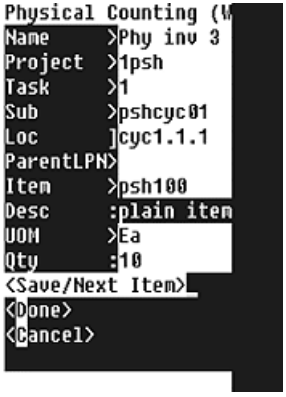
- Defining the physical inventory
- Taking a snapshot of the on-hand quantities
- Generating tags
- Counting items
- Entering counts
- Making approvals and adjustments
- Generating and viewing reports
- Purging physical inventory information

How to Perform a Physical Inventory Using the Mobile User Interface

> **Note:** Before you perform a physical inventory using the mobile user interface, you must have already defined a physical inventory using standard Oracle forms. For more information on defining a physical inventory using the standard Oracle forms, refer to the *Oracle Inventory User's Guide*.

1. Log into the mobile user interface and navigate to the Physical Counting form.

Figure 4–30 Mobile User Interface - Physical Counting Form



2. Enter or select the name of the physical inventory.
3. In the Project field, enter, select, or scan the project associated with this count. (Only visible in a WMS enabled Project Manufacturing organization.)
4. In the Task field, if applicable, select the task associated with the project. (Only visible in a WMS enabled Project Manufacturing organization.)
5. Enter or select the name of the subinventory to which this count is associated.
6. Enter or select the locator for this count.
7. In the Parent LPN field, optionally enter a parent LPN that contains the items to be counted.
8. Enter or select the item that is being counted.

   The Desc and UOM fields default to the item's description and unit of measure.
9. In the Qty field, enter the physical inventory count for this item.
10. To save this counts and to enter additional counts for other items, select <Save/Next Item>.
11. To save and complete this count, select <Done>.

Explaining Facility Management

This section covers WMS facility management features. These facility management features enable you to better manage your warehouse facilities. This section includes the following topics:

- Explaining how to use WMS kanban management features
- Explaining WMS Picking for Manufacturing
- Explaining LPN based WIP completions and put away
- Explaining WMS task dispatch and assignment

Explaining How to Use WMS Kanban Management Features

Recall that kanban is a means of supporting pull-based replenishment in manufacturing systems. A kanban system is a self-regulating pull system that leads to shorter lead times and reduced inventory. Kanban systems are typically applied to items with relatively constant demand and medium to high production volume. Kanbans represent replenishment signals that are manual and highly visible, such as a color-coded card that moves with the material, a light that goes on when replenishment is required, or an empty bin that is moved to the supply location to trigger replenishment.

Kanban replenishment is a two step process: First the kanban replenishment request is created, next, the kanban is filled. The transaction that fills the kanban is different depending on the source type of the kanban.

Replenishing Kanban Cards Using the Mobile User Interface

The Replenish Card mobile user interface form enables you to replenish kanban cards. It sends a replenishment signal to the appropriate replenishment source. In the case of an intra-organization kanban card, the system generates a move order and the kanban card status is updated to In-Process.

The Replenish Card form operates in two modes:

- Verify: You review the kanban card information before replenishing the card
- Automatic: You replenish the kanban card as soon as you scan the card number.

Note: Automatic mode should only be used by expert users.

Performing Kanban Transactions Using the Mobile User Interface

The system enables you to fill your kanban by scanning the kanban card number. If the move order has not been allocated by the Move Order Pick Slip report, then you can allocate the move order on the mobile device.

Transacting the move order indicates that you have filled up the bin and returned it to the kanban's location.

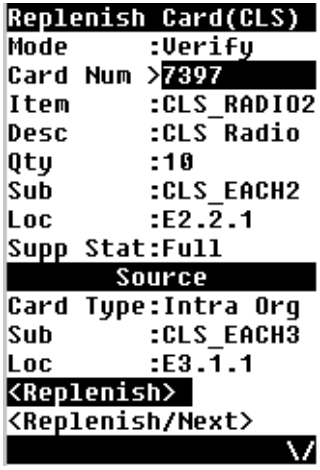
Use the following instructions to perform kanban transactions with the mobile user interface. For information about setting up kanban features in standard Oracle forms, see Overview of Kanban Replenishment in the *Oracle Inventory User's Guide*.

How to Manually Replenish a Kanban Card Using the Mobile User

Note: The following instructions assume that you have selected Intra-Org as your kanban replenishment method.

1. Log into the mobile user interface, and navigate to the Replenish Cards form.

Figure 4–31 Mobile User Interface - Replenish Card



The system displays the Replenish Card window in Verify mode.

2. In the Card Num field, enter, scan, or select the kanban card number.

   The system automatically displays the item information associated with this kanban card.

3. In the Source region of the form, verify that the subinventory and locator are the ones from which the kanban will be replenished.

4. Select <Replenish> to complete the replenishment.

5. Select <Replenish/Next> to replenish more cards.

> **Note:** If WMS is enabled in a Project Manufacturing organization, two fields will be visible: Project and Task. These fields will be populated and cannot be edited. The rest of the procedure is the same as shown here.

How to Automatically Replenish a Kanban Card Using the Mobile User

> **Note:** The following instructions assume that you have selected Intra-Org as your kanban replenishment method.

1. Log into the mobile user interface, and navigate to the Replenish Cards form in Automatic Mode.

2. Enter, select, or scan the kanban card that you want to replenish, and press [Enter].

   The system automatically replenishes the card that you selected, and opens the Replenish Card form.

3. If you want to automatically replenish another card, in the Card Num field, select, enter, or scan the card that you want to replenish.

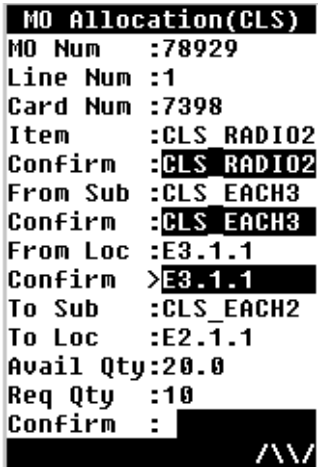
4. To verify the replenishment, press [CTRL] + [B] to view the replenishment success message.

How to Perform a Kanban Move Order Using the Mobile User Interface

The WMS mobile user interface also enables you to replenish kanbans through a move order transaction. With a move order form of replenishment, you specify replenishing a kanban from an existing kanban, with available supply.

1. Log into the mobile device and navigate to the Query Kanban Cards window.

Figure 4–32 Mobile User Interface - Kanban Move Orders



2. In the Card Number field, enter or select the kanban card to replenish, and then select <Query>.

   The WMS returns the item information associated with the kanban card that you entered.

3. If the kanban information is correct, select <Allocate>.

   The system assigns a move order number to this transaction, and also displays the to and from locations for the replenishment.

4. Press the [Enter] key to perform the allocation.

5. When prompted, confirm the item, the from subinventory, and from locator, and then press [Enter].

   The system displays the available quantity, and the quantity required by the "To" location.

6. In the Confirm field, enter a confirmation quantity, and press [Enter].

7. Select <Save/Next> to complete the transaction.

How to View Kanbans Using the Mobile User Interface

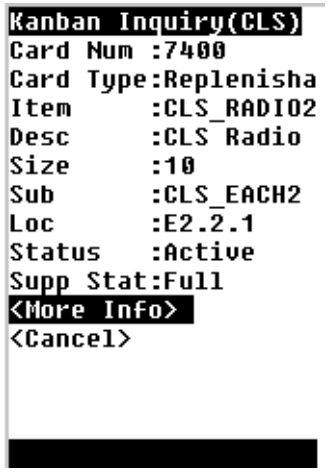
You use the Kanban Inquiry form to view the following kanban information:

- The status of the kanban card, which indicates whether the card is active, cancelled, and so on
- The supply status of the kanban card, which indicates whether the card is new, in-process, or full
- The source replenishing the kanban, such as organization for inter-org cards, subinventory for intra-org cards, supplier and supplier site for supplier cards, and production line for production cards
- The activity information of the cards, such as the move order number, the purchase order number for supplier cards, the internal requisition number for inter-org cards, and so on

Use the following instructions to view kanban information.

1. Navigate to the Kanban Inquiry form.

Figure 4–33 Mobile User Interface - Kanban Inquiry



2. Enter or select a card number, item, or kanban type, and select <Find> to search for the kanban card.

   The system returns information about the specific kanban card, including the item's location, its material status, and the kanban's card status.

Explaining WMS Picking for Manufacturing

Inventory will create move orders and allocations for material requirements on a job or a schedule. The component pick release process supports discrete jobs, repetitive schedules, lot-based jobs, and flow schedules.

This section covers the following topics:

- Describing picking for manufacturing within WMS
- Explaining manufacturing component pick release
- Explaining manufacturing picking tasks
- Explaining opportunistic crossdocking for manufacturing
- Explaining manufacturing label printing
- Explaining paper-assisted manufacturing picking
- Explaining change management

Describing Picking for Manufacturing Within WMS

Oracle WMS enables you to utilize the Rules Engine and the Task Dispatching Engine to pick component requirements for jobs and schedules. Four manufacturing modes are supported with this process:

- WIP job
- Repetitive schedule
- Lot-based job
- Flow schedule

Instead of using a paper-based report to direct operators to retrieve material for the job, picking for manufacturing enables operators to be sent directly to the best material for the job and for the picking transactions to be recorded directly on the mobile device. Manufacturing picking also supports opportunistic crossdocking and label printing.

The bill of material, routing, job, and schedule are set up as indicated in the respective users guides; no change in manufacturing setup is required to use these features. Instead, the component picking process is triggered by using a new desktop form, called Component Pick Release. Different forms for each of the four supported manufacturing modes are provided and described in the respective users guides.

Once a job or schedule has been pick released and material has been allocated, the allocated material cannot be used for any other transaction. The allocations can be viewed or updated on the Transact Move Orders form, and the tasks can be viewed or updated on the Warehouse Control Board.

Migration to task based picking for manufacturing is optional. The process is triggered by Component Pick Release of the job or schedule. If pick release is not performed, then an organization can continue to use the component picking process in place unchanged.

Explaining Manufacturing Component Pick Release

Selecting jobs and schedules to pick release in a warehouse-enabled organization is no different than the process in an inventory organization. However, once the process is triggered, different actions are taken by the system.

In a warehouse-enabled organization, component pick release uses the WMS Rules Engine to allocate the material required for the job. As part of the component pick release process, tasks are also created and assigned a task type for automatic dispatching at a later point. Backordered components are available for re-release, or can be crossdocked if crossdocking is enabled for the organization.

Explaining Manufacturing Picking Tasks

Once the push or pull allocation has been made via Component Pick Release, the Rules Engine is used again to determine the task type. These tasks are then dispatched to qualified operators who sign on with the required equipment, in the same way that replenishment and sales order tasks are dispatched. For a detailed description of the differences between how Push and Pull supply types are treated during pick release, please refer to the Oracle Inventory User's Guide.

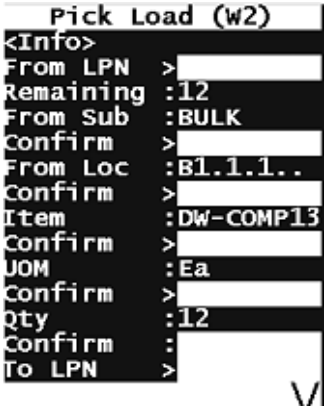
The operator can load the material to their equipment and then drop the task at a later point, or the task may be loaded and dropped in a single step. The load and drop process are identical to that for a sales order requirement, except that a push requirement is dropped to a job instead of a supply subinventory.

The pick load page will appear differently if the organization is Project Manufacturing enabled and if the sales order or WIP job to be picked has a project and task. In these cases, the project and task, from which material has been allocated, will be displayed in separate non-editable fields. They will not be displayed in the locator field and should not be scanned in the locator that the user enters in the confirm field. The project and task will be appended to the physical locator and the Inventory Pick transaction will be posted against the correct project and task locator.

Note: Depending on the picking rules used and the material availability, WMS may not source material from the same project and task that was on the sales order or WIP job. In that case, the pick transaction will also perform a project transfer to the project and task on the sales order or WIP job. This will happen when the material is dropped and the transaction is executed in Oracle Inventory.

Use the following instructions to accept a picking task.

1. Navigate to the Pick Load form.



2. Confirm all suggested fields.
3. Select the <Info> option to review information about the job or schedule for this task.
4. Select <Load> to load the material to your equipment and drop it later, or select <Drop> to drop it immediately.
5. If you select <Drop>, and the material is a Push supply type, you will be taken to the Drop form and you will view the Job number, Operation Sequence number, and the Department related to the drop.



6. If you select <Drop>, and the material is a Pull supply type, you will be taken to the Drop form and you will view the destination subinventory and locator instead of the job, op sequence, and department.

> **Note:** The destination fields will be different for different manufacturing modes.

As in the pick load page, the Project and Task on the transaction will be shown in separate non-editable fields. The user will only scan the physical portion of the locator.

> **Note:** The Project and Task on this page may not match the project and task on the pick load page for the same pick. If this is the case, the material was sourced from a different project and task. The project and task on the drop page will be the same as the project and task on the sales order or WIP job.

Explaining Opportunistic Crossdocking for Manufacturing

If crossdocking is enabled for the organization, then newly received material can be crossdocked directly to backordered component requirements. Supply from purchase order receipts and LPN-based completions will be considered. Both push

and pull component requirements will be considered for demand. A push requirement would be crossdocked directly to the job, while a pull requirement would be crossdocked to the supply subinventory and locator.

To configure crossdocking for manufacturing, several parameters on the Organization Parameters form must be defined.

Explaining Manufacturing Label Printing

WMS can print labels during the picking process. Labels will be printed when the operator performs the pick load if label types have been assigned to the WIP Pick Load business flow. Similarly, labels can be printed during pick drop if label types have been assigned to WIP Pick Drop. Note that these are different business flows than those used for sales order label printing, because they can print different label types. Specifically, the WIP business flows can print the WIP Contents label, which includes details about the job, schedule, routing, operation, and department.

Explaining Paper-Assisted Manufacturing Picking

A warehouse can use paper-directed picking if operators should not be automatically dispatched tasks by the system. The Move Order Pick Slip report includes a task id. Rather than navigating to "Accept Next Task" on the task menu, the operator can instead select "Manual Pick" and enter this task id. The specified task will then get dispatched directly to that operator, bypassing any restrictions via task type or required equipment, as well as any sequencing logic.

Explaining Change Management

If the job or schedule is cancelled, then all the pending and queued tasks are cancelled and the allocations are relieved. Tasks that have been loaded to an operators equipment can be unloaded or dropped if the components have supply type of pull, but must be unloaded if they have supply type of push. Tasks that have already been completed require user intervention to return the components from the job or schedule. Additional support is also provided when the component requirements on the job or schedule change due to a change in the quantity of final assemblies to produce, or a change in the material requirements for that particular job. Please refer to the Oracle Inventory User's Guide for additional details on this type of change management.

Explaining LPN Based WIP Completions and Put Away

This section covers the following topics:

- Describing WIP completions within WMS

- Explaining prepacking LPNs for WIP completion
- Explaining lot and serial attribute entry
- Explaining crossdocking support

Describing WIP Completions Within WMS

Oracle WMS enables you to utilize LPNs and other WMS features with Oracle WIP completion including:

- Pack LPNs at WIP completion using new, pregenerated, or prepacked LPNs
- Enter lot and serial attributes
- Crossdock to backordered requirements
- Print labels for completed material or LPNs
- Utilize the WMS rules engine for directed put away

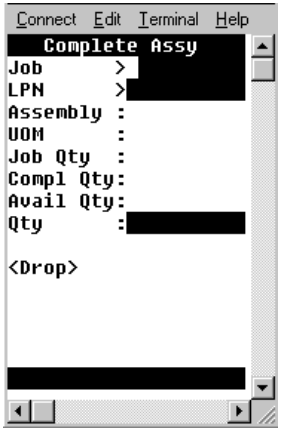
Oracle Quality can also be utilized with WIP Completion. If WMS is enabled in a Project Manufacturing organization, Oracle Quality can be integrated to have inspection plans triggered off of project and task numbers. For more information n Oracle Quality, refer to the *Oracle Quality User's Guide*.

WIP completion can be performed for discrete jobs that have a quantity available to complete, and can also be performed for workorderless completions.

After identifying the LPN to complete into, and the job or assembly which you are completing, you have the option of either completing directly into inventory, or allowing the LPN to reside in WIP until another operator puts the LPN away. The completion and put away process can be included in one continuous flow, or the process can be split in two separate parts.

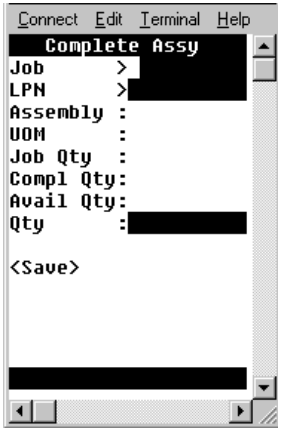
Like a standard purchase order receipt, a completed LPN is not visible as on-hand or available quantity until the inventory put away is performed. Also like a standard purchase order receipt, a completed LPN that still resides in WIP can be put away using the mobile put away window. These two different modes are triggered via two different windows. To put the job or assembly directly into inventory, you use the Assembly Completion w/Drop screen:

Figure 4–34 Assembly Completion w/Drop Screen



If you want the LPN to reside in WIP until another operator puts it away, you use the Assembly Completion screen:

Figure 4–35 Assembly Completion Screen



When the material is completed into the LPN, the job is updated and material with supply type Assembly Pull is pulled from inventory. Also at this point, any labels that are defined for the WIP completion business flow will be printed. If any of the

components are serial controlled, you will be able to optionally enter the serial numbers of the components that are part of your assembly.

Pre-defined put away rules are utilized at the time of WIP completion. The system will generate the put away subinventory and locator based on user-defined put away rules. Some common processes that the rules are capable of modeling include minimizing item fragmentation, requiring no lot commingling in a locator, directing hazardous materials to a corresponding hazardous storage location, or placing seasonal items in a subinventory dependent on time of year. For more information on put away rules, refer to the Inbound Logistics chapter of this user's guide.

Explaining Prepacking LPNs for WIP Completion

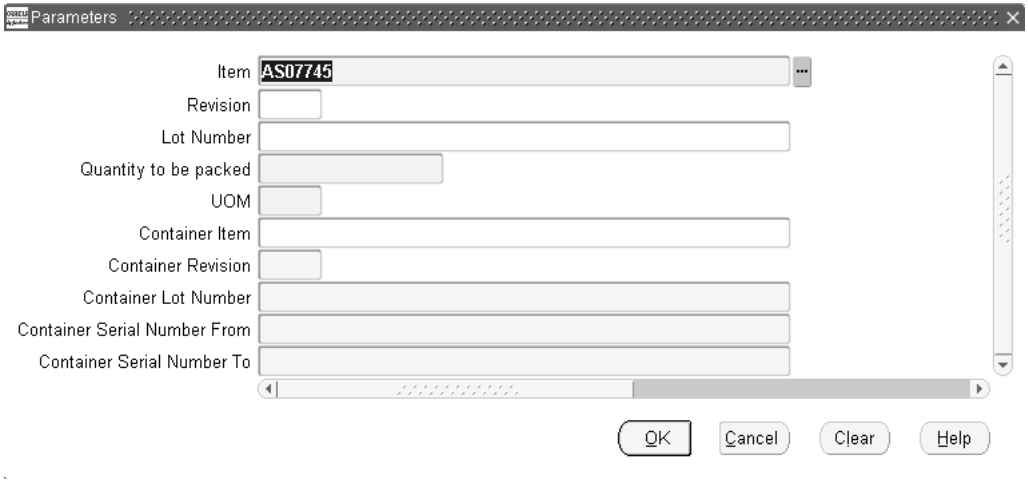
Prepacking generates LPNs that can later be used at WIP completion. Prepacking utilizes the cartonization setup, including container load relationships if set up, to determine the best container item and correct quantity of those container items to use. In order to prepack, you must enter the revision and lot number of the finished assembly, if applicable. If no lot number is entered but one is required, the system will automatically generate a lot number for you.

Note: Particular serial numbers are not prepacked into specific LPNs, but rather the serial numbers are entered at the time of completion.

Labels can be printed as part of the prepack request. Prepacking can print the label types that are associated to the Pack / Unpack / Update / LPN business flows. The labels can then serve as the printed instructions to the operator of which LPNs should be used at time of completion.

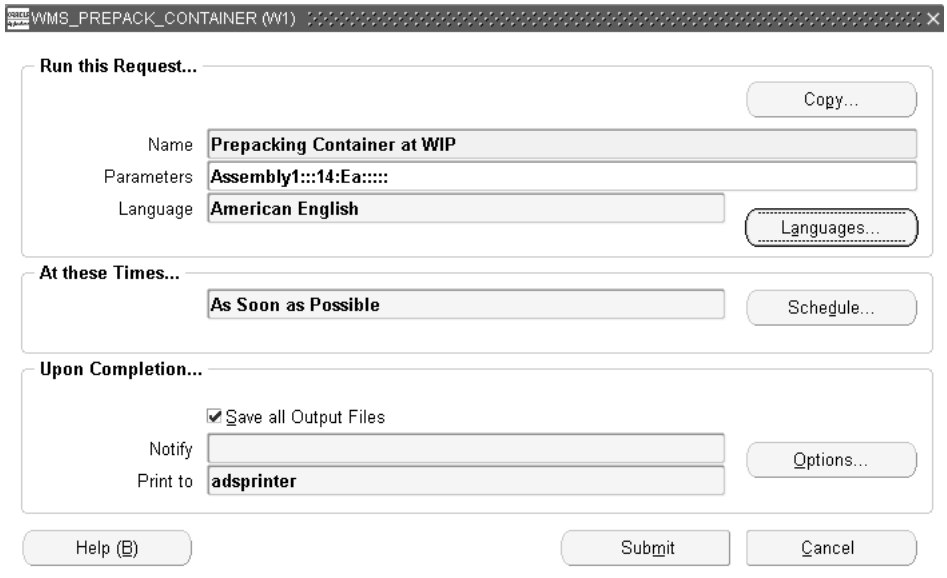
An association is not made between the prepacked LPNs and the WIP job. While each prepack request may have been run with a particular job in mind, the generated LPNs need not be used for that particular job, and do not need to be used at all.

