Infor LN Warehousing User Guide for Direct Material Supply

Important Notices

Trademark Acknowledgements

Publication Information

Document code	whdirmatsupug (U8945)
Release	10.6 (10.6)
Publication date	August 5, 2024

Table of Contents

Part IV: Cross-Docking Settings

About this document

This guide provides an introduction to direct material supply and describes the functionality and setup.

References

Use this guide as the primary reference for direct material supply. Use the current editions of these documents for information that is not covered in this guide:

- *User Guide for Warehousing Procedures*
- *User Guide for Warehouses*
- *User Guide for the Inbound Goods Flow (U9788 US)*
- *User Guide for the Outbound and Shipments Goods Flows (U9794 US)*
- *User Guide for Handling Units (U8938 US)*
- *User Guide for Cross-docking (U8939 US)*
- *User Guide for Delivery Notes and Shipments (U8982 US)*

How to read this document

This document is assembled from online Help topics.

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

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

Comments?

We continually review and improve our documentation. Any remarks/requests for information concerning this document or topic are appreciated. Please e-mail your comments to documentation@infor.com .

In your e-mail, refer to the document number and title. More specific information will enable us to process feedback efficiently.

Contacting Infor

If you have questions about Infor products, go to Infor Concierge at https://concierge.infor.com/ and create a support incident.

If we update this document after the product release, we will post the new version on the Infor Support Portal. To access documentation, select **Search Browse Documentation**. We recommend that you check this portal periodically for updated documentation.

If you have comments about Infor documentation, contact documentation@infor.com .

Chapter 1
Introduction

1

Direct material supply (DMS)

Direct material supply (DMS) is a supply method in which (pending) receipts and available inventory on hand are used to meet high-priority demand within a user-specific cluster of warehouses.

Based on the **DMS upon Receipt** or **DMS upon JSC Receipt** setting in the Item Data by Warehouse (whwmd2510m000) session, you can run DMS in several ways:

- **Automatically**
  After confirmation of a receipt line, DMS runs automatically.
- **Interactively**
  After confirmation of a receipt line or reporting of an operation complete, the Direct Material Supply Distribution (whinh6130m000) session starts. In this session, users can change priorities and quantities for distribution before approving and processing.
- **Manually**
  After receipt confirmation, users can start the Direct Material Supply Distribution (whinh6130m000) session from the following sessions:
  - Receipt Lines Awaiting Direct Material Supply (whinh3512m300)
  - Inspection Lines Awaiting Direct Material Supply (whinh3522m300)

Note

In case of multiple receipt lines, DMS is carried out for each receipt line, starting with the first line that qualifies for DMS.

Meeting demand

To meet demand, DMS uses two of the following main resources:

- **Receipts**
  If demand is from the same warehouse, received goods are either cross-docked if the inventory is urgently required, or put away temporarily.

If demand is from another warehouse, received goods can be transferred to the other warehouse by creating a transfer order and cross-docking the received goods for the transfer order.

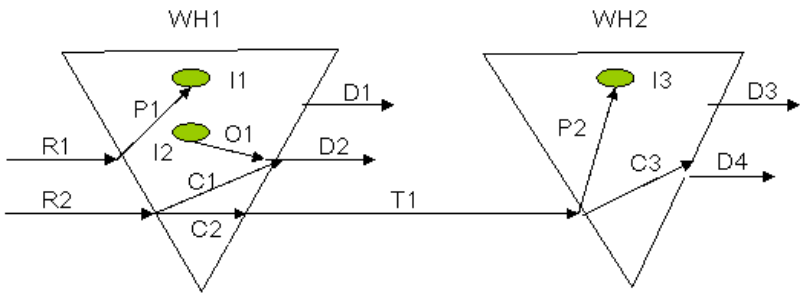
- **On hand inventory**
  If demand is from the same warehouse, available inventory can be outbounded if the inventory is urgently required.

  If demand is from another warehouse, available inventory can be transferred to that warehouse by creating a transfer order and outbounding the available inventory for the transfer.

