



Infor LN Warehousing User Guide for Warehouses

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About this Guide

Objectives

The objectives of this book are to describe the purpose and the use of warehouses.

References

Use this guide as the primary reference for the setup and the use of warehouses. Use the current editions of these documents for information that is not covered in this guide:

- *User Guide for Warehousing Procedures*
- *User Guide for the Inbound Goods Flow (U9788 US)*
- *User Guide for the Outbound and Shipments Goods Flows (U9794 US)*
- *User Guide for Warehousing Inspections (U9875 US)*
- *User Guide for Warehousing Quarantine Handling (U9876 US)*
- *User Guide for Delivery Notes and Shipments (U8982 US)*
- *User Guide for Cross-docking (U8939 US)*
- *User Guide for Direct Material Supply (U8945 US)*

How to read this document

This document is assembled from online Help topics.

Text in italics followed by a page number represents a hyperlink to another section in this document.

Underlined terms indicate a link to a glossary definition. If you view this document online, clicking the underlined term takes you to the glossary definition at the end of this document.

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Chapter 1: Introduction

Using warehouses

Warehouses are places where goods are stored.

You can optionally divide a warehouse in locations or zones.

Purchased and produced goods, but also goods from other origins, can be stored in warehouses. These goods are retrieved from the warehouse later on for production, sales, service, or transport to another warehouse.

To define warehouses

Warehouses are initially defined in the **Warehouses (whwmd2500m000)** session. You can start this session:

- By clicking New in the Warehouses tab of the **Enterprise Unit (tcemm0630m000)** session or the **Site (tcemm0650m000)** session.
If you create a warehouse for an enterprise unit in the **Enterprise Unit (tcemm0630m000)** session, the warehouse is automatically linked to the *enterprise unit*.
If you create a warehouse for a site unit in the **Site (tcemm0650m000)** session, the warehouse is automatically linked to the *site*.
- Stand-alone.

In the **Warehouses (whwmd2500m000)** session, you can define addresses for each warehouse and data that relates to its type.

In this session you can, for example, also define:

- Whether a warehouse is location-controlled.
- The default location data.
- Lead times:
 - *inbound lead time*
 - *outbound lead time*
 - *cross-dock lead time*
- The use of *handling units*
- Settings for:
 - *cross-docking*
 - *direct material supply*

Warehouses are used throughout all the modules of Warehousing.

To register item master data for each warehouse

To get information about item data for each warehouse, you can view or report the item data by warehouse in the **Item Data by Warehouse (whwmd2510m000)** or the **Print Warehouse - Items Inventory (whwmd2410m000)** session.

In these sessions you can view or change, for example, this information:

- Safety stock
- Reorder point
- Forecast method
- Pricing information

Item data (by warehouse) is used in these processes:

- Calculate the demand forecast
- Advise purchase and production orders
- Maintain purchase and production orders
- Maintain inventory transactions

Chapter 2: Item Data

Tool items in Warehousing

Tool items can be purchased or produced based on a *production order*. A tool item can be an *end item* or a component used as material to produce an end item.

As end items, tool items can be received in a warehouse and in quarantine. In the **Item - Warehousing (whwmd4500m000)** session, you can set the Rejects Handling field to **Scrap** or **Scrap and/or Quarantine** for tool items. Also, in the **Report Operations Completed (tisfc0130m000)** session, you can directly send a tool item to quarantine.

In the **Quarantine Inventory Disposition (whwmd2172m000)** session, these dispositions are available for tool items:

- **Use As Is**
- **Scrap**
- **Rework (to Existing Specification)**

A tool end-item has no inventory value. Therefore, the financial integration transactions generated for tool items are different from those generated for manufactured items. See *Financial Integration and Reconciliation Transactions*.

For tool items issued as materials for production orders, financial transactions are not posted.

Configurable purchased items in Warehousing

This topic explains different concepts and activities related to receiving, storing and issuing of configurable purchased items within Warehousing.

Configurable purchased items-Important Points

- Configurable purchased item (configured item)
To define *configurable* purchased items in Warehousing:
 - Set the **Item Type** to **Purchased** or **Product** and select the **Configurable** check box in the **Items (tcibd0501m000)** session. For item type **Product**, the supply source of the item specified in the Actual Supply Source field must be **Purchase**.
 - Select the **Purchase Schedule in use** check box and set the **Purchase Schedule Type** to **Pull Schedule** in the **Item - Purchase** session.

- **Option List ID**
The *option list ID* in the ASN specifications is populated from the **Inbound Order Lines (whinh2110m000)** session.
For *configurable* purchased items in Warehousing, only the option list ID is part of the specifications. This means that inventory is maintained per option list ID, which is an accumulation of inventory of all product variants with the same option list ID.
The *option list ID* is displayed only if the **Assembly (APL/ASC/ASL)** check box is selected in the **Implemented Software Components (tccom0100s000)** session.
- **Handling units**
The use of handling units is mandatory for configurable purchased items. You must select the **Handling Units in Use** check box in the **Warehouse Master Data Parameters (whwmd0100s000)** session.
- **Allocation level**
For a *configurable* purchased item, the **Allocation Level** is treated as **Physical Item**. This means that when you receive a configurable purchased item, a handling unit is generated, and the specifications, including the *option list ID* and allocations, are stored in the handling unit.
The inventory of the option list ID that is transferred can be allocated to a business partner, business object, or to a reference in the **Inventory by Specification (whwmd2519m000)** session. If you want to change the configuration of this inventory, you must specify this allocation on the **Specification** tab of the **Outbound Order Lines (whinh2120m000)** session. Optionally, you can first remove the allocation, or can remove it after the transfer is completed. To change the allocations you can use the **Allocation Change Orders (whinh1120m000)** session. If you remove the allocation before the transfer, no allocation is required to be specified on the outbound order line. For more information, refer to CINDI process.
- **Supply system**
To call-off *configurable* purchased item, based on the Sequence Shipping Schedule, you must set the supply system for the combination of the configured item and warehouse to the **Order Controlled/SILS**.
- **Inventory Valuation Method**
Configured items are always valued against actual costing (MAUC/FIFO/LIFO/Lot Price/Serial Price). You can select any valuation method for configured items, except **Standard Cost**.