Figure 4–36 Prepack LPNs Window



Prepacking LPNs for WIP completion is performed through the desktop forms. This is a request that requires you to input the item number, revision, lot number, quantity, and so on as needed. This request also enables you to specify a container item for the assembly item to be packed into, if applicable. If cartonization is enabled, the system will automatically select the appropriate container for the assembly item to be packed into. However, even if cartonization is enabled, you may enter a container, which the system will only recognize for this assembly item. The system will not utilize the cartonization parameters if a specific container is specified on this form. After you have entered the required information, select OK to prepare to submit the information.

Figure 4–37 Prepack LPNs Request Window



Your prepacked LPN information is now ready to be submitted. Selecting Submit will start the process that will generate the necessary LPNs for your assembly.

Prepacked LPNs can be entered at the time of completion. The LPN list of values, in the WIP completion window, contains all pregenerated LPNs as well as all LPNs prepacked with the assembly that has been entered or that is on the job or schedule. New LPNs can also be created.

> **Note:** An LPN that has been prepacked with a different assembly then the current completion transaction cannot be used.

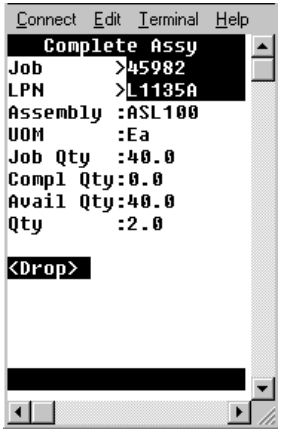
The quantity specified during the request for prepacked LPNs will automatically be entered after the prepacked LPN is chosen. If over completions are not allowed, then an LPN which is prepacked with a greater quantity than is available to complete for a particular job cannot be used.

The revision number of the contents will automatically be used. The lot number that was prepacked will also be automatically entered and cannot be changed. If

the lot number is new, then you will need to enter lot attributes and lot status as before, but if the lot number already existed then you will not be prompted for them. All serial numbers, including any applicable attributes or status, must be entered for a serial controlled assembly.

Note: The lot, quantity, revision, and item number of a prepacked LPN cannot be changed. However, as there is not tie between the prepacked LPNs and the job prior to the completion transaction, there is no need to use the prepacked LPNs for a particular job. New LPNs can be generated as needed. The original prepacked LPN can remain unused and will not impact any current or future transactions.

Figure 4–38 WIP Completion Form w/Prepacked LPN



At WIP completion, you enter your Job number then tab. The system will automatically fill in the fields based on this assembly, including the unit of measure, job quantity, and so on. In the LPN field, you select the prepacked LPN from the list of values. When the prepacked LPN is selected, the Qty field will be populated with the quantity specified during the request that you performed for the prepacked LPN.

Depending on whether you are going to put the assembly directly into inventory, or if you are going to have the assembly reside in WIP will determine whether you drop or save the transaction.

Explaining Lot and Serial Attribute Entry

Like other transactions that can potentially generate new lots or serial numbers, entering lot and serial attributes, and lot and serial status is supported for LPN based WIP completions. Lot expiration date, if required, will also be entered here.

Explaining Crossdocking Support

Crossdocking WIP completions to sales orders is supported if crossdocking is enabled for the organization. Crossdocking from WIP simply provides a new supply type, in addition to purchase order receipts, that can be used to fulfill backordered sales order lines. Crossdocking from WIP behaves identically to crossdocking from purchase order receipts, honoring the release sequence rules and suggesting the appropriate staging lane for the material when the LPN is put away to inventory. For more information on crossdocking, refer to the Inbound Logistics chapter of this user's guide.

Explaining WMS Task Dispatch and Assignment

This section covers the following topics:

- Describing task management
- Explaining a task management example
- Describing task management setup

This section also provides a detailed example of task assignment and dispatch for a picking transaction.

Describing Task Management

Oracle WMS task management features increase the efficiency of your warehouse operations by doing the following:

- Dispatching tasks to qualified users with the right equipment
- Splitting tasks based on the capacity of the equipment
- Merging tasks based on the pick methodology of the wave

- Optimizing the task sequence, based on task priority, locator pick sequence, and approximate distance between the locator x-y coordinates and the current location (last pick locator) of the warehouse operator who is currently logged onto the equipment
- Minimizing the distance traveled by operators to complete assigned tasks
- Minimizing dead-heading, or the number of trips travel by operators with an empty load

Task management is handled by two systems: The rules engine assigns task types, and the dispatch engine assists with task execution.

Describing the Task Type Rules

The WMS Rules Engine enables the system to assign task types to tasks. Like the picking and put away rules, task type assignment rules can be based on a variety of data, including the following:

- Unit of measure (UOM) defined for the pick line: for example, if the pallets need to be picked, the Task Type Assignment engine can dispatch tasks to the pallet pickers
- Ownership of the material: for example, if the item belongs to XYZ company, and XYZ requires that their hazardous material be handled by a resource that has hazardous material handling skills, then the Task Type Assignment engine will dispatch tasks associated with XYZ's hazardous material handling requirements
- Type of material being handled: for example, the The Task Type Assignment engine might handle refrigerated material different than hazardous material

Task type assignment rules are prioritized, based on their respective weights that you specify. For example, you might assign different weights for two rules to handle a specific tasks. In this case, the Task Type Assignment engine will execute the rule with the higher weight first.

Note: Oracle WMS does not stamp a task priority based on the priority of the sales order. This is because Oracle Order Management's shipping priorities are not numeric. Because the order priority is not numeric, there is no way to indicate which order has the higher priority. You can enter a task priority manually using the Control Board. This priority will be used to dispatch tasks and will supersede locator picking orders.

Describing the Task Dispatch Engine

Whenever a new task is requested by the operator, the task dispatch engine handles the actual execution of a task. The task dispatch engine dispatches an appropriate tasks to a qualified operator. The task dispatch engine also handles exception management, and automatically triggers corrective actions whenever a discrepancy is recorded.

The task dispatch engine also performs the following functions:

- Splits tasks based on equipment capacity
- Merges tasks based on pick methodology
- Identifies resource and equipment requirements for a particular task
- Evaluates skill sets
- Filters appropriate tasks to resources

The Task Dispatch engine also includes a set of predefined exception messages and transaction reasons that handle all of the generic exceptions during task dispatching, and will trigger a set of actions and workflows, based on these exceptions.

Describing Task Splitting

The rules engine optimizes task dispatching by splitting tasks, based on equipment capacity, the maximum fill capacity of the equipment, and the locator pick UOM at the subinventory level.

The system makes the decision to split a task based on whether the available equipment can handle the task, and whether the volume and weight of the items in the pick line are within the equipment's capacity limits.

The system calculates equipment capacity based on the equipment volume, the maximum weight it can handle, the volume of the items that it is required to handle, and their corresponding weights.

Note: All material movement tasks can be split.

Example of Task Type Assignment and Dispatch

Assume that your warehouse has the following human resources, each assigned to the roles and equipment shown in the following table.

Table 4–3 Resources and Equipment

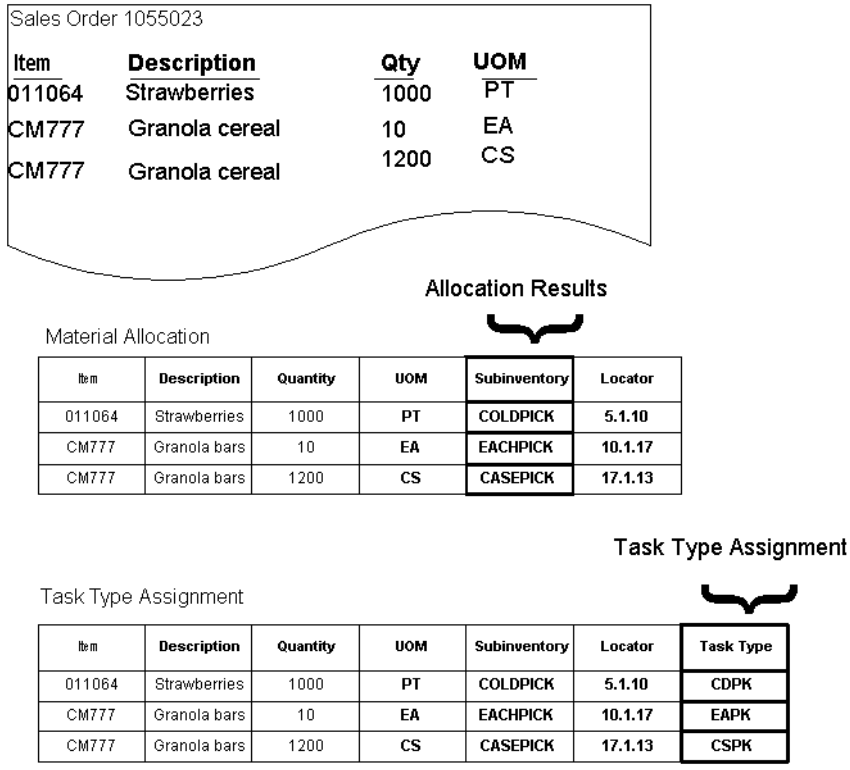
Task Type	Resources	Equipment
EAPK (each pick)	Robert, Randy	Dolly, equipment number: DL-222
CDPK (cold pick)	Judd	Forklift, equipment number: FL-12011
CSPK (case pick)	Robert, Judd	Cart, equipment number: CRT-12232

Each task type requires the appropriate set of skills and equipment. For example, case picking tasks require a cart and an operator that can pick up the required cases. Alternatively, cold pick tasks require a forklift and a picker who can operate the forklift.

Based on the information provided above, task type assignment rules would need to be set up that assign the appropriate task type whenever the task has certain attributes. For example, picks of refrigerated items should be assigned the CDPK task type, while case picks should be assigned the CSPK task type.

Material Allocation Now, assume that the sales order shown in the following figure has just been released to the warehouse for picking.

Figure 4–39 Material Allocation Example



Based on the above scenario, the following occurs:

- First, the system evaluates the picking rules to come up with a material allocation. In this case, picking rules that honor the pick unit-of-measure have been set up that allocate full case (where one case equals 12 eaches) picks of granola bars to the CASEPICK subinventory. Smaller order lines of granola bars are allocated from the EACHPICK subinventory, while strawberries are stored only in the COLDPICK subinventory.
- Next, the system evaluates the task type assignment rules in the sequence indicated by the rule weight, and then assigns the task type of the first rule where the restrictions are met. In this example, the rules have been set up based solely on the subinventory of the task, resulting in the task type assignments indicated above.

- Now the task will be split based on equipment capacity. Assume that each granola bar weights 4 ounces, and that the equipment that is used for this type of task, a cart, has a weight capacity of 225 pounds. Therefore, only 225 pounds can be moved onto the cart at a time, so the system splits the picking task for granola bars into the following two tasks:
  - One task for 900 eaches (or 75 cases)
  - One task for 300 eaches (or 25 cases)

Note: Calculation for granola bar weight: 900 bars @ 4 ounces = 3600 ounces. 3600 ounces / 16 ounces (16 ounces = 1 pound) = 225 pounds

Finally, after performing the material allocation, task type assignment, and task splitting, the Task Dispatch engine dispatches the tasks to each operator's mobile device, based on their equipment and task type assignment. The following figure shows the tasks that have been assigned to the operators (Robert, Randy, and Judd) that are eligible to perform the task. When the operator completes the task and requests the next task, the system dispatches the next closest task that the operator is qualified to perform with the equipment that is currently available.

Figure 4–40 Task Type Assignments

Task dispatch

Task Type Assignment

Item	Description	Quantity	UOM	Subinventory	Locator	Task Type	Assigned To
011064	Strawberries	1000	PT	COLDPICK	5.1.10	CDPK	Robert , Randy
CM777	Granola bars	10	EA	EACHPICK	10.1.17	EAPK	Randy, Jane
CM777	Granola bars	1200	CS	CASEPICK	17.1.13	CSPK	Judd

Note: The previous example provides a detailed view of picking tasks. However, the WMS performs replenishment tasks using an identical process.

Describing Task Management Setup

Setting up task type assignment and dispatch includes setting up the following:

- Resources,
- Equipment items
- Equipment resources
- Departments
- Setting up task types
- Setting up task type assignment rules

For detailed instructions on setting up task management, see Task Management setup.

Describing WMS Inquiry Windows

With the WMS you can navigate to several inquiry windows, where you can view, inquire, and better manage your warehouse operations. You can also run summary reports from some windows. To access the following windows, from the Warehouse Manger navigator, select the Inquiry option.

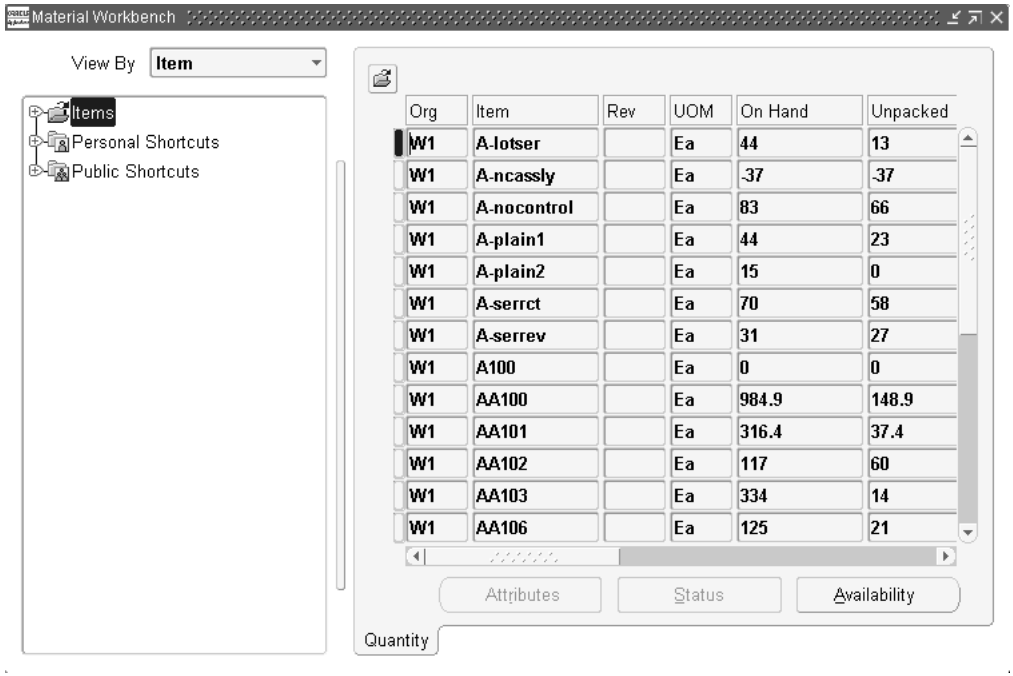
- Material Workbench, see Explaining the Material Workbench
- Global Inventory Position Inquiry
- Warehouse Control Board, see Explaining the Warehouse Control Board
- Run Multi-organization Quantity Report (report)
- Supply/Demand Detail, see Oracle Inventory Windows and Navigator Paths
- Potential Shortages
- Item Lots, see Oracle Inventory Windows and Navigator Paths
- Serial Numbers, see Oracle Inventory Windows and Navigator Paths
- Item Reservation window, see Oracle Inventory Windows and Navigator Paths
- Material Transactions, see Oracle Inventory Windows and Navigator Paths
- Summarize Transactions, see Oracle Inventory Windows and Navigator Paths
- Material Transaction Distributions, see Oracle Inventory Windows and Navigator Paths

- Movement Statistics Summary, see Oracle Inventory Windows and Navigator Paths
- Rules Workbench

Explaining the Material Workbench

To view the details of your warehouse, navigate to the Material Workbench window.

Figure 4–41 Material Workbench Window



You can view warehouse details by any of the following criteria:

- Location
- Item
- Cost Group
- Status

- LPN
- Serial
- Lot

When you first navigate to the Material Workbench window a Query Material window appears. This window functions like a standard Oracle Find window. In it, you can enter criteria to narrow the results of the information displayed in the material workbench.

In the Material Workbench window, depending on the View By option that you select, you can view the following types of information:

- Item information, including the item's organization, the item number, the item's UOM, the available quantity of an item, the item's lot, and the item's serial
- Location information, including the subinventory and its associated locators. You can also view subinventory quantities, including the packed (into an LPN) and unpacked quantities. If you click Status for a given locator, you can also view the material status transactions allowed or disallowed for this locator. Clicking Availability enables you to view the amount of material in a locator that is available to be transacted
- Cost group information, including the cost group assigned to an item
- Status information, including the statuses assigned to subinventories, locators, lots, and serials
- LPN information, including the details for a particular LPN, such as the item packed into an LPN, the number of items packed in that LPN, and the material status of the item in an LPN
- Serial information, including the item associated with a serial number, the quantity of the item, the specific serial number of the item, and the material status transactions allowed or disallowed for the serial
- Lot information, including the item associated with a particular lot number, the quantity of the item for this lot, the specific lot number associated with the item, as well as the material status transactions allowed or disallowed for the lot

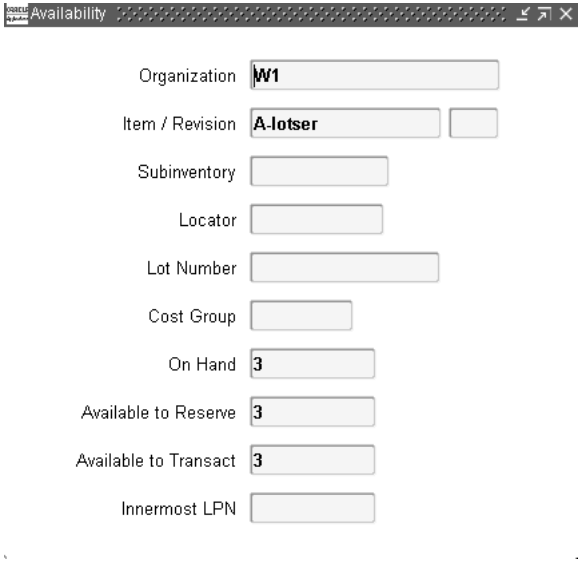
You can also perform a variety of transactions through Tools pull down menu on the Material Workbench window including:

- Material status updates, enabling you to update the material status of a subinventory, locator, lot, or serial from the desktop

- Cost group change transaction, enabling the cost group transaction functionality from the desktop
- Cycle count request, enabling you to create a manual cycle count request for a given subinventory or locator

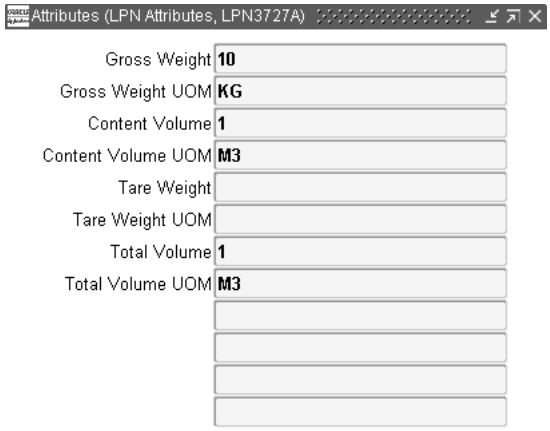
You can calculate the available quantity at most levels through the Material Workbench. Availability can be calculated for a given item at the subinventory, locator, lot, or revision level. Availability cannot be calculated for a particular serial number, or for a particular LPN or its contents. The level to which available quantity is calculated is displayed in the Availability window. To access the Availability window, select Availability in the Material Workbench window.

Figure 4–42 Material Workbench Availability Window



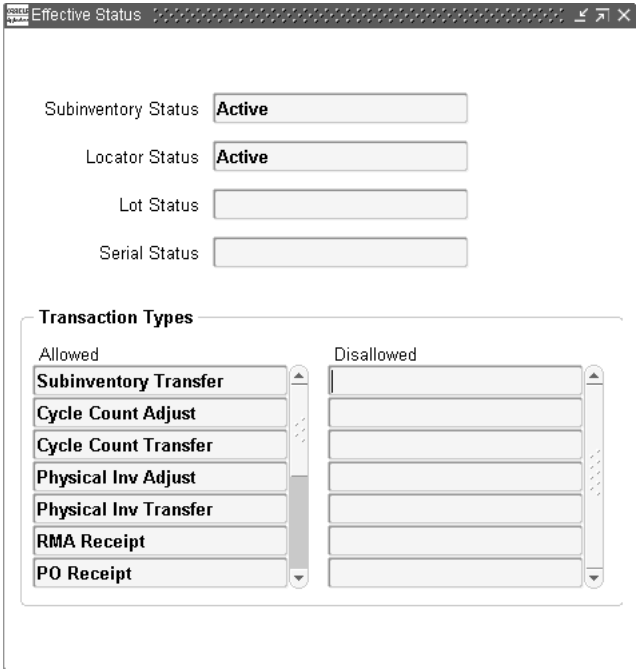
The attributes of a particular lot, serial, or LPN can be displayed by selecting a lot, serial, or LPN in the tree and selecting Attributes on the Material Workbench window. For lots and serials, the attributes that have been mapped to the item or item category are displayed. For LPNs, the weight and volume of the highlighted LPN are displayed.

Figure 4–43 Material Workbench with Attributes Window



The current material status of a subinventory, locator, lot, and serial can be displayed by selecting the row, for which material status should be displayed, and then selecting Status. The material status at all of the levels that are applicable are displayed, as well as the list of transaction types that are disallowed at that level or for that material. Material status is cumulative, so that any transaction type that is disallowed by any of the four material statuses that are displayed will be listed as disallowed at that level.

Figure 4–44 Effective Status Window



Explaining the Warehouse Control Board

Warehouse tasks such as picks, put away, moves, and replenishments are created by Oracle Inventory. On demand, the pending warehouse tasks are then dispatched by Oracle WMS to operator's mobile radio frequency devices (or through the mobile user interface).