For more information, refer to *DMS and demand (p. 17)*.

Supply flows example

The following figure shows possible supply flows to meet demand.



In this example, receipt R1 will be put away and receipt R2 is used to meet demand.

Demand can be local (D1 and D2), and can be from other warehouses (D3 and D4). If local demand is outside a predefined *time fence (p. 51)*, this demand will not be taken into account yet. This is the case with demand D1.

Receipt R2 is used to meet demand D2, D3 and D4. D2 is local demand, so a cross-dock order C1 will be created and processed.

Demand D3 and D4 are from another warehouse (WH2), so a transfer order T1 and related cross-dock order C2 are created and processed. In destination warehouse WH2, a cross-dock order C3 is created for demand D4. No cross-dock order is created yet for demand D3, because this demand is still outside the time fence.

Inventory I2 is used for demand D2 by creating outbound advice O1.

Warehouse WH1 is the warehouse that will be used for DMS planning. This planning assigns receipts and available inventory to specific demand.

Planning

DMS planning can be run at various points in time:

- **During JSC operations**
  DMS can be run automatically after reporting of an operation complete to show current demand and the distribution of supply. Without generating any cross-dock orders and/or transfer orders yet, DMS, in this way, offers a preview of the DMS run during or after receipt.
- **During warehouse receipts**
  Based on the actual receipt quantity, demand can be met by creating transfer orders and cross-dock orders. In addition, available inventory can be taken into account at the time of actual receipt.
- **After warehouse receipts**
  Using one of the following sessions, in which confirmed but not yet processed receipts can be selected for DMS planning:
  - Receipt Lines Awaiting Direct Material Supply (whinh3512m300)
  - Inspection Lines Awaiting Direct Material Supply (whinh3522m300)
- **During outbound advice**
  Using the Generate Outbound Advice (whinh4201m000) session, DMS planning can be applied to a range of item-warehouse combinations for which the **DMS on Inventory** parameter is set.
- **Any time**
  Using the Warehouse - Item Inventory (whwmd2515m000) session, DMS planning can be applied to a range of item-warehouse combinations for which the **DMS on Inventory** parameter is set.

For more information, refer to *DMS planning and processing (p. 13)*.

Setup questions and related parameter settings

As the supply flows example illustrates, using DMS requires answering a number of setup questions. The following table aims to help your organization answer these questions.

Setup question	Parameter setting or solution
Will this warehouse be used for DMS planning?	On warehouse level: ■ **DMS Supplied**
Will this item be used for DMS planning in this warehouse?	On warehouse-item level: ■ **DMS Supplied** ■ **DMS upon Receipt** ■ **DMS upon JSC Receipt** ■ **DMS on Inventory**

When will DMS planning be triggered for this item and warehouse?	On warehouse-item level: ■ **DMS upon Receipt** ■ **DMS upon JSC Receipt** ■ **DMS on Inventory**
How will DMS planning be triggered for this item and warehouse?	On warehouse-item level: ■ **DMS upon Receipt** ■ **DMS upon JSC Receipt** ■ **DMS on Inventory**
From which warehouses should demand be taken into account?	Use the Warehouse Supply Structures (whinh6140m000) session to define warehouse supply structure relationships.
Which types of demand should be taken into account?	On warehouse-item level: ■ **Demand Type for DMS upon Receipt** ■ **Demand Type for DMS on Inventory**
Which demand should be met first?	Use the Priority Definitions (whinh6120m000) session to define planning priority rules.
Which demand is outside the planning horizon?	On warehouse-item level: ■ **Planning Horizon for DMS upon Receipt** ■ **Planning Horizon for DMS on Inventory**
Will DMS planning be run during JSC operations?	In JSC: ■ **DMS on Completion**

For more information, refer to *DMS settings and master data (p. 31)*.

