

ORACLE WAREHOUSE MANAGEMENT 11i

KEY FUNCTIONALITY IN ORACLE WAREHOUSE MANAGEMENT SYSTEM THAT IMPROVE WAREHOUSE EFFICIENCIES

Index

<i><u>Introduction.....</u></i>	<i><u>3</u></i>
<i><u>Setup Considerations.....</u></i>	<i><u>4</u></i>
<i><u>License Plate Numbers (LPN).....</u></i>	<i><u>5</u></i>
<i><u>Consolidation and Cross Docking.....</u></i>	<i><u>6</u></i>
<i><u>Tasks and Departments.....</u></i>	<i><u>8</u></i>
<i><u>Label Setup.....</u></i>	<i><u>9</u></i>
<i><u>Business Flows.....</u></i>	<i><u>11</u></i>
<i><u>Warehouse Management System Responsibilities.....</u></i>	<i><u>12</u></i>
<i><u>Warehouse Management System Profile Settings.....</u></i>	<i><u>12</u></i>
<i><u>Third-Party Printing Options.....</u></i>	<i><u>12</u></i>
<i><u>Radio Frequency (RF) and Wireless Devices.....</u></i>	<i><u>13</u></i>
<i><u>Summary.....</u></i>	<i><u>13</u></i>

Introduction

Oracle Warehouse Management System (Warehouse Management System) and Oracle Mobile Supply Chain Architecture (MSCA) have provided the ability to perform many traditional material handling processes more quickly and efficiently. Oracle Warehouse Management System has the ability to manage and improve the process of material picking, receiving and replenishment by incorporating barcode and RFID scanners.

This paper focuses on the guidelines and setup steps required to take advantage of Oracle Warehouse Management Systems functionality that is aimed at improving material handling including:

- Receiving
- Material Adjustments
- Replenishment
- Movement
- Shipping Transactions
- Label Generation

MSCA is an Oracle server that provides connection for transactions in Oracle Warehouse Management System via mobile devices through a telnet connection. MSCA is embedded into Warehouse Management System.

The areas that benefit most from using Warehouse Management System are:

- Inbound Receiving
- Order Picking
- Shipping Execution
- Work Order Completion
- Flow Schedule Completion
- Kanban Replenishment
- Cycle Counting
- Physical Inventories

Scanners and radio frequency (RF) devices from manufactures such as Symbol, PSC, LXE and Intermec connect to an existing 802.11.b wireless network and connect to the MSCA server.

Oracle Warehouse Management System also relies on a third-party printing solution such as Loftware or Optio Software to read XML output and print manufacturers include Zebra, Intermec and Sato.

The next section will discuss the setup requirements needed to implement Warehouse Management System in an Oracle 11.5.10 environment.

