



Infor LN Warehousing User Guide for the Outbound and Shipment Goods Flows

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Publication Information

Document code	whoutbshipmug (U9794)
Release	10.5 (10.5)
Publication date	February 6, 2024

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About this document

This guide describes the setup and use of the outbound and shipment procedures.

Intended Audience

This book is intended for those who want to learn how to use outbound, inspections and shipments and to set up the delivery note functionality in the way that best serves their purposes. Both end users and users on administrator level will find the information they require.

Assumed Knowledge

Familiarity with the business processes involved in handling outbound goods in the warehouse, and general knowledge of the LN functionality will help you understand this book. In addition, Warehousing training courses are available to give you a head start.

Document summary

The first chapter, *Introduction*, describes the purpose and the general characteristics of the outbound procedure, outbound inspections, and the shipment procedure.

The following chapters deal with master data and parameter setup, and describe how outbound, inspection orders, and shipments are created.

This book describes procedures that users carry out using delivery notes and provides some information on the underlying processes that LN carries out. The most important session windows and fields involved are discussed, but a full description of all software components is outside the scope of this book. For details, refer to the online Help.

How to read this document

This document was assembled from online Help topics. As a result, references to other sections in the manual are presented as shown in the following example:

Please refer to the Table of Contents to locate the referred section.

Underlined terms indicate a link to a glossary definition. If you view this document online and you click on underlined text, you jump to the glossary definition at the end of this document. Non-underlined references do not represent a link to glossary definitions or other elements.

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Chapter 1

Introduction

1

The outbound process is used to issue goods from the warehouse. To issue and ship goods from a warehouse, warehouse processing is either based on handling units or outbound shipments and warehousing order lines. If you use handling units to process goods, the order lines and/or shipments related to the handling units are updated in the background.

In LN, you can add warehousing inspection and quarantine handling functionality to both the inbound and outbound goods flows. Although briefly referred to in this guide, for more information please refer to *LN Warehousing User Guide for Warehousing Inspections (U9875)* and *User Guide for Quarantine Handling (U9876)*.

To define warehousing order types

Warehousing order types determine how warehousing orders are handled. Warehousing order types are classified by inventory transaction type. The inventory transaction type that you add to a warehousing order type determines the type of warehousing procedure that you can link to the warehousing order type. The activities that must be carried out in order to handle warehousing orders are, by default, determined by the warehousing procedures that are linked to the warehousing order types.

Warehousing order types are linked to warehousing orders when warehousing orders are generated from other packages or when you manually create a warehousing order in the Warehousing Orders (whinh2100m000) session.

Define warehousing order types

In the Warehousing Order Types (whinh0110m000) session, you can specify warehousing order types for the following inventory-transaction types:

- **Receipt**
Use a warehousing order type of inventory transaction type **Receipt** to receive goods in a warehouse. You can link a **Receipt Procedure** and, optionally, an **Inspection Procedure** to a warehousing order type of inventory transaction type **Receipt**.
- **Issue**
Use a warehousing order type of inventory transaction type **Issue** to issue goods from a warehouse. You can link a **Outbound Procedure** and a **Shipment Procedure** to a warehousing order type of inventory transaction type **Issue** **Note:** LN allows you to modify the outbound order line data based on the value the **Allow Updating Outbound Order Lines upto and including** field is set to in the Warehousing Order Types (whinh0110m000) session.
- **Transfer**
Use a warehousing order type of inventory transaction type **Transfer** to transfer goods between warehouses, locations, business partners, projects, or work centers.

You must link these procedures to a warehousing order type of inventory transaction type **Transfer**:

- **Receipt Procedure**
- **Inspection Procedure**
- **Outbound Procedure**
- **Shipment Procedure**

A transfer involves either one or two warehouses. If items are transferred between two different warehouses, all activities of the warehousing procedures must be carried out. However, if a transfer takes place between two locations within the same warehouse, the receipt activities are not carried out. You can use transfer orders to define a replenishment system within a single warehouse. This system controls replenishment from bulk locations to pick locations.

Note: LN allows you to modify the outbound order line data based on the value the **Allow Updating Outbound Order Lines upto and including** field is set to in the Warehousing Order Types (whinh0110m000) session.

- Inspections in LN Quality are possible for warehouse orders having order origin **Transfer (Manual)** only if the QM Implemented parameter is selected for the order type **Warehouse Transfer** in the Quality Management Parameters (qmptc0100m000) session.
- **WIP Transfer**
Use a warehousing order type of inventory transaction type **WIP Transfer** to transfer work from one costing work center to another.

To define warehousing procedures

To model the inbound, storage, and outbound goods flows in your warehouse, you can define warehousing procedures in LN. A warehousing procedure includes various steps called activities that control the way warehousing orders and/or handling units are processed. An activity is performed using a particular LN session.

Link warehousing procedures to inbound and outbound goods

Initially, you define a warehousing procedure and link this procedure to a particular warehousing order type. As a result, the warehousing procedure is the default procedure for the warehousing orders to which the order type is allocated, and the goods are processed according to the procedure of the order on which the goods are listed.

If you use handling units to process goods into and/or out of the warehouse, the goods are processed according to the warehousing procedure of the warehousing orders that list the goods contained in the handling units.

You can adjust the default procedure for individual warehousing orders and warehousing order lines of this warehousing order type. If you adjust the default procedure for an individual warehousing order of this order type, the adjusted procedure applies to the inbound and/or outbound order lines of the warehousing order. You can also adjust the warehousing procedure for an individual inbound or outbound order line. For further information, see *How to modify warehousing procedures*.

Automatic or manual execution of activities

You can specify whether an activity of a warehousing procedure must be carried out manually or automatically. Manually means that the user must perform the activity using the session related to the activity. Automatic means that the activity is carried out automatically after the preceding activity is finished. If the first activity is automatic for warehousing orders generated from orders originating from other packages, this activity is carried out the moment the warehousing order is generated. For information on how to define a warehousing procedure and specifying whether the activities of the procedure are carried out manually or automatically, see [How to define a warehousing procedure](#).

However, to trigger warehouse processing for warehousing orders whose first activity is set to automatic processing and that are manually created or generated from Project, you must click Process.

The Process command is available in the following sessions:

- Warehousing Orders (whinh2100m000)
- Warehousing Order (whinh2100m100)
- Warehouse Manager Dashboard (whinh2300m000)
- Warehousing Assembly Orders (whinh2101m000)
- Inbound Order Lines (whinh2110m000)
- Outbound Order Lines (whinh2120m000)

The outbound procedure

The outbound procedure comprises the activities that you must perform in LN to issue goods from the warehouse and prepare these goods for shipment or transfer. The outbound procedure can include outbound inspections, if required.

This topic describes all steps, also called activities, of the outbound procedure and shows how you can perform these steps.

If a step is mandatory, this is indicated in the step description. You are not required to include non-mandatory activities in your warehousing procedures. In addition, you can specify whether an activity must be performed manually or automatically. For information on how to define warehousing procedures, see *To define warehousing procedures* (p. 12).

After the outbound advice is generated for the outbound order line, LN allows you to modify the outbound advice. If the **Full Packages Only** functionality is implemented and the modified advised quantity is not in multiples of full packages, LN displays a warning message. During the confirmation of shipments, you can modify the advised quantity to multiples of full packages.

The outbound procedure includes these steps:

Step 1: Generate outbound advice

The **Outbound Advice** activity is a mandatory step of the outbound procedure.

The first step of the outbound procedure is to generate outbound advice for the goods that you want to issue from the warehouse. You can generate outbound advice as soon as outbound order lines have been created for the goods that you want to issue. If the warehouse has no locations, the outbound advice does not list locations, but only lists the quantities to be issued.

To generate outbound advice, in the Generate Outbound Advice (whinh4201m000) session, select the order lines that list the goods that you want to issue and click **Advise**. Alternatively, you can generate outbound advice for individual outbound order lines in the Outbound Order Lines (whinh2120m000) session or the Outbound Line Status Overview (whinh2129m000) session.

The initial status of an outbound order line is either **Planned** or **Open**, which is determined by parameter settings. If the initial status is **Planned**, the order line must be activated to obtain the **Open** status before

you can generate outbound advice. For more information, refer to *Planned status for Warehousing orders and order lines*. After the outbound advice is generated, the status of the outbound order lines that list the goods selected for the outbound advice changes to **Advised**. For more information, refer to *Outbound advice* (p. 18).

Step 2: Release outbound advice

The **Release Outbound Advice** activity is a mandatory step of the outbound procedure.

After the outbound advice is generated, you must release the outbound advice for these reasons:

- To enable picking lists to be generated, if picking lists are included in the warehousing procedure of the outbound order lines related to the outbound advice.
- To indicate that the goods are ready for shipment, if the warehousing procedure includes no picking lists.
- To indicate that the goods are ready for inspection, if the warehousing procedure includes inspections.

After the outbound advice is released, the related outbound order lines and handling units obtain these statuses:

- **Released**
If picking lists are included in the outbound warehousing procedure of the outbound order lines. For further information on picking lists, see the following step, *Generate picking list*.
- **Staged**
If picking lists are not included in the outbound warehousing procedure of the outbound order lines. This status implies that the goods have been moved to the loading area of the warehouse and are about to be shipped. For **Staged** order lines, LN creates shipment lines. You can perform *The shipment procedure* (p. 47) for these lines.
- **To be Inspected**
If outbound inspections are included in the outbound warehousing procedure of the outbound order lines and the items requires outbound inspections. For further information on outbound inspections, see step *Inspect outbound goods*.

To release outbound advice, in the *Release Outbound Advice* (whinh4202m000) session, select the order lines that list the goods that you want to release and click **Release Advice**. Alternatively, you can release outbound advice for individual order lines in the *Outbound Order Lines* (whinh2120m000) session or the *Outbound Line Status Overview* (whinh2129m000) session.

Step 3: Generate picking list

A picking list is a document that shows the locations from which you must collect the goods that you want to issue. A picking list shows the preferred order in which to pick the goods from the warehouse. You can generate picking lists after the outbound advice is released. The picking list activity is not mandatory and is only available for location-controlled warehouses. After you generate a picking list for an outbound order line, the status of the order line remains **Released**.

You can generate picking lists in the *Generate Picking List* (whinh4415m000) session.

Step 4: Adjust picking list

Optionally, you can change the picking list, if you want to pick other goods than those originally advised, or you can change the locations. Thus, you can change lot numbers, serial numbers, item quantities, and/or locations.

Step 5: Confirm picking list

To confirm that the goods on the picking list are picked, in the Picking List (whinh4525m100) session, select the **Pick Run** option, the **Pick Mission** option, or the **Pick Advice** option from the appropriate menu. The status of the related outbound order lines changes to **Staged**. This status implies that the goods have been moved to the loading area of the warehouse and are about to be shipped. For **Staged** order lines, LN creates shipment lines. You can perform *the shipment procedure (p. 47)* for these lines. If outbound inspections are included in the warehousing procedure, however, the status changes to **To be Inspected**.

Step 6: Inspect outbound goods

Unlike inbound inspections, the outbound inspection is not a warehousing procedure in its own right, but an activity that you can add to the outbound procedure. You can add the outbound inspection step to a warehousing procedure if the setup for the warehouse, supplier, or item requires item inspection.

If the inspection activity is included in the warehousing procedure, LN creates an inspection record in the Warehouse Inspections Overview (whinh3122m000) session after the outbound advice is released or the picking list is confirmed as described in the previous steps, and the status of the related outbound order lines changes to **To be Inspected**.

You can then approve, reject, or scrap and process the items in the Warehouse Inspections Overview (whinh3122m000) session or the Warehouse Inspection (whinh3622m000) session.

Outbound order lines related to approved and processed items obtain the **Staged** status. This status implies that the goods have been moved to the loading area of the warehouse and are about to be shipped. For **Staged** order lines, ERP LN 6.1 creates shipment lines. You can perform *the shipment procedure (p. 47)* for these lines. Rejected and processed item quantities are removed from inventory or sent to the quarantine warehouse or quarantine location without using the outbound procedure. The rejected quantities are updated on the outbound order lines.

Outbound order lines

Outbound order lines deal with activities that relate to the issue of goods from a warehouse and the preparation of these goods for shipment.

Outbound-order line characteristics

You can link an outbound order line to a warehousing order with one of the following inventory-transaction types:

- **Issue**
- **Transfer**
- **WIP Transfer**

An outbound order line is generated either automatically by another package or module, or created manually in Warehousing. The order type determines the default warehousing procedure steps that must or can be taken to process the order lines. You can adjust the default warehousing procedure for an individual order header. As a result, the adjusted procedure applies to the order lines that belong to the order header. In addition, you can adjust the procedure for an individual order line.

Outbound advice

Outbound advice comprise instructions to move items to be issued out of the warehouse. Therefore, an individual line of an outbound advice might read as follows: Take 10 of item A from location Pick3 and put them in location Staging 5.

Generate outbound advice

Outbound movement of goods is initiated and controlled by a warehousing order of one of the following inventory-transaction types:

- **Issue**
- **Transfer**
- **WIP Transfer**

Outbound movement of goods can also be triggered by a warehousing assembly order.

These warehousing orders can be generated automatically by other packages or modules in LN, or manually created in Warehousing.

A warehousing order has one or more outbound order lines. You can generate outbound advice for an outbound order line in the Generate Outbound Advice (whinh4201m000) session. This advice shows where the goods must be taken from and where they must go. You can group several outbound advice lines to be run at the same time. You can view the outbound advice in the Outbound Advice (whinh4525m000) session.

Release outbound advice

You can release outbound advice in the Release Outbound Advice (whinh4202m000) session. After the advice is released, you can put the advice on a picking list by generating the picking list for a run. On

the picking list, the outbound advice lines are grouped by run and picking mission. You can confirm an individual advice line, picking mission, or an entire run.

Approve/reject picked inventory

After you (partially) confirm the picking list, you can approve or reject the picked inventory. For the approved advice lines, LN creates shipment lines, which you can confirm.

Note

The only mandatory activities for outbound warehousing procedures are to generate outbound advice lines and to release outbound advice lines. The other activities, generating picking lists and inspections, are optional. It depends on the warehousing procedure defined for the outbound orders whether LN automatically carries out these activities or the user must perform the activities. For further information, see Automatic or manual execution of activities.

For each procedural step, you can undo the previous procedure step: for example, undo the advice, the release, or undo the generation of the picking list. However, you cannot undo the confirm picking and approval activities.

Peg distribution in the outbound process

During the outbound process, issuing project pegged goods from a warehouse results in inventory transactions that are based on the peg distribution.

During the outbound advice and during inspections, the outbound order line cost peg distribution is updated with the advised quantities, approved quantities and the rejected quantities. When the goods arrive at the staging location and are shipped, the actual pegs are created. During the confirmation process, the shipment line peg distribution is created.

Generating outbound advice

While generating an outbound advice for a pegged outbound order line, additional inventory checks are performed to determine the pegged inventory that must be advised. LN first searches for the available stock points. If the stock point is identified, the outbound order line cost peg distribution is advised based on the available quantity at the stock point and the available quantity in the project pegged inventory. The peg distribution is based on the earliest required date.

When determining the quantity that must be advised for each separate peg line, this calculation is performed before searching for the project pegged inventory:

Quantity to be advised = Required Quantity - Advised Quantity - Rejected Quantity
- Shipped Quantity - Not Shipped Quantity - Expected Not Shipped Quantity

Quantity to be advised = Minimum (To be distributed (Stock point Quantity),
To be Advised)

This table explains the quantity that must be advised:

Required Quantity	Advised Quantity	Shipped Quantity	Not Shipped Quantity	To be Advised Quantity
10	10	10	0	0 (10 – (10 – 0))
20	10	10	0	10 (20 – (10 – 0))
20	20	10	10	10 (20 – (20 – 10))
20	20	10	0	0 (20 – (20 – 0))
20	20	15	5	5 (20 – (20 – 5))
20	20	0	20	20 (20 – (20 – 20))

After the to be advised quantity is retrieved, the project pegged inventory search engine is activated.

These scenarios exist:

- No shortages, full advise
- Shortage on project pegged inventory
- Shortage on stock point inventory
 - Part that can be advised has no shortage in project pegged inventory
 - Part that can be advised has a shortage in project pegged inventory

No shortages, full advise

Initial position of the inventory:

Warehouse - Item Inventory (whwmd215)

Warehouse	Item	Inventory on hand	Location Allocated Quantity	Available Quantity
WH01	item001	100	0	100

Project Pegged Inventory (whwmd260)

Ware-house	Item	Project	Element	Activity	Extension	Cost Component	Inventory on Hand	Location Allocated Quantity	Available Quantity
WH01	item001	proj1	elem1	acti1			40	0	40
WH01	item001	proj2	elem2	acti2			40	0	40
WH01	item001	proj2	elem3	acti2			20	0	20

Outbound Order Line (whinh220)

Order Origin	Order	Line	Sequence	Item	Warehouse	Ordered Quantity	Status
Sales	SLS000001	10	1	item001	WH01	40	Open

Outbound Order Line cost peg Distribution (whinh290)

Order Origin	Order	Line	Sequence	Peg Line	Project	Element	Activity	Ordered Quantity	Advised Quantity	Required Date
Sales	SLS000001	10	1	10	proj1	elem1	acti1	10	0	10/30/2011

Sales	SLS000001	10	1	20	proj2	elem2	acti2	20	0	11/1/ 2011
Sales	SLS000001	10	1	30	proj2	elem3	acti2	10	0	10/29/ 2011

In the example, you can see that the outbound order line can be advised because the inventory levels are sufficient.

This example displays results after an outbound advice is created:

Warehouse - Item Inventory (whwmd215)

Warehouse	Item	Inventory on hand	Location Allocated Quantity	Available Quantity
WH01	item001	100	40	60

Project Pegged Inventory (whwmd260)

Ware-house	Item	Project	Element	Activity	Extension	Cost Component	Inventory on Hand	Location Allocated Quantity	Available Quantity
WH01	item001	proj1	elem1	acti1			40	10	30
WH01	item001	proj2	elem2	acti2			40	20	20
WH01	item001	proj2	elem3	acti2			20	10	10

Outbound Order Line (whinh220)

Order Origin	Order	Line	Sequence	Item	Warehouse	Ordered Quantity	Status
Sales	SLS000001	10	1	item001	WH01	40	Advised

Outbound Advice (whinh225)

Order Origin	Order	Line	Sequence	Item	Warehouse	Advised Quantity
Sales	SLS000001	10	1	item001	WH01	40

Outbound Order Line Cost Peg Distribution (whinh290)

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Order Origin	Order	Line	Se- quence	Peg Line	Project	Element	Activity	Ordered Quantity	Advised Quantity	Re- quired Date
Sales	SL000001	10	1	10	proj1	elem1	acti1	10	10	10/30/ 2011
Sales	SL000001	10	1	20	proj2	elem2	acti2	20	20	11/1/ 2011
Sales	SL000001	10	1	30	proj2	elem3	acti2	10	10	10/29/ 2011

Note

Only one outbound advice is created. The outbound order line cost peg distribution is updated with the advised quantity for each peg.