The main Warehousing activities

- **Creating an ASN for a configured item**
You can create an *advance shipment notice (ASN)* for a *configurable* purchased item. The ASN can be created manually, or generated based on an EDI message. The ASN specifications include the *option list ID*. The ASN specifications are populated from the **Inbound Order Lines (whinh2110m000)** session. In turn, the specifications on the inbound order line are populated from the purchase schedule line.
For a manually created ASN, you can modify the option list ID, as long as the ASN has the following status:
 - **ASN Received**
 - **Scheduled Manually**
 - **Under Review**
 - **Open****Note:** The ASN specifications are populated only if the specifications on the inbound order line are functional and meaningful. Example: Specifications with null or no values is not functional and meaningful.

When the ASN is created based on an EDI message, is for a purchase schedule, and the item is a configured item, the option list ID is populated from the EDI message.

If the option list ID of the EDI message differs from the option list ID of the related inbound order line, following are the possible scenarios:

- The option list ID is present in a sent revision of the related purchase schedule line. This means that the option list ID received by the EDI was ordered earlier, but the ordered configuration was changed later. A warning message is generated but the ASN and ASN lines are created. The specification contains the option list ID of the EDI message and the other attributes of the related inbound order line.
- The option list ID is not present in a sent revision of the related purchase schedule line. An error message that the configurations are different are displayed and an ASN is not created. The EDI message cannot be processed.

You can view the features and options of the option list from the ASN line.

- Receiving a configured item

You can receive a configured item based on an ASN. When you receive the configured item, one or more receipt lines are created. The ASN specifications are copied on the receipt line including the *option list ID*. You can view the features and options of the option list from the receipt line. Before you confirm the receipt line, you can change the option list ID. The new option list ID that you specify must be present on one of the sent revisions of the related purchase schedule. When the option list ID that you specify differs from the option list ID on the latest purchase schedule revision, a warning message is displayed. If the option list ID is not present on a sent revision of the related purchase schedule, an error message is displayed and you cannot save the receipt line. For more information, refer to CINDI process.

Additionally, you can also receive a *configurable* purchased item based on the Reference field in the **Shipment Notice Lines (whinh3101m000)** session. This reference is sent to the supplier with the purchase schedule, and the supplier specifies this reference again on the shipping documents that accompany the shipped configured item.

The manufacturer can receive a configuration as an unexpected receipt if:

- The customer changes the configuration at the last minute and orders a new configuration.
- The supplier has already produced and shipped the configuration, which is not yet received by the manufacturer.

You can create an unexpected receipt line in the **Warehouse Receipt (whinh3512m000)** session and specify the received option list ID.

The unexpected receipt line can be handled in the following two ways:

- Confirm the unexpected receipt line. When the unexpected receipt line is confirmed, a purchase order is generated and the first configuration is received against this purchase order.
 - Link the unexpected receipt line to the original purchase schedule line and confirm it. When you confirm the receipt, the first configuration is received against this purchase schedule line. Effectively, a different configuration is received than the last ordered configuration.
- Storing a configured item

The configured item is stored in inventory when you confirm the receipt. You can view the inventory of all option list IDs and if applicable the allocations for the *option list IDs* in the **Inventory by Specification (whwmd2519m000)** session.

The specification including the Option List ID is also stored on the handling unit. You can view inventory for handling units with option list IDs in the **Inventory Overview (whinr2510m000)** session.

- Issuing a configured item

Configured items that are received in the warehouse can be issued to a work center at the assembly line through an Assembly Control (ASC) production order. The specifications of the warehousing outbound order line for the ASC production order, including the *option list ID* must exactly match the specifications and the option list ID of the configured item.

You cannot modify the option list ID for warehousing orders that are created by LN. For manually created inbound and outbound order lines, the option list ID must be entered if the item is a configured item and can be modified till no outbound advice or inbound advice to cross-dock the outbound order line is created.

When you create an outbound advice, the purchased configurable item to be advised must have the same specification contents as the specification contents of the outbound order line. **Note** that the outbound advice is always for handling units, and these handling units must always have the correct specifications. Example if the outbound order line specification contains an option list ID only, the handling units for which the specification contains the same option list ID only can be advised. If the outbound order line specification contains an option list id and an allocation, the handling units with specification containing the same option list id and the same allocation can be advised . It is not possible to advise handling units with specification containing the same option list id, but without allocation.

- Backflushing a configured item

You can *backflush* configured items for an ASC production order without generating warehouse orders.

Default values for item - ordering data

The setting of the **Use Item Ordering Data** check box in the **Warehouses (whwmd2500m000)** session determines whether data from the **Items - Ordering (tcibd2100m000)** session or the **Item Data by Warehouse (whwmd2510m000)** and **Item Item - Warehousing (whwmd4500m000)** sessions are used to create new items for a warehouse.

The setting of this check box is used as the default setting of the **Use Item Ordering Data** check box in the **Item Item Data by Warehouse (whwmd2510m000)** session.

The setting of the **Use Item Ordering Data** check box in the **Warehouses (whwmd2500m000)** session and the default setting of the **Use Item Ordering Data** check box in the **Item Data by Warehouse (whwmd2510m000)** session can be overruled for individual items by the value of the **Use Item Ordering Data** field in the **Item - Warehousing (whwmd4500m000)** session.