The WMS Control Board is a tool that warehouse management and supervisors use to monitor, control and execute various warehouse operations, including the following:

- Effectively use resources
- Assign, reassign, and prioritize the progress of tasks
- Perform manual scheduling

The WMS Control Board enables you to view pending workloads across the entire warehouse, manage exceptions, and review, reassign, and re-prioritize pending tasks. Specifically, the Control Board enables you to do the following:

- View tasks: including, pending, queued, dispatched, loaded, completed, and exception tasks
- Manage task assignments: including creating, updating, and deleting assignments
- View task statuses: including pending, queued, dispatched, loaded, completed, and exception task statuses
- View task exceptions: including a description of the cause for failure
- View task performance measures: including resource utilization, task type distribution, and task completion status

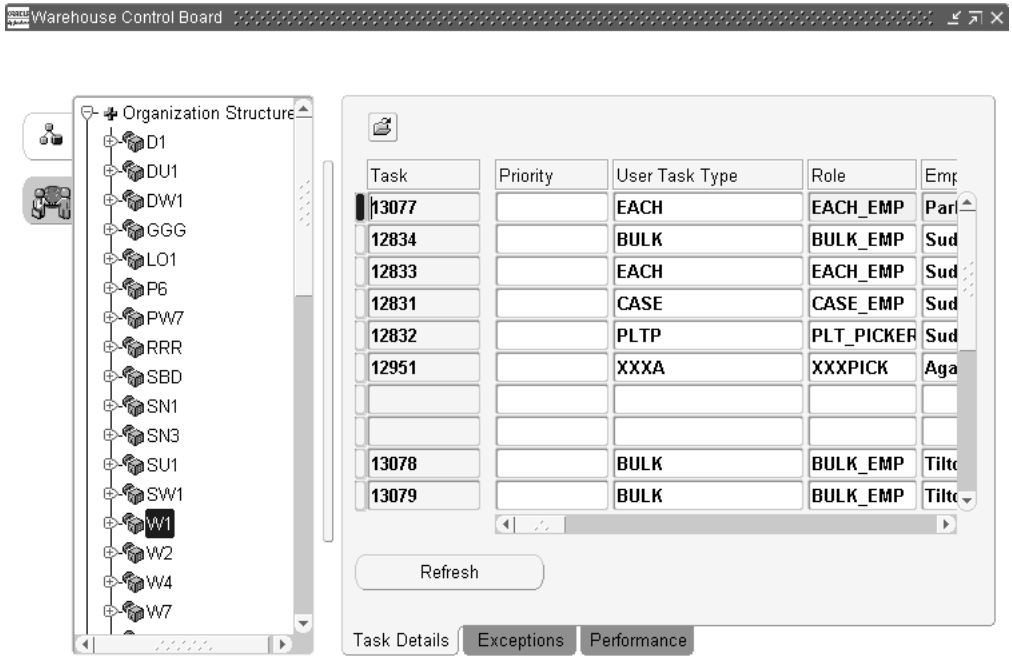
You can also view the status of each task, including the time in which it was dispatched to a user, the time it was picked up, and the time it was dropped into a staging lane. If any errors occurred in processing the task, you have full view of the error reported, and the task in question's current status

Using the Warehouse Control Board

When you navigate to the Control Board window, the Find window appears first. This window provides you with the option of filtering tasks, before you actually view them. After entering the desired search criteria, you click the Find button and the Control Board displays only the information related to the specified find criteria.

Navigate to the Warehouse Control Board window to view and manage warehouse tasks.

Figure 4–45 Warehouse Control Board Window



The WMS Control Board window includes two panes. You use the left pane to control the level and detail of information that you want to see displayed in the right pane. In the left panel of the window, you can control the level and detail that you want to see by clicking the Expand and Collapse options next to each icon. Details of the icon selected in the left panel appear in the right panel of the window.

Note: Unless you are searching for tasks that occur on a specific date or range of dates, you should clear the Creation Date fields so that you can view all tasks, regardless of the date on which they were created.

The task information is further segregated by the Performance, Task Details, and Exceptions tabs located at the bottom of the window. Each tab includes the information noted in the following table.

Table 4–4 Task Information

Tab	Description
Task Details	Select the Task Details tab to view information about the various warehouse tasks, such as The User Task Type code, the role, and the employee assigned to this role. You can also use this tab to view the status of tasks, and the subinventory and locators in which each task occurs.
Exceptions	Use the Exceptions tab to view exceptions to a particular task. For example, you might use this tab to view tasks dispatched to an operator, but not accepted by that operator.
Performance	Use the Performance tab to see a graphical representation of warehouse tasks. For example, in the Performance window, you can view a pie chart that compares the percentage of completed tasks to the percentage of pending tasks.

5

WMS Inbound Logistics

This chapter explains the Oracle Warehouse Management inbound logistics features, including the following:

- ❏ Inbound Logistics Overview on page 5-2
- ❏ WMS Inbound Features on page 5-3
- ❏ Describing Receiving Documents on page 5-4
- ❏ Describing Receiving Methods on page 5-5
- ❏ Describing WMS Receiving Processes on page 5-7
- ❏ How to Perform Receiving Transactions Using the WMS Mobile User Interface on page 5-15
- ❏ Explaining LPN and Cross Docking Put Away on page 5-23

Inbound Logistics Overview

Oracle WMS inbound logistics refers to receiving, inspection, and put away processes within the warehouse. The major inbound features of Oracle WMS include the following:

- Support for handling Advanced Shipment Notices (ASNs)
- Functionality to receive material directly into unique license plate numbers (LPNs)
- Features that enable you to specify and capture lot and serial information at receipt
- Functionality to automate the matching of material received to expected material
- System suggested put away locations
- Opportunistic Cross Docking for backordered sales order lines
- Support for Oracle Project Manufacturing organizations. For more information, refer to the *Oracle Project Manufacturing User's Guide*.
- Support for Oracle Quality. For more information, refer to the *Oracle Quality User's Guide.*

Supporting ASNs

The WMS system supports suppliers sending ASNs that might include item, quantity, lot, and serial information, project number and task (with Oracle Project Manufacturing,) as well as the LPNs into which the material is packed. You can receive ASNs through a standard ASN receipt, where LPN contents are verified by the receiver, or through an Express ASN receipt, where the LPN contents do not need to be verified.

Receiving Material into LPNs

All material received through Oracle WMS is associated with a unique LPN. This enables material to be easily tracked and transacted throughout the warehouse, without scanning the item, quantities, lots, or serials.

Note: Oracle WMS requires that you receive items into an LPN.

Specifying and Capturing Lot and Serial Attributes at Receipt

With standard Oracle Purchasing, at the time of receipt, you are not allowed to enter lot and serial numbers. With Oracle WMS, however, you can enter lot and serial numbers immediately, at the time of receipt. You can also enter related material statues or attributes that might apply to the lot or to the serial just received.

Automatically Matching Material Received to Expected Material

Oracle WMS matches the item and quantity received to the document that the material was received against. This means that the receiver does not need to manually select lines or shipments individually. However, Oracle WMS does not show the *expected* quantity to be received, rather, the system requires the receiver to enter the *actual* quantity received, and then through a background process, the system matches the actual quantity against the expected quantity.

Instead of having to spend time reviewing the related purchasing documentation, a the time of receipt, automatically matching the received material also enables operators to efficiently process inbound material.

Note: Oracle requires that all WMS-related receipts be made through the mobile device.

WMS Inbound Features

The WMS system also supports the following:

- Optional inbound material inspections: The system supports an inbound inspection flow that includes a receipt step, an inspection step, and a put-away step. The system does not increment on-hand balances until the inspection and put away are complete. Inspections can be performed using standard Oracle Purchasing Inspection or using the optional module of Oracle Quality. If WMS is enabled in a Project Manufacturing organization, Oracle Quality can be set up to trigger collection plans based on project and task numbers. For more information on setting up Oracle Quality, refer to the Overview of Setting Up topic in the *Oracle Quality User's Guide.*

> **Note:** If selected for inspection, all quantities within an LPN must be inspected.

- System assigned cost groups: At the time of receipt, the system will assign a cost group–providing that you have set them up–to the inbound material. WMS separates physical inventory accounting from standard cost group accounting. This enables you to assign split portions of an LPN different cost groups.
- System suggested put-away locations: Using the WMS Rules Engine, the system will suggest an optimal put away location for inbound material.

> **Note:** Put away suggestions are not enforced by the system and therefore, you can override them at the time of put away.

- Workflow enabled discrepancy actions: If you override a put away suggestion at the time of put away, then you must provide a reason for the change. You can optionally build workflow notifications and corrective actions that are triggered on put away override reasons.
- System suggested opportunistic cross-docking: If you enable cross docking for your warehouse, then before suggesting a put away location, the WMS will attempt to cross-dock inbound material directly to an outbound staging area to fulfill backordered sales order lines.

The remainder of this chapter covers the following topics:

- Describing receiving documents
- Describing receiving types
- How to perform receiving tasks using the mobile user interface
- Explaining LPN and cross docking put away

Describing Receiving Documents

The WMS supports the following receiving documents:

- Purchase orders, with or without ASNs
- Return material authorizations (RMAs)
- Inter-org intransit shipment documents

- Internal requisitions
- Blanket purchase orders

Oracle WMS supports two modes of receiving: Express and Confirm. To enter receipts using Express mode, you need only enter the document number, and optionally the LPN. For Confirm mode, you need to enter all of the information about the material being received. This includes the following information:

- Document number
- Project (with Oracle Project Manufacturing)
- Task, if applicable (with Oracle Project Manufacturing)
- LPN
- Item
- Quantity
- UOM
- Revision (if applicable)
- Lot (if applicable)
- Serial number (if applicable)

> **Note:** Express mode is only supported for purchase orders with ASNs and inter-org shipments.

Describing Receiving Methods

Oracle WMS supports receiving material according to the same three routings that are used in standard Oracle Purchasing: Standard Routing, Inspection Required, and Direct Delivery.

Standard Routing Standard routing includes the following steps:

- Receiving the material
- Later putting the material away

You should use this routing when the material needs to be received (checked-in) initially and then, at some later point, put away into an inventory storage location. With Standard Routing, the system does not increment the on-hand balance, until the put away task has been completed.

Inspection Required Inspection Required includes the following steps:

- Material receipt
- Material inspection
- Material put away

You should use Inspection Required when the material that you are receiving requires inspection. You can accept or reject material during the inspection, and put away to separate locations, based on the inspection result. The system does not increment the on-hand balance until the put away step task been completed.

Direct Delivery This routing should be used when it is important that material show up in the on-hand balance immediately after it is received into the warehouse, or whenever the receiver will be receiving the material directly into its inventory storage location.

With WMS, you can receive material directly into an on-hand storage location. That material can optionally be put away from that storage location into a final storage location. Direct delivery can be effectively used to model a receiving staging lane, where material is initially received into the warehouse and it is important that on-hand balances are incremented at the time of receipt. Later, the material can be put away from the temporary staging lane to a final storage location.

Direct delivery includes the following steps:

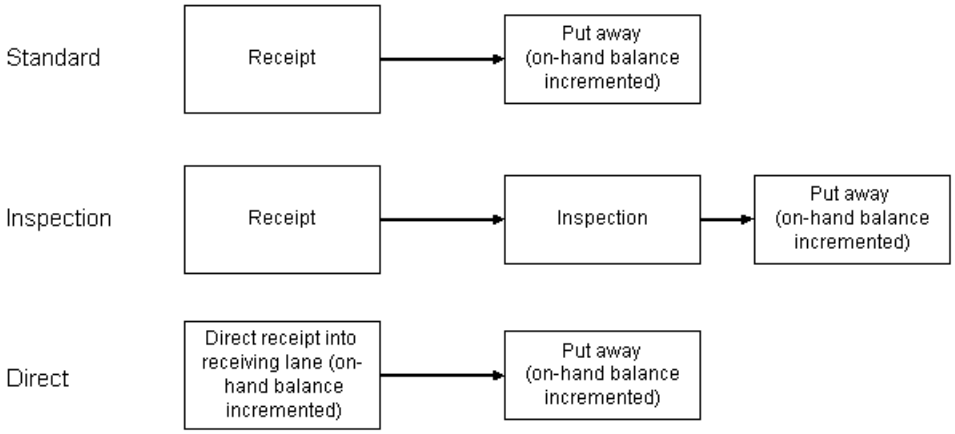
- Material receipt
- Material put away (optional in this routing, because on-hand inventory has already been incremented)

The system also supports express receiving for Advanced Shipping Notices (ASNs).

> **Note:** Put away task are always manually instigated. Thus, the system does not dispatch put away tasks.

The following figure summarizes the three types of receiving methods.

Figure 5–1 WMS Receiving Routings



Describing WMS Receiving Processes

The WMS supports the following receiving processes

- Standard receipt
- Direct receipt
- Confirm receipt
- Express receipt
- LPN inspection

Explaining the Standard Receipt Process

The Standard receipt process includes the following steps:

1. The user scans the document number that is being received.

> **Note:** In a WMS enabled Project Manufacturing organization, you can receive project material against a new LPN using [CTRL+G] to generate the LPN. Alternatively, you can receive the project material into an LPN that is associated with the project. The system will display all of the LPNs associated with the project, in inventory and in receiving, for that project and task combination.

2. The user scans the LPN material that is being received into. Optionally, the user can request a new system-generated LPN through a hot key on the mobile device.
3. In the Project field, enter, select, or scan the project associated with this document line. (Only visible in a WMS enabled Project Manufacturing organization.)

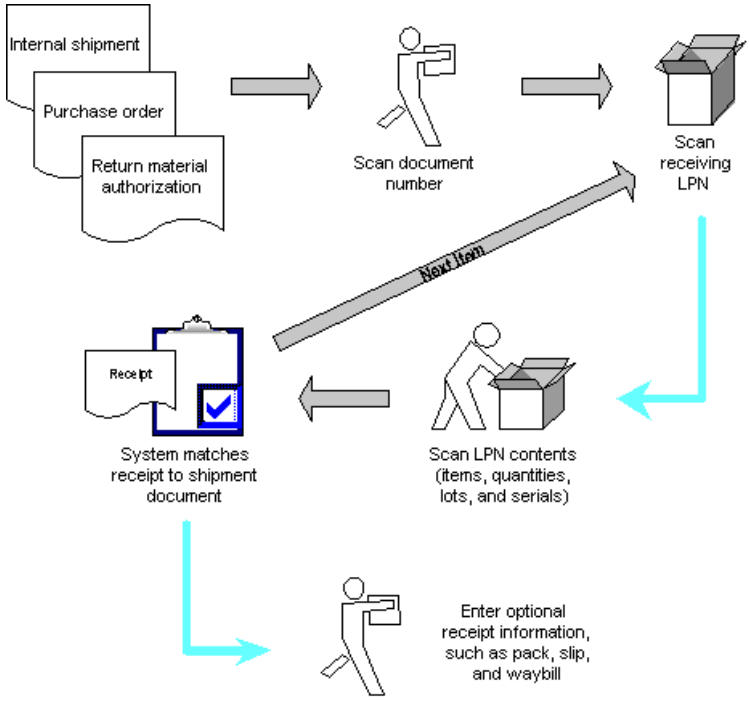
   Note: If the project details are not entered in the purchase order, when you log into the mobile device for receipts, the system will not display the Project or Task details.

4. In the Task field, if applicable, select the task associated with the project. (By default, the system selects the task associated with the project from the purchase order distribution line.) (Only visible in a WMS enabled Project Manufacturing organization.)
5. The received material is scanned, including the item numbers, quantities, lots, and serials.
6. The user can select the <Next Item> option to continue receiving again the same document, or he or she can select the <Done> option to proceed to the receipt header.
7. At this point, the system matches the material entered by the user to the shipment lines on the document, according to the WMS matching algorithm.
8. On the receipt header page, the user can enter optional information for the receipt, such as pack slip number, waybill, and so on, or can select <Done> to complete the receipt.

   Note: As previously mentioned, the on-hand balance for standard receipts is not incremented until the put away step has been completed.

The following figure illustrates the standard receipt process.

Figure 5–2 Standard Receipt Process



Explaining the Direct Receipt Process

The receiving process for a Direct routing is similar to the Standard routing process, and includes the following steps:

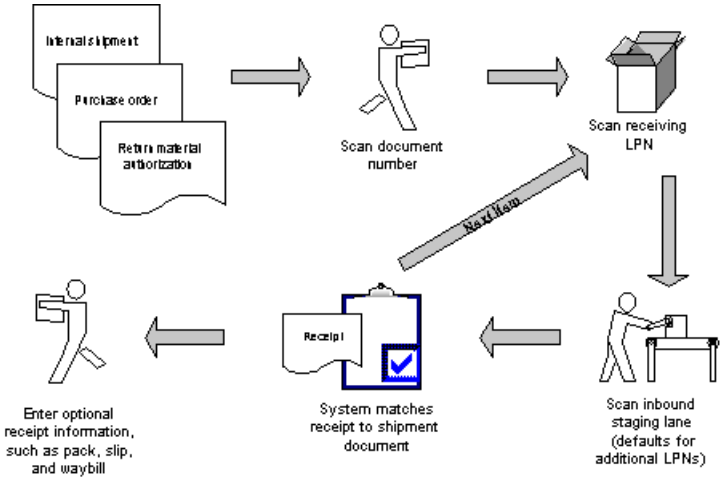
1. The user scans the document number that is being received against.
2. The user scans the LPN material that is being received into. Optionally, the user can request a new system-generated LPN through a hot key on the mobile device.
3. The received material is scanned, including the item numbers, quantities, lots, and serials.
4. In the Project field, enter, select, or scan the project associated with this document line. (Only visible in a WMS enabled Project Manufacturing organization.)

5. In the Task field, if applicable, select the task associated with the project. (By default, the system selects the task associated with the project from the purchase order distribution line.) (Only visible in a WMS enabled Project Manufacturing organization.)
6. The user scans the subinventory and locator in which the material is being received.

   This is typically the inbound staging lane. This location defaults for additional LPNs that are received against the same document.
7. The user can then select <Next Item> to continue to receive against the same document, or select <Done> to proceed to the receipt header.
8. At this point, the system matches the material entered by the user to the shipment lines on the document, according to the WMS matching algorithm.
9. On the receipt header page, the user can enter optional information for the receipt, such as pack slip number, waybill, and so on, or can select <Done> to complete the receipt.

The following figure illustrates the Direct routing process.

Figure 5–3 Direct Receipt Process



Explaining the Confirm Receipt Process

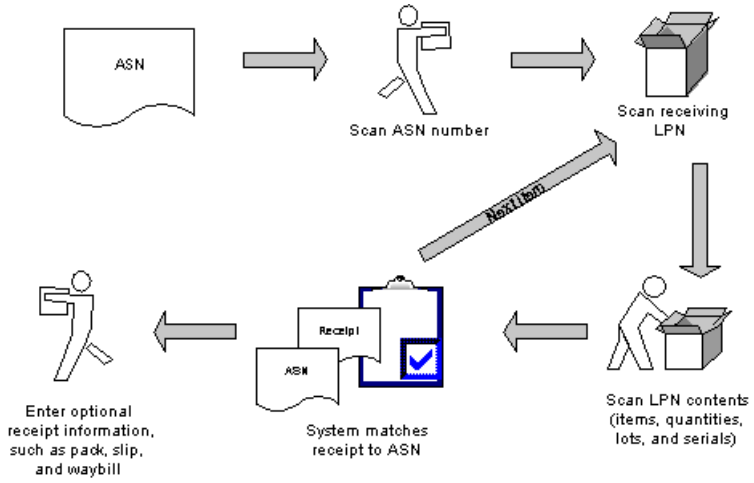
The receiving process for standard ASNs is similar to the process of a Standard routing receipt. The following steps explain the ASN receipt process:

1. The user scans the ASN number that is being received against.
2. The user scans the receiving LPN. Optionally, the user can request a new system-generated LPN through a hot key on the mobile device.
3. In the Project field, enter, select, or scan the project associated with this document line. (Only visible in a WMS enabled Project Manufacturing organization.)
4. In the Task field, if applicable, select the task associated with the project. (By default, the system selects the task associated with the project from the purchase order distribution line.) (Only visible in a WMS enabled Project Manufacturing organization.)
5. The received material is scanned, including the item numbers, quantities, lots, and serials.
6. The user can then select <Next Item> to continue to receive against the same document, or select <Done> to proceed to the receipt header.
7. At this point, the system matches the material entered by the user to the information contained on the ASN. If a discrepancy appears, the system provides immediate notification to the user.
8. On the receipt header page, the user can enter optional information for the receipt, such as pack slip number, waybill, and so on, or can select <Done> to complete the receipt.

   If receipt header information was sent on the ASN, it will automatically default on the header page.

The following figure illustrates the ASN Confirm Receipt routing process.

Figure 5–4 Confirm Receipt Process



Explaining the Express Receipt Process

The receiving process for ASN express receipts is more streamlined than if an ASN is not used. You can use ASN receiving options regardless of the routing of the purchase order. However, instead of scanning the document number, you scan the ASN number. With ASN receipts, the system matches the received material against the ASN information. If a discrepancy appears, then the system sends you a notification. The following steps explain the ASN receipt process:

1. The ASN is sent by the supplier and processed by Oracle WMS.

   LPNs are prepacked in the system. This means that although the material has not yet been received, all of the content information has been entered into the system.

2. The user scans the ASN being received.

   If direct routing is used, then the user would also need to scan the receiving subinventory and locator. The LPN state at this point, is "Resides at vendor site."

3. Enter, select, or scan the Project and Task details. (Only visible in a WMS enabled Project Manufacturing organization.)

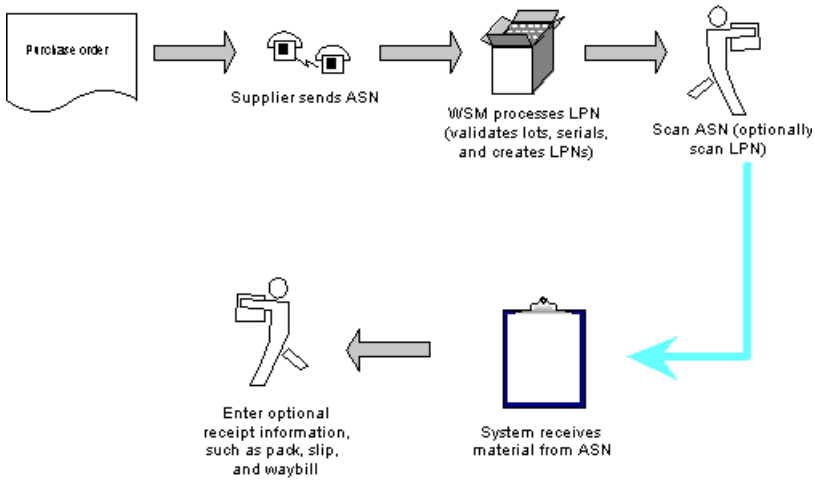
4. The system receives all of the material sent on the ASN.