Chapter 2
DMS Planning and Processing

2

DMS planning and processing

LN provides three methods of DMS planning:

- DMS upon Receipt
- DMS upon SFC Receipt
- DMS on Inventory

DMS upon Receipt

DMS planning comprises the following steps:

1. Receive items using the Warehouse Receipt (whinh3512m000) session.
2. Start the Direct Material Supply Distribution (whinh6130m000) session. You can do this at various moments and in several ways after you confirm receipt.
3. DMS does the following:
   - Determines demand from each warehouse within the warehouse supply structure.
   - Nets demand against on hand stock and open (cross-dock) orders.
   - Prioritizes demand based on planning priority rules.
   - Assigns received goods to demand, according to priority.
   - Assigns any on hand inventory to demand, according to priority.
4. Users can change priorities and reassign quantities.
5. Users must approve the assigned quantities.
6. Users can process assigned quantities according to the priorities.
   As a result, LN will generate:
   - Cross-dock orders to cross-dock goods within the supply warehouse and destination warehouses.
   - Transfer orders to transfer the assigned quantities to the other warehouses.
   - Outbound advice to outbound the assigned on hand inventory.

DMS upon JSC Receipt

For JSC production orders, DMS planning can be run:

- **After reporting an operation complete**
  If DMS is a step in the routing and if an operation has the **DMS on Completion** check box selected, DMS runs automatically after reporting the operation complete. In this case, however, no cross-dock orders and/or transfer orders will be generated. Instead, the Direct Material Supply Distribution (whinh6130m000) session will only show current demand and the distribution of supply, thus offering a preview of the DMS run during or after receipt.
- **During or after confirm receipt**
  The **DMS upon JSC Receipt** setting indicates whether and, if so, in what way, DMS will be run when receiving an SFC production order. Otherwise, **DMS upon JSC Receipt** comprises the same steps as **DMS upon Receipt**.

DMS on Inventory

You can run DMS planning in various situations:

- To apply DMS planning to the inventory of the supply warehouse only, users can select one or more inventory lines in the Warehouse - Item Inventory (whwmd2515m000) session, and then click **Direct Material Supply Distribution** on the appropriate menu.
- In the Generate Outbound Advice (whinh4201m000) session, users can generate outbound advice for DMS items according to DMS planning rules.
- Upon receipt of items, depending on the **DMS upon Receipt** and **DMS upon JSC Receipt** settings.

In any situation, transfer orders can be generated to transfer the inventory to warehouses with the highest-priority demand.

DMS processing

Regardless of the way in which DMS planning is carried out but depending on the situation, cross-dock orders, transfer orders, and outbound advice can be generated.

DMS upon Receipt

If received goods are required in other warehouses than the supply warehouse, cross-dock orders are generated to cross-dock the goods in the supply warehouse, and transfer orders are generated to transfer the goods to the other warehouses.

DMS on Inventory and outbound advice according to DMS

If you run DMS on inventory or through generate outbound advice, no cross-dock orders are generated. Instead, outbound advice are generated to get the goods out of the warehouse, and transfer orders will be generated to transfer the goods to other warehouses.

Inbounding goods

If demand with the highest priority is in the supply warehouse itself, the goods will be inbounded instead of transferred to other warehouses. The goods can also be cross-docked in the warehouse for actual demand orders on the warehouse.

Chapter 3
DMS and Demand

3

DMS and demand

To determine and prioritize demand, LN will consider the following:

- Warehouse-item combination
- DMS planning horizon
- DMS demand type
- Priority rules

Warehouse-item combination

DMS can only be run for a warehouse-item combination for which the **DMS Supplied** check box is selected and one of the **DMS upon Receipt**/ **DMS on Inventory** options is set.

If you run DMS for a supply warehouse, LN only considers demand from other (destination) warehouses that are **DMS Supplied**, and that have a relationship with the supply warehouse, as defined in the Warehouse Supply Structures (whinh6140m000) session.

For more information, refer to *Warehouse supply structures (p. 41)*.

DMS planning horizon

The planning horizon of the *destination* warehouse-item as defined in the Item Data by Warehouse (whwmd2510m000) session, determines demand that is taken into account when DMS is run in a *supply* warehouse. Demand for a date beyond the planning horizon is ignored.