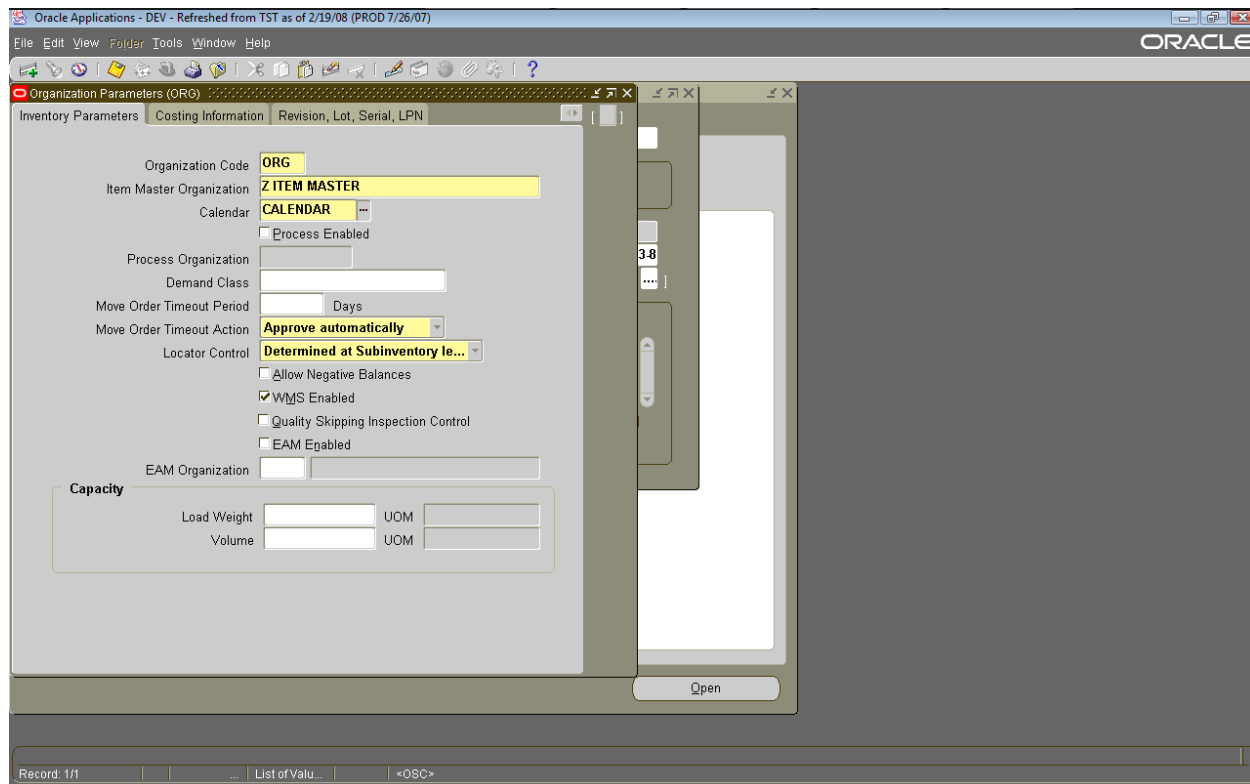
Setup Considerations

The setups steps are completed using the Warehouse Manager or Inventory Superuser responsibility. The major setup steps include the following main activities.

1. Define and enable the locator flexfield and segments
2. Define at least one stock locator in each of the Subinventories
3. Enable Warehouse Management System at the organization level
4. Define label types
5. Define printers to XML port
6. Associate labels to printing software

The first step is to define and enable the stock locator flexfield and segments in inventory. Oracle Warehouse Management System uses the stock locator to drive rules for material put away and picking. At least one stock locator must be defined for each Subinventory.

The next step is to check the “Enable Warehouse Management System” check box on the Inventory Organization Parameter form.



Enabling this parameter activates the allocation and rules engine for this organization. This parameter also allows for the use of containers and License Plate Numbers (LPN).

License Plate Numbers (LPN)

An LPN is any object that exists in a location and holds items. You can use Warehouse Management System to track, transact, and nest LPNs.

LPN sequence needs to be set up in the Organization Parameter form under the Warehouse Management tab.

Oracle Applications - DEV - Refreshed from TST as of 2/19/08 (PROD 7/26/07)

Organization Parameters (BOP)

Inventory Parameters | Costing Information | Revision, Lot, Serial, LPN

Starting Revision: 0

Lot Control

Uniqueness: None

Generation: At item level

Zero Pad Suffix

Prefix: _____

Total Length: 30

Serial Control

Uniqueness: Within inventory model and items

Generation: At organization level

Prefix: _____

Starting Serial Number: 1

Allocate Serial Numbers: _____

LPN Generating Option

Prefix: L Suffix: _____

Starting LPN Number: 100

Open

Record: 1/1 ... <OSB>

You can use LPNs in the following ways:

- Store information about an LPN such as item, revision, lot, serial, organization, subinventory, or locator
- Track contents of any container in receiving, inventory, or in-transit
- Receive, store, and pick material by LPN
- View on hand balances by LPN
- Move multiple items in a transaction by LPN
- Transfer LPN contents
- Pack, unpack, consolidate, split, and update LPNs
- Print labels and reports for referencing container contents
- Track nested LPNs
- Reuse empty LPNs
- Receive and send LPN information on an ASN

Consolidation and Cross Docking

Cartonization and cross docking are also controlled by organization parameters. Cross docking allows for material to be received and directly delivered to a shipping dock or manufacturing assembly line. Cartonization provides for box and container suggestions by item based on rules for size and weight. Cartonization can be controlled in manufacturing and at shipping.