5. On the receipt header page, the user can enter optional information for the receipt, such as pack slip number, waybill, and so on, or can select <Done> to complete the receipt.

   If receipt header information was sent on the ASN, it will automatically default on the header page.

The following figure illustrates the ASN express receipt process.

Figure 5–5 Express Receipt Process



Explaining the Inspection Process

The following steps explain the LPN Inspection process.

1. To initiate the LPN Inspection process, the user scans the LPN to be inspected.
2. Next, the user scans the item and quantity.

   If only one item is packed in the LPN, then you can press enter and the contents of the LPN will automatically default into the appropriate fields.
3. Depending on the value of the system profile option, QA:PO Inspection, the system transfers the user to either Oracle Purchasing Inspection or Oracle Quality Inspection. If the profile option value is set to Oracle Quality, but not applicable quality plans are found, then the system defaults to Oracle Purchasing Inspection.

4. If the user is using Oracle Quality, then he or she should proceed to step 5. If the user is using Oracle Purchasing, then he or she should proceed to step 6.
5. Using Oracle Quality Inspection, the user enters information into a quality collection plan that has been previously set up to include customizable quality-related fields that must be captured during inbound inspection.

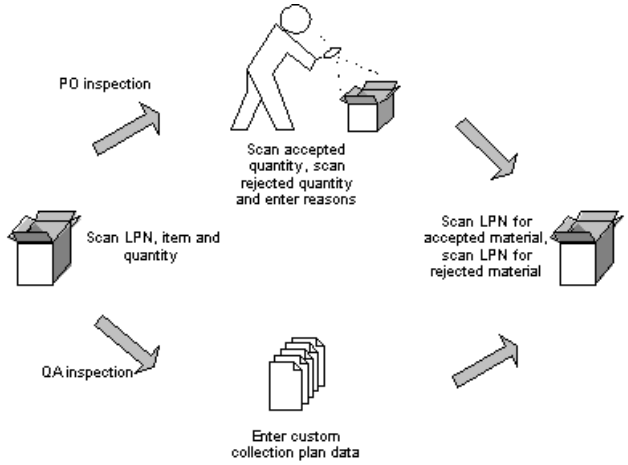
   Note: Inspections can be performed using the optional module of Oracle Quality. If WMS is enabled in a Project Manufacturing organization, Oracle Quality can be set up to trigger collection plans based on project and task numbers. For more information on setting up Oracle Quality, refer to the Overview of Setting Up topic in the *Oracle Quality User's Guide*.

6. Using Oracle Purchasing Inspection, the user enters the accepted quantity, rejected quantity, and a reason and quality code for both accepted and rejected material.
7. The user enters the accepted and rejected quantities.
8. In addition to capturing data in Oracle Quality Inspection, material statuses and lot or serial attributes can be assigned automatically, based on the results of a Quality Inspection and assignment rules that were previously set up.
9. After completing the inspection, the user must scan an LPN for the accepted quantity (this value defaults to the original LPN), and then must generate a different LPN for the rejected quantity.

   At this point, the LPN inspection is complete.

The following figure provides and example of the LPN Inspection process.

Figure 5–6 LPN Inspection Process



How to Perform Receiving Transactions Using the WMS Mobile User Interface

You use the mobile user interface to perform receiving transactions. However, before you can receive items into the warehouse, using either the standard, direct, or inspection methods, an approved purchase order or orders must already exist. Oracle WMS supports both non-stocked items (items that are not set up in inventory) and stocked items (items that are defined and set up in inventory), enabling you to receive against any purchase order lines through the mobile user interface.

This section explains how to perform the following receipt transactions, using the mobile user interface:

- Standard receipt
- Direct receipt
- Inspection receipt
- ASN receipt

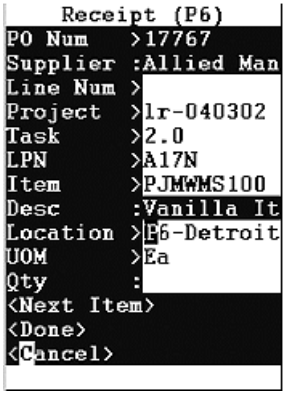
You can view the results of your receipt transactions, using the Material Workbench. Query on the subinventories into which you received items, or query the items being received.

How to perform a Standard Receipt

You use the mobile user interface to perform a standard receipt from a purchase order. After you receive the material, you must also perform a corresponding put away task to put away the received items into a subinventory and locator. Recall that with standard receiving, the on-hand inventory is not incremented until the item or items have been put away.

1. Log into the mobile user interface and navigate to the Receipt form.

Figure 5–7 Mobile User Interface - Receipt Form



2. In the PO Num field, enter or select the purchase order number that you want to receive against.

   The system automatically displays the associated supplier.

3. In the Line Num field, enter or select the purchase order line number that is associated with this receipt.

   The system automatically displays the associated item, item description, location, and UOM.

4. In the Project field, enter, select, or scan the project associated with this document line. (Only visible in a WMS enabled Project Manufacturing organization.)

5. In the Task field, if applicable, select the task associated with the project. (By default, the system selects the task associated with the project from the

purchase order distribution line.) (Only visible in a WMS enabled Project Manufacturing organization.)

6. In the Qty field, enter the number of items that you want to receive.
7. Select <Next Item> to receive more items, or select <Done>, which opens the Receipt Information form.
8. In the Receipt Information form, optionally enter the carrier, pack slip, bill of lading, waybill, and airbill numbers associated with the receipt.
9. Select <Done> to complete the standard receipt.

After you perform the standard receipt, you must perform a put away task to put the item away into the appropriate subinventory and locator. In the case of a WMS enable Project Manufacturing organization, the item would be put away into the subinventory and locator belonging to the project.

Use the following instructions to perform standard receipt put away tasks.

1. From the mobile user interface, navigate to the Putaway Drop form.
2. In the LPN field, enter the LPN that you want to put away.
3. Select <Drop> to perform the put away transaction.

Figure 5–8 Mobile User Interface - Put Away Drop Form



4. Confirm the values for the Qty, To Sub, and To Loc fields.

5. Select <Done> to complete the put away task.

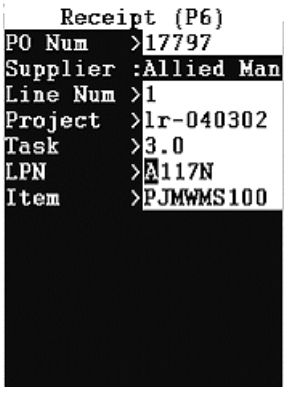
> **Note:** In the case of a WMS enabled Project Manufacturing organization, the Project and Task details are derived from the LPN. This will be the project and task on the purchase order distribution line. The fields cannot be edited. In the Locator fields, only the physical segments of the locator are displayed. You only enter the physical segments of the locator in the confirmation field. The system will append the project and task to this locator when posting the transaction to Oracle Inventory.

How to Perform a Direct Receipt

You use the mobile user interface to perform a direct receipt from a purchase order. With direct receiving, you receive the item or items directly into a subinventory, and at the time of receipt, the on-hand inventory balance is automatically incremented.

1. Log into the mobile user interface and navigate to the Receipt form.

Figure 5–9 Mobile User Interface - Direct Receipt Form



2. In the PO Num field, enter or select the purchase order number that you want to receive against.

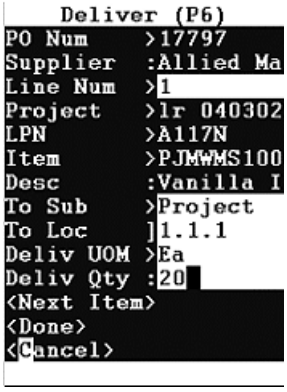
   The system automatically displays the associated supplier.

3. In the Line Num field, enter or select the purchase order line number that is associated with this receipt.

4. In the Project field, enter, select, or scan the project associated with this document line. (Only visible in a WMS enabled Project Manufacturing organization.)
5. In the Task field, if applicable, select the task associated with the project. (By default, the system selects the task associated with the project from the purchase order distribution line.) (Only visible in a WMS enabled Project Manufacturing organization.)
6. In the LPN field, enter or generate (by pressing [CTRL]+[G]) a LPN for this receipt.

   The system automatically displays the associated item.
7. Press [Enter] to display the Deliver form.

Figure 5–10 Mobile User Interface - Deliver Form



The system automatically displays the PO Number, Supplier, LPN, item, and the item description. In the case of a WMS enabled Project Manufacturing organization, the Project and Task fields would also be visible and populated.

8. In the To Sub field, enter or select the subinventory in which to receive this item.

   When you enter a value for the To Sub field, the system displays the To Loc field.
9. In the To Loc field, enter the subinventory locator in which to receive the item.

10. In the Deliv Qty field, enter the number of items (from the purchase order) that you want to receive into this subinventory and locator.
11. In the Receipt Information form, optionally enter the carrier, pack slip, bill of lading, waybill, and airbill numbers associated with the receipt.
12. Select <Next Item> to enter more items, or select <Done> to complete the standard receipt.

How to Perform an Inspection Receipt

You use the mobile user interface to perform an inspection receipt from a purchase order. With inspection receiving, you receive the item or items.

1. Log into the mobile user interface and navigate to the Receipt form.
2. In the PO Num field, enter or select the purchase order number to receive against.

   The system automatically displays the associated supplier.
3. In the Line Num field, enter or select the purchase order line number that is associated with this receipt.
4. In the LPN field, enter or generate (by pressing [CTRL]+[G]) a LPN for this receipt.

   The system automatically displays the associated item.
5. Press [Enter] to display the Receipt form.

   The system displays the item description, location, and UOM.
6. In the Qty field, enter the quantity being received.
7. To enter additional items, select <Next Item>; To complete this receipt and perform the required inspection, select <Done>.

   The system displays the Receipt Information window.

Figure 5–11 Mobile User Interface - Receipt Information Form with the Inspect Option



8. Select <Done> or <Inspect> to perform the inspection.
9. Enter whether the item passed or failed the inspection.
10. Select <Done> to complete the transaction.

The standard inspection process does not support project/task material within an Oracle Project Manufacturing organization. The Oracle Quality inspection process does support project/task material inspection. If Oracle Quality is not installed, the following procedure can be utilized to inspect project material:

1. Navigate to the Putaway Drop form.
2. In the LPN field, enter the accepted LPN and select <Drop>
3. The system will display the item, project, task, subinventory, and locator details for the accepted LPN.
4. The To Subinventory and To Locator details will be suggested by the system based on the put away rules defined for the Project and Task.

How to Perform an ASN Receipt

You can also use the mobile user interface to perform receipts from advanced shipping notices (ASNs).

1. Log into the mobile user interface, and navigate to the Express Receive form.

   The system displays the ASN Receipt Express form.

2. In the ASN Num field, enter or select the ASN number, and then select <Done>.

   You can optionally enter an LPN and purchase order number in the ASN Receipt Express form. The system automatically displays the ASN number, a receipt number, and other information, if supplied.

Figure 5–12 Mobile User Interface - Express Receive



3. In the BOL field, enter the bill of lading number.
4. In the Waybill or Airbill fields, enter either the waybill or the airbill.
5. Select <Done> to save and complete the transaction.

How to Print WMS ASN Descrepancy Report

The ASN discrepancy report enables users of Oracle WMS to generate a report that details any discrepancies between the material information that a supplier sent on their ASN, and the material information that was collected at the time of actual receipt. The ASN Discrepancy Report is only valid for material that was not received through an Express Receipt, but through a Confirmed Receipt instead.

At the time of Confirmed receipt, you can enter different LPNs, Items, Quantities, Lots and Serials than what was shipped on the ASN. This report enables you to see the difference between the expected information and the actual information. The report also enables you to specify what types of discrepancies to report on and other parameters to control the behavior of the report.

1. Log into the application and navigate to the Submit Request window.
2. In the Name field, enter, or select from the list of values, WMS ASN Discrepancy Report.
3. Populate the remaining fields. The remaining fields include:

- Organization - The organization for which the WMS ASN Discrepancy Report will be executed
- Shipment Num - The shipment number to query for ASN Confirm Receipts
- Item - The item number to query for ASN Confirm Receipts
- From Date - The earliest date ASN receipts should be searched for ASN Confirm Receipts
- To Date - The latest date ASN receipts should be searched for ASN Confirm Receipts
- Supplier - The supplier that should be searched for
- Supplier Site - The supplier site that should be searched for
- Check LPN - Include expected and received LPNs on the report
- Check Revision - Include expected and received revisions on the report
- Check Lot Number - Include expected and received lot numbers on the report
- Check Serial Number - Include expected and received serial numbers on the report
- Show Only Discrepancies - Display all ASN Confirm Receipts that met the selection criteria, or display only those that had discrepancies

Explaining LPN and Cross Docking Put Away

This section covers the LPN and cross docking put away processes. It includes the following topics:

- Describing the LPN put away process
- Describing the cross docking put away process

- Explaining pre-generated putaways

Describing the LPN Put Away Process

In addition to supporting LPN put away from a Standard Routing, the WMS enables you to initiate a put away by scanning an LPN anywhere in the warehouse.

After you scan an LPN, you have the option of loading that LPN onto your current equipment, or dropping the LPN immediately. If you load the LPN, you can scan additional LPNs onto their equipment then begin dropping LPNs whenever they are at the appropriate locations to be dropped.

LPN Loads You load an LPN by scanning the material onto the LPN. You can load multiple LPNs onto equipment and then scan the LPNs as you put them away (see LPN Drops below). After you load a put away task onto your equipment, that task can be monitored through the WMS Control Board. On the Control Board, the put away task appears as a task with a status of Loaded, along with the user who has loaded it.

LPN Drops When you request an LPN drop, the WMS Rules Engine determines the optimal put away location for the material. If no suggestion is returned (either because no applicable rule has been set up, or no capacity is available), the system issues an error that the system failed to allocate space for the put away. If the system returns a suggested put away location, then the system requests that you verify the quantity being dropped, and the drop location. You can optionally choose to drop to a different LPN, than the one suggested by the system. If the system returns multiple drop locations, for example, if the system suggests multiple locations to store a split LPN, then you are required to enter new LPNs for any material that you drop outside of the original LPN in which it was included.

If a discrepancy is reported at this point, for example, you drop less than the full quantity, or you drop to a different location than what was suggested, the WMS requires that you supply an appropriate reason code. Based on that reason, the system can execute user-defined workflows that instruct you to take corrective action, for example, perform a cycle count, or notify the appropriate people. After you verify the drop location, the put away drop is complete.

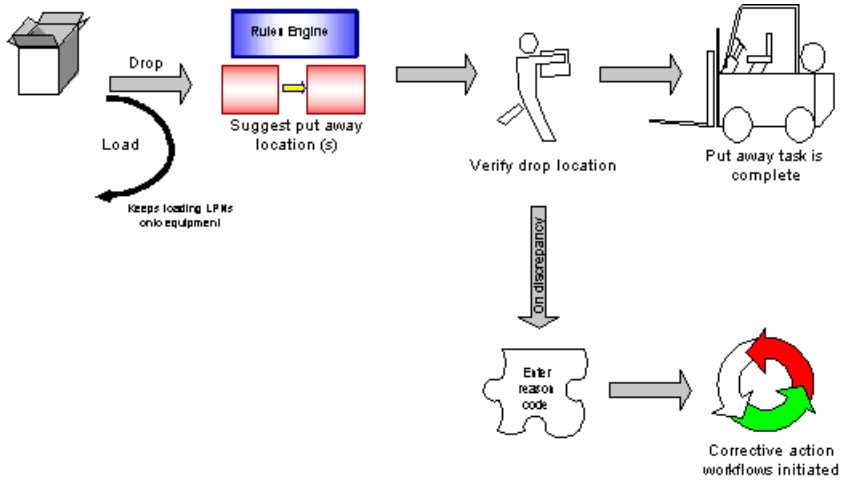
Multi-Step Put Away and Replenishment If the suggested put away location is not accessible, you can drop the LPN into a 'temporary' area for the suggested subinventory. Like any discrepancy of a suggested put away location, a reason code must be given. Based on that reason code the system can execute a workflow that assigns a task to the appropriate operator to put the LPN away to it's original suggested location. For example, the suggested put away location for a particular

LPN is a VNA (Very Narrow Aisle) location that is serviced by a special fork truck. When you scan the LPN at the inbound lane, it tells you to put it away to the VNA locator. However, you can only bring it as far as the head of the VNA lane because you don't drive the fork. You put it away to the VNA lane 'temporary' area. When you do that, you give a reason, for example 'Multi-Step', that is attached to a workflow. The workflow creates a task for the fork driver to move the material from the VNA lane 'temporary' area into the VNA locator itself.

To set up multi-step put away and replenishment, you need to create a subinventory as your 'temporary' area or lane to temporarily drop the material into. A workflow must be created to assign a task to the operator that needs to put the material into the appropriate location. The multi-step put away and replenishment process can be repeated any number of times on an LPN.

The following figure illustrates the LPN put away process.

Figure 5–13 LPN Put Away Process



Describing the Cross Docking Put Away Process

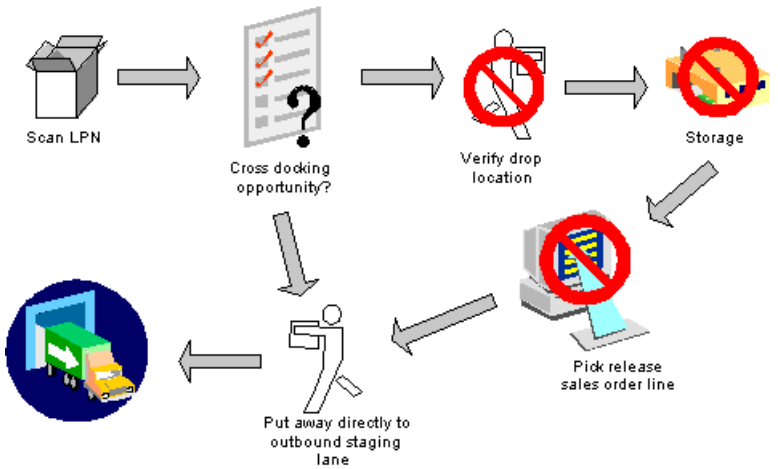
If you have enabled cross docking for your warehouse, then cross docking, if necessary, occurs before the WMS Rules Engine suggests a put away location for incoming material. Before suggesting a put away location, the WMS Rules Engine checks for backordered sales order lines (including Oracle Project Manufacturing sales orders) that might be fulfilled by the incoming material. If the systems finds an

eligible line, then it prompts you to put away the incoming material directly to an outbound staging lane. Thus, cross docking enables backordered demand to be met immediately.

Cross docking avoids unnecessary material handling and eliminates the extra steps of having to store the material in a storage area, before moving it to the outbound staging area. If only a partial quantity of the material being put away needs to be used to fulfill a backordered sales line, then the system prompts you to put that quantity away to an outbound staging area. The rules engine then determines an optimal storage location for the remaining portion of material.

The following figure provides an illustration of the cross docking put away process.

Figure 5–14 Cross Dock Put Away Process



Explaining Pre-Generated Putaways

Oracle WMS pre-generated put away functionality allows incoming material to have space allocated for the put away as a background process, immediately after the receipt has been completed. This enables a put away suggestion to be created before the operator requests to put the material away. Pre-generated suggestions can be given an expiration time. WMS will attempt to re-allocate expired suggestions if, for example, warehouse conditions have changed before the put away is requested. The pre-generated put away functionality is integrated with

barcode label printing functionality enabling barcodes to be printed as soon as a put away allocation has been suggested.

Pre-generated put away is especially useful in two scenarios:

1. It offers potential performance gains by enabling the put away allocation process to run in the background
2. It enables the users to print labels containing the put away suggestion so that material can be routed to that location in order to expedite put away processing.

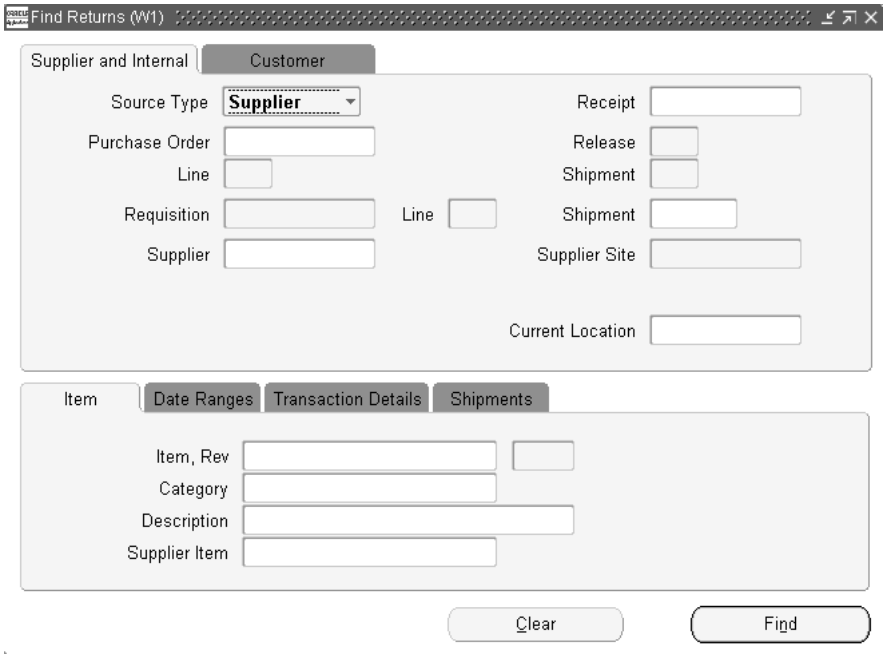
Explaining LPN Based Returns

As stated in the Overview chapter, WMS offers a one step or a two step process for returns. This option is determined by the WMS:Express Returns profile option. By enabling this option you can perform a two step return process where, for example, a manager can initiate the return (step 1) and a picker can retrieve the material and deliver it to shipping (step 2). Otherwise the return transaction is initiated and completed in one step.

Returns to suppliers can be based on the LPN that the material was put away into. Rather than searching for the material by supplier, or by subinventory, you can search by LPN which will direct you immediately to the needed material.