Shortage on project pegged inventory

The cost peg transfer functionality enables you to track the shortages in project pegged inventory. For more information, refer to Cost peg transfers in Warehousing.

Initial position of the inventory:

Warehouse - Item Inventory (whwmd215)

Warehouse	Item	Inventory on hand	Location Allocated Quantity	Available Quantity
WH01	item001	100	60	40

Project Pegged Inventory (whwmd260)

Ware-house	Item	Project	Element	Activity	Extension	Cost Component	Inventory on Hand	Location Allocated Quantity	Available Quantity
WH01	item001	proj1	elem1	acti1			20	0	20
WH01	item001	proj2	elem2	acti2			10	0	10
WH01	item001	proj2	elem3	acti2			70	60	10

Outbound Order Line (whinh220)

Order Origin	Order	Line	Sequence	Item	Warehouse	Ordered Quantity	Status
Sales	SLS000001	10	1	item001	WH01	40	Open

Outbound Order Line Cost Peg Distribution (whinh290)

Order Origin	Order	Line	Sequence	Peg Line	Project	Element	Activity	Ordered Quantity	Advised Quantity	Required Date
Sales	SLS000001	10	1	10	proj1	elem1	acti1	10	0	10/30/2011

Sales	SLS000001	10	1	20	proj2	elem2	acti2	20	0	11/1/ 2011
Sales	SLS000001	10	1	30	proj2	elem3	acti2	10	0	10/29/ 2011

In the example, peg line 20 has a higher priority, because the required date is earlier.

The resulting inventory after the outbound advice is created (without the use of transfer logic) is listed in these tables:

Warehouse - Item Inventory (whwmd215)

Warehouse	Item	Inventory on hand	Location Allocated Quantity	Available quantity
WH01	item001	100	90	10

Project Pegged Inventory (whwmd260)

Ware-house	Item	Project	Element	Activity	Extension	Cost Component	Inventory on Hand	Location Allocated Quantity	Available Quantity
WH01	item001	proj1	elem1	acti1			20	10	10
WH01	item001	proj2	elem2	acti2			10	10	0
WH01	item001	proj2	elem3	acti2			70	70	0

Outbound Order Line (whinh220)

Order Origin	Order	Line	Sequence	Item	Warehouse	Ordered Quantity	Status
Sales	SLS000001	10	1	item001	WH01	40	Partially Advised

Outbound Order Line Cost Peg Distribution (whinh290)

Order Origin	Order	Line	Sequence	Peg Line	Project	Element	Activity	Ordered Quantity	Advised Quantity	Required Date
Sales	SLS000001	10	1	10	proj1	elem1	acti1	10	10	10/30/2011

Sales	SLS000001	10	1	20	proj2	elem2	acti2	20	10	11/1/2011
Sales	SLS000001	10	1	30	proj2	elem3	acti2	10	10	10/29/2011

Outbound Advice (whinh225)

Order Origin	Order	Line	Sequence	Item	Warehouse	Advised Quantity
Sales	SLS000001	10	1	item001	WH01	30

Shortage on stock point inventory

The possible scenarios for stock point inventory shortage:

The part that can be advised has no shortage in the project pegged inventory

In this example, there is not enough inventory available. However, the part of the inventory that can be advised must also be handled.

Initial position of the inventory:

Warehouse - Item Inventory (whwmd215)

Warehouse	Item	Inventory on hand	Location Allocated Quantity	Available quantity
WH01	item001	50	20	30

Project Pegged Inventory (whwmd260)

Ware- house	Item	Project	Element	Activity	Exten- sion	Cost Compo- nent	Inventory on Hand	Location Allocated Quantity	Available quantity
WH01	item001	proj1	elem1	acti1			10	0	10
WH01	item001	proj2	elem2	acti2			30	20	10
WH01	item001	proj2	elem3	acti2			10	0	10

Outbound Order Line (whinh220)

Order Ori- gin	Order	Line	Sequence	Item	Warehouse	Ordered Quantity	Status
Sales	SLS000001	10	1	item001	WH01	40	Open

Outbound Order Line cost peg Distribution (whinh290)

Order Origin	Order	Line	Se- quence	Peg Line	Project	Element	Activity	Ordered Quantity	Advised Quantity	Re- quired Date
Sales	SLS000001	10	1	10	proj1	elem1	acti1	10	0	10/30/ 2011

Sales	SLS000001	10	1	20	proj2	elem2	acti2	20	0	11/1/ 2011
Sales	SLS000001	10	1	30	proj2	elem3	acti2	10	0	10/29/ 2011

A shortage of 10 pieces is present on the inventory level. The advice can be created only for the available pegged inventory. LN generates a message for shortage and an outbound advice of the available inventory is created. Following is the resulting inventory after the outbound advice is generated:

Warehouse - Item Inventory (whwmd215)

Warehouse	Item	Inventory on hand	Location Allocated Quantity	Available quantity
WH01	item001	50	50	0

Project Pegged Inventory (whwmd260)

Ware-house	Item	Project	Element	Activity	Extension	Cost Component	Inventory on Hand	Location Allocated Quantity	Available quantity
WH01	item001	proj1	elem1	acti1			10	10	0
WH01	item001	proj2	elem2	acti2			30	30	0
WH01	item001	proj2	elem3	acti2			10	10	0

Outbound Order Line (whinh220)

Order Origin	Order	Line	Sequence	Item	Warehouse	Ordered Quantity	Status
Sales	SLS000001	10	1	item001	WH01	40	Partially Advised

Outbound Order Line cost peg Distribution (whinh290)

Order Origin	Order	Line	Sequence	Peg Line	Project	Element	Activity	Ordered Quantity	Advised Quantity	Required Date
Sales	SLS000001	10	1	10	proj1	elem1	acti1	10	10	10/30/2011

Sales	SLS000001	10	1	20	proj2	elem2	acti2	20	10	11/1/ 2011
Sales	SLS000001	10	1	30	proj2	elem3	acti2	10	10	10/29/ 2011

Outbound Advice (whinh225)

Order Origin	Order	Line	Sequence	Item	Warehouse	Advised Quantity
Sales	SLS000001	10	1	item001	WH01	30

The part that can be advised has a shortage in the project pegged inventory

There is a shortage in the project pegged inventory.

Initial position of the inventory:

Warehouse - Item Inventory (whwmd215)

Warehouse	Item	Inventory on hand	Location Allocated Quantity	Available quantity
WH01	item001	50	20	30

Project Pegged Inventory (whwmd260)

Ware-house	Item	Project	Element	Activity	Extension	Cost Component	Inventory on Hand	Location Allocated Quantity	Available quantity
WH01	item001	proj1	elem1	acti1			10	0	10
WH01	item001	proj2	elem2	acti2			5	0	0
WH01	item001	proj2	elem3	acti2			35	20	15

Outbound Order Line (whinh220)

Order Origin	Order	Line	Sequence	Item	Warehouse	Ordered Quantity	Status
Sales	SLS000001	10	1	item001	WH01	40	Open

Outbound Order Line cost peg Distribution (whinh290)

Order Origin	Order	Line	Sequence	Peg Line	Project	Element	Activity	Ordered Quantity	Advised Quantity	Required Date
Sales	SLS000001	10	1	10	proj1	elem1	acti1	10	0	10/30/2011

Sales	SLS000001	10	1	20	proj2	elem2	acti2	20	0	11/1/ 2011
Sales	SLS000001	10	1	30	proj2	elem3	acti2	10	0	10/29/ 2011

There is a shortage of 10 pieces on the inventory level. In the part that can be advised, a shortage of 5 pieces is also identified on the project pegged inventory. In this situation, LN determines that 30 pieces can be advised. However, an additional shortage of 5 pieces is identified. Hence, only 25 pieces are available to be advised. The resulting inventory is explained in these examples:

Warehouse - Item Inventory (whwmd215)

Warehouse	Item	Inventory on hand	Location Allocated Quantity	Available quantity
WH01	item001	50	45	5

Project Pegged Inventory (whwmd260)

Ware-house	Item	Project	Element	Activity	Extension	Cost Component	Inventory on Hand	Location Allocated Quantity	Available Quantity
WH01	item001	proj1	elem1	acti1			10	10	0
WH01	item001	proj2	elem2	acti2			5	5	0
WH01	item001	proj2	elem3	acti2			35	30	5

Outbound Order Line (whinh220)

Order Origin	Order	Line	Sequence	Item	Warehouse	Ordered Quantity	Status
Sales	SLS000001	10	1	item001	WH01	40	Partially Advised

Outbound Order Line cost peg Distribution (whinh290)

Order Origin	Order	Line	Sequence	Peg Line	Project	Element	Activity	Ordered Quantity	Advised Quantity	Re-quired Date
Sales	SLS000001	10	1	10	proj1	elem1	acti1	10	10	10/30/2011

Sales	SLS000001	10	1	20	proj2	elem2	acti2	20	5	11/1/2011
Sales	SLS000001	10	1	30	proj2	elem3	acti2	10	10	10/29/2011

Outbound Advice (whinh225)

Order Origin	Order	Line	Sequence	Item	Warehouse	Advised Quantity
Sales	SLS000001	10	1	item001	WH01	25

Create outbound advice despite inventory shortage

LN does not allow you to generate an outbound advice with an advised quantity higher than the total advised quantities of the related outbound order line cost peg distribution.

Outbound advice ownership

LN automatically generates the outbound advice ownership when the outbound advice is created if the outbound line is project pegged. LN does not allow you to change the ownership distribution for the project pegged order lines. The ownership distribution is based on the issue ownership set on the outbound order line.

LN does not allow you to generate ownership distribution or insert, modify, delete records for pegged outbound order lines in the Outbound Advice Ownership (whinh4128m000) session.

Inventory search engine

Inventory selection during the process of generating an outbound advice must be changed to support the project pegged inventory. When demand for a pegged item is advised, the process takes care of these peg distribution lines. So, the inventory search engine logic is extended to support the project pegged inventory.

The initial point of these steps is that the inventory on item warehouse level is found. The search sequence for inventory:

- Search for available inventory with the required peg.
- Search for available cost peg transfer orders (cost peg transfer orders created by Enterprise Planning or manually entered).
- Search for available excess.
- Search for available to transfer (non-excess inventory).

- Unpegged inventory.
- Alternative Items.

Manual outbound advice

For a manually created outbound advice, when there is insufficient inventory to allocate for the manually entered advised quantity, LN displays an error message. The cost peg transfer logic is also executed.

Manual changes on outbound advice

When you modify the outbound advice quantity, LN updates the advised quantity on the underlying peg distribution.

In case of a decrease in the quantity, a peg redistribution is initiated. The decrease in advised quantity must be based on the latest required date. For example:

Warehouse - Item Inventory (whwmd215)

Warehouse	Item	Inventory on hand	Location Allocated Quantity	Available quantity
WH01	item001	50	50	0

Project Pegged Inventory (whwmd260)

Ware-house	Item	Project	Element	Activity	Extension	Cost Component	Inventory on Hand	Location Allocated Quantity	Available Quantity
WH01	item001	proj1	elem1	acti1	100	100	20	20	0
WH01	item001	proj2	elem2	acti2	100	100	30	30	0

Outbound Order Line (whinh220)

Order Origin	Order	Line	Sequence	Item	Warehouse	Ordered Quantity	Status
Sales	SLS000001	10	1	item001	WH01	50	Advised

Outbound Order Line cost peg Distribution (whinh290)

Order Origin	Order	Line	Sequence	Peg Line	Project	Element	Activity	Ordered Quantity	Advised Quantity	Required Date
Sales	SLS000001	10	1	10	proj1	elem1	acti1	20	20	10/30/2011
Sales	SLS000001	10	1	20	proj2	elem2	acti2	30	30	11/1/2011

Outbound Advice (whinh225)

Order Origin	Order	Line	Sequence	Item	Warehouse	Advised Quantity
Sales	SLS000001	10	1	item001	WH01	50

When you change the advised quantity to 45, the following is the result:

Warehouse - Item Inventory (whwmd215)

Warehouse	Item	Inventory on hand	Location Allocated Quantity	Available quantity
WH01	item001	50	45	5

Outbound Advice (whinh225)

Order Origin	Order	Line	Sequence	Item	Warehouse	Advised Quantity
Sales	SLS000001	10	1	item001	WH01	60

Undo outbound advice

When an advice is removed, the advised quantity on the deleted outbound advice line must be removed from the outbound order line cost peg distribution.

Process pick

When the user processes the picking list, LN also processes the pending cost peg transfers for the outbound advice that is picked.

Outbound advice for returns

Advising is done based on the latest required date; the pegs with the latest required date are advised first.

Creation of shipment line cost peg distribution

When the shipment lines are confirmed, the shipment line cost peg distribution is created for shipment lines related to an outbound order line that is pegged. The shipped quantities are distributed over the pegs for the shipment lines. The distribution is explained in these examples:

Warehouse - Item Inventory (whwmd215)

Warehouse	Item	Inventory on hand	Location Allocated Quantity	Available quantity
WH01	item001	50	50	0

Project Pegged Inventory (whwmd260)

Ware-house	Item	Project	Element	Activity	Extension	Cost Component	Inventory on Hand	Location Allocated Quantity	Available Quantity
WH01	item001	proj1	elem1	acti1			20	20	0
WH01	item001	proj2	elem2	acti2			10	10	0
WH01	item001	proj2	elem3	acti2			20	20	0

Outbound Order Line (whinh220)

Order Origin	Order	Line	Sequence	Item	Warehouse	Ordered Quantity	Status
Sales	SLS000001	10	1	item001	WH01	50	Open

Outbound Advice (whinh225)

Order Origin	Order	Line	Sequence	Item	Warehouse	Advised Quantity
Sales	SLS000001	10	1	item001	WH01	50

Outbound Order Line cost peg Distribution (whinh290)

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Order Origin	Order	Line	Se- quence	Peg Line	Project	Element	Activity	Ordered Quantity	Advised Quantity	Re- quired Date
Sales	SLS000001	10	1	10	proj1	elem1	acti1	20	20	10/30/ 2011
Sales	SLS000001	10	1	20	proj2	elem2	acti2	10	10	11/1/ 2011
Sales	SLS000001	10	1	30	proj2	elem3	acti2	20	20	10/29/ 2011

For this situation the following shipment lines are created:

Shipment Lines (whinh431)

Shipment	Shipment Line	Order Ori- gin	Order	Line	Sequence	Item	Shipped Quantity
SHIP00001	10	Sales	SLS000001	10	1	item001	30
SHIP00002	10	Sales	SLS000001	10	1	item001	20

Shipment Lines (whinh428)

Shipment	Shipment Line	Peg Line	Project	Element	Activity	Required Date	Shipped Quantity
SHIP00001	10	10	proj1	elem1	acti1	10/30/2011	10
SHIP00001	10	30	proj2	elem2	acti1	10/29/2011	20

When the shipment is confirmed, the shipped quantity is updated on the outbound order line cost peg distribution

Outbound Order Line cost peg Distribution (whinh290)

Order Origin	Order	Line	Se- quence	Peg Line	Project	Ele- ment	Activity	Or- dered Quanti- ty	Ad- vised Quanti- ty	Re- quired Date	Shipped Quanti- ty
Sales	LS00001	10	1	10	proj1	elem1	acti1	20	20	10/30/ 2011	10
Sales	LS00001	10	1	20	proj2	elem2	acti2	10	10	11/1/ 2011	0
Sales	LS00001	10	1	30	proj2	elem3	acti2	20	20	10/29/ 2011	20

Underdeliveries and overdeliveries

For underdeliveries, the quantity not delivered must be distributed on the peg distribution, beginning with the peg line with the latest required date. For overdeliveries, the quantity overdelivered must be distributed equally over the available peg lines for the outbound order line.

Not shipped quantities

The peg line distribution data is transferred to the transfer order / adjustment order only if a not-shipped quantity exists on peg distribution. During the confirmation process the not-shipped quantity is updated on the outbound order line cost peg distribution and the shipment line cost peg distribution.

Shipments for returns

When the items are not shipped to the destination, but are shipped back to the origin, a reverse required date priority is applied when generating the shipment line cost peg distribution during the confirmation of the return shipment line. As item inventory is decreased, LN changes the pegged inventory with the latest required dates.

Cost peg transfers

Cost peg transfers enable transfer of costs between two different pegs (pegged to unpegged and vice versa). The cost peg transfers do not physically move the inventory but only transfer the costs of the inventory. Cost peg transfers are performed within the same warehouse. It is not possible to transfer the goods across warehouses. For more information, refer to Cost peg transfers in Warehousing

Transfer (manual) orders / Transfer orders

LN allows you to use an inbound and outbound cost peg distribution to specify transfer manual orders to transfer actual goods between warehouses. LN generates the outbound order line cost peg distribution

based on the project pegged inventory. The cost peg distribution can also be created manually and transferred to the inbound line cost peg distribution.

Change warehouse order at a later stage

LN allows you to modify the outbound warehousing order data related to the sales order/schedule. The data can be modified for warehousing orders of all origins. You can also define up to which outbound procedure step the data can be modified. For more information, refer to [To modify the outbound warehousing order data](#).

Additional costs on shipment header/line

When the cost item that is mandatory pegged is added as additional cost to the shipment, the cost item is not displayed because LN cannot decipher which pegs must be added to the additional cost line.

When the cost item that is mandatory pegged is added as additional costs on the shipment line, or when the parent shipment line has a peg distribution, LN copies the peg distribution data to the additional cost line. The cost peg distribution of this additional cost line is transferred to the sales cost order. For more information, refer to [Additional costs - shipment based](#)

Shipments

The shipment procedure

The shipment procedure comprises the activities that you must perform in LN to ship goods that were issued from the warehouse by means of the outbound procedure.

The shipment procedure includes these steps, also called activities:

1. Freeze/Confirm Shipments/Loads (whinh4275m000) (mandatory)
2. Print shipping documents. These types of shipping documents are available:
 - Print Bills of Lading (whinh4470m000)
 - Print Packing Slips (whinh4475m000)
 - Print Packing Lists (whinh4476m000)
 - Print Delivery Notes (whinh4477m000)
 - Print Shipping Manifest (whinh4478m000)

You are not required to include non-mandatory activities in your warehousing procedures. In addition, you can specify whether an activity must be performed manually or automatically. For information on how to define warehousing procedures, see *To define warehousing procedures (p. 12)*.

Prepare shipment procedure: adjust loads, shipments, and shipment lines

Before you freeze or confirm the shipments and print the shipment documents, you can, if required, change the item quantities of the shipments and adjust the shipment and load structure.

You can specify quantities that cannot be shipped and create a transfer order to return the not-shipped goods to the storage location or create an automatic adjustment to remove the items from the inventory. For more information, refer to Not-shipped quantities.

While the shipment and loads are still being adjusted, the **Open** status is not changed.