The screenshot shows the Oracle Warehouse Management 11I 'Organization Parameters (BOP)' form. The window title is 'Oracle Applications - DEV - Refreshed from TST as of 2/19/08 (PROD 7/26/07)'. The form is divided into several sections:

- Crossdocking:** Includes a checkbox for 'Enabled' (unchecked) and a checked checkbox for 'Prioritize Manufacturing'. Below are two text input fields: 'Delivery Subinventory for Mfg' and 'Delivery Locator for Mfg'.
- Time Zone:** A text input field.
- Default Cycle Count Header:** A dropdown menu with 'CYCLE COUNT' selected.
- Default Rules:** Includes 'Picking' and 'Put Away' dropdown menus, both set to 'Seeded Default pick rule' and 'Seeded Default putaway rule' respectively.
- Cartonization:** Includes 'Enable Cartonization' set to 'Controlled at Subinventory', a checked checkbox for 'Cartonize Sales Orders', and an unchecked checkbox for 'Cartonize Manufacturing'.
- Direct Shipping Allowed:** A checked checkbox.

An 'Open' button is located at the bottom right of the form area. The status bar at the bottom shows 'Record: 1/1' and '<OSC>'.

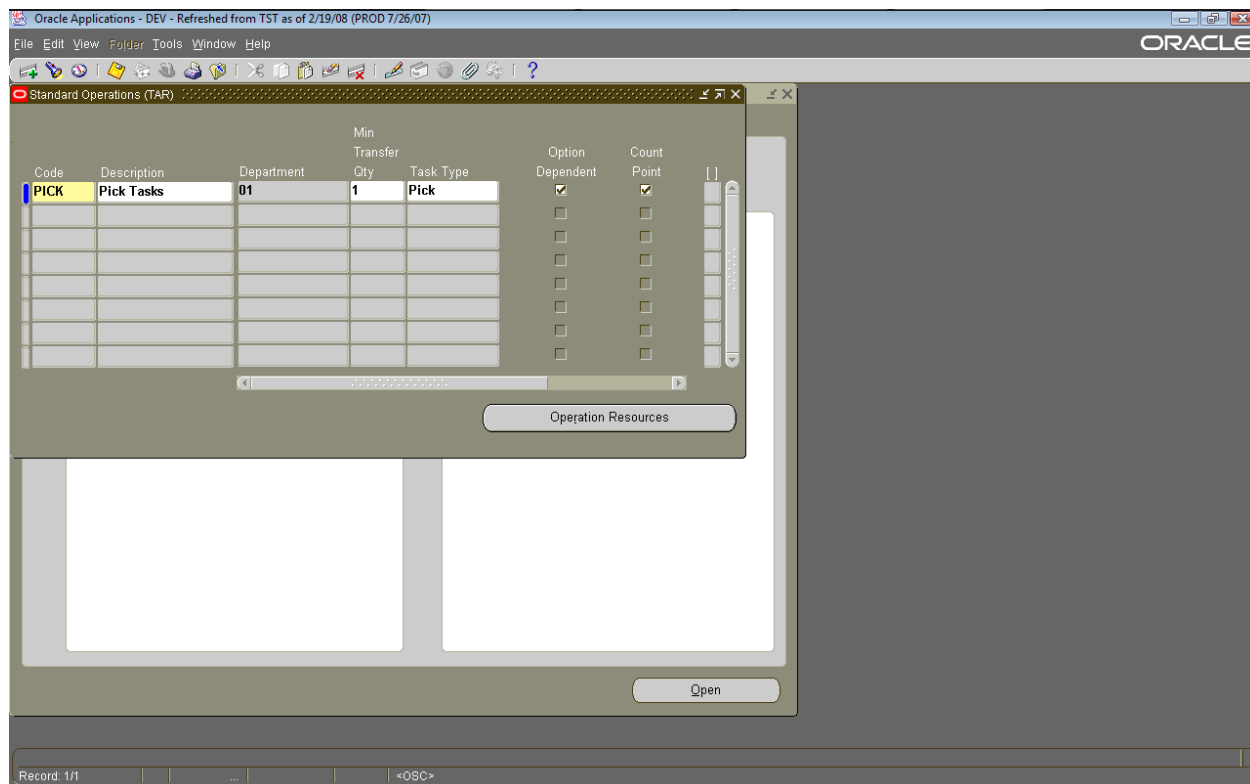
Tasks and Departments

Another new feature introduced with Oracle Warehouse Management System is the control board. The control board allows a warehouse manager to allocate activities or tasks to a material handler. The control board also allows for prioritization of tasks assigned to a material handler. In order for these tasks to be automatically assigned, material handlers need to be assigned as a resource to a department. This control board functionality allows the warehouse manager ultimate flexibility in terms of resource allocation across the warehouse.

There are several tasks that need to be defined in order for Warehouse Management System to work properly. These include:

- Picking
- Put away
- Cycle counting

The form below shows the setup for a Pick Task.



Label Setup

The next step is to define labels and associate them to business flows. A business flow in Oracle Warehouse Management System is an event such as a Purchase Order Receipt or a Ship Confirmation process. The next event automatically generates an XML file that can be stored on a file server or sent directly to the print server. The advantage of sending the XML file directly is there is no delay in the processing of the XML file. If the XML file is stored in a directory on the server, the file must be transferred to the print server by FTP or another means. The XML file can also be sent directly to XML-enabled printers.

Oracle Warehouse Management System is defined with several label types:

- **Material:** Provides information about the item, including lot information if applicable