1. To initiate the two step LPN based return, navigate to the Returns window.

Figure 5–15 Find Returns Window



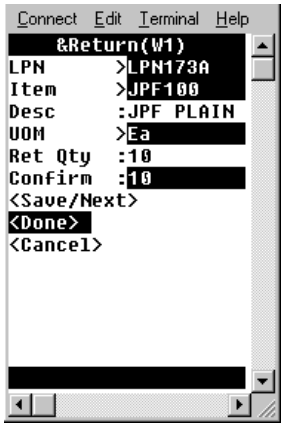
2. Select the Transaction Details tab.
3. Enter the LPN to be returned and select Find.
4. In the Receiving Returns window, enter the quantity to be returned, where you want the material returned to (Supplier or Receiving) and any other applicable information, for example an RMA number.
5. Select the check box of the line that you are returning.
6. Save your work.

Step two, of the return process, takes place on the mobile device. After the return is initiated on the desktop, an operator with a hand held device scans the LPN to be returned and delivers the material to the appropriate location.

7. You begin the second step by navigating to the returns menu on the hand held device.
8. You can either scan the LPN or select the LPN from the list of values. Only those LPNs to be returned will be in the list of values.

9. The Item field will populate automatically. The UOM and the quantity to be returned will populate as well. You must confirm the quantity to be returned.

Figure 5–16 Mobile Return Window



10. Select Save/Next to continue with another return, or select Done to complete the return process.

6

WMS Outbound Logistics

This chapter explains the Oracle Warehouse Management outbound logistics features, including the following:

- ❏ Outbound Logistics Overview on page 6-2
- ❏ Describing Shipment Planning on page 6-2
- ❏ Describing the Picking Process on page 6-3
- ❏ Explaining Container Management on page 6-16
- ❏ Explaining How to Use WMS Packing Options on page 6-26
- ❏ Performing the Shipping Confirmation Process on page 6-33

Outbound Logistics Overview

The WMS outbound logistics process includes the following steps:

- User optionally plans outbound shipments
- User then pick releases sales orders
- At pick release, the system determines the appropriate material allocations for the release orders
- The system creates tasks for users to pick the material and then dispatches them to the appropriate users
- During the material picking step, users accept tasks and bring the material to the outbound staging locations
- User optionally inspects outbound LPN's with Oracle Quality.
- After material is placed in the outbound staging lanes, it is ready for ship confirmation

The remainder of chapter includes the following topics, which each discuss the outbound logistics process in more detail:

- Describing shipment planning
- Describing the picking process
- Explaining container management
- Performing the shipping confirmation process

Describing Shipment Planning

Shipment planning is an optional step in the outbound logistics process that enables you to plan deliveries and trips. You use Shipping Transaction window to complete the shipment planning process.

The Shipping Transactions window is an Oracle workbench form that consolidates the three major shipping forms from Release 11: the Departure Planning form, the Ship Confirm form, and the View Shipping Information form. In addition to the consolidation of these three forms, the Shipping Transactions window supports the following processes:

- Trips
- Stops

- Delivery legs
- Deliveries
- Delivery lines

The Shipping transaction window now enables you to plan trips and deliveries, confirm shipments, explain and enter souring material information for delivery lines, support multi-leg shipments, and access all shipping functionality. However, if WMS is enabled, in the organization, because LPNs are managed either through cartonization or through user-initiated packing, none of the Shipping Execution container features are enabled in this window.

Also note that WMS will not allow you to pack material for different deliveries into the same LPN. Furthermore, during cartonization, if you created deliveries prior to pick release or auto created at pick release, the system will not suggest packing material for different deliveries onto the same grouping criteria to segregate material for packing suggestions.

For more information about shipment planning and transactions, see the *Oracle Shipping Execution User's Guide*, shipment planning topic.

Describing the Picking Process

This section covers the following topics:

- Overview of the WMS Material Picking Process
- Explaining pick release
- Explaining the pick allocation process
- Explaining the picking process
- Describing pick task grouping
- Explaining material handling device sign on
- Describing task loading and dropping
- Explaining express picking
- Explaining express load
- Describing User-Initiated Consolidation
- Explaining task unloading
- Explaining task skipping

- Explaining task exceptions
- Describing pick methodologies

Overview of the WMS Material Picking Process

Pick release is the process of selecting orders for release to the warehouse for picking and shipping. After the orders are released, Oracle WMS uses the Rules Engine to determine the appropriate material allocations. After the system completes the allocations, the Task Type Assignment engine assigns the appropriate task types, and the system can then suggest packing configurations. At this time, order lines are also split or merged, based on equipment capacity and pick methodology.

At this point, the task is now ready for dispatching to an operator. The operator can then log onto the system, optionally sign onto a material handling device, and accept pick tasks. Optionally, the operator can accept all pick tasks for a specific task grouping as a bundled set of tasks. WMS enables the operator to pick multiple partial LPNs, full LPNs, and loose picks for a single task. Loose material and material packed in an LPN can be picked in any sequence for a given task. Operators can continue to load material as long as there is capacity on the equipment. After the material is loaded, it can be dropped into staging lanes for further packing and labeling before shipment. This completes the material picking process.

Explaining Pick Release

The pick release process selects sales order lines to release to the floor for picking and shipping. A pick release rule stores the criteria that will be used to select sales orders for release. If trips are not scheduled for dock doors, then the release rule also determines the staging lane to which the material should be delivered. The pick release criteria are documented in the *Oracle Shipping Execution User's Guide*, Releasing Sales Orders for Picking topic.

Explaining the Pick Allocation Process

After orders have been selected for release and prioritized for allocation, the rules engine makes the material allocations. Recall that material allocations might be based on characteristics such as, customer requirements, organization-wide business directives, stock rotation policies, item handling restrictions, item category, or by some other business attribute. The rules engine can also divide the allocations by pick unit of measure.

The output of the pick allocation is a task that includes the subinventory and locator from which to pick, and if applicable, the revision and lot to be picked.

After the system performs allocations, it must determine the task type so that the job to pick the allocated material can be dispatched to an appropriately trained user.

Explaining the Picking Process

Operators can accept a picking task, or a set of tasks, directly from the mobile device. The system dispatches tasks through the mobile user interface. Through this user interface, the picker can view the item, quantity, subinventory, and locator from which they can pick the load. If the item were revision or lot controlled, the system would also display those details.

The picking tasks assigned by the system to a user might include any of the following:

- Pick loose items into an LPN
- Pick whole LPNs
- Pick multiple LPNs, for example, pick 5 boxes of 10 each to fulfill a task to pick 50
- Pick from LPNs, for example, pick 5 items out of a box of 10
- Pick multiple partial LPNs, full LPNs, and loose picks for a single task
- Build larger LPNs
- View cartonization suggestion

The user can confirm a pick by scanning one or more LPNs to load. If the material in the storage locator is not identified with an LPN, then the user must confirm the item, quantity, and the storage subinventory, and locator to confirm the pick.

The user can also unpack an LPN to fulfill the pick, however if the pick units of measure are appropriately established during system setup, unpacking an LPN to fulfil a pick, should not be necessary. The user can also pick the items or the whole LPN into another larger LPN (like a pallet or carton), thus building a package that can be shipped during the picking process. If Cartonization is enabled, the user will also see the container suggestion in his or her task queue.

Explaining Pick Task Grouping

Oracle Warehouse Management enables users to perform all pick tasks, for a specific task grouping, as a bundled set of tasks. This functionality is only available through a mobile RF device and is not available through the desktop forms.

Upon Pick Release, pick tasks can be generated and grouped by a number of Pick Slip Grouping Rules, for example Order Picking. Typically, this grouping represents a discrete bundle of work to be performed by a single user.

All functionality of the pick task screen remains the unchanged, except that when the task has been completed (either dropped or loaded), a determination will be made whether more tasks remain in the current grouping. If so, the Pick Load screen is presented for the next task in the grouping, with a message indicating that the pick has been completed. If no more tasks remain for the grouping, the Task Menu is presented, with a message indicating that the last pick for the grouping has been completed.

Explaining Material Handling Device Sign On

In addition to being able to define devices and assign devices to Business Events, WMS enables an operator to sign onto a particular device in order to restrict the list of tasks they receive. When the Tasks page is initially navigated to, the operator will be able to sign into devices. The operator can change the devices signed onto at any time using the Choose Eqp/Sub form.

Users may only sign onto devices that are associated with subinventories. When a user is signed onto a device, that user will only receive tasks from the subinventory that the device is currently associated with.

Multiple Device Sign On and Carousel Pods WMS enables operators to sign onto more than one device. When multiple devices are signed onto, the operator will only receive tasks from the three subinventories associated to those devices. That operator will receive tasks from those devices in the order they were signed onto. In addition, WMS will dispatch tasks into the operators queue such that the operator always has tasks for each device in their queue. Device integration information is sent at the time that each task for a device is dispatched.

For example, suppose an operator signs onto devices Carousel_1, Carousel_2, and Carousel_3 in that order. When the operator attempts to accept the next task, they will receive one task from each carousel dispatched into their queue (assuming there are available tasks from each carousel). At that time, the integration information will be sent so that all three carousels may begin rotating for the first series of picks. The operator will be shown the task information for the task from

Carousel_1 on the mobile UI and asked to confirm the pick. Once that task has been completed, the operator will be asked to confirm the pick for the task from Carousel_2. At the same time, the operator will be dispatched another task for Carousel_1 into their queue and integration information for that task will be sent in order for that carousel to be rotating while the tasks for Carousel_2 and Carousel_3 are being confirmed. The operator will continue in that way, receiving tasks from Carousel_1, Carousel_2, and Carousel_3 in that order while integration information is sent in advance.

Describing Task Loading and Dropping

Task loading and dropping includes the following and completes the WMS picking task process.

- Loading material onto equipment and then accepting another task
- Dropping material directly into a staging lane
- Viewing pending tasks

After the operator picks the load, they can either drop it directly into a staging lane, or load it on to their equipment. They can then proceed to the next pick location. The operator can view the current LPNs at any time, including information on the customer and the destination address, on the equipment that are waiting to be dropped.

When the operator is ready to drop the material into a staging lane, the system directs the operator to an appropriate staging lane (as determined by the dock appointment or pick release rule). The operator confirms the drop by scanning the staging lane.

If an LPN for the same delivery has already been dropped into the staging lane, the operator will be shown that LPN as a suggested drop LPN. The operator can select another LPN in that lane, if multiple LPNs have been staged for the same delivery. Alternatively, the operator can enter a new LPN to drop into, or drop without packing the LPN from the task into another LPN. The final pack can also be competed as a user-initiated packing transaction.

Task dropping completes the WMS picking task process.

Explaining Express Picking

Either the standard picking process or the express picking process can be used to pick material. Express picking enables the user to perform a pick in a single transaction without confirming any of the material information. Using this screen,

operators can pick loose material in a single keystroke, rather than confirming all of the fields as is ordinarily required for a standard pick. Express pick can be used for material that has no controls, revision control, or for lot controlled material where only a single lot was allocated for the task. Tasks for all other items will be filtered out of the express pick process, as will any task for which a particular LPN has been allocated by the rules engine.

This speeds up the picking process for situations where confirmation scans of the material being picked are not required. The express pick process will automatically generate new LPNs for the material to be picked into or honor LPNs that were generated during cartonization.

Express pick can be used only to load the material, after which the operator uses the standard drop process, or express pick can be used to confirm both the load and the drop in a single scan.

Use the following instructions to perform an express pick.

1. Log onto the mobile device.
2. Navigate to the mobile interface Express Pick form.

Figure 6–1 Mobile User Interface - Express Pick Form



3. All of the fields will be populated with the task information. Select <Drop/Next> to complete the task as suggested and display the next task. Select <Drop> to complete the task and return to the menu. Select <Discrepancy> to confirm Item, Qty, and so on, as a standard task requires.

Select <Skip Task> to skip the task, and select <Cancel> to cancel this form and return to the menu.

Explaining Express Load

Express load enables the user to load material without having to confirm each field individually. The system directs the user to the subinventory and locator where the material resides. The Item, UOM, Qty, From Sub, and From Loc fields are automatically populated. The To LPN field will be populated only if cartonization is enabled. If cartonization is not enabled, then the To LPN field will need to be manualy populated or the user will need to generate an LPN for the material.

Express Load can only be utilized for loose material. Express load can be used for material that has no controls, revision control, or for lot controlled material where only a single lot was allocated for the task. Tasks for all other items will be filtered out of the express load process, as will any task for which a particular LPN has been allocated by the rules engine.

Use the following instructions to perform an express load.

1. Navigate to the mobile interface Express Load form.

Figure 6–2 Mobile User Interface - Express Load Form



2. The task will be generated. The user will generate a new LPN (in the case where cartonization is not used) then select one of the following:

- Load/Next - This option will load the task and accept the next task immediately
- Load - This option loads the material then takes the user to the Task Menu form
- Discrepancy - The user will be redirected to the Pick Load screen where they can enter all fields for the task, including any discrepancies
- Skip Task - This option skips the current task
- Cancel - This option will take the user back to the Task Menu

Describing the Consolidation Report

A consolidation report is available to help direct manual consolidation based on sales order, delivery, or trip. This report displays all staged LPNs for a given sales order, delivery, or trip.

Use the following instructions to run the Consolidation Report.

1. Log into the application.
2. Navigate to the Submit Request window.
3. Enter, or select from the list of values, Consolidation Report in the Name field.
4. In the Parameters window, enter, or select from the list of values, the organization that you want to run the report against.
5. Enter one of the criteria in the Parameters window and submit your request.

Note: Only one of the following criteria should be entered per request: Trip, Delivery, Sales Order Type and Sales Order Number, and Customer Name. While the report supports entering any combination of criteria, the report will only include LPNs that meet all the criteria. Therefore, entering multiple criteria will likely not return data.

The Consolidation Report parameters include the following:

- Organization - The organization that you want to run the report against
- Trip - The trip for which staged LPNs should be included
- Delivery - The delivery for which staged LPNs should be included

- Sales Order Type and Sales Order Number - The sales order for which staged LPNs should be included
- Customer Name - The customer for which staged LPNs should be included
- Check LPN Multiple Association - Include additional data on whether the LPNs have been staged for other sales orders, deliveries, and trips in addition to that which has been queried

The Consolidation Report displays the following fields:

- Trip Number
- Delivery Number
- Sales Order Number
- All LPNs that belong to the search criteria
- Current location (subinventory and locator)
- Items (Item Number)
- Unit of Measure (UOM)
- Quantity in the primary UOM (Qty)
- A flag which lets the user know whether the LPN contains items that either belong to multiple sales orders, multiple deliveries, or multiple trip stops
- Trip Stop Location (if a trip exists)
- Status of the delivery detail (Staged, Released to Warehouse, and so on)

Note: It is only possible for LPNs to be staged for multiple sales orders, deliveries, or trips if bulk picking has been used. Therefore, if bulk picking is not used in the organization, the output will be easier to read and also will complete faster if this option is disabled.

Describing User-Initiated Consolidation

Based on the output of the Consolidation Report, the business processes might require that LPNs be consolidated into larger pallets or shipping containers. Consolidation of LPNs is supported via the mobile Consolidate form, by specifying a parent and a child LPN. Consolidation is ordinarily restricted to LPNs that reside in the same locator. However, LPNs that have been picked for a sales order can be consolidated even if they are in different locators. The child LPN will be moved to the locator of the parent LPN.

For instance, using the output of a consolidation report, the operator may note that there are two LPNs staged for the same delivery, and that should be consolidated into one LPN. Even though these LPNs are in two different staging lanes, the consolidation can be performed using a single transaction.

Use the following instructions to perform an LPN consolidation.

1. Log onto the mobile device.
2. Navigate to the mobile interface Consolidate form.

Figure 6–3 Mobile User Interface - Consolidate Form



3. Enter, or select from the list of values, the parent LPN.
4. Enter, or select from the list of values, the Next LPN.
5. Select <Merge> to complete the consolidation.

> **Note:** You can merge as many LPNs as required provided they belong to the same delivery. If the LPN does not belong to the same delivery, the system will generate an error and consolidation will not be completed.

Pick Drop Consolidation Oracle WMS supports consolidation in the Pick Drop process. This is especially useful during pallatization. In the "DROP" activity of the picking task, the operator drops the loaded material into an LPN, which could be a pallet in

a subinventory and locator. If the operator is performing DROP task in the same subinventory and locator as the user did in the previous drop, the system will suggest the same drop LPN. Because the system cannot know if the pallet is full, the operator will have to make the determination. The operator can choose to drop in a different LPN if:

- the operator is dropping in the same subinventory and locator
- and the system suggests the same LPN
- and the LPN is full

Consolidation Using Put Away Rules In Oracle WMS one of the operations where the WMS Rules Engine is called is during pick release process. Once pick release is complete, Put Away tasks are generated using the Rules Engine. You can build consolidation Put Away rules that consolidate into particular staging lanes. Various objects on the sales order header, or sales order lines, can be used to construct different rules. Examples of frequently used sales order header objects are as follows:

- Customer
- Shipment Priority
- Shipment Method
- Order Type

> **Note:** Do not commingle these rules with inbound put away rules. The non-inbound put away rules should have the lowest number in the strategy search order.

Similar rules can be built for other transaction types, for example internal orders. Different put away rules can be built for this transaction type and then assigned to strategy. Again this strategy is given a number that is lower then the inbound put away rules.

Explaining Task Unloading

A task that has been loaded can be unloaded at any point prior to the task drop. Unloading a task enables you to reverse the task load, returning the material, or full LPN, to the same locator from which it was picked. If the material requirement that has created that task has been cancelled, then the task will be cancelled when it is

unloaded. This is particularly for change management of sales orders and work orders.

Use the following instructions to perform a task unload.

1. Log onto the mobile device.
2. Navigate to the mobile interface Current Tasks form.

Figure 6–4 Mobile User Interface - Current Tasks Form



3. Enter, or select from the list of values, the LPN that you want to unload.

> **Note:** If you have loaded multiple items or tasks into the same LPN, the LPN will be listed multiple times within the list of values. You must select the one that you want to unload. Also, you cannot unload an LPN that has been loaded in its entirety until all other tasks that have been loaded to it have also been unloaded.

4. Select <Unload> to complete the transaction.

Explaining Task Skipping

An operator may be unable to perform a task that has been dispatched to them due to conditions outside their control, and do not warrant another type of task exception. For example, the aisle to which he or she was directed may be

temporarily blocked. The operator may skip the task. An exception will be recorded against the task with the operator's name, and the task will not be dispatched again for the number of minutes specified in the Organization Parameters form. After that period of time has elapsed, the task will be returned to the pool of pending tasks and dispatched again.

Explaining WMS Task Exceptions

If at any point during the pick process the user reports a discrepancy, the WMS can initiate a corrective action workflow. Discrepancies might include any of the following:

- Picking a different quantity than the quantity suggested by the system
- Dropping material into a different staging lane than the staging lane suggested by the system

If a discrepancy is reported, the system immediately directs the user to an audit screen, where he or she is prompted to indicate a reason for the mismatch.

Each reason has an associated corrective action workflow, which will be initiated immediately after an exception occurs. For example, a corrective action workflow might notify the warehouse supervisor, through pager, mail, or other alert mechanism, that an exception has occurred. Corrective actions can also notify customer service that a potential backordered situation exists on a sales order.

Corrective actions can also place a location on hold so that subsequent material allocations do not source material from that locator. These actions can also request a cycle count for a particular locator, or re-release the balance of the sales order line so that it can be sourced from another location.

> **Note:** Reason codes and their related corrective action workflows are created during system set up. For more information about corrective actions, see the *Oracle Workflow User's Guide*.

Describing Pick Methodologies

Pick methodologies refer to the different ways in which you might select to fulfill a group of orders. For example, you might select to pick an order by itself, or to pick multiple orders at the same time. The type of picking methodology that a warehouse uses depends on the kinds of operations that they run. For example, a high volume warehouse that is concerned with picking speed might not use a bulk picking option.

Oracle WMS supports the following pick methodologies:

- Cluster picking: the system dispatches tasks line by line, regardless of the subinventories where those tasks are picked from, or to whom other lines on the order have been dispatched.
- Order picking: the system assigns picks for one order at a time to a user. Thus, when a user accepts a task for the first line on a sales order, all other picking tasks associated with that order are automatically assigned to the user as well, regardless of the task type or subinventory.
- Zone picking: the system assigns picks for a given order in a given subinventory to a user. Thus, if a user accepts a task for the firs line on a sales order, all other lines on that order that are sourced from that subinventory are assigned to the user.
- Bulk picking: the system groups tasks to pick the same items that are sourced from the same subinventory and locator so that the user only sees one task that might represent picks for several orders.
- Paper-based picking: Users pick according to a paper pick slip that is printed at pick release. This enables a user to dispatch tasks to themselves when working in a paper-assisted environment.
- Pick and Pass/Label picking: LPNs are generated by the system during cartonization and the labels are printed prior to picking. Thus, to pick, the user scans the LPN and is dispatched the picking task associated with that LPN, the user can then "pass" the LPN to the next user or continue picking all material for the LPN and will not be prompted to drop the LPN in the staging lane, until all the lines have been picked.
- User-defined pick grouping: See Oracle Shipping Execution's pick slip grouping rules topic.

You set up pick methodologies in the Oracle Shipping Execution module, Pick Slip Grouping Rules window.

Explaining Container Management

This section covers WMS cartonization features. Cartonization enables the system to suggest optimal packing configurations for an item or group of items. This section includes the following topics:

- Describing WMS cartonization features
- Describing carton groups

- Describing container-load relationships
- Using cartonization

Describing WMS Cartonization Features

With container management features, the WMS can automatically suggest packing configurations for groups of items. Optionally, cartonization may be based on the following packing requirements, WMS cartonization routines suggest the best carton selection for a grouping of items:

- Container weight capacity
- Volume
- Item and container dimensions
- Item's packaging restrictions

The system can determine the best carton size in which to pack the material being picked for shipment. It can also suggest the packed configuration for material being manufactured on a work order.

Using cartonization eliminates suboptimal packing configurations by always suggesting the best cartons to use based on grouping rules, carton weight capacity, carton volume, and the dimensions of the items to be packed in comparison to the carton's dimensions.

To use cartonization, you must set up carton groups and container-load relationships. These concepts are described in more detail in the following sections.