Step 1. Freeze/Confirm Shipments/Loads

In the Freeze/Confirm Shipments/Loads (whinh4275m000) session, you can freeze and confirm shipment lines, shipments, and loads. Freezing is optional, confirming is mandatory.

Freeze shipments, shipment lines or loads

Freezing shipments, shipment lines, and loads means that major changes are not allowed because they are ready for shipping, but you can print the shipping documents, if printing shipping documents is included in the shipment procedure. For more information, refer to *Shipment and load status* (p. 55).

Freezing is optional, you can skip this step if freezing is not part of your business practice. To make freezing a mandatory step in your shipment procedure, select the **Freeze Mandatory** check box in the Warehousing Order Types (whinh0110m000) session.

To freeze...	Use the Freeze command in...
Shipment lines	The Shipment Lines (whinh4131m000) session
Shipments	The Shipments (whinh4130m000) session
Loads	The Loads (whinh4140m000) session

To freeze a range of shipment lines, shipments, or loads, use the Freeze/Confirm Shipments/Loads (whinh4275m000) session.

Note

You can only freeze shipment lines, shipments, and loads if the status is **Open**.

Reopen

If changes are required for any frozen shipment lines, shipments, or loads, you must reopen these shipment lines, shipments, or loads to be able to make these changes. You can only reopen shipment lines that have the **Frozen** status. To reopen shipment lines, use the **Re-open** command on the appropriate menu of the Shipment Lines (whinh4131m000) session.

When you reopen a shipment line, the related shipment and load are also reopened. The shipment documents must be printed again, after the final changes to the shipments have been made. The status of the handling units of the shipment and shipment line are changed from **Shipment Frozen** to **Shipment Open**. If you again freeze a shipment line or shipment and a handling unit already exists for the shipment or shipment line, the handling unit is regenerated automatically.

Shipment acceptance

To perform source acceptance, you must submit a shipment for acceptance and specify the accepted or not-shipped quantities when the shipment's status is **Open**. To complete the *Source acceptance - procedure* (p. 112), you must freeze the shipment.

If a shipment is submitted for acceptance, the shipment's status is **Open**, but:

- You cannot modify the shipment except for the source acceptance fields.
- No new lines can be added to the shipment.

Confirm shipments, shipment lines or loads

Confirming is mandatory in the shipment procedure. This step entails processing the shipments, shipment lines, and loads generated during the outbound procedure. When the goods are loaded and are leaving the warehouse, you must confirm the shipment and loads. As a result, the status of the shipments and loads changes to **Confirmed**.

When shipments are set to **Confirmed**, the status of the related outbound order lines and handling units changes to **Shipped**.

Note

- If the **Freeze Shipments/Loads** activity is performed automatically in the shipment procedure, shipments and loads are automatically confirmed. In that case, you cannot freeze shipment lines, shipments, or loads.
- If the **Freeze/Confirm Shipments/Loads** activity is performed automatically, LN confirms the shipment lines, shipments, and loads and prints the shipping documents without enabling you to make any changes to the shipment line quantities or the shipment and load structure.
- If the shipment documents must be printed automatically, printing is started as soon as the status of the shipment or load changes from **Open** to **Frozen** or **Confirmed**.

Step 2. Print shipping documents

If shipping documents are used in the outbound flow of your warehouse, the shipping documents are printed after the shipment lines, shipments, and loads have obtained the **Frozen** status or the **Confirmed** status.

The settings of the shipment procedures specified in the Activities by Procedure (whinh0106m000) session determine whether the documents are printed automatically or manually. These types of shipping documents are available:

- Print Bills of Lading (whinh4470m000)
- Print Packing Slips (whinh4475m000)
- Print Packing Lists (whinh4476m000)
- Print Delivery Notes (whinh4477m000)
- Print Shipping Manifest (whinh4478m000)

Manually created shipments

In addition to generating shipments for warehousing orders, LN enables you to manually create shipments and shipment lines. Manual shipments are used to ship goods without performing LN warehousing procedures and related financial transactions.

You can use manual shipment and shipment lines to register goods transports for items not registered in LN, and/or goods transports for which no warehouse orders exist. For example, transports of rejected goods to the junk yard.

For manually created shipments, you can print delivery notes.

To create and maintain manual shipments

To manually create a shipment, click  on the toolbar of the Shipments (whinh4130m000) session or the Shipment (whinh4630m000) session.

In these sessions, the following fields are mandatory:

- **Address**
- **Ship-from Type** Note that for manual shipments, only Work Center and Warehouse are available.
- **Ship-from Code**
- **Series**
- **Address**
- **Ship-toType**
- **Ship-to Code**

Because warehouse processing is not performed for manual shipments in LN, you are not required to enter a shipment procedure in the **Warehousing Procedure** field.

Note that you can replace the default series in the **Series** field.

You can link a manual shipment to a load. If you do not link the shipment to a load, LN creates a load for the shipment when the shipment is confirmed. To link the shipment to a load, in the **Load** field, select the required load. As a result, the data from the load is copied to the shipment.

If you do not select a delivery note for the shipment in the **Preliminary Delivery Note** field, LN creates a delivery note for the shipment when the shipment is confirmed, provided that the use of delivery notes is enabled for the ship-from/ship-to warehouse defined for the shipment.

For a manual shipment, LN does not create an advance shipment notice.

To update manual shipments

You can update the following fields for manual shipments:

- **Hazardous Material**
- **Class of Risk**

The status of manual shipments are updated as a result of the freeze or confirm shipment process. For further information, see *Shipment and load status* (p. 55).

The weight of a manual shipment is updated from the weight of the shipment lines added to the shipment.

The loading list sequence for the shipment is updated when the loading list is generated for the load to which the shipment is allocated.

To delete manual shipments

You can delete manual shipments in the Shipments (whinh4130m000) session or the Shipment (whinh4630m000) session if the shipment status is **Open**. In the Remove Confirmed Shipments/Loads (whinh4250m000) session, you can delete manual shipments with status **Confirmed**.

To create manual shipment lines

You can create manual shipment lines for both generated shipments and manually created shipments.

On a manual shipment line, you can enter an item present in LN or an item that does not exist in the application.

For example, you can use a manual shipment line to register a delivery in addition to the ordered delivery, such as a free gift, that is not listed on the order but must be listed on the delivery note: for each computer that you deliver you give a mouse pad for free.

To manually create a shipment line, click  on the toolbar of the Shipment Lines (whinh4131m000) session or the Shipment (whinh4630m000) session.

For manual shipment lines, the same attributes are available as for generated shipment lines, except that you cannot:

- Generate lot and serial numbers
- Generate handling units
- Create packing structures

Move a shipment to another load

If a shipment is moved to another load, LN checks if the shipment data matches the delivery note data of a shipment present on the load. If yes, the shipment is allocated to that delivery note. If not, a delivery note is created for the shipment that is moved.

Shipment building

Shipments and loads

A load consists of one or more shipments, and a shipment has one or more shipment lines.

Loads, shipments, and shipment lines are generated by Warehousing or by Freight. During the outbound procedure, Warehousing generates loads and shipments for outbound order lines with status **Staged**, unless an actual Freight load plan is present. For more information, refer to Freight loads and shipments, Warehousing loads and shipments, and *The outbound procedure* (p. 15).

You can also manually create loads and shipments, which is usually done to adjust or replace generated loads and shipments.

Optionally, you can manually insert shipping containers, which provide a detailed insight into the packing structure of the shipments. If shipping containers are used, a load contains one or more shipping containers, a shipping container contains one or more shipments, and a shipment has one or more shipment lines. For further information on shipping containers, see Overview of kit handling in Warehouse Management.

Warehousing loads and shipments

LN generates loads, shipments, and shipment lines for the outbound order lines that obtain the **Staged** status as follows:

1. Generate shipment line.
2. Check if a shipment is present to which the shipment line can be linked.
3. If yes, link shipment line to shipment. For more information, refer to How LN links a shipment line to a shipment
If no, generate shipment.
4. Check if a load is present to which the shipment can be linked.
5. If yes, link shipment to load. For more information, refer to How LN links a shipment to a load
If no, generate load and link shipment.

Note

- If an actual Freight load plan is present, Warehousing generates loads and shipments based on the Freight loads and shipments. For more information, refer to Freight loads and shipments.
- For production orders, the setting of the **Create Shipment** field in the Default Order Types by Origin (whinh0120m000) session determines whether shipment lines are generated.
- If the **Consolidate Stock Points in one Shipment Line** check box in the Inventory Handling Parameters (whinh0100m000) session is selected, the outbound advices of the same order line with different stock point details are consolidated into a single shipment line even if the outbound advices contain multiple:
 - Lots (in inventory)
 - Serials (in inventory)
 - Inventory Dates
 - Effectivity Units
 - E-Item Revision (via the lot)

You can view and maintain loads, shipping containers, shipments, and shipment lines in the following sessions:

- Planned Loads/Shipments (whinh4180m000). In this session, you can create loads and shipments for both inbound and outbound order lines.
- Warehousing Order Loads and Shipments (whinh4545m000)
- Loads (whinh4140m000)

- Shipping Containers (whinh4125m000)
- **Shipping Structures Graphical User Interface**
This GBF is available from the appropriate menu of the sessions mentioned in this list.
- Move Shipment to Shipping Containers (whinh4125m100)
- Shipments (whinh4130m000)
- Shipment Lines (whinh4131m000)
- Compose Load (whinh4134m000)
- Compose Shipment (whinh4231m000)

In these sessions, you can also manually create or modify loads, shipping containers, shipments, and shipment lines. For further information, see:

- *Shipping structures (p. 65)*
- *Shipment and load status (p. 55)*
- *Manually created shipments (p. 50)*
- Overview of kit handling in Warehouse Management

How LN links a shipment line to a shipment

A shipment line is linked to a shipment for which the following data matches the warehousing order line data of the shipment line:

- Ship-from type and ship-to type
- Ship-from code and ship-to code
- Ship-from address and ship-to address
- Delivery terms
- Point of title passage
- Delivery code
- Motive of transport
- Sales office
- Shipment procedure activities
- Route
- Carrier
- Planned delivery date. The way the planned delivery date is used is controlled by the option selected in the **Generate Shipments** group box of the Warehouses (whwmd2500m000) session.

Note

If the **Single Order per Shipment** check box or the **Single Order Set per Shipment** check box is selected in the Warehousing Order Types (whinh0110m000) session, a shipment can only contain shipment lines that are created from order lines of the same order or order set. For more information, refer to *Shipping structures (p. 65)*.

How LN links a shipment to a load

Normally, a shipment is linked to a load for which the following data matches the warehousing order line data of the shipment:

- Route
- Planned delivery date
- Carrier/LSP

If any of the following conditions apply as well, the shipments are aggregated into more than one load:

- Different ship-from addresses on the originating (sales) order lines.
- The **Single Order per Load** check box is selected in the Warehousing Order Types (whinh0110m000) session. For more information, refer to *Shipping structures (p. 65)*.
- The **Single Ship-to Code per Load** check box is selected in the Warehousing Order Types (whinh0110m000) session.
- The goods picked for a load exceed the maximum weight specified for the load in the **Maximum Weight** field of the Loads (whinh4140m000) Loads (whinh4140m000) session.

Note

If the ship-from type of the warehousing order is a warehouse, narrow shipment time intervals specified for the warehouse will cause fewer shipments to be aggregated into the same load than wide ranges. For more information, refer to **Add Orders Based On**.

Freight loads and shipments

Freight can generate loads and shipments for warehousing order lines and originating order lines. To generate loads and shipments, Freight must generate freight orders for the warehousing orders or originating order lines first. The loads and shipments that Freight generates from the freight orders are contained in a load plan. After the load plan is made **Actual**, Freight passes on these loads and shipments to Warehousing, where they are displayed in the Planned Loads/Shipments (whinh4180m000) session.

If Warehousing has generated loads and shipments for a particular warehousing order before Freight's load plan based on the freight orders of the warehousing order is made **Actual**, the loads and shipments generated by Warehousing prevail. Warehousing's loads and shipments will populate the Planned Loads/Shipments (whinh4180m000) session, and will replace the load and shipments of the (not yet Actual) load plan. However, if the **Override Load Plan** check box is selected in the Outbound Order Lines (whinh2120m000) session, the load plan is overruled, even if it is actual.

Settings for generating freight orders for warehousing order lines

Freight can generate freight orders for warehousing order lines if:

- In the Warehousing Order Types (whinh0110m000) session, the **Generate Freight Order Automatically** check box is selected for the warehousing order type of the order line.
- For outbound order lines, the **Generate Freight Order from Warehousing** check box is selected in the Outbound Order Lines (whinh2120m000) session.

- For inbound order lines, the **Generate Freight Order from Warehousing** check box is selected in the Inbound Order Lines (whinh2110m000) session.

The values of the **Generate Freight Order from Warehousing** check box in the Outbound Order Lines (whinh2120m000) session and the **Generate Freight Order from Warehousing** check box in the Inbound Order Lines (whinh2110m000) session are defaulted from the **Generate Freight Order Automatically** check box in the Warehousing Order Types (whinh0110m000) session.

Note

- Freight orders can be generated from various originating orders, such as:
 - Sales orders
 - Purchase orders
 - Enterprise Planning orders
- To ignore the shipment lines of a Freight load plan for an individual outbound order line, you can select the **Override Load Plan** check box in the Outbound Order Lines (whinh2120m000) session.

Shipment and load status

Shipments, shipment lines, and loads can have the following statuses:

- **Projected**
Shipments, shipment lines, and loads are created when the outbound order lines are created. This is the initial status if the use of projected shipments is specified. To use projected shipments and loads, these check boxes must be selected:
 - **Projected Shipments in use** in the Inventory Handling Parameters (whinh0100m000) session
 - **Projected Shipments in use** in the Warehousing Order Types (whinh0110m000) session
- **Open**
You can:
 - Adjust the quantities on shipment lines.
 - Add or remove shipment lines from shipments
 - Add or remove shipments from Shipping container status or loads
 - Move shipments to other shipping containers or loads
 - Add shipping containers to a load
- You cannot print shipment documents and you cannot ship the shipment.
- **Partially Frozen**
The **Partially Frozen** status is assigned if handling units are in use, and you freeze the shipment line at the handling unit level. If multiple handling units are linked to a shipment line, a few of the handling units must be set to **Frozen**. In case of **Partially Frozen** shipment lines, LN assigns the **Frozen** status to confirmed handling units and its children. After all the handling units linked to a shipment line are set to **Frozen**, the shipment line is assigned the **Frozen** status.

You cannot update the shipment line anymore unless triggered by an already linked open handling unit.

- **Frozen**

The picked goods are at the staging area of the warehouse and are ready for shipment. You can print shipment documents and confirm the shipment. You can generate handling units. You cannot change the loads, shipping containers, shipments, and shipment lines, except for the following fields:

- **Carrier Tracking Number** (shipment)
- **Tracking Number** (shipment)
- **Inventory Adjustment Date** (shipment line)

If other changes are required, you must reopen the shipment lines first.

- **Confirmed**

The goods have been shipped and are actually leaving the warehouse. LN performs financial and inventory transactions for the shipped items. You can print shipment documents for the goods.

Note

Loads present in the Planned Loads/Shipments (whinh4180m000) session have different statuses. For more information, refer to Planned Loads/Shipments Status and *Shipments and loads (p. 51)*.

How the status is determined

The shipment's status is determined as follows:

- If at least one of the shipment lines has the status **Open**, **Partially Frozen** or **Confirming** the shipment's status is **Open**.
- If at least one of the shipment lines has the status **Frozen** and the remaining shipment lines has status **Confirmed**, the shipment's status is **Frozen**.
- If all shipment lines have the status **Confirmed**, the shipment's status is **Confirmed**.
- If a shipment line is reopened, the shipment's status also changes to **Open**.

The load's status is by default determined as follows:

- If at least one of the shipments linked to the load has the status **Open** or **Frozen**, the load's status is **Open**. Even if all shipments are **Frozen**, the load's status is still **Open** and you can add new shipments to the load.
- The load status becomes **Frozen** if you freeze the load.
- If all shipments linked to the load have the status **Confirmed**, the load's status is **Confirmed**.
- If a shipment line of a shipment that is linked to the load is reopened, the load's status also changes to **Open**.

Shipping container status

If in the Inventory Handling Parameters (whinh0100m000) session the **Shipping Containers in use** check box is selected, you can use shipping containers.

The status of a shipping container is:

- **Open**
If the container is empty or at least one shipment in the container has status **Open**.
- **Frozen**
If all shipments of the container have status **Frozen**.
- **Confirmed**
If all shipments of the container have status **Confirmed**.

For more information, refer to Overview of kit handling in Warehouse Management.

To freeze projected shipments

To prevent shipments with status **Projected** from being changed or deleted, you can freeze these shipments. This is done by clearing the **Allow Changes to Shipment** check box in the Shipments (whinh4130m000) session.

This is similar to freezing shipments with status **Open**, but when freezing **Projected** shipments:

- You cannot print the shipping documents.
- Various checks that validate the shipment contents are not performed.

The Freeze option is only available for shipments with status **Open**.

Projected shipments

If the use of projected shipments is implemented, projected shipments are created when the outbound order lines are created for a warehousing order. The purpose of creating shipments at this early stage in the outbound process is to prepare labeling and to publish the shipments before the goods to be shipped reach the staging area, which enhances the efficiency and cost-effectiveness of the process.

If the projected shipments are changed or removed, new labels must be created and new shipment Business Object Document (BODs) must be published. A projected shipment is deleted when changes, such as increasing or decreasing the order quantity, are made to the originating outbound order line.

Modifying projected shipments

To prevent such changes from being made to projected shipments or the originating outbound order lines, freeze the projected shipments by clearing the **Allow Changes to Shipment** check box in the Shipments (whinh4130m000) session. Consequently, adding or removing shipment lines either manually or automatically is not allowed.

For example, when creating shipment lines for a new outbound order line, the application cannot add these shipment lines to frozen projected shipments. To enable shipment composition for these shipments, you must first select the **Allow Changes to Shipment** check box.

Picking projected shipments

After the quantities of the projected shipments are picked and the shipment status is changed to **Open**, the setting of the **Allow Changes to Shipment** check box is not changed.

Freeze and reopen shipments

When a shipment is frozen, the **Allow Changes to Shipment** check box is cleared. If the user reopens the shipment, the **Allow Changes to Shipment** check box is automatically selected. This is done because a frozen shipment is reopened to implement changes to the shipment.

Cancel originating order lines

An order line cannot be canceled if the **Allow Changes to Shipment** box is selected for the linked shipment. To cancel the order line, clear the **Allow Changes to Shipment** check box for the shipment.

Shipment building based on shipment reference

Shipment building is the process that automatically creates shipments based on picked outbound advices.