For example, if the **Use Item Ordering Data** check box is selected in the **Warehouses (whwmd2500m000)** session, but the value in the **Use Item Ordering Data** field is **no** for an item in the **Item - Warehousing (whwmd4500m000)** session, the **Use Item Ordering Data** check box is cleared by default for the item in the **Item Data by Warehouse (whwmd2510m000)** session.

In turn, the default value of the **Use Item Ordering Data** field in the **Item - Warehousing (whwmd4500m000)** session is taken from the **Use Item Ordering Data** field of the **Item Warehousing Defaults (whwmd4501m000)** session.

For shop floor warehouses, the **Use Item Ordering Data** check box in the **Item Data by Warehouse (whwmd2510m000)** session is cleared by default. For financial warehouses, item - ordering data is never used.

Chapter 3: Units

Units in Warehouse Management

Inventory unit

The inventory unit, commonly called a piece, is the smallest unit in which the item can be referenced. This unit cannot be subdivided. Because all other units (boxes, pallets, and so on) can be split, an unsplittable unit is required for accurate description of stock levels. The inventory unit is registered at the item level. If you use package definitions, the unit must be a whole number. If you do not use package definitions, decimals are allowed by defining a rounding factor smaller than one (for example, for kilograms).

Order, receipt, approval, and rejection units

Unlike the inventory unit, these units can change frequently from order to order and from receipt to receipt. A conversion factor from these units to inventory units must always be defined. The inventory unit is always calculated and displayed whenever one of these other units has been used.

Package definition units

A warehouse will frequently receive items and issue items in a certain structure. For example, an issue might contain two pallets, each of which contains 10 boxes, which in turn contain 12 pieces each. The total quantity issued, expressed in the inventory unit, is 240 pieces.

Similarly, customers can require 240 pieces in different ways. Customer A might require 240 pieces, which consist of two pallets (that is, $2 * 10 \text{ boxes} * 12 \text{ pieces} = 240 \text{ pieces}$.) Or, customer B requires 240 pieces consisting of one europallet (that is, one europallet containing five crates of 48 pieces).

Package definition units also allow the tracking of any reusable packaging (such as pallets and boxes).

Units on a receipt

On receipts, you can use units on both the inventory part and the packaging part, and you must treat the units differently in each case.

In the inventory part, you can use partial units. So, one box means one full box, one pallet means one full pallet, and so on. Furthermore, the terms pallet and box are simply units and do not refer to a physical packaging item.

Therefore, if you receive 24 pieces, you can also say that one pallet has been received because one pallet contains 24 pieces. The fact that you have not received a wooden pallet on which the items were shipped does not matter when considering the inventory part of the receipt.

In the packaging part, however, you must consider the physical packaging items that were received. If the 24 pieces that were received arrived on a wooden pallet, the quantity of this field is 1.

Units on an ASN

On an ASN, you can use partial units. For example, you can say that you received one pallet with 24 items, one pallet with six items, and one pallet with four items. You know that three physical wooden pallets were received and 34 physical items were received. No fixed conversion exists between pallets and pieces: on the first line, a pallet is 24 pieces, but on the second line, a pallet is six pieces, and on the third line a pallet is four pieces.

Chapter 4: Defining Warehouses

Warehouse Type

Normal

A warehouse that stores normal inventory.

Service

A warehouse that stores the required inventory for a service area.

Service Customer Owned

A warehouse that stores the required inventory for a service area. All of the inventory stored is *customer owned*.

Service Reject

A warehouse used by Service that stores defective items received from customers.

Shop Floor

A warehouse that stores intermediate inventory in order to supply work cells, work centers, or line stations. A shop floor warehouse is linked to an individual work cell, one or more work centers, or one or more line stations. For this purpose, the shop floor warehouse is linked to the appropriate value of the Used at field in the **Warehouses (whwmd2500m000)** session.

Consignment (Not Owned)

A warehouse that stores *consigned* materials that have been delivered but are not yet company owned.

Consignment (Owned)

A warehouse that stores *consigned* materials that have been delivered and have either been used or have been acquired by the company for manufacturing a specific order.

Project

A warehouse that only stores materials that belong to a specific project.

Financial

financial warehouse

Shop floor warehouse - work cell

If a *shop floor warehouse* is used for an individual *work cell*, various warehousing settings are not required. For this purpose, you must select the **work cell** option in the **Used at** field of the **Warehouses (whwmd2500m000)** session for this warehouse.

Consequently, various settings are preset and unavailable in these sessions:

- **Warehouses (whwmd2500m000)**
- **Item Data by Warehouse (whwmd2510m000)**

Warehouses (whwmd2500m000)

- Lead times are unavailable.
- The **Business Partner** field is unavailable and the **Inventory Management** check box is selected and unavailable, because inventory management is not handled by an external party.
- The **Usage at Warehouse Transfer** field is unavailable and set to **Always**.
- The **External Site** field is set to **No**, because the shop floor warehouse belongs to the current company.
- The buy-from, ship-from, ship-to, and sold-to business partner fields are not applicable.
- The **WMS Controlled** check box is cleared and unavailable.
- The fields in the **Labels** tab are unavailable, because the inventory is used within the work cell and therefore labels are not required.
- Only these *supply systems* are available:
 - **Time-Phased Order Point**
 - **Kanban**

For either supply system, you must specify a supply-from warehouse. This warehouse must be located in the current company.

Note:

For shop floor warehouses in general, locations and elaborate shipment procedures are not required. Therefore:

- The locations fields are unavailable.
- In the **Shipments** tab, these settings are preset and unavailable:
 - The Generate Shipments field is set to **Per Exact Planned Delivery Date/Time**.
 - The Shipment Interval Lower Boundary field is set to 0 (zero) days.
 - The Add Orders Based On field is set to **Time of Picking**.
 - The Update Shipping Material Account during field is set to **Not Applicable**.
 - Delivery notes and packing slips are not applicable.