- **Serial:** Provides information specific to the serial number of the item
- **Location:** Provides information about specific warehouse locators
- **WIP Content:** Provides information about WIP components picked for a job. It includes the component number, serial, lot, job number, assembly number, and start date.
- **LPN:** Provides information about the LPN but does not contain content information
- **LPN Content:** Provides information about the LPN and content details
- **LPN Summary:** Provides information about the LPN and a summary of the contents (including nested LPNs)
- **Shipping:** Provides information about the outbound shipment, such as the address
- **Shipping Contents:** Provides information about the outbound shipment and the contents of the shipment

The following is an illustration of the material label. The material label is widely used in Inventory Management and Warehouse Management System to identify items as they are received into a warehouse from Work in Process (WIP) or Receiving.

Oracle Applications - DEV - Refreshed from TST as of 2/19/08 (PROD 7/26/07)

File Edit View Folder Tools Window Help

Define Label Formats

Define Label Field Variables

Label Type: **Material**

Label Format: **Seeded Label Default for Mater**

Label Fields

Field Name	Field Description	Field Variable Name	Description
Item	Item	item	item
Item Description	Item Description	item_description	item_description
Lot	Lot	lot_number	lot_number
Quantity	Quantity	quantity	quantity
UOM	UOM	uom	uom
Organization	Organization	organization	organization

Open

Record: 1/1 | ... | <OSC>

Warehouse Management System Responsibilities

Two types of responsibilities exist for Warehouse Management System. The first is the standard Desktop Applications. The second is to navigate to the telnet / mobile forms.

The seeded responsibility "Whse Mgmt" should be copied and modified to support requirements. These paths can be modified via the system administration or AOL developer forms.

Warehouse Management System Profile Settings

Several Warehouse Management System Profiles need to be set to make Warehouse Management System work properly. These include:

Warehouse Management System: Label Print Mode =

- Synchronous (not used)
- Synchronous TCP / IP
 - Synchronous sends the XML directly to a print server or XML printer
- Asynchronous
 - Asynchronous uses the next profile to write the XML to a directory on the server.

Warehouse Management System: Output Directory

- This profile is only used if the Label Print mode is set to Asynchronous
- This directory is used to write the XML file out
- The print server may need to read this directory to pull files from this directory.