The shipment building criteria are:

- Ship-from Type, Ship-from Code, Ship-from Address
- Ship-to Type, Ship-to Code, Ship-to Address
- Planned for Load Plan (Y/N)
- Manual Shipment (Y/N)
- Office
- Office Company
- Route
- Terms of Delivery
- Point of Title Passage
- Motive of Transport
- Carrier
- Planned Delivery Date
- Delivery Point
- Shipment Reference

The shipment reference determines, among other criteria, how the goods picked from the supplier warehouse are grouped into shipments. The items on sales schedule lines that have the same shipment reference must be shipped as one shipment to the customer. In the automotive business this is called a Pickup Sheet (PUS) process. The shipment reference is primarily populated for warehouse orders with origin *Sales Schedule*. The value of the shipment reference is passed from Order Management to Warehousing by the **Shipment Reference** field in the Sales Schedule Planned Warehouse Orders (tdsls3520m000) session.

Based on the *Shipment Reference*, these shipment building parameters are available in the Warehousing Order Types (whinh0110m000) session:

- **Unique Shipment Reference per Shipment**
- **Single Shipment Reference per Shipment**

Unique Shipment Reference per Shipment

If this check box is selected, LN creates a unique shipment for each shipment reference number. Creation of multiple shipments for the same shipment reference is not allowed in the following cases:

- The Ship-to business partner of the shipments is same.
- The Ship-to business partner is different, but shipments have the same Sold-to business partner. Conversely, this means that when the ship-to BP's differ and their related sold-to BP's differ, LN allows the same shipment reference for creation of multiple shipments.

This parameter has the following consequences:

- The *Shipment Reference* criterion overrules the shipment building criterion for *Planned Delivery Date*. When the planned delivery date is not the same for all schedule lines, but the schedule lines have the same shipment reference, LN creates one shipment that contains all the schedule lines for this shipment reference.
- LN does not create outbound advices and shipment lines for *pickup sheet lines* that have full shortage of items. Other lines of the same pickup sheet can be picked and shipped. The outbound line for which the shortage of items occurred remains open and has the pickup sheet number of the already shipped pickup sheet. Processing of this remaining outbound line can result in a shipment that has the already used pickup sheet number. You can cancel the schedule line or provide the schedule line with a new pickup sheet number.

Note

- If a confirmed shipment already exists for the same shipment reference, LN stops the creation of the shipment and displays an error message.
- Splitting/composing shipments must not result in multiple shipments per pickup sheet number and vice-versa. If shipment composition results in duplicate pickup sheet numbers, LN stops the creation of shipments and displays an error message.

Single Shipment Reference per Shipment

If this check box is selected, LN allows creation of multiple shipments for the same *Shipment Reference*. This parameter has the following consequences:

- For two shipment lines that have the same shipment reference and different planned delivery dates, LN creates two shipments that have the same shipment reference.
- Outbound Lines that have different shipment reference numbers are put on different shipments.
- If other shipment building criteria allow, outbound lines that have the same shipment reference number are put on the same shipment. Otherwise, outbound lines are put on separate shipments.

The shipment reference scenarios

Contents Existing Shipment Header	Shipment Reference Outbound Line	Related Or-der Type is Single Reference	Action
Single Reference=No, Shipment Reference=empty	empty	no	Add to Shipment
	empty	yes	Add to Shipment
	AAA	no	Add to Shipment
	AAA	yes	Create New Single Reference Shipment
Single Reference=No, Shipment Reference=AAA In this scenario, the shipment reference at the shipment header is manually filled by the end-user.	empty	no	Add to Shipment
	empty	yes	Add to Shipment
	AAA	no	Add to Shipment
	AAA	yes	Add to shipment if all shipment lines have reference "AAA" and make it a single reference shipment, otherwise create new single reference shipment
	BBB	No	Add to Shipment
	BBB	Yes	Create New Single Reference Shipment
Single Reference=Yes, Shipment reference=AAA	empty	no	create new shipment
	empty	yes	create new shipment
	AAA	no	Add to Shipment
	AAA	Yes	Add to Shipment
	BBB	No	Create new shipment
	BBB	Yes	Create New Single Reference Shipment
Single Reference=Yes, Shipment Reference=Empty	Not Applicable		

Freight integration

The **Shipment Reference** field which, among others, is used for the *Pickup Sheet* process, is transferred from the Outbound Order Lines (whinh2120m000) session to the corresponding freight order if Freight is implemented. In the Freight package, this shipment reference must be taken into account, if filled, as a *Shipment Building* criterion during the Load Building procedure through the Generate Plan (fmlbd0280m000) session.

That is, if the **Single Shipment Reference per Shipment** check box is selected and the Generate Plan (fmlbd0280m000) session is run, multiple shipments must be generated if different shipment references are applicable, even though these shipments are to be delivered at the same destination address at the same time, that is, within the same load.

If the **Unique Shipment Reference per Shipment** check box is selected and the Generate Plan (fmlbd0280m000) session is run, for example, for a particular period/freight order range and the same Reference is linked to multiple freight order lines (outbound lines) with different delivery times/dates, LN must still generate one single shipment per reference. This implies that the delivery time/date range on the order lines is extended so that both lines can be included in one and the same shipment. To create one single shipment, other criteria, if applicable, must also be met.

Shipment building based on delivery points

Shipment building is the process that automatically creates shipments based on (picked) outbound advices.

The value of the delivery point is passed from Sales to Warehousing by the **Delivery Point** field in the Sales Schedule Lines (tdsls3107m000) session. The delivery point is passed to the warehouse order outbound line when a schedule line is transferred to Warehousing.

These shipment building criteria are available:

- Ship-from Type, Ship-from Code, Ship-from Address
- Ship-to Type, Ship-to Code, Ship-to Address
- Planned for Load Plan (Y/N)
- Manual Shipment (Y/N)
- Office
- Office Company
- Route
- Delivery Terms
- Point of Title Passage
- Motive of Transport
- Carrier
- Planned Delivery Date
- Delivery Point
- Shipment Reference

Originally, in LN, the ship-to business partner and related ship-to address is the most detailed level at which the destination of goods is defined. However, often the premises of customers / Original Equipment Manufacturers (OEM) are huge and goods can be received at multiple delivery points. For efficient goods

handling, the supplier / shipping company must know the specific delivery point at which the goods must be unloaded. This objective is achieved by adding delivery points to delivery addresses and including them as shipment building criteria.

LN groups the outbound advices that have the same *Delivery Point* as shipment lines in one shipment. You can use the **Single Delivery Point per Shipment** check box in the Warehousing Order Types (whinh0110m000) session to group the shipment lines by delivery points during shipment building. If this check box is selected, LN groups the outbound lines in the following manner :

- Outbound lines that have the same delivery point are put on the same shipment, as shipment lines, provided other shipment building criteria allow this. Otherwise, outbound lines are put as shipment lines on separate shipments. This effectively means that the creation of multiple shipments for the same delivery point is permitted in specific cases.
- Outbound Lines that have different delivery points are put on different shipments.

The following example explains the scenario in which shipments are created based on delivery points:

Order	Position	Ship-to BP	Delivery Point	Shipment
SSC000123	10	VW	Dock A	SHP000234
SSC000123	20	VW	Dock B	SHP000235
SSC000124	10	Opel	Dock A	SHP000236
SSC000125	10	VW	Dock A	SHP000234
SSC000126	10	Opel		SHP000237

Freight Integration

In case a delivery point is present on an outbound order line and the **Single Delivery Point per Shipment** check box in the Warehousing Order Types (whinh0110m000) session is selected, the delivery point is passed to the corresponding freight order (if Freight is implemented). The **Single Delivery Point per Shipment** check box cannot be modified in Freight. In other words, Freight load building always follows the shipment building instructions from Warehousing. This implies that the planning engine in Freight builds separate shipments per delivery point instead of per delivery address, which may result in multiple shipments per unloading address within one load.

Multiwarehouse shipments

The **Shipment through Warehouse** field in the Warehouses (whwmd2500m000) session is used to:

- Consolidate shipment lines containing goods from specific warehouses into one shipment
- Define the warehouse from which the actual shipping takes place

This option is used in either of these cases:

- The travelling distance and logistic handling time between a group of warehouses is negligible.
- Multiple warehouses exist for administrative reasons, whereas there is only one actual warehouse from which shipping takes place.

In this way, you can skip specifying transfer orders to register inventory movements from the storage warehouses to the ship-from warehouse.

In the **Shipment through Warehouse** field of the Warehouses (whwmd2500m000) session, the main warehouse is specified for each warehouse that shares this warehouse as ship-from warehouse.

Example

Warehouses WH001, WH002 and WH003 are located on the same premises. For easy administration, shipping is done from WH003. For WH001 and WH002, specify WH003 as the main warehouse in the **Shipment through Warehouse** field of the Warehouses (whwmd2500m000) session.

As a result, shipment lines that contain goods from warehouses WH001, WH002, and WH003 are combined in one shipment. WH003 is the main warehouse, from which shipping is done. WH001 and WH002 are the subwarehouses.

In the Shipments (whinh4130m000) session, the ship-from type and ship-from code of the shipment display WH003. On the shipment lines, the **Warehouse** field displays WH001 and WH002.

To prevent unwieldy clusters of main and subwarehouses:

- In the **Shipment through Warehouse** field of the Warehouses (whwmd2500m000) session, subwarehouses are unavailable.
For example, WH003 is a subwarehouse of WH055. Therefore, you cannot select WH003 as the main warehouse for WH001 and WH002.
- For a warehouse that is selected as the main warehouse for one or more subwarehouses, the **Shipment through Warehouse** field is unavailable.

Note

- This functionality is unavailable for WMS controlled warehouses.
- This functionality is only available for warehouses of type **Normal**.
- The application allows you to select subwarehouses regardless of the distances defined between these warehouses and the main warehouse. Therefore, ensure that you select the correct warehouses.
- Transfer orders between two subwarehouses or between a sub and main warehouse are handled normal transfer orders. For transfers between two subwarehouses, the main warehouse is not involved. For transfers between a sub and a main warehouse, the main warehouse is either the receiving warehouse or the issuing warehouse.
- Consolidation of shipment lines from multiple warehouses into one shipment is used for logistic and transport planning purposes. This has no impact on consolidation of multiple shipments in export or customs related documents.
- Inventory from different warehouses cannot be consolidated into one shipment line.

Multi warehouse shipment - shipment building

When the shipment procedure is launched for picked or released goods from a subwarehouse, the shipments are built according to the properties and settings of the main warehouse. subwarehouses

These fields from the Warehouses (whwmd2500m000) session impact shipment building and transport planning:

- **Generate Shipments**
- **Time Interval**
- **Minimum Shipment Interval Unit**
- **Maximum Shipment Interval**
- **Maximum Shipment Interval Unit**
- **Add Orders Based On**
- **Update Shipping Material Account during**
- **Delivery Note**
- **Reset Delivery Note Number**

For subwarehouses, the values of these fields are taken from the main warehouse. Therefore, in the Warehouses (whwmd2500m000) session, these fields are unavailable for subwarehouses.

Warehouse locations

If location control applies, the application does not use the staging locations of the subwarehouses when building shipments.

Handling units

Handling units are consolidated if the package definitions and handling unit templates match of the main warehouse match those of the subwarehouses.

A handling unit present for a shipment can be a multiwarehouse handling unit if the items of the shipment lines originate from different warehouses that share the same main warehouse. For more information, refer to the Multiwarehouse shipment example. Each bottom-level handling unit can contain items from a different shipment line.

Shipping documents

If used in the shipment procedure, the shipping documents list the ship-from address or ship-from code of the main warehouse.

Delivery date, distance, and lead time calculation

During the entry of, for example, a sales order, the calculation of the planned delivery date is based on the warehouse specified on the sales order. This is the warehouse in which the sold goods are stored. This can be a sub or a main warehouse. The delivery dates are based on the lead times specified for the warehouse and the distance between the warehouse and the business partner.

During shipment building, after the goods are picked, the application calculates the delivery dates of the main warehouse. These delivery dates are based on the lead times of the main warehouse and the distance between the main warehouse and the business partner.

Quantities not shipped

Unshipped quantities can be returned from the staging location of the main warehouse to the bulk location of the subwarehouse from which the quantities were issued through a transfer order.

Transfer orders between two subwarehouses are not handled through the main warehouse.

Move shipment lines to shipment

If the application does not combine some of the shipment lines into the shipment, you can move the shipment line to the shipment as long as the ship-from code and ship-from addresses of the shipment lines match those of the shipment. This applies to both Warehousing and Freight.

Freight

*To support consolidation of shipment lines containing goods from different warehouses into one shipment, you must link the main and subwarehouses involved to a shipping office and the planning groups of the shipping office. Warehouses are linked to shipping offices and planning groups in the Shipping Office (fmfmd0680m000) session. Consequently, the main warehouse is used as the source of the ship-from information of the freight orders and freight order lines, which in turn are used as input for loads and shipments.

If the multiwarehouse shipments functionality is supported, the application inserts the address and the ID of the main warehouse in the ship-from address and ship-from code fields of the freight order. The freight order lines and the shipment lines display the warehouse from which the items originate. If the multiwarehouse shipments functionality is supported, this is a subwarehouse.

Shipping Structure

Shipping structures

Single order settings

In addition to the standard requirements described in Conditions for shipment composition and *Shipments and loads* (p. 51), the following warehouse order type settings determine how shipment lines, shipments, and, if implemented, shipping containers, are structured to form loads:

- **Single Order Set per Shipment**
- **Single Order per Load**
- **Single Order per Shipment**

Create shipment line

When a shipment line is created for a warehousing order and **Single Order Set per Shipment** or **Single Order per Shipment** is selected for the order type of the warehousing order, the shipment line is linked to an existing shipment if the shipment is linked to the same warehousing order (**Single Order per Shipment** selected) or order set (if **Single Order Set per Shipment** is selected). If no such shipment is present, a new shipment is created. If **Single Order per Load** is selected, a new load is created if no matching load is present.

Shipment lines are generated during the outbound procedure or manually created. For more information, refer to *The outbound procedure* (p. 15) and *Manually created shipments* (p. 50).

Move shipment line

If a shipment line refers to a warehousing order with order type setting **Single Order per Shipment** or **Single Order Set per Shipment**, you can only move the shipment line to a shipment that refers to the same warehousing order or order set, respectively. You can also move a shipment line to a shipping container and load if the shipment of the shipment line and the destination load and shipping container belong to the same warehousing order.

You can move shipment lines in the Compose Shipping Structure graphical user interface or the Compose Shipment (whinh4231m000) session.

Move shipment

To move a shipment to a load created for a warehousing order with order type setting **Single Order per Load**, the shipment must belong to the same warehousing order.

You can move shipments in the Compose Shipping Structure graphical user interface or the Compose Load (whinh4134m000) session.

To compose shipping containers

You can move shipments from one shipping containers to the next within the same load if the status of the shipments and the shipping containers is **Open**.

If a shipment for which the shipping manifest is printed is moved to another shipping container, a new shipping manifest must be printed after the shipment is moved. If a shipment is added to a shipping container for which the shipping manifest is printed, the shipping manifest must be printed again.

If a shipment with a handling unit is moved to a shipping container with a handling unit, the handling unit of the shipment is unlinked from the handling unit of the source container and linked to the handling unit of the destination shipping container. In addition, the gross weights and the net weights of the shipping containers is recalculated. You can use the Compose Shipping Structure graphical user interface to compose shipping containers.

Compose Shipping Structure - Container Handling

This topic describes whether containers, if applicable, must be created manually or whether LN generates the first container automatically. The following **Container Handling** options are available:

- **Manual**
- **Automatic**
- **Not Applicable**

The shipping container indicates how the shipments are packed for transportation. Multiple containers can be linked to a load. Multiple shipments, (for different ship-to codes) can be linked to one shipping container.

Manual

The creation of shipping containers and the assignment of shipments to shipping containers is a fully manual process. When LN creates a shipping structure, by default all the shipments are added to the node *Without Containers* in the Compose Shipping Structure graphical browser framework (GBF). You must manually create shipping containers and move the shipments from *Without Containers* to these newly created shipping container.

Note

The **Manual** option is not applicable for the following **Inventory Transaction Type**:

- **Receipt**
- **WIP Transfer**

Automatic

The **Automatic** option indicates that LN generates a first shipping container and assigns the shipments to this shipping container automatically. LN automatically generates a shipping container during load/shipment building and links this container to the load/shipments.

Note

The **Automatic** option is not applicable for the following **Inventory Transaction Type**:

- **Receipt**
- **WIP Transfer**

Not Applicable

The **Not Applicable** option indicates that the concept of shipping containers is not in use. LN does not generate shipping containers. If the option is **Not Applicable**, you cannot create shipping containers even manually.

Note

The **Not Applicable** option is not applicable for the following **Inventory Transaction Type**:

- **Issue**
- **Transfer**

(Automatic) Linking of Shipments to Containers

Example

The following example scenarios describe how shipments are linked to shipping containers and how shipping containers are created in case no container is available:

- *Scenario 1: Load status = Open*

The number of containers with status Open = one: New shipments must be linked to that container.

Example

- Container 1 with status = Confirmed
- Container 2 with status = Confirmed
- Container 3 with status = Frozen
- Container 4 with status = Open

In this case, new shipments are linked to the container with status Open.

- *Scenario 2: Load status = Open*

The number of containers with status Open = two : New shipments must be linked to node "Without Containers."

Example :

- Container 1 with status = Confirmed
- Container 2 with status = Confirmed
- Container 3 with status = Open
- Container 4 with status = Open

In this case, new shipments are linked to node "Without Containers" to let the user decide which container must be used.

- *Scenario 3: Load Status = Open*

The number of containers with status Open = Zero.

In this case, a new container is generated and the new shipments are linked to this new container.

- *Scenario 4: Load status = Frozen/Confirmed.*

In this case, a new load and container are generated and the new shipments are linked to this new container.

Shipping Constraints

LN records the shipping constraints on the warehouse order header and the outbound order lines. If a shipping constraint is defined at header level of a manual warehouse order, the shipping constraint is defaulted to all the outbound order lines. For warehouse orders of the origin sales order or sales schedule, the shipping constraint is retrieved from Sales. For all other non-manual origins, the shipping constraints

are defaulted as **None**, which means that the shipping constraints can be defined manually on the warehousing order.

Shipping Constraints - Warehouse Order

You can specify the following shipping constraints on the warehouse order header:

- **None**
No shipping constraint applies. LN handles the orders based on the available inventory. Sufficient inventory results in a complete shipment. If the inventory is insufficient, the following possibilities exist:
 - If the **Use Contracts for Schedules** check box is selected in the Sales Schedule Parameters (tdsls0100s500) session, the back orders are not created automatically in case of partial shipment. In this situation, LN communicates the shipped quantity back to the sales schedule and, based on the shipping details, the user decides on how to deal with the short-shipped quantity. LN clears the **Create Backorders** check box in the Outbound Order Lines (whinh2120m000) session.
This process applies only for the sales schedules which are created after the **Use Contracts for Schedules** check box is selected.
 - In case contracts are not used for sales schedules, LN automatically creates a backorder in case of a partial shipment. LN selects the **Create Backorders** check box in the Outbound Order Lines (whinh2120m000) session.
- **Ship Order Complete**
The total order must be shipped in a single shipment. Therefore, LN does not allow partial deliveries. The lack of inventory results in the postponement of the shipment .
- **Ship Set Complete**
A warehouse order set is based on the sales order set, which is recorded on the Warehouse order header. More than one warehousing order set can belong to a sales order set. For the origin sales this constraint means that the complete sales order set must be shipped at once, which implies that the related warehouse order set(s) must be shipped completely.
- **Ship Kit Complete**
This can be applied only for a kitting order and means that kits have to be shipped completely. It will be possible to ship less items than ordered but only when the related kit structures are complete with all their components. LN assigns a unique set number to the component lines that constitute a main item/kit, which must be shipped in one set.