Item Data by Warehouse (whwmd2510m000)

- Storage zones are not used, therefore the **Storage Zone** field is unavailable.
- The Issue Priority field is set to **Owned Inventory First**.
- For the Usage at Warehouse Transfer field, the **Always** and **No** options are available. This is because transfers are only allowed within the same *company, planning cluster, or enterprise unit*.
- The Use Item Ordering Data check box is cleared.
- Lead times are unavailable.
- Service levels are not applicable.

- For the Order Method field, the **Lot for Lot** and **Fixed Order Quantity** options are available.
- Economic order quantities are not applicable.
- Only these *supply systems* are available:
 - **Time-Phased Order Point**
 - **Kanban**

For either supply system, you must specify a supply-from warehouse. This warehouse must be located in the current company.
- The reorder point is not applicable, because this is not used for the allowed supply systems **Time-Phased Order Point** and **Kanban**.
- The Assembly Kit and Trigger-from Station fields are unavailable, because these are only used for supply system **Order Controlled/SILS** and **Order Controlled/Single**.

Chapter 5: Locations

Using locations

Locations are the parts of the warehouse where items are actually stored. Locations can optionally be assigned directly to an item or *item group*, or by means of *storage conditions*.

Several types of location exist:

- *receiving location*
- *inspection location*
- *pick location*
- *bulk location*
- *staging location*
- *quarantine location*

Locations are used for the following purposes:

- Control the inbound movement of items
- Control the outbound movement of items
- Enter *inventory transactions*
- Create *cycle count orders*
- Register items at locations

You can specify locations in the **Warehouse - Locations (whwmd3500m000)** session.

Note: Defining locations for a warehouse is optional.

Defining the transactions allowed in a location

In the fields of the **Transactions** group box of the **Warehouse - Location (whwmd3100s000)** session, you can specify whether inbound movement, outbound movement, or assembly is allowed for a location.

This table shows the check boxes used to specify whether a type of transaction is allowed in a location.

Check box	Selected	Cleared
Inbound	Inbound movement including inbound inspections are allowed.	Not allowed
Outbound	Outbound movement is allowed.	Not allowed

Check box	Selected	Cleared
Transfer (Receipt)	Inbound transfers are allowed.	Not allowed
Transfer (Issue)	Outbound transfers are allowed.	Not allowed
Assembly	Assembly is allowed.	Not allowed

Transfers refer to transfers between locations within the same warehouse or other warehouses. Receipt transfers refer to the inbound part of a transfer. Issue transfers refer to the outbound part of a transfer.

If the **Blocked** check box next to a type of transaction check box is selected, a (temporary) block is imposed on the type of transaction.

For example, if the **Inbound** check box is selected and the **Blocked** check box next to the **Inbound** check box is selected, the location is defined as a location that accommodates inbound movement, but the location is (temporarily) blocked for inbound movement on account of some specific circumstances that caused the user to select this check box. When after a while a user clears the **Blocked** check box, the block is lifted and the inbound function of the location is restored.

Making warehouses location controlled

As the goods volumes moving in and out of the warehouse increase, the need for more advanced warehouse management in the form of *location* control may arise.

You can enable location control for a warehouse without inventory, that is, a newly defined warehouse, or a warehouse that has been defined but not yet been put into use, or for a warehouse for which inventory is present.

To make a warehouse without inventory location controlled, in the **Warehouses (whwmd2500m000)** session, select the **Locations** check box.

This topic describes enabling location control for warehouses with inventory. In a nutshell, to make a warehouse with inventory location controlled, in the **Change Location System (whwmd3205m000)** session, you copy the stockpoint and inventory structure information of the items of the warehouse to the **Assign Locations (whwmd3105m000)** session. In this session, you assign the items to locations that you define in this session or define in advance in the **Warehouse - Locations (whwmd3500m000)** session or the **Fixed Locations (whwmd3502m000)** session.

In the **Assign Locations (whwmd3105m000)** session, after assigning the locations, you copy the adjusted information back to the inventory structure and stockpoint sessions by actualizing the locations assigned to the inventory. While actualizing the information, LN adjusts the warehousing procedures.

Prerequisites

Before copying the item information to the **Assign Locations (whwmd3105m000)** session, there are a few prerequisites to take into account.

The inventory data that you copy to the **Assign Locations (whwmd3105m000)** session must match the real inventory as closely as possible to limit inventory discrepancies after the process, when the inventory data are copied back to the warehouse.

To limit inventory discrepancies, and before copying the inventory data, complete these steps:

- 1 Verify that there are no unconfirmed receipts.
Check the line status in the **Inbound Line Status Overview (whinh2119m000)** session. Only statuses **Open** and **Put Away** are valid.
- 2 Verify that all shipment lines are confirmed or closed.
Check the line status in the **Outbound Line Status Overview (whinh2129m000)** session. Only statuses **Open** and **Shipped** are valid.
- 3 Verify that all inventory inspections are processed.
- 4 Verify that all outbound advice is removed.
- 5 Verify that all cycle counting or adjustment orders are processed.
- 6 Repeat the previous steps for partial receipts and partial shipments.
- 7 Block the warehouse for inbound and outbound movements.
To do so, in the **Warehouses (whwmd2500m000)** session, select the **Blocked for Inbound** and **Blocked for Outbound** check boxes.
Because there may be inventory movements just before you block the warehouse, you cannot exclude the possibility of the occurrence of inventory discrepancies.