In the Warehouses (whwmd2500m000) and Item Data by Warehouse (whwmd2510m000) sessions, you can define two planning horizons for the destination warehouse:

- **Planning Horizon for DMS upon Receipt**
- **Planning Horizon for DMS on Inventory**

If the DMS planning horizon for destination warehouse WH2 and item X is 90 days, demand up to 90 days will be considered for that DMS-supplied warehouse, regardless of any DMS planning horizon settings for supply warehouses.

Note

- The planning horizon of the *destination* warehouse-item determines the planning horizon that will be considered for a DMS run in the supply warehouse.
- During a DMS run the warehouse calendars are taken into account for the planning horizon.
- If DMS planning horizons are (too) short, a lot of stock can end up in the supply warehouse.

DMS demand type

For DMS, the type of demand from *destination* warehouses can be taken into account. For this purpose, you can define two demand-type parameters in the Warehouses (whwmd2500m000) and Item Data by Warehouse (whwmd2510m000) sessions:

- **Demand Type for DMS upon Receipt**
- **Demand Type for DMS on Inventory**

The following demand types exist:

- **Warehousing Orders**
- **Planned Inventory Transactions**
- **Planned Orders**
- **Forecast**

If you select one option, any preceding options are included as well. For example, if you select **Planned Orders**, **Warehousing Orders** and **Planned Inventory Transactions** are also included.

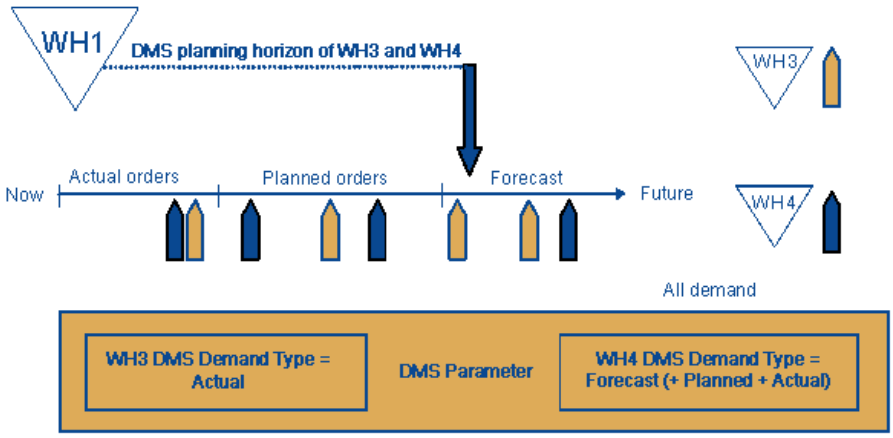
Note

- The demand type setting of the *destination* warehouse-item determines the demand types that will be considered for a DMS run in the supply warehouse. For example, forecast demand can be considered for one warehouse and ignored for another.
- In Enterprise Planning, forecast data is stored at cluster level instead of at warehouse level. The plan item corresponding with the item has a default warehouse for the cluster. This default warehouse should correspond with the warehouse where stock for the item is stored, in case there is more supply than required to match demand.
- If you use Enterprise Planning for demand forecasting, Infor strongly recommends that you set the DMS demand type to **Forecast** for the default warehouse of the cluster. For other warehouses, you can choose the other options.

Example

The following example illustrates how the planning horizon and demand type settings determine demand to be handled by DMS when goods are received at warehouse WH1.

Setup:



Result:

Explanation

- Forecast and planned orders on warehouse WH3 are ignored, whereas actual orders on WH3 are taken into account.
- Forecast on WH4 is ignored because it is outside the DMS planning horizon of WH4.

Priority rules

If you run DMS planning, LN assigns a priority to each demand instance. The priority is compiled based on the rules as defined in planning priority rules and assigned by LN to each demand instance. Users can change these priorities when they run the Direct Material Supply Distribution (whinh6130m000) session.

For more information, refer to *Planning priority rules (p. 33)*.