Note

- The shipping constraint **Ship Kit Complete** is not applicable to the following:
 - Warehouse orders that are created manually.
 - Non-manual warehouse orders that have an origin other than sales order and sales schedules.

Shipping Constraints - Outbound Order Line

You can specify the following shipping constraints on the outbound order lines:

- **None**
No shipping constraint applies.
- **Ship Line Complete**
This means that the total quantity of the line must be shipped as one single shipment.
- **Ship Line & Cancel**
If sufficient inventory exists, this results in a complete shipment of the line. A lack of inventory does not result in a back order but in the cancellation of the order for the remaining quantity. LN links a predefined cancel reason to the order line.

Loads

In LN, all goods and/or shipments carried by one means of transport on a specific date and time and using a specific route.

The use of transport categories

In Warehousing, the transport category specified for a load is added to the shipment BOD.

For each load, a carrier is specified. The transport category defined for a carrier in the Carriers/LSP (tcmcs0580m000) session is defaulted to the load.

Carriers can provide multiple types of transport, therefore various transport categories in addition to the default transport category are available that you can specify for a load.

The transport category is also used as a load building criterion. If a transport category other than the default transport category of the carrier is specified for a load, no new shipment lines can be added to the shipments of this load. Therefore, if another transport category is required, you must change the transport category of the load after the load building process is completed.

If a shipment was created after the transport category of the load is changed, the shipment cannot be added to this load, but the shipment is added to a load for which the default transport category is specified. If this is not required, use the Compose Shipment (whinh4231m000) session to move the shipment to the load with the changed transport category.

Note

In Freight, a limited number of transport categories is supported. Therefore, if a load includes shipment lines linked to a freight order, various transport categories cannot be added to the load. See the Freight section below.

Freight

In Freight, these transport categories are unavailable:

- **Transport by Sea (Container)**
- **Transport by Rail (Container)**
- **Transport by Road (Container)**
- **Transport by Air (Charter)**
- **Contract Carrier**
- **Transport by Customer Pickup**
- **Less than Truck Load**
- **Mail**
- **Intermodal**
- **Consolidation**
- **Express Air**
- **Express Truck**
- **Express Rail**
- **Pool Point**
- **Milk Run**

Carriers for which one of these transport categories is specified in the Carriers/LSP (tcmcs0580m000) session cannot be linked to a shipping office and planning group in the Carriers/LSP by Shipping Office and Planning Group (fmfr0160m000) session. Consequently, such carriers are unavailable for load building in Freight.

Chapter 6

Shipping Documents

6

The shipping documents are printed along with the shipment that list the consignment related information. The shipping documents are printed as part of the shipment procedure. The shipment procedure determines which shipping documents must be printed. The shipping documents are:

- Packing slip
- Packing list
- Shipping manifest
- Bill of lading
- Delivery note

Packing slip

An order document that shows in detail the contents of a particular package for shipment. The details include a description of the items, the shippers or customers item number, the quantity shipped, and the inventory unit of the shipped items.

Packing list

A document that shows all shipments of a load.

Shipping manifest

A shipping document that describes the content of the shipping structure consisting of loads, shipments, and, if implemented, containers, created for a warehousing order or order set. The shipping structure can contain separate items or items included in BOM or kit structures.

Bill of lading

The legal document used by the carrier that states what is transported (nature, quantity, weights, and so on) to what address.

Delivery notes

A delivery note is a transport document that provides information on a consignment contained in one truck (or other vehicle) and refers to an order or a set of orders for one consignee at a delivery address. If the truck load contains shipments for various business partners, the load includes more than one delivery note.

The information on a delivery note includes the delivery date and address, the customer's name, the contents of the consignment, and so on. In Italy, a delivery note is a legally required document, where it used to be called BAM (Bolla Accompagnamento Merci). Currently it is called DDT (Documento di Trasporto). In Portugal and Spain delivery notes are also used, but there they do not have the same legal status as in Italy.

A delivery note is one of the shipping documents that can be part of a shipment procedure. Various parameter settings control if and how the delivery note functionality is used.

How to set up delivery notes

To make sure that the delivery notes functionality works in the preferred way, various parameters must be set and data must be defined in Warehousing and, if Freight is used, in Freight as well. For information on delivery note setup for Freight, see *Delivery note setup in Freight Management (p. 78)*.

Step 1: Enable delivery notes functionality

To enable the user to use the delivery notes functionality, in the **Concepts (Logistics)** tab of the Implemented Software Components (tccom0100s000) session, check the **Delivery Notes** check box.

Step 2: Define Reasons

In the **Reason** field of the Reasons (tcmcs0105m000) session, define two reasons, one with reason type **Delivery Code** and one with reason type **Motive of Transport**.

The delivery code indicates the party that is to pay for the transportation of the goods listed on the delivery note. For example, you can define delivery code reasons such as Customer, Supplier, Shipper, and so on. The motive of transport indicates the reason why transportation takes place, for example, Sales, Scrap Yard, Repair, and so on. In addition, LN uses the motive of transport and the delivery code to allocate delivery notes to shipments and to combine shipments in loads.

Users can enter these reason codes in sales order lines, sales schedules, service orders, and maintenance sales orders. The reason codes will be defaulted on a delivery note when the delivery note is created. If not entered in these orders, the reason codes can be entered in warehousing orders and shipments. You can define default reason codes for order types and warehouses. This is discussed in the following steps.

Step 3: Define default reasons for order types

In the Default Order Types by Origin (whinh0120m000) session, you can define default delivery codes and motives of transport for warehousing order types that are linked to particular order types of originating

orders. What you accomplish in this way, is that a delivery code or motive of transport is defaulted on a warehousing order that is created for a particular type of originating order if the user did not enter a delivery code or motive of transport on the originating order. LN then passes on the delivery code or motive of transport to the shipment, the load, and the delivery note.

Step 4: Set delivery note parameters

In the Inventory Handling Parameters (whinh0100m000) session, select the required values for the following fields:

- **Print Cost/Service Item on Delivery Note**
- **Print Manufactured Item or Components on Delivery Note**
- **Number Group**
- **Series**

Step 5: Set user profiles

- In the User Profiles (whwmd1140s000) session, select the required series in the **Series for Delivery Notes** field.
- In the Default Devices by User (whwmd1545m000) session, select the required default device for the Print Delivery Notes (whinh4477m000) session.

Step 6: Add print delivery note to shipment procedure

To enable delivery notes to be printed, in the Activities by Procedure (whinh0106m000) session, define the Print Delivery Notes (whinh4477m000) session as an activity for the shipment procedures in which delivery notes are required.

Step 7: Enable or disable delivery notes for warehouses

For each warehouse, you must specify whether for items issued from the warehouse, delivery notes must be printed.

These settings overrule the warehousing procedure settings (see previous step). This means that if you specify that delivery notes must not be printed for a particular warehouse, no delivery notes are printed for orders requiring the issue of items from this warehouse even though the warehousing procedure for these orders includes delivery notes.

For this purpose, select the required values for the following fields in the Warehouses (whwmd2500m000) session:

- **Transport Document**
- **Suppress Printing Packing Slip**

Step 8: Adjust print delivery note activity for order activities

If the Print Delivery Notes (whinh4477m000) session is defined as an activity for a particular shipment procedure, in the Activities by Warehousing Order (whinh2104m000) session, you can adjust the following settings of the activity for an individual warehousing order that uses this shipment procedure:

- Select or clear the **Automatic** check box
- Select a printer from the **Output Device** list

Note, however, that warehouse procedure settings that control delivery notes can be overruled by delivery note settings for warehouses, which is described in the previous step.

Step 9: Adjust print delivery note activity for order line activities

If the Print Delivery Notes (whinh4477m000) session is defined as an activity for a particular shipment procedure, in the Activities by Outbound Order Line (whinh2124m000) session, you can adjust the following settings of the activity for an individual warehousing order line that uses this shipment procedure:

- Select or clear the **Automatic** check box
- Select a printer from the **Output Device** list

Note, however, that warehouse procedure settings that control delivery notes can be overruled by delivery note settings for warehouses, which is described in step 7.

How delivery notes are created

A delivery note is automatically created when a shipment is created, unless various data of the shipment match the data of a delivery note created earlier. In such cases, LN links the shipment to the existing delivery note. As a result, a delivery note can refer to more than one shipment, and via the shipment, to more than one originating order.

Delivery note data and preliminary/definite ID numbers

When a delivery note is created, the data of the delivery note is copied from the shipment. The delivery note obtains a preliminary delivery note number, which is also displayed on the shipments to which the delivery note refers.

The definite delivery note number is generated if at least one of the shipment lines to which the delivery note refers is frozen or confirmed. For further information, see *Shipment and load status* (p. 55).

After a delivery note is created, you can maintain the delivery note and print preliminary and final versions.

To maintain delivery notes

Delivery notes are maintained in the Delivery Notes (whinh4135m000) session. In this session, you can maintain delivery note data if the delivery note has a status other than **Completed**. For further information, see *Delivery Note Status* (p. 77).

You can delete a delivery note if the status is **Completed** provided that all orders relating to the delivery note are completely processed.

To print delivery notes

If printing delivery notes is included in a shipment procedure, delivery notes are printed automatically or manually for shipments to which the shipment procedure applies. You can manually print preliminary or final versions for delivery notes in the Print Delivery Notes (whinh4477m000) session.

Delivery Note Status

- **Canceled**
The load to which delivery note refers is canceled.
- **Open**
At least one of the shipments to which the delivery note refers has status **Open**.
- **Frozen**
At least one of the shipments to which the delivery note refers has status **Frozen**, and none of these shipments has status **Open**.
- **Confirmed**
All of the shipments to which the delivery note refers have status **Confirmed**.
- **Completed**
The load to which the delivery note refers has status **Confirmed** and the final version of the delivery note is printed.

Delivery notes - Ownership of goods during transport

When delivery notes are printed, the owner data of the goods is also included. This owner data is retrieved, based on the following hierarchy:

1. The ownership data is retrieved from the Shipment Line Ownership (whinh4138m000) session in case the value in the **Ownership** field is **Customer Owned**.
Note that this owner can be a different business partner than the ship to business partner specified on the order.
2. For transfer orders, the ownership data is retrieved from the Shipment Line Ownership (whinh4138m000) session if the following conditions are fulfilled:
 - The value in the **Ownership** field is **Consigned**.
 - The **Ownership Change on Issue** check box is not selected.
3. The ownership data is retrieved from the business partner specified in the **Invoice-to Business Partner** field in the Delivery Notes (whinh4135m000) session if the value in the **Point of Title Passage** field in the Shipments (whinh4130m000) session is **Point of Origin**.

The ownership data is retrieved from the **Ship-From** field in the Delivery Notes (whinh4135m000) session if the value in the **Point of Title Passage** field in the Shipments (whinh4130m000) session is one of the following:

- **Point of Destination**
- **Named Location**

Note: You can specify this **Point of Title Passage** in the given **Delivery Terms** in the Delivery Terms (tcpcs0141m000) session.

This step is performed if no ownership data is defined in the sessions specified in step 1 and 2.

4. The ownership data is retrieved from the Warehouses (whwmd2500m000) session if ownership data is not defined in the sessions specified .

How shipments are linked to existing delivery notes

LN links a shipment to an existing delivery note if the following values match:

Ship-from data

- **Ship-from Code**
- **Ship-from Type**
- **Ship-from Address**

Ship-to data

- **Ship-to Type**
- **Ship-to Code**
- **Ship-to Address**
- **Carrier/LSP**
- **Route**
- **Motive of Transport**
- **Delivery Code**
- **Delivery Terms**
- **Sold-to Business Partner**
- **Invoice-to Business Partner**
- The weight of the shipment does not cause the **Total Weight** of the load to exceed the **Maximum Weight** of the load.

Delivery note setup in Freight Management

A delivery note is one of the shipping documents optionally created when the shipment procedure is carried out. Parameter settings control if and how the delivery note functionality is used.

If the delivery note functionality is used, Freight adds the following delivery note attributes to the criteria used to group freight orders for freight planning or freight order clustering purposes:

- **Motive of Transport**
- **Delivery Code**

In this way, clusters created from freight orders are grouped by delivery note, and shipments created from freight orders are grouped by delivery note and load. A load can contain more than one group of shipments-by-delivery-note, but a delivery note cannot refer to more than one load. If more than one load is needed to contain the shipments, for each additional load, a new delivery note is created.

Delivery codes and motives of transport are entered on originating orders and passed on to freight orders, or defaulted on the freight order from the Freight Order Type - Defaults (fmfmd0165m000) session if not entered on the originating orders. You can also manually enter these attributes on freight orders.

Delivery notes are created and maintained in Warehousing. For further information, see *Delivery notes* (p. 74).

Setup

To make sure that delivery codes and motives of transport are used to select freight orders for freight planning or freight order clustering in the preferred way, take the following steps:

Step 1: Define default values for freight order types

In the Freight Order Type - Defaults (fmfmd0165m000) session, you can define default delivery codes and motives of transport for freight order types. What you accomplish in this way, is that a delivery code or motive of transport is defaulted on a freight order that is created for a particular type of originating order if the user did not enter a delivery code or motive of transport on the originating order. LN then passes on the delivery code or motive of transport to the shipment, the load, and the delivery note created from the freight order.

Step 2: Define plan matrix

In the Plan Matrix (fmfoc1120m000) session, you can define delivery codes and motives of transport as criteria to retrieve planning groups for freight order lines.

Step 3: Define shipping office matrix

In the Shipping Office Matrix (fmfoc1140m000) session, you can define delivery codes and motives of transport as criteria to retrieve shipping offices for freight orders. For further information, see Freight order grouping and The use of shipping offices and planning groups.

Package definitions

A package definition specifies how items must be packed. If you use handling units, the package definition determines the handling unit structure and the packaging details for the handling units used to pack the items. If you do not use handling units, the package definition determines the way items are packed.

Package definitions exist on two levels, a general level and an item level. The general level includes general information on how items are packed and how the packing is structured. The item-level package definition is linked to an item, and the information on the way items are packed and how the packing is structured is adjusted for the item, thus a general-level package definition can be used as a basic template for item-level package definitions. The item-level package definition is used to generate handling units for order lines, receipts, advice, approvals, or shipments. A package definition on both general level and item level includes the following elements:

- **Identification code**
Package definitions are uniquely defined by means of the identification code.
- **Description**
The description is a free text that can provide some easy reference to the package definition.
- **Package definition type**
The package definition type determines how you can set up packaging structures for handling units and items.
- **Handling unit template**
A handling unit template stores information as to the packing materials used and the way the packing is structured. The packing materials refer to handling units. If you use a package definition to generate handling units for items listed on a particular order, shipment, and so on, the handling units are generated according to the package definition structure and the packing information defined for the handling unit template of the package definition. This results in the creation of the actual handling unit structures. Basically, a handling unit template is a generic handling unit structure.

Package definition types

In LN, the following types of package definitions are available:

- Fixed package definitions
- Variable package definitions
- Mixed package definitions

You can use fixed package definitions with or without handling units. The variable and mixed types of package definitions are only available in combination with handling units.

Fixed package definitions

The fixed package definition is the only type of package definition that you can use with or without handling units. If you use handling units, the package definition determines the handling unit structure and the packaging information of the handling units used to pack the items. If you do not use handling units, the package definition determines the way the items are packed. A fixed package definition is used for the following types of items:

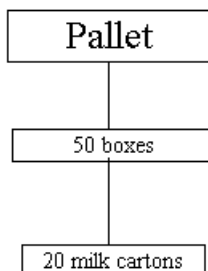
- Purchased items
- Manufactured items
- List items
- BOM items

Note

Fixed package definitions are not used on receipt lines if:

- Handling units are not used for the item on the receipt line.
- Either of the following applies:
 - The receipt is by component
 - The item is a low volume serialized item

A packing structure for a fixed package definition can include multiple packaging items, but only one type of tradeable item. A pallet cannot include (packing materials for) sour cream and yoghurt in addition to milk cartons, as shown in the following picture.



If handling units are used, a fixed package definition includes a handling unit template in which the number of packaging items and items is fixed.

The user uses storage units from Common to define the number of packaging items for each node. When a fixed package definition is linked to an item, the following takes place:

- LN uses the conversion factors of the storage units defined for each node to calculate the fixed number of packaging items for each node. For example, if the conversion factor for storage unit Pallet and storage unit Box is 50, a pallet has 50 boxes.
- The handling unit template of the package definition is copied to an item-level handling unit template. The user can modify this structure to adjust the structure for the specific item.

Fixed package definitions are useful if items are always packed in the same way.

Variable package definitions

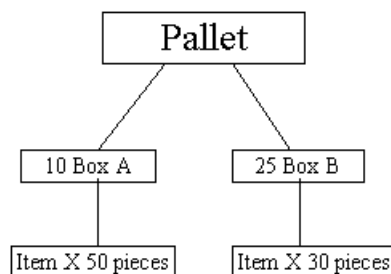
A variable package definition is used to define handling unit structures for the following types of items:

- Purchased items
- Manufactured items
- List items
- BOM items

A handling unit structure of a variable package definition can include multiple packaging items, but only one type of tradeable item. To use the previous example, a pallet cannot include (packing materials for) sour cream and yoghurt in addition to milk. List items and BOM items can include various component items, but you cannot specify how component items are packed.

The relations between the nodes of the handling unit structure are user-definable. This means that, unlike fixed package definitions, you can specify the number of packing items per node both on general and item-level handling unit templates without referring to the storage units and conversion factors defined in Common. In addition, you can define various nodes with various packaging items for all nodes except the top node.

Example



In this picture, box A and box B represent nodes 2 and 3, which are both on the second node level just below the top level. The pallet includes 10 boxes of type A and 25 boxes of type B. Box A contains 50 items X and box B contains 30 items X.

You can use the same variable package definition to define handling unit structures for individual items and add or delete nodes and specify several numbers of packaging items for the nodes. Therefore, this method is a more flexible way of defining package structures than the fixed package definition.

Example

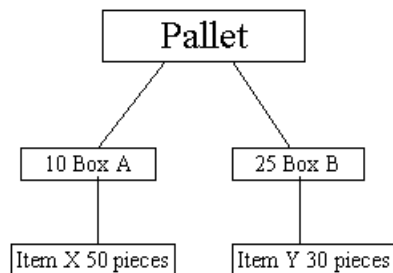
Package definition Z consists of one pallet X, 15 boxes type A and 40 boxes type B. Package definition Z is linked to item 0001, item 0002, and item 0003.