Procedure

To make a warehouse location controlled, complete these steps:

- 1 Start the **Change Location System (whwmd3205m000)** session.
- 2 Select the warehouse to be made location controlled.
- 3 Select the items to be made location controlled or copied to the **Assign Locations (whwmd3105m000)** session.
- 4 If required, enter a receipt, inspection, reject, or staging location in the location fields.
- 5 To perform a trial run and print a report before actually copying the data or making the items location controlled, select the **Print Report** check box and in the **Update Mode** group box, select **Simulate**.
To actually copy the items to the **Assign Locations (whwmd3105m000)** session or make items location controlled, select **Update**. Note that at this point, the [prerequisites](#) on page 19 must be met.
- 6 Click **Get Stockpoints** to launch the trial run or to actually copy the items to the **Assign Locations (whwmd3105m000)** session.
- 7 Start the **Assign Locations (whwmd3105m000)** session.
- 8 Look up the warehouse for which you copied the item data in the previous steps.
- 9 For each item, in the **New Location** field, enter a new location as required. The location entered in this field overwrites the location present in the **Proposed Location** field when you actualize the location and inventory information. Actualizing the information is described in the final step of this procedure.
You cannot enter *fixed locations* in the **New Location** field. You must create fixed locations in advance in the **Fixed Locations (whwmd3502m000)** session. When you copy the item data to the **Assign Locations (whwmd3105m000)** session as described in the previous steps, the fixed locations are displayed in the **Proposed Location** field.

- 10** If you want to divide the inventory of a particular item over more than one location, from the *appropriate* menu, select Split and in the new line that appears, enter a location and the quantity to be stored in the location.

Making items location controlled

The items that you copy to the **Assign Locations (whwmd3105m000)** session must be location controlled. This is because you cannot assign non-location controlled items to a location. If you store a non-location controlled item in a location controlled warehouse, the items are stored without reference to a bulk or pick location, thus making the location system of the warehouse ineffective.

Sometimes, items stored in a non-location controlled warehouse, are location controlled. This is because these items are also stored in a location controlled warehouse. You can copy these items to the **Assign Locations (whwmd3105m000)** session without making them location controlled first.

Note: Items contained in not-owned handling units cannot be made location controlled. To make such items location controlled, remove the items from the handling unit structure first.

Using dock locations

When a warehouse uses locations, dock locations can be used.

In LN, two types of dock locations exist:

- **Staging**
A staging location, or staging lane, is an area near a shipping dock where material is gathered and consolidated before shipment.
- **Receiving**
A receiving dock location is an area near a receiving dock where received material is placed before being put away. With the help of inbound advice, the items from this location are assigned to inventory locations.

If a warehouse uses locations, at least one receiving location and one staging location must be set up.

Dock locations are created in the **Warehouse - Dock Locations (whwmd2120m000)** session. The first receiving dock location and inspection location are created in the **Warehouses (whwmd2500m000)** session.

Dock locations - search criteria

A warehouse can have multiple docks for staging and composing/structuring loads. Goods are loaded in the trucks from these docks. LN automatically selects and proposes a specific loading dock when goods are picked from the warehouse locations. The dock selection process is based on a range of possible selection criteria, such as item, storage zone, (ship-to) business partner, carrier, route, and so on.

LN selects the dock location based on the following criteria:

Warehousing criteria for dock selection

- **Carrier/LSP**
- **Route**
- **Delivery Terms**
- **Package Definition**
- **Rush Order**
- **Ship-to Code** (for outbound dock locations)
- **Ship-from Code** (for inbound dock locations)

Note: You can use the Freight Management related criteria for dock selection only if the **Freight Management (FM)** check box is selected in the **Implemented Software Components (tccom0500m000)** session.

LN selects the dock location based on the following criteria:

Freight criteria for dock selection

- **Standard Route**
- **Route Plan**
- **Transport Means Group**
- **Transport type**

You can define the priorities based on which LN selects a dock location. The lowest number is given the highest priority and vice-versa. The highest priority is number 10, followed by 20, 30, and so on in decreasing order. LN selects a dock location if the search criteria matches the information of the shipment staged on that dock.

In case of conflicting search criteria, the priority set determines which dock location is advised.

Example

- If a shipment of a specific item is to be staged on dock 3, but the route linked to the shipment is attached to dock 5.
- If the combination of carrier and route on a shipment results in a dock which is different than the dock linked to a business partner and the delivery terms on that same shipment.

If the **Use Only Unoccupied Dock Locations** check box is selected in the **Warehouses (whwmd2500m000)** session, LN allocates a new dock location if the first selected dock location is occupied.

Note: To ensure that LN allocates only vacant dock location, you must clear the **Location Occupied** check box in the **Warehouse - Locations (whwmd3500m000)** session.

Warehouse location capacity

Depending on the setup in the **Warehouse - Location - Capacity (whwmd3101s000)** session, a *location's* available capacity is based on the floor space, weight and/or height specified for the location minus the total floor space, weight and/or height of the items stored in the locations.

Receipts into and issues from the location affect the location's capacity. Inbound advice that exceed the available capacity are not allowed if the **Block** check box is selected. A warning is displayed if you manually create inbound advice that exceeds the percentage specified in the Warning at field.

Handling units

If *handling units* are used for which *packaging items* have been defined, the dimensions of the packaging items of the handling units are used to calculate the available capacities of the locations as follows:

- **Volume**

The **Internal** packaging items of the top level handling units determine the location space occupied by the handling unit. If the handling unit's packaging item is **External**, the volume of the packaging item plus the volume of the items stacked on top of the packaging item determine the location space occupied by the handling unit.

If the handling unit structure consists of an **External** packaging item and various **Internal** packaging items, the added volumes of the internal and external packaging items determine the location space occupied by the top level handling unit of the structure. For example, in case the external packaging item is a pallet and the internal packaging items are boxes.

- **Floor Space**

The floor space of the packaging items of the top level handling units determine the location space occupied by the handling unit.

- **Weight**

The total weight of the items and the packaging items of the handling unit determine how much of the location's weight capacity is taken up by the handling unit.

Note: If handling units are used without packaging items or auxiliary packaging items, the handling units do not affect the location capacity.