Describing Carton Groups

You assign items to one or more carton groups. Carton groups represent a group of similar-type cartons that can carry a category of items. For example, a carton group that you define as miscellaneous might contain flashlights and stereos, while a liquid carton group might contain paint and oil.

Note: The system will never suggest packing an item of one type into a carton of a different type. For example, it will not suggest packing a liquid item into non-liquid carton type.

Explaining Carton Selection

The first step that the WMS makes when selecting cartons is to separate items by carton group (and, in the case of sales order cartonization, by delivery.) This step is not performed for WIP prepack, as WIP prepack is always performed on only a single item at a time, while bulk pack and sales order cartonization are performed on groups of items.

Within each carton group, the system first attempts to pack all of the items into a single carton. The total weight and volume of the items is compared with the weight capacity and volume of each carton. If the dimensions of any of the items will not fit into the dimensions of a container, then that container is not selected. If there are several potential matches, then the system selects the smallest container, verifying that Minimum Percent Fill of the container item has been met. If all of the items cannot fit into a single carton, then the system selects the largest carton, again verifying that Minimum Percent Fill of the container has been met. If the Minimum Percent Fill cannot be met, then the cartonization algorithm will look for a smaller container. The system repeats this step by trying to fit the remaining items into a single carton, and then suggesting subsequent cartons based on the carton sizes and capacity.

> **Note:** 'Smallest" and "largest", as well as Minimum Percent Fill, can be based on either weight or volume. The Percent Fill Basis flag, in the Shipping Parameters form, is used to determine whether weight or volume should be used. If this flag is set to Quantity, then Weight will be used.

For pick release cartonization, the system tries to pack items into the container in the sequence in which the operator will be directed to pick them. When the next item in the picking sequence cannot fit into the container, the container is considered full.

Carton Selection Example Assume that an item is 1 foot wide, 5 feet long, 3 feet high, and weighs 60 pounds. Also assume that five containers are available in which to pack this item. The WMS cartonization feature uses the following methodology to determine the optimal container in which to pack the item.

Table 6–1 Cartonization Selection Example

Container	Width (feet)	Length (feet)	Height (feet)	Capacity (pounds)
A	1	1	1	40
B	2	4	4	60
C	6	2	2	75
D	2	4	6	80
E	4	4	6	100

- Container A is disqualified because with a capacity of 40 pounds, it does not have sufficient weight capacity to hold the item, which weighs 60 pounds.
- Container B, with a capacity of 60 pounds, can hold the weight of the item, so the system checks its dimensions. The largest dimension of the item, its length (5 feet), cannot fit into any dimension of container B, so it is disqualified.
- Container C's largest dimension, its width of 6 feet, can hold the item's largest dimension of 5 feet, but container C's next largest dimension, its width and height of 2 feet cannot hold the item's next largest dimension, its height of 3 feet.
- Container D's dimensions and capacity can hold the item.
- Container E's dimensions and capacity can hold the item.

Both Container D and E can hold the item, however, the system chooses container D, because it has the smaller weight capacity of the two containers. Thus, the system selects the smallest container possible that will fill the entire order.

Note: If the order exceeds the weight or volume capacity of the largest carton in the carton group, the largest carton is chosen and then filled to capacity. At that point, based on the criteria stated above, the system selects the next carton in the group.

Note: Non integer quantities cannot be cartonized. Also note, that if no container can hold a particular item, then that item will not be cartonized.

Describing Container-Load Relationships

You can define a container-load relationship for items that require more specific packing than what the WMS would suggest. Container-load relationships specify the maximum quantity and required container to use whenever the item is packed. Container-load relationships apply to items that can only be packed in one type of container, or require a certain packing configuration.

The WMS honors container-load relationships, regardless of the container group or physical characteristics of the container item or contained item.

Container-Load Relationship Example For example, assume that a warehouse ships roses. For these items, quality assurance dictates that only small coolers be used to ship the roses. Furthermore, while 180 roses might fit into the small cooler by weight, volume, and size, experience has shown that any more than 144 roses causes damage in route. In this scenario, you can set up a container-load relationship that overrides the standard cartonization logic, so that only 144 roses are packed into each small container.

Multi-Level Cartonization

Oracle WMS cartonization can consider multiple levels of packaging as well as single level packaging using cartonization. For example, a warehouse may have items that are packed into boxes, boxes packed into cases, and the cases packed into pallets. A packaging hierarchy can be build and the system will generate content and summary labels for each level of the hierarchy. However, only the outermost package generated by the system (in this case the pallet) will be considered an LPN. The cartonization process is triggered in one of three places:

- Bulk pack
- Prepack
- Pick release

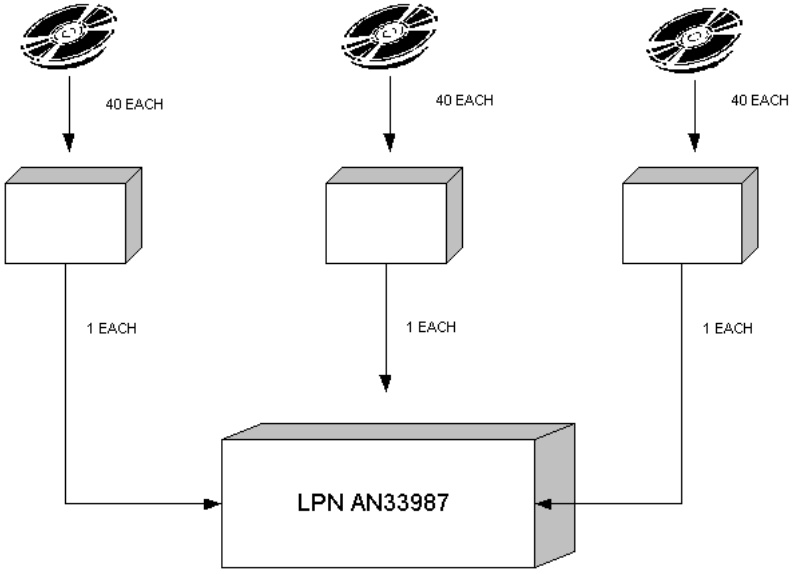
The bulk pack process can be set to stop at an arbitrary level for deep packaging hierarchies.

Multi-level cartonization enables multiple labels to be printed for a single cartonization request, thereby assisting with building pallets or complex packaging configurations. Different label formats can be produced at each of the levels, ensuring warehouse labels are formatted properly for the container on which they will be placed. In addition, summary labels are printed at every level of the cartonization hierarchy. One summary label is printed for each package and each LPN created by the cartonization process.

Like standard cartonization, multi-level cartonization can utilize either container groups relating a set of items to a set of containers, or specific container load relationship indicating exactly how much of an item can be packed into each container.

The following graphic illustrates an example of multi-level cartonization.

Figure 6–5 Multi-Level Cartonization Example



In this example, forty disks can fit into each box and three boxes can fit into each case. The case is the outermost container, therefore it is associated with an LPN. Each box is labeled with a summary label identifying the boxes contents and the LPN of the case that they are packed into.

Multi-level cartonization builds on the setup already defined for cartonization. The two inner boxes from the single level setup can now be assigned a category code in the Contained Item category set, and similarly, an outer box can be given a category code in the Container Item category set. This indicates that, for instance, forty disks can be packed in a small inner box, and three small inner box can, in turn, be packed into an outer box.

Refer to the Setup chapter of this user's guide for more information on setting up cartonization.

Using Cartonization

The WMS uses cartonization for the following tasks:

- Sales order line picking (pick release)
- Cartonization prior to WIP completion
- Mobile bulk packing

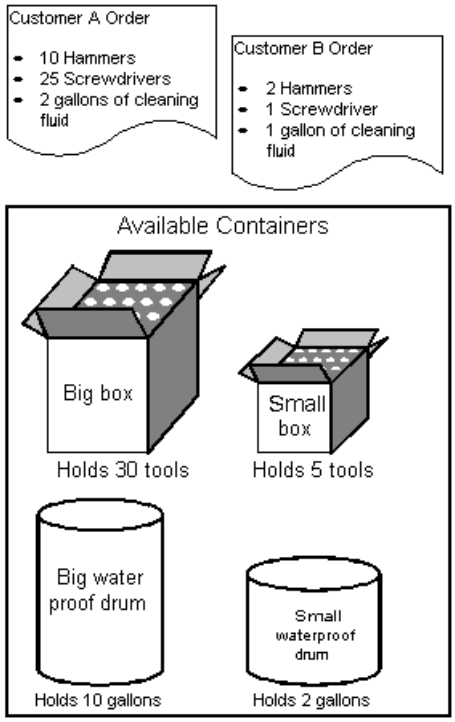
Describing Sales Order Line Picking

If cartonization is enabled for the warehouse from which the material is being picked, then the system automatically performs cartonization whenever sales orders are released for picking. During pick release, after the lines are allocated, they are grouped by delivery or delivery grouping criteria and cartonization group. The system then makes cartonization suggestions for each grouping and generates LPNs according to those groupings.

Without cartonization, at the beginning of the picking process, operators must guess the carton size to use. With cartonization, the system selects the best cartons to use, before the operator performs the first pick.

Sales Order Line Picking Example The following figures provide an example of cartonization results for two sales order picks.

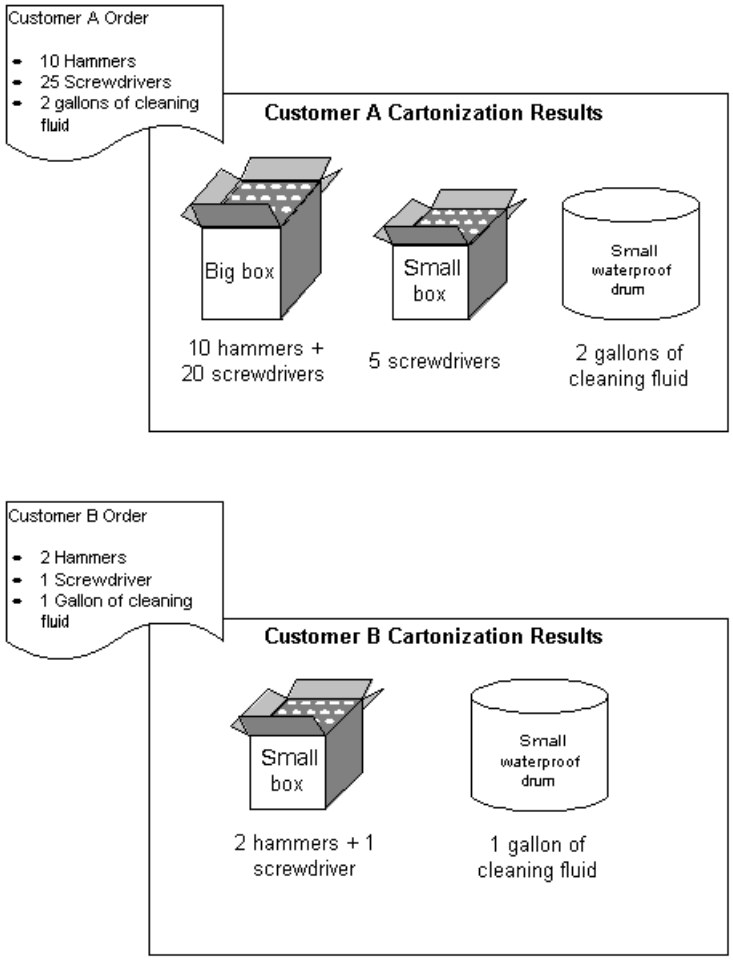
Figure 6–6 Cartonization Example of Sales Order Line Picking



In this example, assume that two customers, A and B, submit the sales orders (shown in the figure) to your warehouse. Also assume that you have two boxes (one large, one small), and two drums (one large and one small) into which sales orders can be packed.

Based on the sales order requirements for customers A and B, the system suggests the packing suggestions shown in the following graphic.

Figure 6–7 Cartonization Results of a Sales Order Pick



Of the 35 tools, and 2 gallons of cleaning fluid on Customer A's sales order, the system suggests the following packing configurations:

- The 10 hammers plus 20 screwdrivers, for a total of 30 tools should be packed in the box, that has a capacity of the 30 tools
- The remaining 5 tools should be packed in the small box–which has a capacity of 5 tools

- The 2 gallon of cleaning fluid should be packed in the big drum–which has a capacity of 2 gallons

Of the 3 tools, and 1 gallon of cleaning fluid on Customer B's sales order, the system suggests the following packing configurations:

- The 2 hammers and 1 screwdriver should all be packed in the small box
- The 1 gallon of cleaning fluid should be packed in the small drum

A license plate number will be generated for each container suggested above. Even if both orders are released together, the system will not cartonize them together. Thus, the picker will not be directed to put 12 hammers in the same box.

Describing Cartonization Prior to WIP Completion

Container prepack is used to suggest appropriate cartons and LPN labels prior to a WIP completion. By entering the quantity of an item that is nearing completion, the WMS can print LPN content labels that specify how many of the assembly should be packed into each container. The transaction that is associated with the WIP completion can be performed by scanning the LPN labels and putting the containers away into inventory.

If the item is serial controlled, the serial numbers must be pregenerated, and only a consecutive sequence of serial numbers can be prepacked. If the item is lot controlled you can enter the lot number directly into the form, or a lot number can be generated by the system.

WIP Completion Example Assume that a WIP job or schedule exists to produce 305 hammers. Assuming the same available containers as presented in the above example (big box with a capacity of 30, small box with a capacity of 5, a large waterproof drum with a capacity of 2 gallons, and a small waterproof drum with a capacity of 1 gallon), when prepack is run, the system will suggest the following cartons in which to pack the 305 hammers:

- 10 big boxes (10 big boxes X 30 tools per box) = 300 hammers
- 1 small box (1 small box X 5 tools per box) = 5 hammer

The system will also generate license plate numbers and pack those license plates with their anticipated contents.

> **Note:** The license plates and their contents will not be considered on-hand or available until they are completed from WIP.

When users are ready to complete the WIP job or schedule, he or she can scan the license plate rather than entering the item, quantity, and any required revision, lot, or serial number.

Using Cartonization Features to Pack Material

After the system performs allocations and the appropriate task types have been identified, the system must determine the appropriate packing configuration for the subject item. The system makes this determination for those items that are not already packed in cases or pallets for shipment. Thus, it is only advisable to use cartonization in subinventories where material is stored loose and not packed into LPNs.

At pick release, the system's cartonization engine selects the appropriate container items category for the item on the picking line and then determines a packed configuration, based on the number of items to be packed, their dimensions, weight, and capacity of the container, that minimizes the total number of containers that need to be used.

For more information about setting up cartonization, see Setting Up Cartonization.

Using Cartonization with Picking

If cartonization was used on the picking lines, you will see a slight change in the standard picking user interface. Now, the To LPN field, will already be determined, based on the LPN suggestion generated by the system during cartonization. Furthermore, the container item that was suggested will be displayed after the To LPN. Also, the system will not display the <Drop> option, until all lines have been picked into that LPN.

When all lines have been picked into a given LPN, the <Drop> option will be enabled.If you decide to load again, and later enter the drop form by viewing current tasks, the system will direct you to drop the material into the appropriate staging lane.

Note: Pick and pass picking can only be used with sales order lines that have been cartonized.

Explaining How to Use WMS Packing Options

WMS includes several packing options. With these options, you can perform the following:

- Packing tasks
- Unpacking tasks
- Splitting tasks
- Consolidation tasks

Note: You can use the Material Workbench in WMS to view the summary results of packing tasks.

Performing Packing Tasks

In the mobile interface Packing form, you can move loose material into an LPN. Use the following instructions to perform a standard packing task.

1. Log onto the mobile device.
2. Navigate to the mobile interface Packing form.

Figure 6–8 Mobile User Interface - Packing Form



3. In the To LPN field, enter, select, or generate ([CTRL]+[G]) the LPN being packed.

This LPN can be any LPN that exists in the locator or that has been defined, but not yet used.

4. In the Sub and Loc fields, use the list of values to select the subinventory and locator, respectively, from which the material is being packed.

   Note: If the LPN is already associated with a location, then the value in the From Loc field takes on the current location of the LPN and cannot be changed. However, if the LPN has been defined, but not used, then you must enter a from location.

5. In the Item field select the item and the item revision being packed.

   Note: The item must exist in the From Loc. that you selected in the previous step.

6. If it is different from the default unit of measure, in the UOM field, enter the unit of measure of the item being picked.
7. In the Qty field, enter the quantity of the item being packed.

   Note: You cannot pack more than the quantity of the item or revision available in the location from which you are packing.

8. If the material being packed is lot controlled, in the Lot field, enter or select the lot number being packed. Continue entering the lot and associated quantity for each lot-controlled item being packed.
9. If the material being packed in serial controlled, in the SN field, enter or select the serial number for each serial item being packed. Continue entering the serial number and associated quantity for each serial-controlled item being packed.
10. Select the <More> option to save the current transaction and refresh the screen.

    Note: The To LPN, Sub, and Loc fields remain visible. This enables you to pack more items into the same LPN without having to rescan those values. All pack transactions that you enter will be saved to the database when you select the <Pack> option.

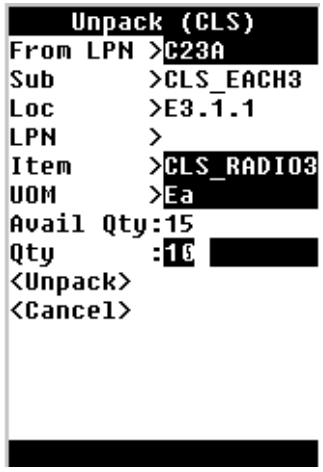
11. Select the <Pack> option to save this transaction and return to the main packing window.

Performing Unpacking Tasks

In the mobile interface Unpacking form, you can unpack material from an LPN to a loose location.

1. Log onto the mobile device.
2. Navigate to the mobile interface Unpack form.

Figure 6–9 Mobile User Interface - Unpacking Form



3. In the From LPN field, enter or select the LPN that you want to unpack.

> **Note:** After you select the LPN, the system displays the subinventory and locator where the LPN is stored.

4. In the Item field, select the item being unpacked.

Note: If only one item is associated with the From LPN, when you select the list of values, the system will automatically display the associated item.

5. In the Qty field, enter the amount of this LPN that you want to unpack.
6. Select <Unpack> to perform the unpacking transaction.

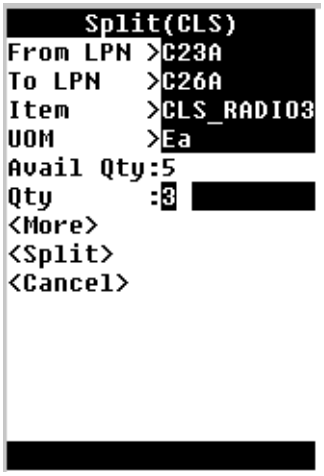
Note: You can use the mobile interface unpack option to also unpack an LPN from another LPN.

Performing Splitting Tasks

You use the mobile user interface Splitting screen to move material from one LPN to another. Splitting tasks involve performing an unpack transaction from the source LPN and then performing a packing transaction to the destination LPN.

1. Log onto the mobile device.
2. Navigate to the mobile interface Split form.

Figure 6–10 Mobile User Interface - Splitting Form



3. In the From LPN field, use the list of values to select the LPN that you want to split.
4. In the To LPN field, enter, select, or generate the LPN to which you want to move the split contents.
5. In the Item field, select the associated item from the list of values.

> **Note:** If only one item is associated with this LPN, when you select the item from the list of values, the system automatically displays the item in the Item field. The default UOM associated with the item is automatically displayed.

6. In the Qty field, enter the quantity that you want to split.
7. Select <More> if you want to split additional quantities of this LPN, otherwise, go to step 8.
8. Select <Split> to split this LPN into the To LPN.

Performing Consolidation Tasks

In the mobile interface LPN Consolidation form, you can consolidate, or pack an LPN into another LPN.

1. Log onto the mobile device.
2. Navigate to the mobile interface LPN Consolidate form.

Figure 6–11 Mobile User Interface - Consolidation Form



3. In the Parent LPN field, enter or select the LPN *to* which you want to consolidate.
4. In the Next LPN field, enter or select the LPN *from* which you want to consolidate.
5. Select <More> to enter additional to and from consolidation LPNs.
6. Select <Merge> to complete the consolidation transaction.

> **Note:** You can view the results of the consolidation in the Material Workbench. Query on Parent LPN to view the results of the consolidation task. The Next LPN, which is the LPN that you consolidated from, should not be displayed as a node under the parent LPN.

Describing Mobile Bulk Packing

Mobile bulk packing is used to suggest containers into which you can pack material in a particular locator in the warehouse. Mobile bulk packing also automatically generates the appropriate LPN labels. With bulk packing, you enter an item and quantity to be packed. You can enter a container item if you want the system to

suggest the appropriate quantity of that container only, or you can let the system suggest both the type and quantity of containers.

Any material for which there is a positive on-hand balance can be packed using this method. For example, operators might use mobile bulk packing if they find a large amount of loose material of an item that should be packed.

You access and perform mobile bulk packing tasks from the mobile user interface Bulk Pack option.

Note: Before performing bulk packing tasks, make sure that you have set up the appropriate container items and their related dimensions. Also, make sure that the items you want to pack are included in the Contained Item category.

Mobile Bulk Packing Example Assume that the Finished Goods inventory subinventory locator 1.1.1 contains 305 hammers. When you run mobile bulk packing, the system will suggest 10 big boxes and 1 small box (assuming that a big box has a capacity of 30 tools and a small box has a capacity of 5 tools), and will generate license plate numbers and then pack those license plates with their anticipated contents. These license plates and their contents will appear in the quantity on hand figures.

Performing the Shipping Confirmation Process

Shipments can be made on the mobile device for individual order lines, for order lines grouped into a common destination, and for entire trips that consist of multiple deliveries. The shipment confirmation process is the final step in the outbound process.

Overview of Shipping Confirmation Transactions

Shipping represents the point at which picked material leaves the warehouse (to fulfill an order). All material is packed into containers, that are uniquely identified by a LPN that is assigned during the pick confirmation process. Shipment confirmation then confirms that all of the LPNs picked for a particular order or trip, are loaded onto the truck.