- 150 items 0001 are packed in 3 boxes type A.
- 100 items 0002 are packed in 2 boxes type A.
- 300 items 0003 are packed in 10 boxes type A
- 400 items 0003 are packed in 40 boxes type B.

Variable package definitions are useful, for example, for items that are sold to various business partners with various packing requirements.

Mixed package definitions

Mixed package definitions are used to define handling unit structures that include more than one type of item.



However, you can only link items to a mixed package definition on the general package definition level. You cannot define mixed package definitions on item level. Mixed package definitions are used to validate manually created free-style handling units. If you manually define handling units for multiple items listed on an order, you can validate the manually created handling unit setup against a mixed package definition that includes a handling unit template for those items and handling units. Validating is used to prevent mistakes from being made when you manually create handling units.

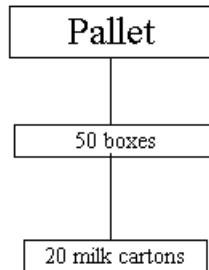
Handling unit templates

A handling unit template is one of the elements of a package definition. The handling unit template defines how handling units are used to pack particular items. A handling unit template includes a

hierarchical structure that consists of several nodes that are related in a parent - child fashion. Each node represents a generic handling unit.

Example

For example, a fluid item such as milk is packed in cartons, the cartons are packed in boxes of twenty cartons each, and 50 boxes are placed on a pallet.



- **Top**
The top node includes the whole structure. In the previous example, the pallet is the top node.
- **Parent**
A node that ranks higher than another node. A parent node includes one or more children. In the previous example, the boxes are the parent nodes of the milk cartons. At the same time, the pallet (the top node) is the parent of the boxes, thus the boxes are the children of the pallet.
- **Child**
A node that is linked to a parent. In the previous example, the milk cartons are the children of the boxes.

A node includes the following information:

- The parent node to which the node belongs (except for the top node, of course).
- The packing item that is used for the node. In the previous example, the packing item for the top node is pallet, and for the children of the top node the packing item is box.
- For package definitions of the variable and mixed type, the number of packing items used for the node. In the previous example, the number of packing items for the top node is one (one pallet), and for the second node the number is 50 (50 boxes per pallet). For fixed packaging definitions, the number of packaging items is determined in a different way.
- For variable and mixed package definitions, the number of items that the packaging item must contain. For variable and mixed package definitions, this number is displayed for both the general-level and the item-level handling unit template. For fixed packaging definitions, the number of items is only displayed for the item-level handling unit template.
- The node is labeled or unlabeled. Labeled means that for each packing item defined for the node, a label record is created. In this way, each existing packing item is uniquely identified. These labels can be printed. If the boxes with milk cartons from the previous example are

labeled, each box obtains a label when handling units are generated for an order for milk cartons.

- Auxiliary packing material, such as sealing plastic that is used for the node.

Handling units

A handling unit is a uniquely identifiable physical unit that consists of packaging and contents. A handling unit can contain items registered in Warehousing and can contain other handling units.

Structure

A handling unit has a structure of packing materials and items. A handling-unit structure can vary from a simple box that contains a particular number of items, to a more complex structure such as a pallet with a number of boxes, which in turn can contain smaller boxes that contain a number of items. A handling unit structure can consist of various handling units related in a parent-child fashion. You can manually create a handling unit structure for a given number of items, or you can define a package definition in which you set up a template that determines the handling unit structure for particular types of items. For further information, see *Package definitions (p. 81)* and Handling unit structures.

The use of handling units

A handling unit is a single entity that is used to process goods in the warehouse. As a result, you can use a handling unit to receive, store, and issue goods.

To use a handling unit for warehouse processing, you must link the handling unit to the entity that represents the applicable warehouse movement:

- Inbound or outbound warehousing order line
- Receipt header or receipt line
- Inspection line
- Inbound or outbound advice line
- Shipment header or shipment line

By linking handling units to warehousing order lines, receipt lines, and so on, the handling units will represent both administrative information, as well as physical information about the contents. For more information, refer to Inbound procedures and handling units and Outbound procedures and handling units.

To link a handling unit to any of these types of headers or lines, generate a handling unit for this line. For example, if you generate a handling unit for a shipment line, you establish the link between the handling unit and the shipment line. For further information, see *To maintain handling units*.

Because users must be able to control item movements with as few keystrokes as possible, automatic identification of handling units is possible. For this purpose, you can attach a label to a handling unit. Defining handling unit structures and scanning labels enables you to have a highly automated execution of warehousing activities at receiving and shipping.

You can use both warehouse processing based on handling units and warehouse processing based on order lines.

Setup

To make the handling unit functionality work in the preferred way, you must define some master data and set some parameters. You can specify how handling units are used for particular items, warehouses, and/or business partners.

For more information about handling units, refer to *LN Warehousing User Guide for Handling Units (U8938)*.

To define package definitions

To define package definitions, proceed as follows:

Step 1: Start session

Start the Package Definitions (whwmd4110m000) session. In this session, you must define the general-level package definition.

Step 2: Code and description

Enter the identification code and description of the package definition.

Step 3: Package definition type

Select the package definition type. See *Package definitions (p. 81)* on the available package definition types.

Step 4: Packaging levels

This step only applies to **Fixed** package definitions.

Define packaging levels for the package definition. To define packaging levels, select the package definition and start the Package Definition Levels (whwmd4520m000) session. You can access this session on the appropriate menu of the Package Definitions (whwmd4110m000) session. For further information on packaging levels, see *Packaging levels (p. 91)*.

Step 5: Handling unit template

For **Fixed** package definitions, skip this step if you do not use handling units.

Define the handling unit template for the package definition in the Handling Unit Templates (whwmd4160m000) session. You can access this session on the appropriate menu of the Package Definitions (whwmd4110m000) session.

Variable and mixed package definitions

For each node, enter the following information:

- The number of the parent node (this does not apply to the top node).
- The packaging item for the node. You can specify one packaging item for a node, for example, box.
- The number of packaging items. For example, if you specified packaging item box, you must specify how many boxes are used for the node.
- Auxiliary packaging, such as sealing plastics, in the Handling Unit Template Node - Auxiliary Packaging (whwmd4162m000) session. To start this session, select the node in the Handling Unit Templates (whwmd4160m000) session and on the appropriate menu, select **Auxiliary Packaging**.

A handling unit template node can have multiple packaging items of one type, for example, 10 boxes type A, and multiple auxiliary packaging items, for example, 2 trays, one length of sealing plastics, and one cover.

- Select the **Labeled** check box. Labeled means that, for each packing item defined for the node, a handling unit is created. In this way, each existing packing item is uniquely identified. These labels can be printed. If the boxes with milk cartons from the first example in *Package definitions (p. 81)* are labeled, each box obtains a label when handling units are generated for an order for milk cartons. For further information on labels, see Label layout and printing.
- The item that is to be packed. This is applicable only to mixed package definitions. For further information, see *Package definitions (p. 81)*.
- The number of items that is to be packed in the packaging item in the parent node. You must only insert this number for the bottom node. For general-level handling unit templates, this is useful if you know that for all items for which the package definition is to be used, the same number will fit in the packaging item.

Fixed package definitions

If you define a fixed package definition, the information for the nodes is copied from the packaging levels. For further information on packaging levels, see *Packaging levels (p. 91)*. You cannot modify this information, but you can add the following information for each node:

- Auxiliary packaging information.
- Select the **Labeled** check box. Labeled means that for each packing item defined for the node, a handling unit is created. In this way, each existing packing item is uniquely identified. The top node is always labeled, you do not need to specify this. These labels can be printed. If the boxes with milk cartons from the example in *Package definitions (p. 81)* are labeled, each box obtains a label when handling units are generated for an order for milk cartons. For further information on labels, see Label layout and printing.

Step 6: Save and quit handling unit template

For **Fixed** package definitions, skip this step if you do not use handling units.

Save the general-level handling unit template and close the Handling Unit Templates (whwmd4160m000) session.

Step 7: Validate handling unit template

For **Fixed** package definitions, skip this step if you do not use handling units.

Return to the Package Definitions (whwmd4110m000) session to validate the general-level handling unit template. This step is the last step in the procedure to create general-level package definitions. After you have validated the template, you can no longer change the template, except for the auxiliary packaging and the packing instructions. To change a validated template, you must first use the **Undo Validate Package Definition** option on the appropriate menu. In the next step, you must link the package definition and thus the handling unit template to an item to create the item-level package definition.

Step 8: Define item-level package definition

Define the item-level package definition. In this step, you link the package definition to an item. To link a package definition to an item, select the item in the Items - Warehousing (whwmd4500m000) session and access the Item - Package Definitions (whwmd4130m000) session. You can access this session on the appropriate menu of the Items - Warehousing (whwmd4500m000) session. Note that you can link an item to various package definitions, this is useful if, for example, the item is sold to various business partners with various packing requirements.

Step 9: Adjust packaging levels for item

This step applies only to **Fixed** package definitions.

Adjust the packaging levels of the package definition that you are linking to the item. To adjust the packaging level information, access the Package Definition Levels (whwmd4520m000) session from the appropriate menu. For further information on packaging levels, see *Packaging levels* (p. 91).

Step 10: Adjust handling unit template for item

Adjust the handling unit template of the package definition that you are linking to the item. Access the Handling Unit Templates (whwmd4160m000) session from the appropriate menu. You can add nodes and change nodes, as described in Steps 5 and 6.

Step 11: Validate handling unit template for item

For **Fixed** package definitions, skip this step if you do not use handling units.

Validate the handling unit template of the package definition that you are linking to the item. After you validate the template, you can no longer change the template. To change a validated template, you must first use the **Undo Validate Package Definition** option on the appropriate menu.

Step 12: Link package definition to business partner

In the Items - Sales Business Partner (tdisa0510m000) session and the Items - Purchase Business Partner (tdipu0110m000) session, you can link an item-level package definition to ship-to business partners or ship-from business partners. As a result, the package definition is defaulted on order lines listing the linked business partners and items. For further information, see [To maintain handling units](#) and [To generate handling units](#).

When you define handling units for an order line, you can use the default package definition of the order line, use another package definition, or use no package definition. You cannot use mixed package definitions for this purpose. Note that this step is optional.

Note

You cannot delete item-level package definitions if an inventory is present that is stored in the package definition for the item. In addition, the package definition levels and handling unit templates on item level must be deleted before a package definition by item can be deleted.

The use of package definitions

You can use package definitions to generate handling units for items in the following warehouse flows:

- Receipt
- Shipping
- Storage

For further information on creating handling units based on package definitions or without package definitions during these flows, see [To maintain handling units](#) and [To generate handling units](#).

In addition, you can use fixed package definitions to define packing structures for items without handling units and specify the inventory structure of an item. For further information on fixed, variable, and mixed package definitions, see *Package definitions* (p. 81).

Receipt

You can use a package definition to generate actual handling unit structures at the moment goods are received. If you know how your suppliers pack the goods they send to you, you can define package definitions with handling unit templates that match your suppliers' packing structures, and link these package definitions to the corresponding item and ship-from business partners. For this purpose, you can use variable and fixed package definitions.

These package definitions will be defaulted on order lines and receipt lines originating from the suppliers. On the receipt line, you can change the default package definition as long as the receipt line is not confirmed. When you generate handling units for goods from these suppliers, the handling units are generated as defined in the packing definition.

Note

You can also select settings for automatic generation of handling units for items that are listed on advance shipment notices (ASN). For further information, see [To set up automatic generation of handling units from ASNs](#).

Shipping

You can specify how the goods that go to a particular customer must be packed. If you know how a particular customer wants their goods packed, you can define a package definition with a matching handling unit template and link the package definition to the relevant sales item and ship-to business partner. If an outbound line is created for the item and ship-to business partner, the package definition is defaulted on the outbound line. For this purpose, you can use variable and fixed package definitions.

Storage

You can use handling units to store items in a warehouse, and use a package definition to specify how the items are packed. For example, to store an item you can use the same handling units and package definition that were used to receive the item. If you use a fixed package definition for storage in inventory, the inventory structure of the items is defined, as well.

Packaging levels

A packaging level is an integral part of a fixed package definition.

To pack an item, you can use various packing materials. To pack an item such as a can opener, you can use a box, and then put the boxes with can openers on a pallet. Box and pallet are packing materials. Item, box, and pallet each represent a packaging level. Item is level one, box is level two, and pallet is level three. You can define various packaging levels for a fixed package definition.

Packaging levels are used for the following purposes:

- If handling units are used, to define the nodes and the relations between the nodes of a packing structure for a handling unit template.
- If handling units are not used, to define the way items are packed. For items stored in a particular warehouse, to specify whether handling units are used, you can select or clear the **Use Handling Units in** check box in the Item Data by Warehouse (whwmd2110s000) session. For specific items, to specify whether handling units are used, you can select or clear the **Handling Units in Use** check box in the Item - Warehousing (whwmd4100s000) session.

For each packaging level, you must specify the proportional number of items or packaging items.

Example A

- **Level 1**
Can openers
- **Level 2**
Box type A: contains 200 can openers
- **Level 3**
Pallet type B: carries 100 boxes type A

To specify the proportional number of items or packaging materials for each packaging level, you must use storage units related to the packaging materials and the items, respectively.

For each packaging level, you must specify a storage unit. The lowest level is the base inventory unit for the item. Each higher level can contain the previous, lower, level. Note that for packaging levels you do not define specific items, but storage units referenced by various items.

Example B

For example, the lowest level has storage unit PCS for the item, the next level has storage unit BXA for the box, which contains 200 pieces, and for the highest level the storage unit is PLB for the pallet that contains 100 boxes.

Level	Storage unit	Storage unit description
1	PCS	Pieces; the storage unit for the item
2	BXA	Box type A: contains 200 PCS
3	PLB	Pallet type B: carries 20,000 PCS (100 boxes type A)

The storage unit at each level must be established in the unit set for the item. Each level must also have a conversion factor to the base unit of the item. Whenever a higher level is added, a check is performed to ensure that the conversion factor is not smaller than that of the previous level. For example, when the level 3 pallet with a conversion factor of 20,000 pieces is added to the level 2 box of 200 pieces, 20,000 is divided evenly by 200 to yield 100 boxes on a pallet.

When you link the package definition to an item, such as can openers in the previous example, which is described in Step 8 in *To define package definitions (p. 87)*, the conversion factors of the storage units defined for the packaging levels determine the number of packing materials and items for each level.

Packaging data

In addition to the unit that you define for a package definition level, the package levels of a fixed packaging definition include the following data:

- **Packaging Item**
The packaging item used to pack the package. Packaging items can be received and stored in a warehouse like any other item. Packaging items can have an assigned location like a normal inventory item. Packaging items have a flag to indicate whether the items are reusable. Reusable packaging items can be returned to inventory after they have been emptied. Note that reusable packaging items can be physically stored in inventory, but they are not registered in inventory in LN.
- **External dimensions**
The external dimensions of the package.
- **Weight**
The **Weight** of the package.
- **Location Type**
The pick or bulk location where the package is stored.
- **Package Type**
The package type indicates whether material is stored internally or externally. Internally means that items or packing material is packed inside the package item. For example, boxes inside a larger box. If you put more boxes in the larger box, the overall volume of the larger box does not increase. Externally means items or packing material is put on top of the package item. For example, crates on a pallet. When you add crates, the volume of the pallet increases.
- **Exists for Partial Quantity**
The partial quantity flag is used when picking orders. When a box is picked from a pallet, the pallet still exists in the location with the remaining quantity. Therefore, the pallet still exists for partial quantities. However, for particular types of boxes, when pieces are picked from the box, the box is discarded and the remaining pieces are represented as pieces. The box does not exist for partial quantities.
- **Shippable**
Shippable

Multiple package definitions

Because items can exist in various package sizes, you can link multiple package definitions to an item. If the item in the previous example can also be stored in a box that contains 50 pieces, another fixed package definition can be created for this item. However, units that are used in a package definition on a level higher than one cannot be used in another package definition for the same item.

Example C

Level	Contents
1	pieces
2	BXB (a box of 50 pieces)
3	PLB (pallet of 400 BXB = 20,000 pieces)

A faster method for creating package definitions for multiple items is using the variable package definition. For further information, see *To define package definitions (p. 87)*.

A default package definition is always allocated to an item in the Items - Warehousing (whwmd4500m000) session. Because a particular warehouse may handle the item with a different package definition, a default (possibly different) package definition is also provided in the Item Data by Warehouse (whwmd2110s000) session.

You can choose to assign a default package definition by business partner and item. This definition is used for a supplier who packages the item in a way that differs from other suppliers. When you purchase this item from this supplier, the package definition defaults to the one defined for this business partner and item. This default can be overridden in the Items - Purchase Business Partner (tdipu0110m000) session, if required.

For sales orders, a mandatory package definition can be selected in the Items - Sales Business Partner (tdisa0510m000) session. You cannot replace a mandatory package definition with another package definition, and the package definition is always mandatory for outbound order lines.

Relationship of packaging to inventory

Fixed package definitions have a relationship to inventory. If a location has an item stored in a base inventory unit called, for example, pieces, an inventory record and an inventory structure record is included for the pieces. This enables you to search the inventory for the various types of packaging. For example, if inventory is required by pallet, you can find the inventory. If inventory is required by pieces and the item is stored at a higher level of packaging, the inventory unit quantity is converted to the higher levels of packaging.

Level	Contents
1	pieces
2	BXB (a box of 50 pieces)
3	PLB (pallet of 400 BXB = 20,000 pieces)

For example, if you use the package definition from example C, a quantity of 45,505 pieces is converted into two full PLB pallets (400 pieces), 110 full BXB boxes (of 50 pieces), and five separate pieces.

Package ownership

Owners of pallets and containers want to get their own property back, and to be able to send their partners' property back to them, LN tracks the number of pallets and containers that have been received or shipped. Only re-usable packaging items can be tracked.

Re-usable packages are counted into and out of warehouses per business partner.

Packaging and shipment processes for outbound handling units

Industries require various packaging and shipment processes for efficient delivery of products.

To enhance the packaging and shipment processes, you can use these features:

- Fill up handling units
- *Full packaging of material (p. 100)*
- Packaging reference distribution
- Shipping sequence
- Consolidate stock point details

Fill up handling units

Handling units can be filled up and shipment lines can be consolidated based on the **Consolidate Stock Points in one Shipment Line** parameter in the Inventory Handling Parameters (whinh0100m000) session.

The prerequisites to fill up handling units within the same handling unit structure:

- The package definition code of the shipment line must be identical to the package definition of the picked goods.

Templates are also compared when dealing with the multi-item structure:

- The number of nodes must be the same.
- The quantity of packaging items must be the same.
- The auxiliary packaging must be identical.
- The quantity of the auxiliary packaging must be the same.
- The handling units must not be in stock, but they must be generated during the confirm pick process. When the handling units are picked from stock, the **Shipment** on the picking list is filled. In this situation, the picking list is closed and the contents are transferred to the **To Shipment Handling Unit**.
- If used, the single packaging references must match the handling unit template.
- When filling up, the item that is put in the single handling units must match the picked item.
- Goods picked and placed within the same shipment are filled up in the handling unit structure, if possible.