Demand netting, demand prioritizing, and assigning quantities

The following example explains:

- The basic demand netting logic and the results for the Direct Material Supply Distribution (whinh6130m000) session.
- The assignment, according to priority rules, of the received quantity or the on-hand inventory to demand.

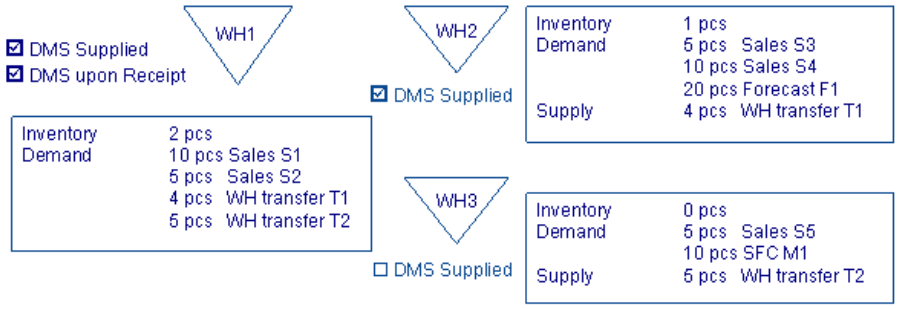
Example 1: Netting and the results for the DMS session

In the Item Data by Warehouse (whwmd2510m000) session, the following settings apply to item X and warehouses WH1, WH2, and WH3:

Parameter	WH1	WH2	WH3
DMS Supplied	**Yes**	**Yes**	**No**
DMS upon Receipt	**Interactive/ Manual**	Irrelevant	**No**
DMS on Inventory	**Receipt and Outbound**	Irrelevant	**No**

Assumptions

- DMS demand type, DMS planning horizon, and warehouse supply structures are not taken into account.
- No cross-dock orders or outbound advice in process.
- **DMS on Inventory** is preferred above the received quantity (Force cross-docking range is not set).
- Minimum order quantity of 10 pieces.
- At most, one planned order per day is created (Order interval is one day).



Warehouses and transactions

The previous figure shows three warehouses in a cluster, and transactions for item X. Warehouses WH1 and WH2 are DMS supplied, whereas warehouse WH3 is not.

Enterprise Planning totals all transactions of the three warehouses and sees, for example, an inventory of three pieces (total of the warehouses). All transactions are sorted on date, and the planned stock is calculated, see the following figure. Note that transfers T1 and T2 are both skipped, because these move goods within a cluster, so the net result is 0. The Generate Order Planning (cprrp1210m000) session must create planned supply orders whenever the planned stock drops below zero or below the safety stock.

Enterprise Planning creates five planned purchase orders. The first planned order at 10/4/2005 is planned one day before the requirement date of sales order S1. The second planned order for 10 pieces is enough to supply sales orders S2 and S3, and so on. All planned orders are created for the default warehouse of the plan item, in this case warehouse WH1.

EP sees:

Transaction		Planned stock	
Inventory	3		3
Sales S1	10	11/ 4	-7
Sales S2	5	12 /4	-12
Sales S3	5	13/ 4	-17
Sales S4	10	14/ 4	-27
Forecast F1	20	20/ 4	-47
Sales S5	5	20/ 4	-52
SFC M1	10	21/ 4	-62

EP creates supply:

WH	Transaction			Pl. st.
WH1	Plan Pur1	10/ 4	+10	+13
	Sales S1	11/ 4	10	3
WH1	Plan Pur2	11/ 4	10	+13
	Sales S2	12/ 4	5	8
	Sales S3	13/ 4	5	3
WH1	Plan Pur3	13/ 4	10	13
	Sales S4	14/ 4	10	3
WH1	Plan Pur4	19/ 4	30	33
	F'cast F1	20/ 4	20	13
	Sales S5	20/ 4	5	8
WH1	PlanPur5	20/ 4	10	18
	SFC M1	21/ 4	10	8

Generation of planned supply orders

DMS is triggered when the first planned purchase order is released to Purchase Control and received in Warehousing as purchase order P1.