Before performing ship confirmation transactions, you should be familiar with the following definitions:

Table 6–2 Shipping Terms

Term	Definition
Delivery	A collection of order lines that are going to the same customer and delivery address. A delivery can have many different items on it, and can span multiple orders, if those orders have the same customer and delivery address. One order can be split among different deliveries.
Trip	A collection of deliveries that will be shipped on the same outbound truck.
Trip Stop	Represents each pick up and delivery address on the trip.
Staging Lane	A special type of inventory locator where picks are dropped off. A warehouse can have multiple staging lanes, which model the physical lanes in the warehouse. Packed inventory is temporarily stored here until the actual ship confirmation removes it from the staging lane and issues the inventory. See, Warehouse Setup.
Dock Door	A special type of inventory locator where LPNs are loaded. A warehouse can have multiple dock doors, which model the doors in the warehouse. All LPNs in a dock door will be shipped together after all validation has been performed.
Ship Set	A group of order lines that are linked by a common number, for which you want the full quantity to ship all together.

For more information about the terms mentioned in the above table, see the *Oracle Shipping Execution User's Guide*.

Explaining Shipment Transaction Integration

The actual shipment confirmation transaction impacts the following Oracle modules:

- Order Management
- Shipping Execution
- Inventory

In Order Management, the order line is updated as shipped. In Shipping Execution, the delivery is closed and the pick up trip stop is closed. In Inventory, the on-hand balance is decremented, serial numbers are generated, if necessary, and LPNs are issued.

Describing Staging and Consolidation

After orders are picked, the system needs to direct the operator to the appropriate staging lane to drop off the product. The appropriate staging and consolidation location depends on the customer order and the shipping requirements. As part of outbound planning, an order can be linked to an outbound standing lane, which in turn, is linked to a dock door as the shipping dock.

If multiple operators are picking an order for one customer, then the order might need to be consolidated at the staging lane. Depending on how many partial pallets are on the dock for an order, the WMS enables operators to consolidate an order from multiple LPNs onto a single LPN.

To perform the consolidation, use the LPN consolidation form (also see the instructions on performing consolidation tasks. The system will not allow consolidation of LPNs that are staged for different deliveries.

Describing the Loading and Shipping Process

Before beginning the loading process, the operator must scan the dock door when he or she arrives. After orders are scanned into a staging lane, and consolidated, if necessary, the order must be loaded into the appropriate shipping vehicle, such as a truck. The WMS includes a loading function, which provides the operator with a prompt from the system to scan the dock door to which he or she wants to load. The system then prompts the loader to scan the first pallet LPN and load it into the designated vehicle. This process continues until all of the LPNs for that shipment have been loaded.

After all of the subject LPNs have been loaded, the system prompts the loader if he or she wants to confirm the shipment. Shipment confirmation triggers the printing of the following shipping documents:

- Bill of lading
- Packing list
- Outbound ASN
- Any additional paperwork that you have set up to print on ship confirm

Describing Oracle WMS Shipping Methods

Oracle supports two types of shipping:

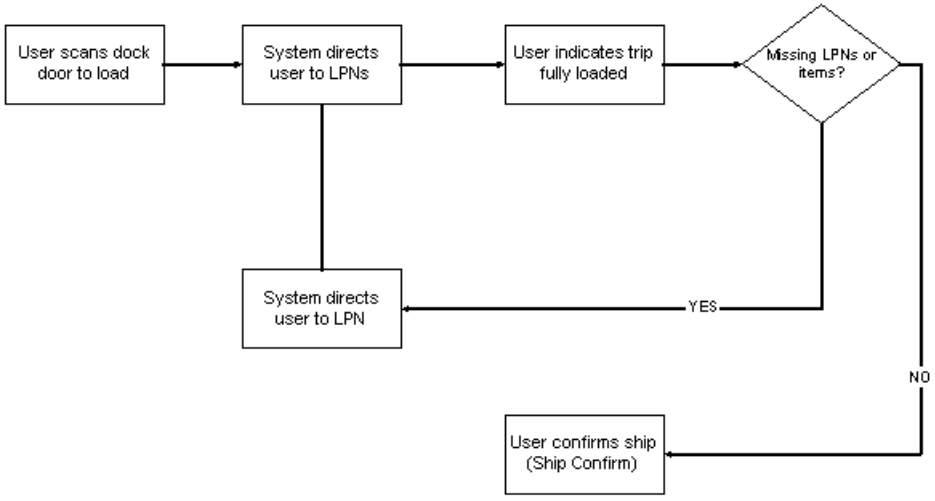
- Shipping by Trip
- Shipping by LPN

Shipping by Trip

With shipping by trip, the operator begins the shipping process by scanning the dock door. Because that dock door is scheduled for a trip, the system knows which LPNs need to be loaded onto the dock. The system then directs the operator to the LPNs that need to be loaded. The system does not require loading in any specific order. When the user is ready to close the shipment and ship all of the loaded LPNs, he or she selects the <Ship> option. At this point, the system checks for incomplete ship sets, missing LPNs, and missing items. A missing LPN is a LPN that has been staged for shipment, but not loaded on the truck. A missing item is an order line that is associated with the trip, but has not yet been pick confirmed. After all LPNs are loaded, the user can enter any header level information about the shipment, and the trip is then ship confirmed.

The following figure provides an illustration of shipping by trip.

Figure 6–12 Shipping by Trip



Shipping by LPN

If no trips have been planned and scheduled by the time that the operator is ready to ship confirm, then there are no dock appointments that need to be honored. However, if deliveries have been created, then the system can still determine when

missing items or missing LPNs need to be found for a delivery. LPN Ship can be performed even if deliveries have not been created prior to shipment; the only difference is that the system cannot direct the operator to missing items or missing LPNs, because it does not know which additional items need to go on the same delivery. As in shipping by trip, the operator begins by scanning the dock door to which they are loading the truck. The operator then scans each LPN that he or she wants to ship confirm, and select <Done> to confirm the shipment.

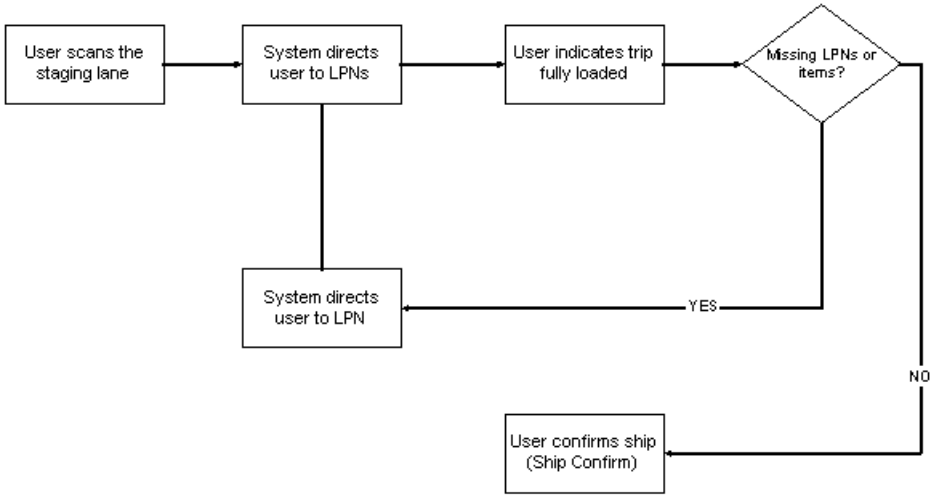
At this point, the WMS will still check for existing trips (if a trip was selected through this method) or deliveries that have not been fully shipped by the operator. The system checks include the following:

- Missing LPN
- Missing item
- Ship set

If all of the information has been entered appropriately, the operator can enter any header level information, such as weight, waybill, or carrier (if it was not known before) and then select the Ship Confirm option to confirm the shipment.

The following figure illustrates shipping by LPN.

Figure 6–13 Shipping by LPN



Describing Mobile User Interface Shipping Methods

With the mobile user interface, you can perform the following three types of shipment confirmation:

- EZ Ship
- LPN Ship
- Dock Door Ship

LPN Ship and Dock Door Ship provide the ability to unload the LPN, which allows reversing part of the shipping process so long as the shipment has not yet been ship confirmed.

EZ Ship

You use EZ Ship to ship an entire delivery, without confirming the individual LPNs. Because it is triggered by the deliver number, EZ ship requires that deliveries be set up. Furthermore, prior to performing an EZ Ship, all of the order lines on the delivery must be staged. The material statuses of the staging subinventory, locator, lots, and serials contained in the delivery should allow the shipment confirmation transaction. Also, no serial at sales order issues items can be on the delivery. All ship sets must be completely contained within the single delivery, or the system will not allow the delivery using the EZ Ship method.

How to Perform EZ Ship

1. Log into the mobile user interface and navigate to the EZ Ship form.

Figure 6–14 Mobile User Interface - EZ Ship Form



2. Enter or select a delivery number.
3. Enter an optional weight for this delivery.

   The Delivery UOM field defaults to the unit of measure specified on the delivery.
4. Enter an optional waybill number.
5. In the Ship Method field, select an optional shipping method.
6. Select <Done> to complete the transaction.

The EZ Ship process includes a <Return to Stock> option, which releases the reservations on all items that are contained on a delivery. Selecting the Return option is the quickest way to cancel an outbound process, if the customer order is canceled after all lines have been staged for shipping. In addition to releasing the item reservations, the <Return to Stock> option does the following:

- Change the delivery line status from Staged to Ready to Release
- Disassociate the LPNs with the delivery lines
- Unassigns the delivery detail lines from the delivery

LPN Ship

You use LPN Ship to individually confirm the shipment of all LPNS on a delivery, or to create new deliveries and confirm the shipment of LPNs that do not yet have a delivery. You begin the LPN Ship transaction by scanning the dock door from which the LPNs will be shipped. Next, you scan each LPN. If the LPN cannot be ship confirmed because of a material status assigned to a lot or serial contained in the LPN, or the staging subinventory and locator, then the system displays a message with this information.

Note: Multiple operators can load LPNs for LPN Ship transactions to the same door.

At any point during the LPN Ship process, you can check for missing LPNs, or missing items that are required at any dock door. However, when you try to continue to the next step, shipping all loaded LPNs, the system will not allow you to continue the transaction, if there are missing LPNs, or missing items. Missing LPNs are LPNs that have been staged, but not yet loaded. Missing Items are lines that have not yet been pick confirmed or pick released.

Note: If you use trip planning, but select LPN ship for shipment confirmation, the system extends its LPN check to all deliveries that are attached to any trip that is currently loaded at that dock door.

You have the option of unassigning missing items from the delivery and continuing with the transaction, or continuing with loading, but waiting for the missing items.

Note: You cannot use the mobile user interface to remove missing LPNs. Instead, you must remove them using desktop forms.

After all validation has been successfully performed, the system uses delivery grouping rules to create the deliveries and trips for LPNs that do not already have deliveries created. For each delivery that is at the dock, you can optionally enter the shipment weight, shipment method, waybill number, and other delivery-specific information.

How to Perform LPN Ship

1. Log into the mobile user interface and navigate to the Ship by LPN form.

Figure 6–15 Mobile User Interface - LPN Ship Form



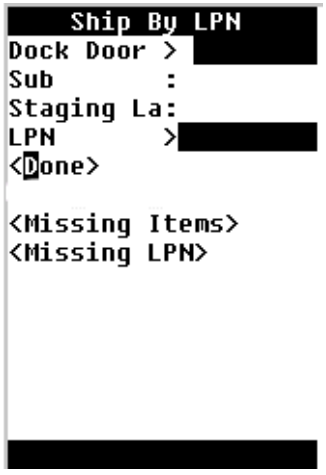
2. Select the Dock Door to ship from.
3. Select the LPN that you want to ship.
4. Select <Done> to complete the LPN shipment.

If this LPN is missing items or LPNs, or is restricted by material status, the system issues an appropriate warning. You can also select the <Missing Items> or <Missing LPN > to check for missing items or LPNs, respectively.

Dock Door Ship

You use Dock Door Ship to load and ship entire trips. Dock Door Ship uses a dock schedule and dock door appointments to intelligently suggest the best staging lane for the material. In order to take advantage of these features, the trip and a dock door appointment must be set up prior to pick release. The mobile user interface form for Dock Door Ship is similar to the LPN Ship form.

Figure 6–16 Mobile User Interface - Dock Door Ship



An LPN that has been loaded during the shipping process via either LPN Ship or Dock Door Ship can be unloaded. This simply reverses the load transaction and makes the LPN available to be loaded again. This is particularly useful if a shipment was mistakenly loaded to a truck or a dock door, or a shipment that was partially loaded must be backed out so that the dock door can be used for other transactions.

The list of dock doors is restricted to those doors which have LPNs loaded to them and the list of LPNs is restricted to those loaded at that dock door. The subinventory and locator display the staging lane from which the LPN is loaded, therefore, where the system will return the LPN if the unload transaction is completed.

Explaining Direct Shipping Without Picking

Oracle WMS enables you to ship confirm material for a sales order line without having to pick release or pick confirm the delivery lines. This feature is enabled by selecting the Direct Shipping Allowed check box located on the Warehouse tab of the Organizational Parameters desktop window. Selecting this check box does not disallow normal pick release shipping methods. Both Direct Shipping and normal pick release shipping can be utilized by selecting Direct Shipping Allowed.

The normal process flow for manufacturing operations when pick release is used assumes two material handling stages:

1. Put material away from manufacturing completion
2. Bring the same material from storage to the staging areas to prepare for packaging and loading to trucks

The second stage is initiated by the pick release process.

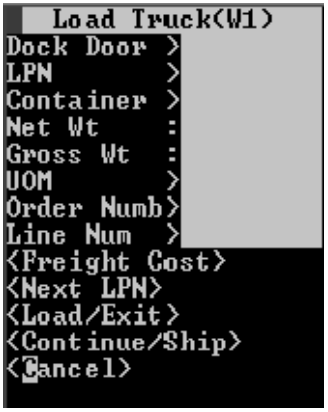
Pick release is the system to select the correct material to allocate for a particular sales order based on any user defined rules. However, in environments where product is built to customer order in a "just in time" mode, this decision is already made by the production schedule, and pick release is redundant and unnecessary. In such manufacturing modes, material is completed off of an assembly line ready to be loaded onto trucks for shipment. The assumption that forms the premise of pick release is that material is on hand in a warehouse storage location when the warehouse is ready to begin processing for shipment. This does not hold true for these scenarios. The additional step to pick material and deliver it to the staging lane is unnecessary because the material is brought to an outbound preparation area directly from manufacturing.

Note: The Direct Shipping Without Picking business process may only be applicable for some operations. In the automotive industry, for example, production jobs are shipped directly after finished goods completion, while after market service orders are fulfilled through a parts inventory that is built to stock and therefore requires picking activity.

How to Perform Direct Shipping Without Picking

1. Log into the mobile user interface and navigate to the Load Truck form.

Figure 6–17 Load Truck Form



2. Enter, or scan, the Dock Door.
3. Enter, or scan, the LPN for the shipment.

> **Note:** The LPN must be in inventory or be loaded to the same dock via Direct Ship; it cannot reside in receiving or WIP, be picked or prepacked, or loaded to a different dock door or via a different shipping method. After entering the LPN, the user will have to enter a sales order and sales order line for all of the LPN contents. The user will be required to enter at least one sales order and line for an LPN before allowing the next LPN to be loaded or ship confirmed. An LPN that has already been loaded to the same dock door for Direct Ship can be entered and additional sales order lines can be assigned to that LPN so long as there is additional available material in the LPN. If the LPN contains a greater quantity than the sales order lines require, then the sales order lines will be overshipped, so long as they are within shipping tolerances. If the LPN contains a smaller quantity than the sales order lines require, then the sales order lines will be undershipped.

4. Optionally, enter the Container, Net Wt, and Gross Wt

5. UOM field will be populated by the Weight UOM code that is defaulted from the LPN.
6. Enter, or scan, the order number. This is the sales order against which you are shipping the LPN. The list of values will display all booked orders. If the LPN is reserved against an order or line then it will restrict the LPN for the same order or line.
7. In the Line Num field, select the order line number from the list of values. This is the sales order line against which the user is shipping the LPN. It is a list of values containing all open lines for the sales order selected in the Order Numb field in ready for release or backordered status. Lines in Staged, Released, and Shipped statuses are excluded. Upon exiting the field, the system must validate that the order line item is found within the LPN.

Note: All sales order/sales order lines loaded in a single LPN must be for a single delivery. If deliveries have been created in advance, then only sales order lines associated to one delivery can be assigned to one loaded LPN. If deliveries have not been created in advance, then sales order lines will be assigned to deliveries as they are loaded in the Direct Ship page based on the Delivery Grouping rules and the user will be prevented from loading lines that would result in different deliveries to the same LPN.

Note: Because the sales order and order line fields are embedded in a single barcode, the user can scan one barcode from the Scheduled Shipment report to enter data into both fields.

At this point, the user will be required to enter any serial details for items that have serial at sales order issue control.

The user can select Next LPN to move on to the next LPN to be loaded. The dock door will remain the same, but all other fields will be cleared to enter the new LPN data.

The user can select Save at which time the system commits the loading of the LPN on to the Dock Door (changes the LPN context to Loaded to Dock) and instead of refreshing screen for accepting more LPNs, it exits from the Load Truck form and returns to the menu.) This can be used if multiple users are loading the same truck or if further verification must be done before the final ship confirm is done.

Setting Up Dock Door Appointments

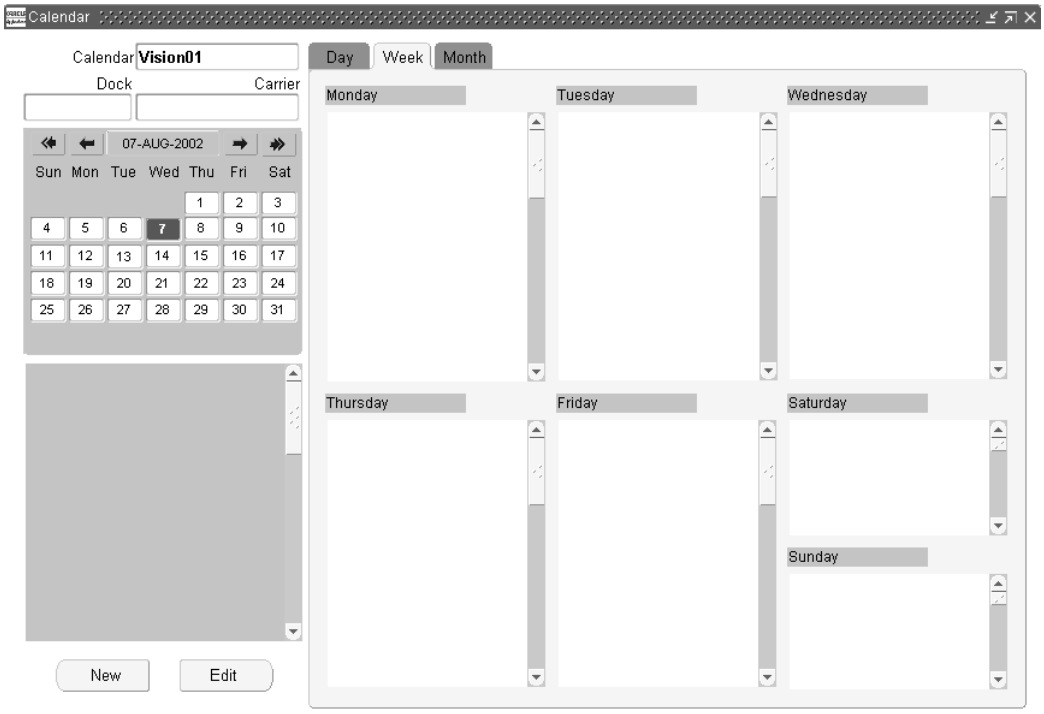
Prior to creating appointments for dock doors, the dock doors and associated staging lanes must be set up. Both dock doors and staging lanes are modeled as locators; the only difference between these locators and standard locators is that the locator type for each is different. For more information about setting up dock doors and staging lanes, see Warehouse Setup. After you set up dock doors and staging lanes, you must also set up dock door to staging lanes relationships.

For the system to suggest the appropriate staging lane for the material, prior to pick release, a dock door appointment must be set up for the trip. You make appointments for the trip using the Oracle Warehouse Management Dock Appointment window.

Scheduling Dock Appointments

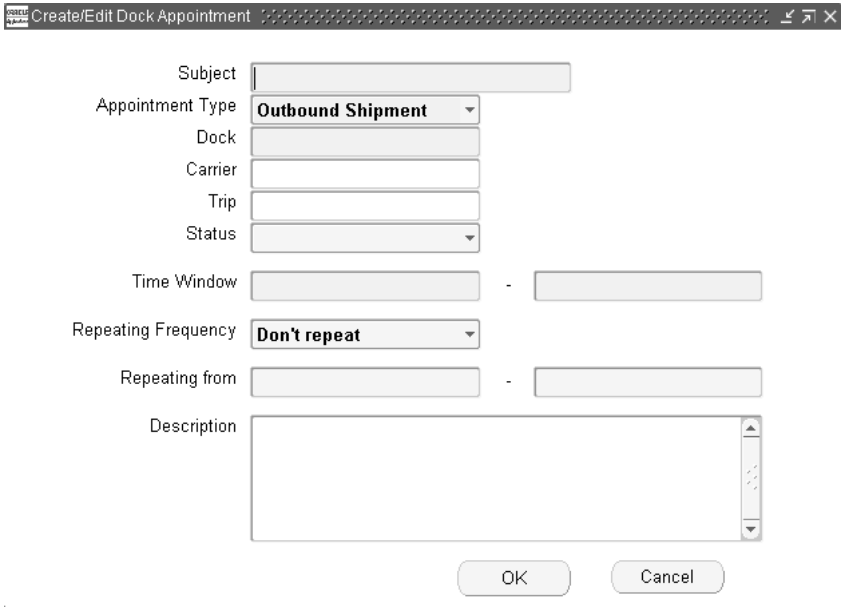
1. Navigate to the Calendar window.

Figure 6–18 WMS Calendar Window



2. In the Calendar field, select the calendar that you want to use to schedule this dock appointment.
3. Click New to open the Create/Edit Dock Appointment window.

Figure 6–19 Create/Edit Dock Appointment Window



4. Enter the subject (or brief descriptor) for this appointment.
5. In the Appointment type field, select the type of appointment that you are scheduling.