Fill-up conditions

When starting the shipment building process, LN checks for existing shipment lines that can be used to ship the goods. When handling units are generated during picking, and the picked goods have no handling unit yet, the package definition of the outbound order line is used. When the package definition is filled, LN searches for existing shipment lines with the same package definition with related handling unit, based on this package definition. When no package definition is defined for the outbound order line, the shipment building process searches for shipment lines without a package definition. When handling units are generated during picking, shipment lines with a related handling unit are also selected and filled up accordingly.

When a shipment line that can be used for the picked goods is identified, these actions are executed:

- Validate current handling unit structure against the package definition. If the validation fails, a new handling unit structure is created for the picked goods. This happens only when all the shipment line related handling units have the **Status** set to **Staged**. In case there are handling units with the **Status** set to **Open**, the fill-up is performed without the validation.
- Add the picked goods to the singles that are not full yet, so contents are added to existing handling units. Related constraints:
 - The item of the single handling unit must be the same as the picked item.
 - Reference, Packaging Reference A and Packaging Reference B must be identical.
- Add packages on the master handling unit(s) if there is still space available on the master handling unit.

Constraints for single item:

- The reference of the master handling unit must match the picked reference when for the master, the **Single Reference** check box is selected in the Handling Units (whwmd5130m000) session.

- The Packaging Reference A of the master handling unit must match picked packaging reference A when for the master, the **Single Packaging Reference A** check box is selected in the Handling Units (whwmd5130m000) session.
- The Packaging Reference B of the master handling unit must match picked packaging reference A when for the master, the **Single Packaging Reference B** check box is selected in the Handling Units (whwmd5130m000) session.

Constraints for multi-item:

- The **Allow Multi Item for Shipping** check box in the Handling Unit Templates (whwmd4160m000) session must be selected for the handling unit template of the outbound order line that is related to the picking list that is just picked.
- The handling unit templates must match (except for the contents within the packaging item) the packaging items.
- The Reference of the master handling unit must match the picked reference when the **Single Reference** indicator is selected on the master.
- The **Packaging Reference A** of the master handling unit must match the picked packaging reference A when the **Single Packaging Reference A** check box is selected on the master.
- The **Packaging Reference B** of the master handling unit must match the picked packaging reference A when the **Single Packaging Reference B** check box is selected on the master.
- Add new master handling unit when the contents cannot be added to the existing masters or the single reference constraints do not match, and there are goods that still require packing.

Validate packaging reference distribution/CINDI

In order to prevent the shipping of incorrect structures, a validation of the structure must be performed before the confirmation of the shipment. For the shipment line that is to be confirmed/frozen, the packaging reference distribution is validated against the handling unit structure. For more information on CINDI, see *CINDI process (p. 108)*.

Compose handling Unit

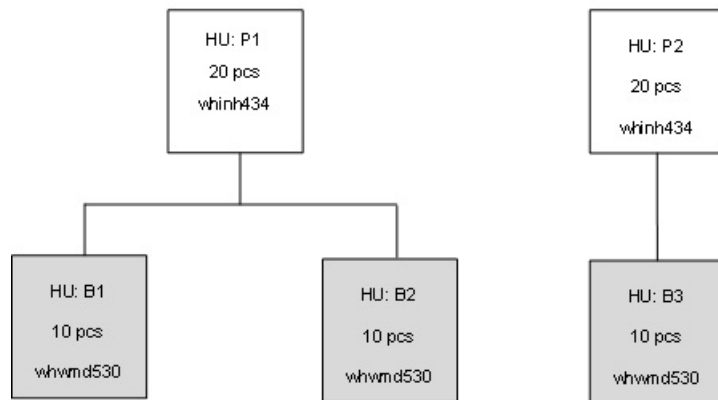
When handling units are composed, additional checks must be executed with respect to the references. When moving handling units from one parent to another, LN considers the handling unit building constraints.

Example

The handling unit is defined:

Node	Packaging Item	Single Packaging Reference	Single Packaging Reference A	Single Packaging Reference B
1	Pallet	V	V	X
2	Box	V	V	V

The handling unit structure is present:



For handling unit P1 these references are filled:

- Reference: REF001
- Reference A: REFA001
- Reference B: REFB001

For handling unit P2 these references are filled:

- Reference: REF001
- Reference A: REFB001
- Reference B: REFB001

When the user want to move the handling unit B2 from P1 to P2 the user will get an error message, because the reference A of the parent handling unit (pallet) are not matching. This table indicates when moving of complete boxes is allowed:

Target (Pallet) Source (box/crate)		Pallet P1			Pallet P2			Pallet P3			Pallet P4		
		Single Reference: V			Single Reference: X			Single Reference: V			Single Reference: X		
		Single Reference A: V			Single Reference A: V			Single Reference A: X			Single Reference A: X		
		Single Reference B: V			Single Reference B: V			Single Reference B: X			Single Reference B: X		
		Ref	Ref A	Ref B	Ref	Ref A	Ref B	Ref	Ref A	Ref B	Ref	Ref A	Ref B
		001	A01	B01	001	A02	B02	002	A01	B01	002	A01	B01
Reference	001												
Reference A	A01	V			X			X			V		
Reference B	B01												
Reference	001												
Reference A	A02	X			V			V			V		
Reference B	B01												
Reference	002												
Reference A	A01	X			X			V			V		
Reference B	B01												
Reference	001												
Reference A	A01	X			X			X			V		
Reference B	B02												
Reference	002												
Reference A	A02	X			V			V			V		
Reference B	B02												
Reference	003												
Reference A	A03	X			X			X			V		
Reference B	B03												

Compose shipment

When a shipment line is moved from one shipment to another, the shipment line reference distribution is also moved into the new shipment line. The reference distribution is copied or updated. The handling units must be filled-up manually by composing the handling unit structure.

Split shipment line

When shipment lines are split, the packaging reference distribution is also split. When a handling unit is split from the shipment line, the handling unit reference fields are used to determine which part of the shipment line reference distribution must be copied.

However, when there are no handling units and there is a shipment line reference distribution present, the split off quantity inherits a part of the packaging reference distribution assigned. LN prioritizes the highest distribution line till the whole split quantity is assigned.

Shipping documents

Generally, handling units are printed on shipping documents. When a multi-item handling unit structure is present for a shipment, the multi-item level is not printed.

Full packaging of material

The material quantities and packaging method received by the car manufacturers. Car manufacturers frequently accept only full packaging material (crates, boxes, pallets and so on); this is applicable to all levels within a packaging structure or only to specific levels. In LN, this can be managed using **Full Packages Only** functionality at each packaging level in a handling unit structure.

The impact of the **Full Packages Only** functionality:

Order entry

When the **Full Packages Only** functionality is implemented for a node/ level within the handling unit template related to a sales schedule, the planned warehouse order quantity becomes a multiple of the full package quantity. When the package definition is defined for the sales contract line logistic data, a relation can be established between the sales schedule and the handling unit template used. This enables the user to activate the **Full Packages Only** functionality for a sales schedule.

When a planned warehouse order is created for which the **Full Packages Only** check box is selected on the package definition or handling unit template, the order quantity may not necessarily be the sum of the linked sales schedule line or lines as the quantity can be adjusted to meet 'full packages only' criterion. The multiple of a packaging item quantity on an order is determined from the package definition and the item. For example:

Node	Packaging Item	Packaging Item Quantity	Quantity in Storage Unit	Full Package Only
1	Pallet	1	0 pcs	No
2	Box	10	0 pcs	Yes
3			100	Yes

In the example, order quantities must be a multiple of the packaging item quantity of 10 pcs (100pcs of node 3 packed in 10 boxes of node 2). The storage unit is the same as the inventory unit. In case the storage unit box is used, allows 4 pcs per box, this happens:

Node	Packaging Item	Packaging Item Quantity	Quantity in Storage Unit	Full Package Only
1	Pallet	1	0 pcs	No
2	Crate	10	0 pcs	Yes
3			40 box	Yes

In the example, order quantities must be multiple of 16 pcs (40 box of node 3 packed in 10 crates of node 2) * 4 (conversion of pcs to box is 4).

Outbound Processes

After the generation of the outbound advice for the outbound order line; the outbound advices can be modified manually. When an outbound advice is adjusted or a shortage has been identified, resulting in a quantity that is not a multiple of the full package quantity, a warning message is displayed, stating that the 'full packages only' criterion is not met. However, LN allows the user to continue the process.

The same principle is applicable in case of partial shipments. A deviation from the 'full packages only' criterion is allowed and semi-filled packages can be delivered. When the warning message is displayed during the generation of the outbound advice, the quantities can be changed to match the 'full packages only' criterion.

Note

LN does not perform the 'full packages only' check again during the confirmation of a shipment.

To modify shipment data

LN allows you to modify the warehouse shipment data and the load data on the open shipments at a later stage of the outbound process.

You can modify these fields :

- **Ship-to Address**
- **Delivery Point**
- **Point of Title Passage**
- **Delivery Terms**

LN allows you to modify the data only if the **Ship-To Type** field is set to **Business Partner** and the shipment **Status** is **Open**. If the shipment line is frozen, you cannot change the data on the shipment line. To modify the data, you must unfreeze the shipment line. In case shipment documents are already

printed, LN resets the print status of the shipment documents from 'Printed' to 'To be printed'. The documents must be re-printed.

Modify the **Ship-to Address**

- LN allows you to change the **Ship-to Address** field on the shipment header.
- If there are multiple shipments for a load with different routes, LN does not allow you to modify the shipment data. However, LN allows you to move the shipment to a new load and modify the **Ship-to Address**. LN modifies the **Ship-to Address** of the shipment line.

The consequences of changing the Ship-to Address

- The value in the **Delivery Point** field on the shipment header and the shipment line, if specified, can also be modified. Specifying the **Delivery Point** is not mandatory.
- The value in the **Route** can also be modified on the shipment header. If there is a single shipment within the same load, the **Route** is automatically updated. In case of multiple shipments within the same load with different routes, the update is not allowed.
- When the taxation regime changes, LN does not allow you to modify the **Ship-to Address**.
- The **Delivery Note** linked to a shipment can also be modified. When only one shipment is linked to the load, LN allows you to modify the **Delivery Note** linked to the shipment with the modified **Ship-to Address**. If the **Delivery Note** is linked to multiple shipments with different ship-to addresses, LN removes the modified shipment from the existing delivery note and links it to a new delivery note. You must also reprint the existing delivery note after you remove the shipment, only if the delivery note is already printed.

Modify the **Delivery Point**

- LN allows you to modify the **Delivery Point** that is part of the **Ship-to Address** on the shipment header. When the **Single Delivery Point per Shipment** check box is selected in the Shipments (whinh4130m000) session, the change in the **Delivery Point** on the shipment header is applicable to the shipment lines as well.
- However, when the shipment building criteria **Single Delivery Point per Shipment** is not selected, you can modify the **Delivery Point** but the changes are not applicable to the shipment lines.

Modify the **Point of Title Passage**

- You can also modify the **Point of Title Passage** for the shipments.

Modify the **Delivery Terms**

- LN allows you to modify the **Delivery Terms** on the shipment header. When the **Delivery Terms** is modified, LN changes the value in the **Delivery Note** field. If the modified shipment is the only shipment linked to the delivery note, the delivery note is modified as well. In case of multiple shipments, if the **Delivery Note** with different delivery terms is linked to multiple

shipments, LN removes the modified shipment from the existing delivery note and links it to a new delivery note.

Shipping Material Accounts

The topic describes the packaging item registration functionality.

Shipping Material Accounts

Shipping Material Accounts are used to communicate with a business partner about quantities of packaging items and payments of packaging items. The shipping material account is used to group packaging items for the purpose of reporting to business partners. For details, refer to the online Help of Shipping Material Accounts (whwmd4170m000) session.

Note

LN records the packaging item transactions only when the :

- **Extended Packaging Item Registration** check box is selected in the Warehouse Master Data Parameters (whwmd0100s000) session.
- **Accountable** check box is selected in the Packaging Items (whwmd4505m000) session.

Important!

You can copy all items from one business partner to another business partner within the same shipping material account.

Search of Shipping Material Accounts (SMA)

When LN records a shipping material transaction, LN searches for a shipping material account (SMA) to be linked to the transaction in the following hierarchy :

1. LN searches for a SMA that has a combination of business partner, packaging item and transaction date of the transaction.
The step 1 can also result in an empty SMA. This means that the item is excluded from accounting for the specific business partner. If a SMA is found in step 1, then the search action stops else step 2 is executed.
2. LN searches for a SMA that has a combination of business partner, and transaction date of the transaction.

In the steps above, LN searches for an entry in the shipping material account that has an effective date which is most close to the transaction date. Expiry date for the shipping material account are not defined. The expiry date of an existing entry in the shipping material account is determined by the effective date of a new entry in the accounting scheme.

Packaging Item Registration

LN record the received and issued quantities of packaging items by date. LN updates the session during the receipt and shipping process for transactions that have a packaging item. Packaging item can be linked to a handling unit, receipt line, shipment or container. The Packaging Item Transactions (whinr1115m000) session is updated even if no shipping material account is used for packaging items.

You can also enter the packaging item transactions manually.

Important!

- Transfer orders and adjustment orders are not logged in the packaging item transactions as no business partner is related to these processes.
- Container related shipments for sales transfer orders are not logged, because no unique link can be determined between a container and the sales order.

For sales orders of type transfer, an exception is made to support a VMI scenario where goods flow through a *VMI warehouse*. The transfer sales orders are used for VMI scenario that deliver the goods from own warehouse to a *VMI warehouse* and after that the issue to the customer is carried out. The business partner is determined at the original sales order. You can select the stage in the supply process at which the packaging item related transactions are updated by LN in the **Update Shipping Material Account during** field of Warehouses (whwmd2500m000) session (in case of a logistical service provider (LSP) scenario). The field is enabled only for VMI warehouses in which warehouse management is not carried out by own company. The packaging item related transactions can be updated by LN at the following points in supply process:

- **Shipment to VMI Warehouse:** The shipping material account must be updated during shipment of (packaging) items from the normal warehouse to the VMI warehouse.
- **Consumption by Customer:** The shipping material account must be updated during shipment of (packaging) items from the VMI warehouse (Logistical Service Provider (LSP) warehouse) to the customer/OEM (Original Equipment Manufacturer).
- **Not Applicable:** LN assigns this value for warehouses in which the own company is doing inventory management. To record the packaging item transactions, you must select the **Extended Packaging Item Registration** check box in the Warehouse Master Data Parameters (whwmd0100s000) session.

Limitations

- Only logistic data is stored in the session. No financial data is stored. So invoicing is a manual action.
- Only receipts and shipments that are related to a business partner are updated in the packaging item transactions session. Also, the sessions that record related packaging item balances are updated only for business partner-related transactions. So warehouse transfer orders and inventory adjustments are not taken into account. For sales orders of type transfer, an exception is made to support a VMI scenario where goods flow through a *VMI warehouse* (For more information, refer to Logistic service providers (LSP) - packaging item registration).

- The logging of packaging item transactions at the moment of consumption by the customer is not based on consumed stock point information from the VMI / LSP warehouse. Packaging material transactions must be logged separately from the regular item consumptions and are processed during the processing of (sales) consumptions.

Shipping Material Accounting Scheme

LN link business partners and packaging items combinations to shipping material account (SMA). The business partner and item combination identify the shipping material account for a packaging item transaction. The Shipping Material Accounting Scheme (whwmd4171m000) session is used to find the correct shipping material account for a packaging item transactions.

The business partner and item link to shipping material account is based on effective dates. You can also specify a future effective date to make a new set of shipping material accounts available for the future. If you do not specify an item, it indicates that an SMA is linked to a BP for all items. If you do not specify a SMA, it indicates that an item is not accountable.

The following are the important characteristics of the shipping material accounting scheme :

- **Business Partner/Item**
This is the most detailed level tracking of packaging item transactions. The accounts are defined for a business partner and a specific item.
- **Business Partner**
This is a more global level which can be defined by keeping the item field empty. This level can be used in case you want to combine all items for a (group of) business partner(s) in one account.

When linking accounts to transactions, LN first tries to retrieve an account at the business partner/item combination level. If business partner/item combination account is not found, LN falls back to the more general business partner level and tries to find an account to link to the transaction.

In case shipping material accounting schemes are defined at business partner level, all items for a (group of) business partner(s) are linked to one account. Following options are available in case you want to exclude specific packaging items from detailed transaction logging :

- You can mark the item as not accountable. You must clear the **Accountable** check box for a item in the Packaging Items (whwmd4505m000) session. As a result, the item is not be available at all for shipping material accounting.
- You can define an entry in the shipping material accounting scheme in which you keep the **Shipping Material Account** field empty.
- You can define a dummy shipping material account and create entries for this dummy account in the shipping material accounting scheme.

When searching for a shipping material account (SMA) for a transaction, LN searches for an entry in the shipping material accounting scheme that has an effective date which is most close to the transaction date. Expiry dates are not defined. The expiry date of an existing entry in the shipping material accounting scheme is determined by the effective date of a new entry in the accounting scheme.

Multiple business partners can be linked to the same shipping material accounting scheme. The following are the possible scenarios :

Scenario 1 : All packaging items linked to one SMA.

This scenario can be achieved by defining an entry in the accounting scheme in which :

- You specify the business partner
- You do not specify the item

Business Part- ner	Item	Effective Date	SMA
VW1			SMA_VW_ GLOBAL
VW2			SMA_VW_ GLOBAL

Scenario 2 : All possible packaging items are linked to one SMA , with the possibility to exclude specific items for accounting.

You can achieve this scenario by defining an entry in the accounting scheme in which you specify the business partner and but do not specify the item. In addition to this, the user must defined an entry in the accounting scheme in which both the business partner and item are specified but the shipping material account is not specified.

Business Part- ner	Item	Effective Date	SMA
VW1			SMA_VW_ GLOBAL
VW1	Foil		
VW2			SMA_VW_ GLOBAL
VW2	Foil		

Scenario 3 : Linking a specified subset of the packaging items to a SMA.

Only the selected items are linked to the SMA. You can achieve this scenario by defining a set of entries in the accounting scheme in which both the business partner and item are specified, one entry for every single item.

Business Partner	Item	Effective Date	SMA
VW1	KLT345		SMA_VW_ SPEC
VW1	KLT521		SMA_VW_ SPEC
VW1	KLT978		SMA_VW_ SPEC
VW2	KLT345		SMA_VW_ SPEC
VW2	KLT521		SMA_VW_ SPEC
VW2	KLT978		SMA_VW_ SPEC

Scenario 4 : The majority of packaging items must be linked to one account, a small subset of the packaging items must be linked to a different account.