Recalculation of location capacity - handling units

LN recalculates the location capacity if you:

- Close handling units stored in the location.
- Manually add packaging items to handling units stored in the location.
- Use the **Pack** option in the **Compose Handling Units (whwmd5130m100)** to add packaging items to handling units stored in the location.
- Manually adjust the dimensions of handling units stored in a location.
- Adjust the parent - child relations of a handling unit structure that contains packaging items. For example, if you take a few handling units of type Box from a handling unit of type Pallet and remove the Boxes from the location.

Using storage conditions

You can use *storage conditions* to prevent the storage of items at unsuitable locations.

You can link a storage condition to an item (or item group), and a location (or an entire warehouse). If the storage condition of the location (warehouse) and the item (or item group) correspond, items (of the item group) can be stored in the location (or warehouse).

You can use storage conditions to do the following:

- Register items at locations.

- Generate inbound advice.

To print storage conditions

This topic describes the master data setup required to print the storage conditions on inbound and outbound documents.

During the inbound process, LN searches for the applicable storage conditions in the following order:

- 1 Item storage conditions
- 2 Item group storage conditions
- 3 Location storage conditions
- 4 Warehouse storage conditions

LN compares the item/item group storage conditions with the warehouse/location storage conditions and vice versa to determine if an item can be stored in the location.

Print Storage Conditions - Inbound

You must select the following parameters in the **Inventory Handling Parameters (whinh0100m000)** session to print the storage conditions on the inbound advice documents and the storage list:

- **Item/Item Group Storage Conditions**
- **Warehouse/Location Storage Conditions**

Note: Both the check boxes are cleared by default.

Print Storage Conditions - Outbound

You must select the following parameters in the **Inventory Handling Parameters (whinh0100m000)** session to print the storage conditions on the outbound advice documents and the picking list:

- **Item/Item Group Storage Conditions**
- **Warehouse/Location Storage Conditions**

Note: Both the check boxes are clear by default.

You can print the inbound/outbound documents from the following sessions:

- **Print Inbound Advice (whinh3425m000)**
- **Generate Storage List (whinh3415m000)**
- **Print Outbound Advice (whinh4460m000)**
- **Generate Picking List (whinh4415m000)**
- **Process Outbound Advice (whinh4200m000)**
- **Generate Outbound Advice (whinh4201m000)**

Chapter 6: Zones

Using zones

Locations that work with other *locations* or locations with identical or similar purposes can be divided into *zones*.

A zone is an area in the warehouse that contains several locations, possibly with some common characteristics such as the inbound or outbound movements allowed for the zone.

To a zone, you can assign:

- An owner
- An employee
- A printer

You can create zones in the **Warehouse - Storage Zones (whwmd3510m000)** session.

Each location can be assigned to a zone in the **Warehouse - Locations (whwmd3500m000)** session.

Note: It is optional to define zones for a warehouse.

Chapter 7: Replenishment Matrices

To use replenishment matrices

Replenishment matrices are used to automatically control the quantity of items on pick locations. Based on a replenishment matrix, you can automatically generate, and also directly process, warehouse orders to replenish pick locations. Replenishment matrices are defined by linking pick locations to bulk locations.

Prerequisites

To be able to setup a replenishment matrix, you must:

- 1 Create a location controlled warehouse. For more information, refer to Using warehouses. In the **Warehouses (whwmd2500m000)** session, you can indicate whether a warehouse is location controlled.
- 2 Optionally create zones. For more information, refer to Using zones.
- 3 Create locations. For more information, refer to Using locations.
- 4 Create a location-controlled item. For more information, refer to Setting up the item data. In the **Item - Warehousing (whwmd4500m000)** session, you can indicate whether an item is location controlled.
- 5 Specify and activate warehouse-related item data in the **Item Data by Warehouse (whwmd2510m000)** session.
- 6 Specify a fixed pick location for the item in the **Fixed Locations (whwmd3502m000)** session, because you can only replenish fixed pick locations. To be able to replenish a fixed pick location, you must also specify the **Minimum Inventory** and **Minimum Replenishment Quantity** in the **Fixed Locations (whwmd3502m000)** session.

Setup

Use the **Replenishment Location Matrix (whwmd3504m000)** session to define the replenishment matrix. You can specify the following replenishment relation types:

- A replenishment location that replenishes a destination location.
- A replenishment location that replenishes a destination zone.
- A replenishment zone that replenishes a destination location.
- A replenishment zone that replenishes a destination zone.

The following restrictions apply to the zones and locations you can use to define a replenishment matrix:

- A replenishment location must be of the **Bulk** type.
- A replenishment zone must at least contain one location of the **Bulk** type.
- A destination location must be of the **Pick** type.
- A destination zone must at least contain one location of the **Pick** type.

You can specify specific and general replenishment relations. A replenishment relation is:

- **Specific** if the item is specified.
- **General** if no item is specified.

You can specify more than one replenishment relation for one specific destination location or destination zone. As a result, the destination location or destination zone can be replenished from several replenishment locations or replenishment zones. In this case, LN determines the sequence of location(s) from which replenishment must take place, based on the **Priority** that is specified for each replenishment relation in the **Replenishment Location Matrix (whwmd3504m000)** session.

Replenishment

Use the **Print Replenishment List (whwmd3405m000)** session to start the replenishment of pick locations. With this session, you can:

- Only print the replenishment list if the **Directly Create Warehousing Orders** check box is cleared. On the replenishment list, you can view the replenishment advice that consist of the locations to be replenished, the locations to replenish from, the item to be replenished, and the replenishment quantity.
- Print the replenishment list, and also directly generate warehouse orders of the **Transfer (Manual)** origin, that enable the actual replenishment. To do so, select the **Directly Create Warehousing Orders** check box, and specify the **Warehousing Order Type** and **Warehousing Order Series**.
- Print the replenishment list, directly create warehouse orders, and also directly process the created warehouse orders to start the actual replenishment directly. To do so, select the **Directly Process Created Orders** check box.