   The default is Outbound Shipment.
6. In the Dock field, use the list of values to select the dock door associated with this appointment.
7. In the Time Window field, use the list of values to select the times for which you are scheduling this dock appointment.
8. If this is a repeating appointment, complete the Repeating Frequency and Repeating From fields.
9. Enter optional appointment information in the following fields:

- Carrier
- Trip
- Description

Note: When you initially define an appointment, the trip is an optional field. This enables you to set up repetitive appointments, without having to tie any of the appointments to a trip, as the trip data will change from appointment to appointment. However, prior to pick release of sales orders for a given trip, the trip must be entered for the relevant appointment.

10. When you are finished, save your work.

    The system displays the results of your appointment schedule in the Calendar window.

After you set up the appointment, at pick release, the system checks the trip to determine if any dock door appointments exist, and then assigns a staging lane to the pick up trip stop.

After the trip has a staging lane and a dock door assigned to it, the actual shipment loading is identical to that for LPN Ship, except that the process is initiated by the selection of a dock door with appointment, rather than by selecting any dock door.

Thus, rather than display all of the available dock doors, the system only displays the dock doors that have open trips during the current time.

At this point, the mobile user interface is identical to that of the LPN Ship. One or more operators can load LPNs on the trip, and missing LPNs or missing items can be viewed at any point. Because all outbound transactions with this process re-assigned to a trip, the validation is also performed at the trip level. After the validation is completed, the <Ship> option enables the operator to enter delivery specific details, and then ship confirm the delivery. At this time, the system issues LPNs, decrements inventory, completes order lines, and close the trip stop.

A

Windows and Navigation Paths

Windows and Navigation Paths

This appendix provides the default navigator paths for the windows and mobile user interface used in the Oracle Warehouse Management system. The first table provides the default navigation paths for the standard WMS application windows. The second table provides the default navigation paths for the mobile user interface. Brackets [ ] indicate a button.

Default Navigation Paths for Standard Application Windows

Table A–1 WMS-Related Windows and Navigation Paths

Window Name	Navigation Path
Assign Label Types to Business Flows	Warehouse Manager: Setup > Warehouse Configuration > Printing > Assign Label Types to Business Flows
Associate Staging Lanes to Dock Door	Warehouse Manager: Setup > Warehouse Configuration > Warehouses > Dock Door to Staging Lane Assignments
Calendar	Warehouse Manager: Outbound Logistics > Dock Assignment
Categories	Warehouse Manager: Setup > Material Setup > Items > Categories > Category Codes
Category Sets	Warehouse Manager: Setup > Material Setup > Items > Categories > Category Sets
Container-Item Relationships	Warehouse Manager: Setup > Material Setup > Items > Define Container Item Relationships
Define Label Formats	Warehouse Manager: Setup > Warehouse Configuration > Printers and Devices > Define Label Formats

Table A–1 WMS-Related Windows and Navigation Paths

Window Name	Navigation Path
Departments	Warehouse Manager: Setup > Warehouse Configuration > Resources > Departments
Descriptive Flexfield Context Mapping	Warehouse Manager: Setup > Material Setup > Flexfields > Descriptive > Segments
Descriptive Flexfields Segments	Warehouse Manager: Setup > Material Setup > Flexfields > Descriptive > Segments
Item Lots	Warehouse Manager: Inquiry > View Lot Numbers
Lot Genealogy	Warehouse Manager: Inquiry > View Lot Numbers > [View Genealogy]
Master Item	Warehouse Manager: Setup > Material Setup > Items > Master Items
Material Status Definition	Warehouse Manager: Setup > Transaction Setup > Inventory Transactions > Material Status
Material Workbench	Warehouse Manager: Inquiry > Material Workbench
Organization	Warehouse Manager: Setup > Warehouse Configuration > Warehouses > Define Warehouses
Organization Parameters	Warehouse Manager: Setup > Warehouse Configuration > Warehouses > Warehouse Parameters
Parameters (for LPN generation)	Warehouse Manager: Inventory Management > Material Maintenance > Generate License Plates
Pre-Pack LPNs	Warehouse Manager: Inventory Management > Material Maintenance > License Plate Prepack
Receiving Options	Warehouse Manager: Setup > Warehouse Configuration > Warehouses > Receiving Parameters
Release Rules	Warehouse Manager: Setup > Warehouse Configuration > Rules > Pick Wave > Release Rules
Resources	Warehouse Manager: Setup > Warehouse Configuration > Resources > Resources
Returns	Warehouse Manager: Inbound Logistics > Returns
Rule Execution Trace	Warehouse Manager: Setup > Warehouse Configuration > Rules > Warehouse Execution > Rule Execution Trace
Rule Where Used	Warehouse Manager: Setup < Warehouse Configuration > Rules > Warehouse Execution > Rule Where Used

Table A–1 WMS-Related Windows and Navigation Paths

Window Name	Navigation Path
Segments	Warehouse Manager: Setup > Material Setup > Flexfields > Descriptive > Segments > [Segments]
Segment Values	Warehouse Manager: Setup > Material Setup >Lot/Serial Attributes > Value Sets > Values
Shipping Parameters	Warehouse Manager: Setup > Warehouse Configuration > Warehouses > Shipping Parameters
Shipping Transactions	Warehouse Manager: Outbound Logistics > Shipment Planning & Transactions
Standard Operations	Warehouse Manager: Setup > Warehouse Configuration > Tasks > Standard Task Types
Stock Locators	Warehouse Manager: Setup > Warehouse Configuration > Warehouses > Stock Locators
Strategy Assignments	Warehouse Manager: Setup > Warehouse Configuration > Rules > Warehouse Execution > Strategy Assignments
Strategy Search Order	Warehouse Manager: Setup > Warehouse Configuration > Rules > Warehouse Execution > Strategy Search Order
Strategy Where Used	Warehouse Manager: Setup > Warehouse Configuration > Rules > Warehouse Execution > Strategy Where Used
Subinventories	Warehouse Manager: Setup > Warehouse Configuration >Warehouses > Subinventories (B) New
Submit Request	Warehouse Manager: Other > Requests > Requests > Run
Warehouse Control Board	Warehouse Manager: Setup > Inquiry
WMS Rule Simulator	Warehouse Manager: Setup > Warehouse Configuration > Rules > Warehouse Execution > Rule Simulation
WMS Rules	Warehouse Manager: Setup > Warehouse Configuration > Rules > Warehouse Execution > Rules
WMS Rule Where Used	Warehouse Manager: Setup > Warehouse Configuration > Rules > Warehouse Execution > Rules Where Used
WMS Strategies	Warehouse Manager: Setup > Warehouse Configuration >Rules > Warehouse Execution > Strategies
WMS Strategy Where Used	Warehouse Manager: Setup > Warehouse Configuration > Rules > Warehouse Execution > Strategy Where Used
Value Sets	Warehouse Manager: Setup > Material Setup >Lot/Serial Attributes > Value Sets > Values

Default Navigation Paths for the Mobile User Interface

Table A–2 WMS Mobile User Interface Forms

Screen Name	Navigation Path
Bulk Pack	Whse Mgt: Warehousing > LPN Transactions > Bulk Pack
Choose Eqp/Sub	Whse Mgt: Warehousing > Tasks > Choose Eqp/Sub
Consolidate	Whse Mgt: Warehousing > LPN Transactions > Consolidate
Consolidate LPN	Whse Mgt: Warehousing > LPN Transactions > Consolidate
Current Tasks	Whse Mgt: Outbound > Tasks > Current Tasks
Cycle Counting	Whse Mgt: Warehousing > Inventory > Counting > Cycle Count
Express Load	Whse Mgt: Tasks > Express Load
Express Pick	Whse Mgt: Outbound > Tasks > Express Pick
Express Receive	Whse Mgt: Inbound > Express Receive
EZ Ship	Whse Mgt: Outbound > Quick Ship
Kanban Inquiry	Whse Mgt: Inquiry > Kanban
Load Truck	Whse Mgt: Outbound > Shipping > Direct Ship > Load Truck
Lot Merge	Whse Mgt: Warehousing > Lot Transactions > Merge
Lot Split	Whse Mgt: Warehousing > Lot Transactions > Split
LPN Inquiry	Whse Mgt: Inquiry > LPN
Misc Issue Txn	Whse Mgt: Warehousing > Inventory > Issues > Misc Issue
Move Orders - [Query all Move Orders]	Whse Mgt: Warehousing > Inventory > Move Orders
Org Transfer	Whse Mgt: Warehousing > Inventory > Transfers > Org Transfer
Pack	Whse Mgt: Warehousing > LPN Transactions > Pack
Pack LPN	Whse Mgt: Warehousing > LPN Transactions > Pack
Physical Count	Whse Mgt: Warehousing > Inventory > Counting > Physical Count
Pick Load	Whse Mgt: Outbound > Tasks > Acc Next Task > Pick Load
Putaway Load	Whse Mgt: Inbound > Put Away

Table A–2 WMS Mobile User Interface Forms

Screen Name	Navigation Path
Query Kanban Cards	Whse Mgt: Warehousing > Inventory > Kanban > Move Order
Receipt (standard receiving)	Whse Mgt: Inbound > Receiving > PO
Replenish Card (automatic)	Whse Mgt: Warehousing > Inventory > Kanban > Auto Replenish
Replenish Card (manual)	Whse Mgt: Warehousing > Inventory > Kanban > Replenish
Ship by LPN	Whse Mgt: Outbound > LPN Ship
Split LPN	Whse Mgt: Warehousing > LPN Transactions > Split
Sub Transfer	Whse Mgt: Warehousing > Inventory > Transfers > Sub Transfer
Unpack LPN	Whse Mgt: Warehousing > LPN > Transactions > Unpack
Update LPN	Whse Mgt: Warehousing > LPN Transactions > Update

B

Mobile User Interface and WMS

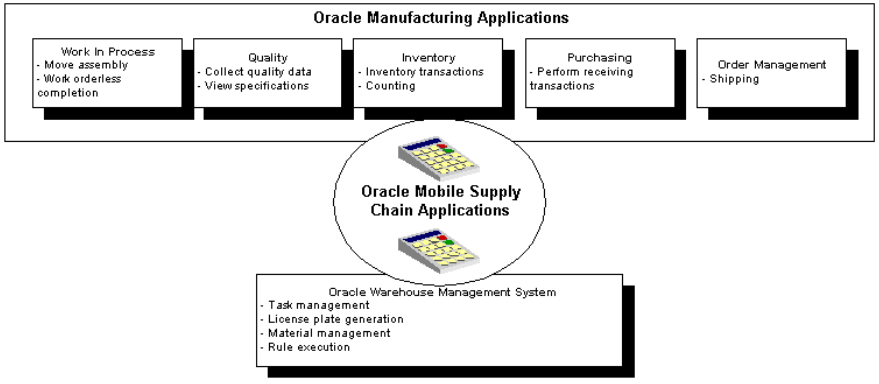
This appendix covers the following topics:

- ❏ Oracle Mobile Supply Chain Applications Overview on page B-2
- ❏ Using MSCA with Oracle Warehouse Management System on page B-4
- ❏ How the Warehouse Management System Builds on MSCA on page B-9
- ❏ Mobile Support for Attachments on page B-10
- ❏ Configurable Barcode Delimiter on page B-11

Oracle Mobile Supply Chain Applications Overview

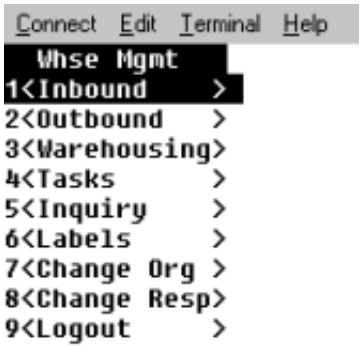
Oracle Mobile Supply Chain Applications (MSCAs) enables you to perform a variety of manufacturing application transactions, without using a desktop computer. You can use MSCAs with the majority of Oracle's suite of manufacturing modules, including Oracle Warehouse Management system (WMS). The following figure illustrates how the MSCAs integrate with Oracle's manufacturing modules. The example also shows just a few of the many transactions that you can perform using MSCA.

Figure B–1 Mobile Supply Chain Applications Integration



MSCAs run on hand-held devices manufactured by a variety of vendors. However, you can also emulate and use the MSCA functions by logging into a telnet session. The following figure shows an example of a Mobile Supply Chan Applications telnet session for WMS.

Figure B–2 Oracle MSCA Telnet Session



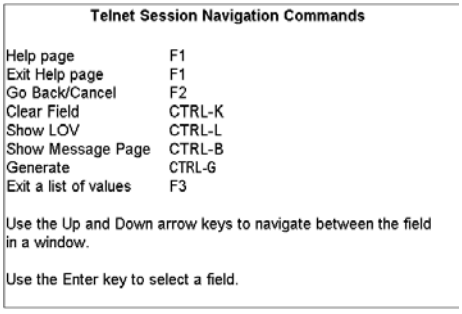
The user interface for the telnet session is the same as what you would see on a mobile device. The simple user interface enables warehouse operators to see only the relevant information that they need.

> **Note:** Because most WMS transactions are not available through the desktop forms, you must use a mobile device to run nearly all of the WMS-related transactions. As an alternative, you can use a desktop telnet session to perform warehouse transactions..

How to Navigate the MSCAs Telnet Interface

Navigating MSCA requires that you use a variety of keys on your keyboard. The following figure provides the basic navigation commands for using MSCAs in a telnet session.

Figure B–3 MSCAs Navigation Commands



Note: Navigation for different hand-held devices might deviate from the telnet navigation described in this section. Check the specific mobile device instructions about how to navigate vendor devices.

Using MSCA with Oracle Warehouse Management System

For Oracle WMS, the Mobile Supply Chain Applications enable warehouse employees to use hand-held devices to perform a variety of warehouse transactions, including the following:

- Inbound transactions, such as receiving, inspecting, and putting away
- Outbound transactions, such as picking, packing, and loading transactions
- Warehousing transactions, such as cycle and physical counting, miscellaneous receiving, and moving inventory from one location to another (move orders)

With MSCA you can do the following:

- Record transactions while you work
- Eliminate duplicate data entry
- Eliminate ob documents and multipart forms

Describing the Mobile Supply Chain Applications Menu for WMS

The MSCA menu for Oracle WMS includes the following options:

- Inbound
- Outbound
- Warehousing
- Tasks
- Inquiry
- Labels

Note: All menus enable you to change responsibilities and log out of a Mobile Applications session.

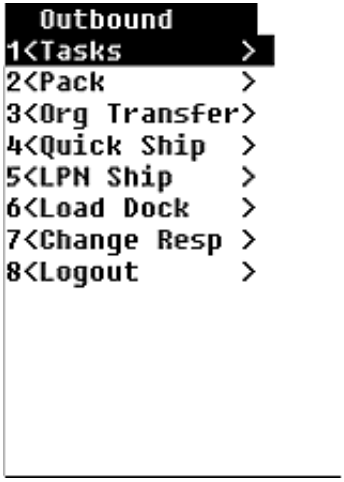
Inbound Menu You use the Inbound menu to perform receiving transactions, such as receiving, inspecting, and put away tasks. .The following figure provides an example of the WMS Inbound menu.

Figure B–4 Mobile User Interface - WMS Inbound Menu



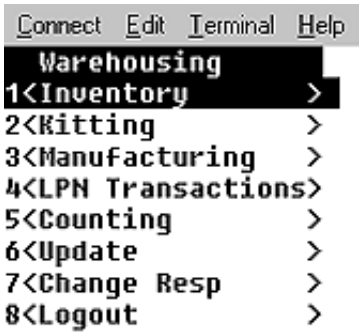
Outbound Menu You use the Outbound menu to perform picking, packing, and shipping tasks. You can also perform inventory transfers between organizations. The following figure provides an example of the WMS Outbound menu.

Figure B–5 Mobile User Interface - WMS Outbound Menu



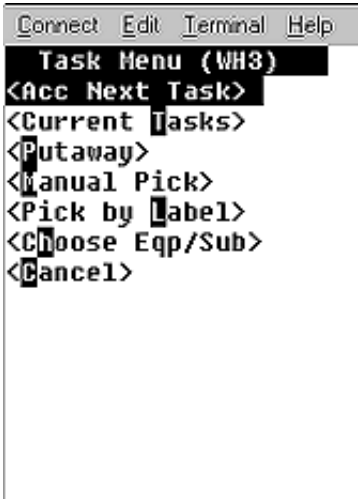
Warehousing Menu You use the Warehousing menu to perform tasks inside of the warehouse. You can use this menu to perform a variety of inventory transactions, such as issuing and receiving material. You can also perform move orders–moves within your organization—through this menu. The Warehousing menu also enables you to perform kanban replenishment. The following figure provides an example of the WMS Warehousing menu.

Figure B–6 Mobile User Interface - WMS Warehousing Menu



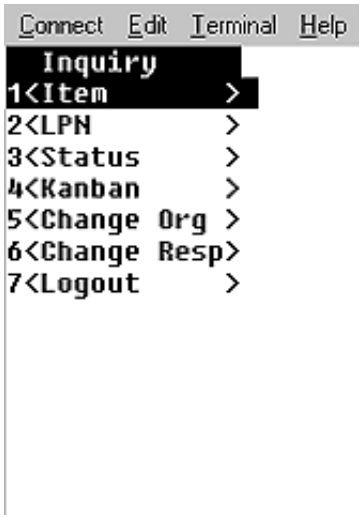
Task Menu The Tasks menu enables you to retrieve the tasks that you are qualified to perform, based on your skill set and the equipment, if any, that you sign onto. After logging into the task menu, you can select your next task in the que, or choose to perform a variety of other tasks, such as perform a manual pick or select different equipment. The following figure provides an example of the WMS Task menu that appears after you logged into the mobile device and have selected a piece of equipment.

Figure B–7 Mobile User Interface - WMS Task Menu



Inquiry Menu You use the Inquiry menu to find an item or LPN, or to view the material status of a particular object, such as the material status assigned to a lot. You can also use the Inquiry menu to find a particular kanban card.

Figure B–8 Mobile Applications WMS Inquiry Menu



How the Warehouse Management System Builds on MSCA

All Mobile Supply Chain Applications forms are available in WMS. With some exceptions, the functionality of these forms is the same. The following table provides a list of the exceptions between the Mobile Supply Chain Applications forms and WMS.

Table B–1 Mobile Transaction Differences between Oracle Inventory and WMS

Mobile Transaction	Inventory Organization	WMS Organization
Put away suggestion	All transactions are performed as loose material, no LPNs are allowed.	Transactions may be performed on loose material, or by LPN (for packed material).
Cost group assignment	System always assigns the cost group associated with the subinventory. all material in a subinventory must have the same cost group.	Rules engine is used to suggest cost group. Thus, material in the same subinventory could have the different cost groups.
Replenishment	System uses inventory picking rules to allocate material for replenishment, users transact move orders to execute the replenishment.	System uses WMS picking rules to suggest allocation and creates a WMS task to pick the material.

Table B–1 Mobile Transaction Differences between Oracle Inventory and WMS

Mobile Transaction	Inventory Organization	WMS Organization
Picking	System uses inventory picking rules to suggest allocation. Users transact move orders to execute the pick.	System uses WMS picking rules to suggest allocation and creates a WMS task to pick material.
Task type	Inventory does not dispatch tasks, pick confirm through move order or pick confirm forms.	Rules-based task type assignment. Tasks are then dispatched to the qualified user when he or she requests tasks.
Label format suggestion	One label format is supported per label type. This format is always selected.	Multiple label formats per label type are permitted. Label format (including content and layout) selection is rules based.
Cycle Counting	Cycle counts are generated and printed. The counter performs the count and returns paper work to be entered into the system.	Cycle counts are dispatched to qualified mobile users via a mobile RF device. The user enters the count and the system is updated.

The following table provides a summary of the functionality that you receive with Mobile Supply Chain Applications and Oracle Warehouse Management.

Table B–2 MSCA and WMS Functionality

MSCA Only	MSCA with WMS Installed, Not Enabled	MSCA with WMS Installed, Enabled
Mobile user interfaces for inventory transactions	Material status control	Tasks
Mobile user interfaces for receiving transactions (receipt, inspection, delivery)	Lot and serial attribute entry and tracking	Rules
Mobile user interfaces for shipping transactions (pick confirm, ship confirm)	Lot split and merge transactions	Cost group flexibility
Label print requests	Not applicable	All of the additional functionality included in this user's guide.

Mobile Support for Attachments

WMS enables you to display Attachments to mobile operator as part of certain business flows. Text notes can be attached to specific Items and/or Item Categories. The three types of attachments, specific to the mobile UI, include:

- To Mobile Receiver
- To Mobile Put Away
- To Mobile Picker"

Attachments of type "To Mobile Receiver" are displayed during the mobile WMS Receipt transaction. Attachments of type "To Mobile Put Away" are displayed during the mobile WMS Put Away transaction. Attachments of type "To Mobile Picker" are displayed during the mobile WMS Pick Load transaction. Text notes can also be attached to Sales Order Lines of type "To Mobile Picker".

You can configure the mobile transactions to always show relevant attachments, display a button for relevant attachments, or to never show attachments via the form function parameter, ATTACHMENT_DISPLAY_MODE. This parameter can be given the values ALWAYS, REQUEST, and NEVER. All the attachments that apply to a given item for a given business flow are displayed together. Because this is controlled by a form function parameter, the parameter can be set differently for the different forms, or even for different individuals by setting up duplicate forms with different responsibilities.

Configurable Barcode Delimiter

There are several occasions when two pieces of data must always be entered in sequence on the mobile device. For example, a subinventory and locator are always entered together if the subinventory is locator controlled, an item is always followed by its revision if it is revision controlled, and a purchase order number is always followed by the line number.

An operator can make two scans to populate the data on the mobile device. Or a single scan of a barcode with an embedded carriage return can also be used to print the data. However, the embedded carriage return may not provide the desired appearance on the printed label. MSCA and WMS enable a user-defined delimiter to be used for these pieces of data.

Three profile options are available for the user to indicate a single character which can serve as a delimiter, inlcuding:

- WMS: Item/Revision Delimiter
- WMS: PO Number/Line Delimiter
- WMS: Subinventory/Locator Delimiter

Each profile can be set at the site level and are applicable to both MSCA and WMS. The character indicated by these profile options will be interpreted as a carriage return, enabling a single scan to populate two different fields on the mobile device.

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