You can achieve this scenario by setting up two accounts. In the accounting scheme one entry is created in which the business partner is specified but the item is not specified. Other entries are created having both the item and business partner filled.

Business Part- ner	Item	Effective Date	SMA
VW1			SMA_VW_ GLOBAL
VW1	KLT345		SMA_VW_ SPEC
VW1	KLT521		SMA_VW_ SPEC
VW1	KLT978		SMA_VW_ SPEC
VW2			SMA_VW_ GLOBAL
VW2	KLT345		SMA_VW_ SPEC
VW2	KLT521		SMA_VW_ SPEC
VW2	KLT978		SMA_VW_ SPEC

CINDI process

Automobile manufacturers use various delivery concepts/ procedures while ordering components from suppliers which result in procedural and informative requirements that all automotive suppliers must meet. One of these procedures is called CINDI, an extensive procedure consisting of four aspects:

- Transport ID
- Distribution Zone/ Routing Code
- RAN/ KANBAN number/ Delivery call number.
- Point of consumption/ Point of destination

Transport ID

The Transport ID is sent by the customer organization as a shipping instruction to the supplier to indicate which deliveries (load/ shipments) must arrive at the factory.

LN allows you to reuse the existing shipment reference as the Transport ID. In case only one Transport ID is allowed per shipment, the **Unique Shipment Reference per Shipment** check box in the Warehousing Order Types (whinh0110m000) session must be selected. In case the Transport ID is not provided by the customer, LN creates a temporary ID because defining the shipment reference is mandatory. However, the ID can be manually replaced with the final Transport ID during the outbound process, at a later date. The temporary ID can be maintained up to the status **Frozen** or **Shipped** before being replaced by the final Transport ID.

The user is responsible for the timely replacement of the temporary ID with the final Transport ID (Shipment Reference) at the appropriate time.

Distribution Zone/ Routing Code

The supplier can also be informed about the more specific destinations within the organization for which a delivery is intended. These destinations are defined as the Distribution Zone or Routing Code. These are the intermediate locations to which the goods are moved after the receipt, at the unloading dock.

If the Distribution Zone (or Routing Code) is provided by a customer organization, this must always be used as a package building criterion. For this purpose, an extra reference field is added on the sales schedule line called **Packaging Reference A** which is picked up by the warehouse order, outbound, and shipping procedure as a criterion while generating handling units during shipment.

The requirements/ items within a Transport ID that are destined for the same Distribution Zone can be combined into the same handling unit; the requirements/ items may not be merged with items/ handling units, destined for other distribution zones.

The Distribution Zone/ Routing Code must be available as extra information and printed on labels and documents to enable the OEM personnel to immediately recognize the (intermediate) destination of a handling unit.

Point of consumption/ Point of destination

The point of consumption (POC) or point of destination (POD) is the final destination of the received items. It is usually the production or assembly line on which the components are used.

If the Point of consumption (POC) is defined by the customer organization, and thus recorded on the sales schedule, the POC is used as handling unit building criterion. A new handling unit is initiated for each POC. Consequently a new reference field **Packaging Reference B** is added. The field is retrieved from the sales schedule and can be viewed using the **Reference Distribution** option from the **References** menu in the Outbound Order Lines (whinh2120m000) session and the **Reference Distribution** option from the **References** menu in the Shipment Lines (whinh4131m000) session.

When handling units are built, the singles (= lowest packaging level example, a box) created must contain items destined for the same point of consumption/ point of destination. Items can only be packed and

shipped in the same box (single), if the point of consumption/ point of destination of the box and the picked goods is the same.

For easy allocation to the precise POC, information of the POC must be printed on the packaging labels.

RAN/ KANBAN number/ Delivery call number

The RAN (Registration Authorization Number) can also be provided by the customer organization. This number can be used as an additional constraint during the building of master handling units (= top level packaging item example pallets), for scenarios where only one KANBAN/ RAN number is allowed per master handling unit. Such master handling units are called Homogeneous, while multi-RAN or MixRAN handling units are called Heterogeneous.

The RAN information can be printed on the labels and the shipping documents.

Shipment acceptance DD 250

The Material Inspection and Receiving Report (DD Form 250) can be mandatory for contractors working for the US Government. The report comprises prescribed information relevant to the shipping process and is used for invoicing.

The DD 250 report may require users to check and accept or reject shipments at their source, destination, or both:

- **Source Acceptance**
The goods must be accepted or rejected at the supplier's or contractor's site during shipment, before the shipments are confirmed. The user performing the acceptance is usually an employee of the supplier or contractor acting on the customer's behalf.
- **Destination Acceptance**
The goods must be accepted or rejected at the customer's site during receipt. The accepted or rejected goods are registered for confirmed shipments.
- **Source and Destination Acceptance**
The goods must be accepted or rejected at both the supplier's or contractor's and the customer's site.

Roles

These roles are involved in shipment acceptance:

- Warehousing official
- Official working on the customer's behalf

First, the warehousing official specifies the required type of shipment acceptance on the outbound order lines and completes shipment building. If the outbound order lines originate from a contract created in Project, the default shipment acceptance type is retrieved from the contract lines.

Next, if source acceptance is required, the official acting on the customer's behalf specifies the accepted or rejected quantities for the shipment lines involved and completes the acceptance procedure. The warehousing official then confirms the shipments and the goods are shipped.

If destination acceptance is required, a customer official completes the acceptance procedure after the goods have arrived at the customer site.

For both source and destination acceptance, dedicated sessions are available.

Prerequisites

- The **Shipment Acceptance in use** check box is selected in the Inventory Handling Parameters (whinh0100m000) session.
- **Source acceptance**
Picking and shipment building is completed, and the status of the shipment lines and shipments is **Open**.
- **Destination acceptance**
The status of the shipment lines and shipments is **Confirmed**.

Note

Shipments can comprise shipment lines that require source acceptance and shipment lines that require destination acceptance. For such shipments, you must complete both the source and the destination acceptance procedure.

Source acceptance - procedure

For the warehousing official

1. For the relevant outbound order lines, select the relevant type of shipment acceptance in the **Acceptance Point** field of the Outbound Order Lines (whinh2120m000) session. If the outbound order lines originate from a contract created in Project, you can use the default shipment acceptance type that is retrieved from the contract lines.
From the outbound order line, LN passes on the selected type of shipment acceptance to the related shipment lines and shipments. You cannot modify the type of shipment acceptance on the shipment lines and shipments.
2. Complete picking and shipment building.
3. In the Shipments (whinh4130m000) session, select the shipment for which acceptance is required.
4. On the appropriate menu, select Submit for Acceptance to set the acceptance mode for the shipment and the shipment lines.

5. When the official acting on the customer's or supplier's behalf has completed the last step of the source acceptance procedure, confirm the shipment.

For the official acting on the customer's or supplier's behalf

1. Open the Shipment Acceptance (whinh4130m200) session.
2. Double-click a shipment for which source acceptance is required and the **Submitted for Acceptance** check box is selected.
The Shipment Acceptance (whinh4630m100) session opens.
3. Do one of the following:
 - To accept the entire shipment, on the toolbar, click **Accept**.
 - To accept individual shipment lines, see the next step.
4. Click the Shipment Lines tab and select a shipment line that you want to accept.
5. Do one of the following:
 - To accept the total quantity of the shipment line, see step 6.
 - To accept less than the total quantity, see Shipment acceptance - to accept or reject quantities.
6. On the appropriate menu of the Shipment Lines tab, select **Accept** to save the accepted quantity.
7. Select **Freeze** to freeze the shipment line.
8. Repeat steps 3 - 7 for the other shipment lines.
9. To complete the acceptance for the entire shipment:
 - Select the **Inventory Accepted** check box.
 - In the **Accepted by** field, select your user name (or the name of the user on whose behalf you accept the shipments).

Modify source acceptance

If the source acceptance is completed and the shipment is not yet confirmed:

1. Clear the **Source Accepted** check box in the Shipment Acceptance (whinh4630m100) session. The values in the **Source Acceptance Date** and **Source Acceptance by** fields are removed.
2. Unfreeze the shipment lines that need modification.
3. Repeat steps 4 - 9 of the procedure For the official acting on the customer's or supplier's behalf.

Destination acceptance - procedure

For the official acting on the customer's or supplier's behalf:

1. Open the Shipment Acceptance (whinh4130m200) session.
2. Open a confirmed shipment for which destination acceptance is required.
3. Open a shipment line that you must accept.
4. In the Shipment Lines (whinh4131m000) session, specify the rejected quantity in the **Destination Rejected Quantity** field if required. This field is located on the **Acceptance** tab.
5. Save and close the Shipment Lines (whinh4131m000) session.
6. You return to the Shipment Acceptance (whinh4630m100) session.
Select the **Inventory Accepted** check box.
7. In the **Accepted by** field, select your user name (or the name of the user on whose behalf you accept the shipments).

The destination rejected quantities are only used for reference and do not trigger any inventory movements, updates in invoicing, or the creation of financial transactions. The destination rejected quantities are updated in the contract deliverables.

Shipment validation

Shipment validation is an optional step that you can add to the outbound flow. It is a process that verifies if specific trading partner requirements are met. For this purpose, this process performs various checks on shipments and loads, such as:

- Are the required handling units present?
- Are the tracking numbers present?
- Are the supplier numbers present?

Shipment validation is performed outside LN by Automotive Exchange Export Manager (EXM), where the validation checks have been defined. BODs are used to send the required shipment, load, and other master data information from LN to EXM, and to return the validation results from EXM to LN.

The shipment validation process

Step 1: Frozen: shipment validation starts

The shipment validation process is launched when a shipment or a load is **Frozen**. This means that the validation checks are started up in EXM. While the validation is in progress, the validation status is set to **Validating**.

The shipment validation status is displayed in the **Publishing Status** field in the Shipments (whinh4130m000) or Loads (whinh4140m000) session.

Step 2: Frozen: checks completed and shipping documents printed

When the validation checks are completed in EXM, the shipment validation status can be either of the following:

- **Validated**
The validation in EXM is successful, the shipping documents are printed. See next step.

- **Validation Error**

The loads or shipments must be corrected in LN and the corrections must be sent to EXM. This will reset the validation status to **Validating**.

Step 3: Confirmed: confirm when validated

For successful validations, the validation status is set to **Validated**. The user can confirm the shipments and loads, after which EXM delivers the advance shipping notice (ASN). The resulting improved accuracy of the shipping documents and ASNs ensures a more cost-effective and efficient shipping process.

Note

If the validation status is **Validating** or **Validation Error**, shipments or loads cannot be confirmed. Only loads or shipments with the **Validated** status can be confirmed.

Setup

To use shipment validation, the **Freeze Mandatory** and the **Shipment Validation** check boxes must be selected in the Warehousing Order Types (whinh0110m000) session and BOD publishing must be activated.

Shipment validation - to correct validation errors

EXM can return various validation errors, such as:

- Missing master data, for example the **Our Supplier Number** of the sold-to business partner.
- Missing or incorrect shipment data, such as the **Tracking Number** or handling units.
- Nonconforming shipment or handling unit structure.

Details about validation errors are displayed in the Message Log (tcstl1500m000) session, which you can open in the appropriate menu of the Shipments (whinh4130m000) or Loads (whinh4140m000) session. If no errors are present (when the shipment validation status is **Validated**), this session is not available.

To correct shipment structures, handling unit structures, and most other shipment data, reopening and refreezing the loads or shipments is required. Refreezing automatically publishes this data to EXM.

However, reopening and refreezing the loads or shipments is not required to correct the following data:

- The **Tracking Number** on the shipment and the **Carrier Tracking Number** on the load. If you change these numbers on the frozen shipment or load, the validation status changes to **Modified**.
- Master data not maintained on the shipment or load, but printed on the shipping documents, such as the **Our Supplier Number**. Correcting this data does not affect the validation status.

To publish corrected load, shipment, or other master data for which reopening and refreezing is not required, use the Publish Shipment or Publish Load options in the Shipments (whinh4130m000) or Loads (whinh4140m000) session.

Refreezing or using the publishing options resets the validation status to **Validating**.

Note

- You can publish a load irrespective of the statuses of the shipments linked to the loads.
- To confirm a load, the status of the shipments of the load and the load itself must be **Validated**.
- If all but one of the shipments linked to a load are confirmed, this last shipment can only be confirmed if the load status is **Validated**. This is to prevent that validation errors of the load are overlooked.

To overrule the EXM **Validating** or **Validation Error** status

If a shipment must be shipped urgently despite unfinished validation or validation errors, authorized users can validate shipments or loads with the **Validating** or **Validation Error** statuses. For this purpose, the **Release Shipment** or **Release Load** option is used in the Shipments (whinh4130m000) or Loads (whinh4140m000) session. The status is then set to **Validated**.

This authorization is provided if the **Release Unvalidated Loads/Shipments** check box is selected for a user in the User Profiles (whwmd1540m000) session.

Shipment validation - interaction with shipment acceptance and scan-to-verify

If shipment validation is used in combination with the shipment acceptance and scan-to-verify procedures, the type of shipment acceptance determines the order in which you must use these procedures.

Source acceptance

Source acceptance is performed for shipments with status **Open**. Therefore, you must deploy source acceptance before shipment validation or scan-to-verify, because the latter procedures requires the shipments to be **Frozen**.

Destination acceptance

Destination acceptance is performed for shipments with status **Confirmed**. Therefore, you must deploy destination acceptance after shipment validation or scan-to-verify, because the latter procedures requires the shipments to be **Frozen**.

Scan-to-verify

Scan-to-verify is an optional step that you can add to the outbound flow. It is a process that is used to verify if the handling units about to be loaded at the staging location match the handling units linked to the shipment lines in LN. If yes, the handling units can be loaded, the shipments can be confirmed, and the ASNs can be sent.

To start the scan-to-verify process, a shipment must be set to **Frozen** to prevent that changes are made to the shipment while scanning is in progress.

The verification is done by scanning the labels of the handling units at the loading dock.

If a scanned handling unit label matches a handling unit label in LN, the **Confirmed for Shipping** check box is selected for the handling unit. If all handling units are scanned successfully, the scan-to-verify process is completed and the shipment line to which the handling units are linked can be confirmed.

Note

When the **Confirmed for Shipping** check box is selected for a handling unit, the status of the handling unit is still **Staged**.

The status of the handling unit is set to **Shipped** when the linked *shipment line* is confirmed. The setting of the **Confirm Shipment Lines when confirming Handling Units** check box in the Warehousing Order Types (whinh0110m000) session determines whether the shipment lines are confirmed automatically when all of the linked handling units are confirmed.

In the Shipment Lines (whinh4131m000) session, the **Indicator** field shows the actions to be taken to complete the shipment procedure (which can include the scan-to-verify process). In the Shipments (whinh4130m000) and Shipment Lines (whinh4131m000) sessions, the **Handling Unit Based Confirmation** check box shows whether handling unit based confirmation is mandatory.

Setup

To use the scan-to-verify functionality, the **Freeze Mandatory** and the **Handling Unit Based Confirmation** check boxes must be selected in the Warehousing Order Types (whinh0110m000) session.

Automatically or manually confirming shipment lines when confirming handling units

The setting of the **Confirm Shipment Lines when confirming Handling Units** check box in the Warehousing Order Types (whinh0110m000) session determines whether the shipment lines are automatically confirmed when all of the linked handling units are confirmed.

Handling units are confirmed in one of these ways:

- Using the **Confirm** option in the **Handling Unit Tree**.
- Using the Confirm option on the **Execute Outbound** submenu of the Handling Units (whwmd5130m000) session.
- After a successful scan if the scan-to-verify process is used.

As a result, the **Confirmed for Shipping** check box is selected for the handling unit.

The status of the handling unit changes to **Shipped** when the shipment line of the handling unit is confirmed. The shipment line is automatically confirmed if the **Confirm Shipment Lines when confirming Handling Units** check box is selected and all of the linked handling units are confirmed.

If the shipment lines containing the handling units are automatically confirmed, the status of the shipment lines changes to **Confirmed** and the status of the handling units changes to **Shipped** after the last handling unit is successfully scanned. Consequently, changes to the shipment lines or the handling units are not allowed.

If the shipment lines are not automatically confirmed after confirming the handling units, the shipment line status **Frozen** and the handling unit status **Staged** are retained. Consequently, you can adjust the shipping structure if required.

For example, if the shipment line contains 100 handling units of type Box but the truck can contain only 80 boxes. You can solve this by reopening the shipment line and setting 20 handling units of type Box to **Not Shipped**. Consequently, these handling units are no longer part of the shipment and the **Confirmed for Shipping** check box is cleared.

Unconfirmed handling units after scan is completed

If after scanning the bar code scanner generates an error message and some of the handling units of the shipments in LN are unconfirmed, the labels of the unconfirmed handling units of the shipment are different from the labels of the scanned handling units at the loading dock. This means that incorrect handling units are picked and must be replaced with the correct handling units. After replacement, the scanning process must be repeated for the newly picked handling units.

Chapter 11

Authorized Excess Transportation Costs (AETC)

11

Authorized excess transportation costs (AETC)

To control transport costs, various organizations require their suppliers to ask for approval if the transport costs exceed the agreed terms. The supplier is to request a customer authorization number.

When granted by the customer, the supplier specifies the customer authorization number on the load.

The supplier also specifies a reason code in the **Reason** field and a reference to the party responsible for the excess costs in the **Responsibility** field. The responsible party can be, for example, the carrier that performs the actual transport.

Note

This applies to Freight and Warehousing loads. The values specified for the Freight load is copied to the Warehousing load and vice versa.

To specify a customer authorization number, reason, and responsible party on the load

1. Specify a tracking number of type **Customer Authorization Number** in one of these tracking number fields of the load:
 - **Carrier Tracking Number**
 - **Tracking Number**
 - **Tracking Number 1**
 - **Tracking Number 2**Adding a tracking number of type **Customer Authorization Number** is allowed in only one of these fields. After adding the customer authorization number, the **Reason** and **Responsibility** fields become available.
2. Specify a reason code of type **Customer Authorization Number** in the **Reason** field.
3. In the **Responsibility** field, specify the party responsible for the excess transportation costs.

Setup

1. For the ship-to business partner role of the customer who requires AETC authorization from their suppliers, select the **Authorize Excess Transportation Costs** check box in the Ship-to Business Partners (tcom4511m000) session to specify that the business partner requires excess authorization numbers.
When this business partner is specified on the load, the **Authorize Excess Transportation Costs** check box on the load is selected.
2. For the applicable order types, select the **Single Ship-to Code per Load** check box in the Warehousing Order Types (whinh0110m000) session. This is to prevent multiple shipments with different settings for the **Authorize Excess Transportation Costs** check box from being combined in a load.
3. In the **Reason** field of the Reasons (tcmcs0105m000) session, define reason codes of type **Customer Authorization Number**.
After specifying a reason code of type **Customer Authorization Number**, the **Excess Transportation Reason** field is available.
4. In the **Excess Transportation Reason** field, specify a transportation cost excess reason, or use the default value **Not Applicable**.