Third-Party Printing Options

As described earlier, Oracle Warehouse Management System does not provide the ability to print barcode, RFID tags or labels. A print solution from Loftware (www.loftware.com) or Optio software (www.optiosoftware.com) is needed. These products can receive XML from Oracle Warehouse Management System via an open port on the server or scan the output directory. Direct input via a port is the best option since time between the generation of the XML and the printing of the XML is reduced. Special RFID printers and RFID tag material are needed to embed the RFID information into the tag. Companies such as Zebra (www.zebra.com) make the printers and RFID materials you will need.

Radio Frequency (RF) and Wireless Devices

Warehouse Management System supports two types of user interfaces, telnet based, and graphical. You can use either a character mode interface, or a graphical user interface (GUI) that mimics the desktop application. The type of interface you choose depends on the type of data entry in your implementation, and the capabilities of the mobile device. If you plan to use the GUI interface, you must install a J2ME compatible Java virtual machine and the GUI client application on the mobile device. If you plan to use the telnet based user interface in your implementation, the device must support telnet over TCP/IP.

The database administrator or network administrator will need to install and start the MSCA server. In addition, a network administrator may need to install the printing software on a network server and create a share drive for label templates. RF and wireless devices must have a radio and must support a telnet session to communicate to the MSCA server.

Scanners and radio frequency (RF) devices from manufactures such as PSC (www.psc.com), LXE (www.lxe.com), Symbol (www.symbol.com) and Intermec (www.intermec.com) connect to an existing 802.11.b wireless network and connect to the MSCA server. These companies also make special scanners to read the embedded information in an RFID tag.

Summary

Oracle Warehouse Management System provides a very powerful tool that is fully integrated into the Oracle E-business suite of applications including Inventory and Purchasing. Oracle customers are no longer forced to use “bolt-on” or customized interfaces, which is an improvement that reduces effort and risk of error dramatically.

In addition, Oracle Warehouse Management System enables important activities not addressed in this paper including:

- Ability to scan inbound shipments
- Ability to have directed putaways
- Ability to have directed zone picking for sales orders and work orders
- Ability to create Kanban replenishments
- Ability to perform cycle counts and physical inventory transactions on mobile devices
- Ability to perform real-time inventory adjustments
- Ability to complete work orders and flow orders on mobile devices

About the Author

Ian Gramaccioni is a Senior Oracle Business Analyst with Motion International. Mr. Gramaccioni has over twelve years experience in designing and implementing business improvement strategies using Oracle functionality. Mr. Gramaccioni has served as Functional Subject Matter Expert, Business Process Lead Role, and Project Manager on large scale Oracle implementation projects. Ian Gramaccioni has successfully restructured global supply chain operational processes to maximize efficiencies and eliminate waste in the global supply chain.

About Motion International

Motion International is an experienced, exclusively Oracle professional services company that works with manufacturing and retail firms with international operations. One of very few firms that offers high-caliber multinational Oracle expertise worldwide, it has developed several proprietary best practices, tools and methodologies to ensure successful delivery. Headquartered in Minneapolis, Motion has delivered Oracle projects on five continents. Its clients include some of the world's largest global companies.

Corporate Headquarters

United States

Northland Plaza
3800 American Blvd West | Suite 425
Minneapolis, Minnesota 55431
T: +1 952 746 5630

Italy

Via Santa Maria Valle 3
20123 Milano (MI)
Italy
T: +39 02 00681.620

United Kingdom

7887-790 Finchley Road
GB - NW11 7TJ London
T: +1 952 746 5630

This document has been created and published by Motion International. This document is copyrighted property of Motion International with all rights reserved. This information may not be copied in whole or in part without the prior written consent of the copyright owner.

This document is for informational purposes only. The information in this document represents the view of Motion International as of the date of publication and is subject to change.

MOTION INTERNATIONAL MAKES NO WARRANTIES, EXPRESS OR IMPLIED, AS TO THE INFORMATION IN THIS DOCUMENT.