Item	X
Warehouse	WH1
Received Quantityin Inventory Unit	10 pcs.
Inventory on Hand	2 pcs.

After receiving the goods, distribution in the DMS session is as follows:

Priority	Date	Demand	WH	Shortage	Assigned Received Quantity	Assigned Inventory	Cross-dock Order
104	12-4-2005	**Sales** S2	1	5	**3**	**2**	
106	14-4-2005	**Sales** S4	2	9	**7**		
203	10-4-2005	**Sales** S1	1	10			
205	13-4-2005	**Sales** S3	2	5			
212	15-4-2005	**Transfer** T2	1	5			
500	20-4-2005	**Forecast** F1	2	20			

Orders (Sales S5 and JSC M1) of warehouse WH3 are ignored, because this warehouse has the **DMS Supplied** check box cleared. However, TPOP on WH3 did plan a warehouse transfer from WH1 to WH3, and this transfer T2 is considered as demand on WH1. This is even the case if warehouse WH3 would be part of another cluster.

Note

DMS can also respond to demand outside the warehouse cluster.

Transfer T1 is to a DMS-supplied warehouse (in the same cluster), and therefore ignored. A transfer from WH1 to WH2 is a demand order to sending warehouse WH1, but is in fact a movement/shift of

demand from WH2 to WH1, for example, a sales order in WH2. Because DMS takes the original demand (sales order) from WH1 into account, the warehouse transfer demand on WH2 must be ignored. Otherwise, DMS supplies twice for the same sales order.

Note

DMS ignores warehouse transfers between two DMS-supplied warehouses in the same cluster.

Demand orders are now sorted on priority, the lowest value indicating the highest priority.

Demand orders are netted against stock.

Note

DMS ignores planned receipts when netting.

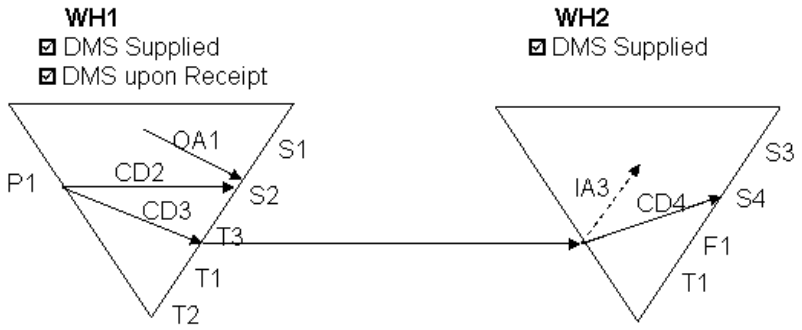
The netted quantity is shown as shortage. Sales order S2 requires five pieces. Only two pieces are on hand in warehouse WH1, which implies a shortage of three pieces.

Similarly, sales order S4 consumes stock of warehouse WH2, and has a shortage of nine pieces. Note that the sales order S1 demand date precedes the demand date of S2, but due to lower priority, S1 does not consume the stock.

Receipt of 10 pieces is first allocated to sales order S2, for thee pieces, and then the remaining seven are allocated to sales order S4.

Note

- On-hand stock in the supply warehouse is only taken into account if **DMS on Inventory** is selected in the Item - Warehousing (whwmd4600m000) session.
- On-hand stock in the destination warehouses is always taken into account, irrespective of any **DMS on Inventory** setting.



Generated transfer orders, cross-dock orders, and outbound advice

If the DMS proposal is accepted, the three and seven pieces must be shipped to the proper location.

If you approve and process the DMS run, LN performs the following process steps:

For sales order S2:

- Creates cross-dock order CD2 on WH1 to move the three pieces to a staging location in WH1. This cross-dock order is related to sales order S2.
- Creates cross-dock order line of three pieces for the cross-dock order. This cross-dock order line is related to the received purchase order (line) P1.
- Generates and releases outbound advice OA1 of two pieces for sales order S2.