If, in the **Print Replenishment List (whwmd3405m000)** session's selection range, you specify:

- A destination zone to be replenished, LN checks all the zone's pick locations that are fixed for a certain item on whether these locations must be replenished.
- A destination location to be replenished, and the location is a pick location that is fixed for a certain item, LN checks whether this location must be replenished.
- An item to be replenished, LN checks for all fixed pick locations for this item whether these locations must be replenished.

A fixed pick location must be replenished if a shortage exists for the item. A shortage exists if the item's total **Inventory on Hand** in that location is less than the **Minimum Inventory**. You can view:

- The total item's **Inventory on Hand** at the bottom of the **Stock Point Inventory (whinr1540m000)** session.
- The **Minimum Inventory** in the **Fixed Locations (whwmd3502m000)** session.

LN calculates the items shortage at the fixed pick location as follows:

```
shortage = minimum inventory - inventory on hand (ninventory unit)
```

Note: If the **Use Economic Stock for Replenishment Advice** check box on the **Print Replenishment List (whwmd3405m000)** session is selected, LN uses the *economic stock*, instead of the **Inventory on Hand**, to determine the quantity to replenish.

Based on the calculated shortage, LN determines the quantity to replenish, taking into account:

- The **Minimum Replenishment Quantity** that is specified in the **Fixed Locations (whwmd3502m000)** session. LN cannot replenish less than the **Minimum Replenishment Quantity**.
- The location's capacity that is specified in the **Warehouse - Location - Capacity (whwmd3101s000)** session. LN cannot replenish more than what fits on the location.

If the quantity to be replenished to a pick location is determined, LN starts searching for a bulk location to replenish from. To determine the bulk location(s) from which the pick location must be replenished:

- LN first searches for **Specific** replenishment relations for the pick location and item. If such a replenishment relation exists and inventory is available for the item on the bulk location that is specified for the replenishment relation, LN creates a replenishment advice to replenish from that bulk location.
- If for the pick location and item a **Specific** replenishment relation exists but not enough inventory is available on the bulk location, or if no **Specific** replenishment relation exists for the pick location and item, LN searches for a **General** replenishment relation for the pick location. If such a replenishment relation exists, and inventory is available for the item on the bulk location that is specified for the replenishment relation, LN creates a replenishment advice to replenish from that bulk location.
- If a replenishment relation exists but not enough inventory is available to replenish, or if no replenishment relation exists, and the **Also Create Orders for Undefined Replenishment Location** check box in the **Print Replenishment List (whwmd3405m000)** session is selected, LN creates a replenishment advice without the location to replenish from for, respectively, the remaining quantity or the replenishment quantity.

Important: If more than one **Specific** replenishment relation exist, or if more than one **General** replenishment relation exist, LN takes into account the replenishment relations' priorities to determine the replenishment sequence of the bulk locations. If two replenishment relations exist with the same priority, LN determines the replenishment sequence of the bulk locations, based on the item's **Outbound Method** that is specified in the **Item - Warehousing (whwmd4600m000)** session.

Example

Warehouse WH1 has, among other locations:

- A pick location: Pick1.
- Four bulk locations: Bulk1, Bulk2, Bulk3, and Bulk4.

Item ABC is location controlled and the item's outbound method is **FIFO**.

Location Pick1 is the fixed pick location for item ABC, for which the following settings apply:

- **Minimum Inventory** = 50.
- **Minimum Replenishment Quantity** = 25.

The following active replenishment relations exist for warehouse WH1 and location Pick1:

Priority	Replenishment Location	Item
3	Bulk1	ABC
1	Bulk2	ABC
3	Bulk3	ABC
2	Bulk4	

The following stock point inventory is available for item ABC:

Ship-from Location	Inventory Date	Inventory on Hand
Pick1	01-08-2002	30
Bulk1	01-15-2002	7
Bulk2	01-18-2002	10
Bulk3	01-25-2002	5
Bulk4	01-22-2002	5

A replenishment list is printed with the **Print Replenishment List (whwmd3405m000)** session with the following settings:

- Warehouse: WH1.
- Destination location: Pick1
- **Replenishment Relation Type: Both.**
- **Use Economic Stock for Replenishment Advice** check box is cleared.

LN calculates the item ABC's shortage at location Pick1 as follows:

$$\text{shortage} = \text{minimum inventory} - \text{inventory on hand (inventory unit)} = 50 - 30 = 20.$$

Because the shortage (20) is less than the **Minimum Replenishment Quantity** (25), the quantity to be replenished is 25.

As a result, the printed replenishment list contains the following replenishment advice (note the sequence):

Advised Quantity	Replenishment Location
10	Bulk2
7	Bulk1
5	Bulk3
3	Bulk4

LN advises first ten ABC from Bulk2, because Bulk2 has the highest priority (1). Then, LN advises seven ABC from Bulk1, because LN first searches for **Specific** replenishment relations. As a result, LN first advises ABC from Bulk1 and Bulk3, and not from Bulk4, although Bulk4 has a higher priority. However Bulk1 and Bulk3 have the same priority, LN first advises ABC from Bulk1 compared to Bulk3, because Bulk1's stockpoint inventory date is before that of Bulk3.

Chapter 8: Negative Inventory

Negative inventory

A warehouse has negative inventory for an item if the issued quantity is larger than the quantity in inventory. Consequently, the inventory levels of the item are below zero. Allowing negative inventory ensures that the logistic processes are not interrupted by (administrative) shortages detected by LN. You can enable negative inventory for one or more items across all warehouses, or for items by warehouse. You can allow unlimited negative inventory or allow negative inventory up to the on-order quantity to be received.