For sales order S4:

- Creates transfer order T3 from WH1 to WH2 for seven pieces.
- Creates cross-dock order CD3 on WH1 to move the seven pieces to a staging location in WH1. This cross-dock order is related to the outbound order line of transfer order T3.
- Creates cross-dock order line of seven pieces for cross-dock order CD3. This cross-dock order line is related to the received purchase order (line) P1.
- Creates second cross-dock order CD4 to move the seven pieces in WH2 from receiving to staging location. Cross-dock order CD4 is related to sales order S4.
- Creates cross-dock order line for cross-dock order CD4. This cross-dock order line is related to the inbound order line of transfer order T3.

Note

The second cross-dock order is only created if the order falls within the time fence as defined in the Item Data by Warehouse (whwmd2510m000) session. Otherwise, the goods are inbounded (IA3).

If all procedure activities are set to **Automatic**, the cross-dock orders, outbound advice, and transfer orders are processed. Five pieces (3 + 2) end up on the staging location of WH1, seven pieces are cross-docked, transferred, and again cross-docked, to end up on the staging location of WH2.

Netting in process cross-dock orders

The following example describes demand netting of cross-dock orders with status **In Process**.

Example 2 : In process cross-dock orders netted against demand orders

A second purchase order P2 is received for 10 pieces for the same item as of Example 1, and the cross-dock orders are not processed completely yet (status **Canceled** nor **Closed**). This can happen if not all procedure activities are set to **Automatic**.

Item	X
Warehouse	WH1
Received Quantityin Inventory Unit	10 pcs.
Inventory on Hand	0 pcs.

After receiving the goods, distribution in the DMS session is as follows:

Priority	Date	Demand	WH	Shortage	Assigned Received Quantity	Assigned Inventory	Cross-dock Order
106	14-4-2005	**Sales** S4	2	2	**2**		CD4: 7 pcs. - **Open**
203	10-4-2005	**Sales** S1	1	10	**8**		
205	13-4-2005	**Sales** S3	2	5			
212	15-4-2005	**Transfer** T2	1	5			
500	20-4-2005	**Forecast** F1	2	20			

In additon to these transactions, two transfers do not appear in the Direct Material Supply Distribution (whinh6130m000) session, because warehouse transfers between two DMS-supplied warehouses in the same cluster are ignored. Sales orders S2 and S4 are also still in process:

Demand	WH	Shortage	Assigned Received Quantity	Cross-dock Order
Sales S2	1	5	**5**	CD4: 7 pcs. - **In Process**
Sales S4	2	10	**7**	CD4: 7 pcs. - **Planned**
Transfer T1	1	4		
Transfer T3	1	7		CD3: 7 pcs. - **In Process**

Sales orders S2 and S4 are not included in the Direct Material Supply Distribution (whinh6130m000) session. The sales orders still have shortages, but these will be met by the cross-dock orders that are in process. The cross-dock orders are netted against the sales orders.

After approval and processing, the results are as follows:

Demand	WH	Shortage	Assigned Received Quantity	Cross-dock Order
Sales S2	1	5	**5**	CD2: 3 pcs. - **In Process**
Sales S4	2	10	**9**	CD4: 9 pcs. - **Planned**
Sales S1	1	10	**8**	CD1: 8 pcs. - **In Process**
Transfer T1	1	4		
Transfer T3	1	9		CD3: 9 pcs. - **In Process**

Explanation

- Cross-dock order CD1 has been created on WH1 to move the eight pieces to a staging location in WH1. This cross-dock order is related to the outbound order line of sales order S1.

- Cross-dock order CD4 has been updated from seven to nine pieces.
- Transfer order T3 has been updated from seven to nine pieces.
- Cross-dock order CD3 has been updated from seven to nine pieces.

Netting inventory commitments

The following example describes demand netting of inventory commitments.

Example 3 : Inventory commitments netted against demand orders

Similar to Example 2, after you receive the second purchase order, but now with three pieces on hand available and a received quantity of nine pieces.