Example

A sales order for 10 pcs is created. The current inventory is 0, but an open purchase order for 5 pcs is present. If unlimited negative inventory is allowed, and outbound advice for 10 pcs is created, this results in a negative inventory of 10 after shipping. After the purchase order is received, the inventory level is increased to - 5. If negative inventory is not allowed beyond the expected on-order quantity, the maximum outbound advice quantity allowed is 5 pcs.

If inventory on order is received in the warehouse, that is, after the receipt is confirmed in the **Warehouse Receipt (whinh3512m000)** session, the received quantity is subtracted from the negative inventory quantity. If the received quantity is equal to or more than the negative inventory quantity, LN deletes the negative inventory record and the financial negative inventory consumption record.

Negative inventory not allowed

Lot items

When negative inventory is issued, LN creates lot tracking records without an order origin. These records are the first to be updated when lot receipts are created.

For *low volume* lots, you can only generate negative outbound advice if:

- The lot is specified as a specific lot in the **Lot** field on the outbound order line.
- The **Create Outbound Advice Despite Inventory Shortage** check box is selected in the **Generate Outbound Advice (whinh4201m000)** session or the **Process Outbound Advice (whinh4200m000)** session.

Note: If these conditions do not apply, you can still manually create negative outbound advice for *low volume* lots in the **Outbound Advice (whinh4525m000)** session.

Inventory valuation

An item's *inventory valuation method* cannot be identified before the receipt of the item. Therefore, all negative inventory transactions are valued against **Standard Cost**.

Backflushing

In case of *backflushing*, LN can also generate negative inventory records. LN generates negative inventory for an outbound order line for which backflushing is applicable if, in addition to the above mentioned conditions, all of the following applies:

- The item is delivered but the receipt is not yet registered.
- The item is picked from the warehouse based on a backflush order.
- The orders or operations are reported completed in Job Shop Control.

Integrations with Manufacturing and Order Management

To determine the **Quantity to Deliver** in Manufacturing and the available stock in Order Management, LN checks the settings of the **Allow Negative Inventory** and **Create Outbound Advice Despite Inventory Shortage** fields in the **Item Data by Warehouse (whwmd2510m000)** session.

Setting up negative inventory

1 Activate the negative inventory concept

In the **Inventory Handling Parameters (whinh0100m000)** session, select the Negative Inventory check box.

2 Default values for item types and item groups

Specify the required value in the Allow Negative Inventory field and select or clear the Create Outbound Advice Despite Inventory Shortage check box in the Item Warehousing Defaults (whwmd4501m000) session.

3 Default values for items

In the Item - Warehousing (whwmd4500m000) session, specify the required value in the Allow Negative Inventory field and select or clear the Create Outbound Advice Despite Inventory Shortage check box.

4 Default values for items by warehouse

In the Item Data by Warehouse (whwmd2510m000) session, specify the required value in the Allow Negative Inventory field and select or clear the Create Outbound Advice Despite Inventory Shortage check box.

5 Allow or block outbound advice for negative inventory

To allow or block the generation of outbound advice for negative inventory, select or clear the Create Outbound Advice Despite Inventory Shortage check box in the **Process Outbound Advice (whinh4200m000)** session or the **Generate Outbound Advice (whinh4201m000)** session.

Clearing the Negative Inventory check box when negative inventory is present

If you clear the Negative Inventory check box in the **Inventory Handling Parameters (whinh0100m000)** session when negative inventory is still present:

- New outbound advice for negative inventory cannot be created.
- The negative inventory records remain and are updated with received inventory. The application removes these records when the received inventory equals or exceeds the negative inventory.
- The negative inventory settings in the Item - Warehousing (whwmd4500m000) and Item Data by Warehouse (whwmd2510m000) are not changed.

Note:

- If the **Create Outbound Advice Despite Inventory Shortage** check box is cleared, you can still manually create outbound advice using the **Outbound Advice (whinh4525m000)** session in case of inventory shortage.
- If the value of the Allow Negative Inventory field is **Yes** or **If on Order** and the Create Outbound Advice Despite Inventory Shortage check box is selected in these sessions, but the Negative Inventory check box is cleared in the **Inventory Handling Parameters (whinh0100m000)** session, no negative inventory is created.

Negative not-owned consumptions

LN creates a negative consigned or customer-owned consumption record if an outbound advice ownership record is created for not-owned inventory for which insufficient inventory is available.

The quantity of the negative consumption quantity record is decreased if a receipt is confirmed for identical not-owned inventory.

When the receipt is confirmed, LN checks whether negative not-owned inventory is present. LN performs this check for the received item, warehouse, and ownership.

If negative inventory is found, LN creates a not-owned, that is, consigned or customer-owned consumption record, as the case may be, and decreases the quantity of the pertaining negative consumption records accordingly. If the received quantity equals or exceeds the negative consumption quantity, LN removes the negative consumption record.

Note: The receipt of goods for a specific owner does not result in the consumption of owned inventory. Conversely, the receipt of owned inventory does not result in the consumption of not-owned inventory.

LN registers negative inventory or financial negative inventory consumptions in these sessions:

- Item - Warehouse - Negative Inventory (whwmd2555m000)
- Negative Inventory Consumptions (whina1520m000)
- Negative Consigned Consumptions (whwmd2552m000)
- Negative Customer Owned Consumptions (whwmd2552m100)

Chapter 9: Bill of Enterprise

Using the bill of enterprise

The *bill of enterprise* specifies the search structure for warehouses by company. The search structure is based on the priorities assigned to the warehouses.

The priority range is [1-999]; 1 is the highest, 999 the lowest priority. Company data is defined in the **Implemented Software Components (tccom0500m000)** session. The warehouse data of the selected company is defined in the **Warehouses (tcmcs0103s000)** session.

On the basis of the bill of enterprise you can generate reports and displays of standard item inventories in the **Print Companies and Warehouses Inventory (whwmd2440m000)** session and the **Item - Companies and Warehouses Inventory (whwmd2540m000)** session respectively.

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