An inventory commitment can exist for one specifc demand. For example, an inventory commitment exists for sales order S3 of two pieces. The actual shortage for this sales order is not 10 in this case, but eight. The shortage for S3, however, still appears as 10.

The on-hand quantity is the quantity on hand that is available. This includes the inventory commitment for demand as displayed in the session. The inventory commitments for demand that does not appear in the session is not included in this on-hand quantity.

Note

You must respect the inventory commitment per demand line. As a result, the following applies:

- The quantity assignments made for a demand line in the DMS session must at least meet the committed inventory for the demand line.
- The sum of assigned received quantity and assigned on-hand quantity must at least be equal to the committed quantity.

The received quantity is within the force cross-docking range, therefore, first the received quantity is assigned, and then the on-hand quantity.

Item	X
Warehouse	WH1
Received Quantityin Inventory Unit	9 pcs.
Inventory on Hand	3 pcs.

Distribution in the DMS session is as follows:

Priority	Date	Demand	WH	Shortage	Assigned Received Quantity	Assigned Inventory	Cross-dock Order
106	14-4-2005	**Sales** S4	2	2	**2**		CD4: 7 pcs. - **Planned**
203	11-4-2005	**Sales** S1	1	10	**7**	**1**	
205	13-4-2005	**Sales** S3	2	5		**2**	
212	15-4-2005	**Transfer** T2	1	5			
500	20-4-2005	**Forecast** F1	2	20			

Despite the fact that 12 pieces must be divided, you cannot fulfill demand S1 of 10 pieces, because of an inventory commitment for demand S3.

The available received quantity to be assigned per demand line is calculated as:

```
received qty - assigned received qty
```

The available on-hand quantity to be assigned per demand line is calculated as:

```
on hand - (committed to other demand + commitment to other demand covered by
 assignments) - on hand assigned to other demand
```

Calculation of the assigned quantities is as follows:

Demand	Shortage	Available received calculation	Available received	Available on hand calculation	Available on hand	Assigned received	Assigned on hand
S4	2	9 - 0	9			**2**	
S1	10	9 - 2	7	3 - (2 + 10) - 0	1	**7**	**1**
S3	5	9 - 9	0	3 - (0 + 0) - 1	2		**2**
T2	5						
F1	20					—	—
Total						**9**	**3**

The received quantity is outside the force cross-docking range, therefore, first the on-hand quantity is assigned, and then the received quantity.

Distribution in the DMS session is as follows:

Priority	Date	Demand	WH	Shortage	Assigned Received Quantity	Assigned Inventory	Cross-dock Order
106	14-4-2005	**Sales** S4	2	2	**1**	**1**	CD4: 7 pcs. - **Open**
203	11-4-2005	**Sales** S1	1	10	**8**	**0**	
205	13-4-2005	**Sales** S3	2	5		**2**	
212	15-4-2005	**Transfer** T2	1	5			
500	20-4-2005	**Forecast** F1	2	20			

Calculation of the assigned quantities is as follows:

Demand	Shortage	Available received calculation	Available received	Available on hand calculation	Available on hand	Assigned received	Assigned on hand
S4	2	9 - 0	9	3 - (2 + 0) - 0	1	**1**	**1**
S1	10	9 - 1	8	3 - (2 + 0) - 0	0	**8**	**0**
S3	5	9 - 1 - 8	0	3 - (0 + 0) - 1	2		**2**
T2	5			3 - (0 + 0) - 1 - 2	0		
F1	20					—	—
Total						**9**	**3**

Chapter 4
DMS Settings and Master Data

4

DMS settings and master data

To use direct material supply (DMS), you must first set a number of parameters and define master data.

Step 1: Set parameters

In the Inventory Handling Parameters (whinh0100m000) session, on the **Cross-docking** tab, do the following:

1. Make sure the **Dynamic Cross-docking** check box is selected.
2. Select the **Direct Material Supply (DMS)** check box.
3. Optionally, select the **Use Planning Priority Rules** check box.

Step 2: Define priority rules

Use the Priority Definitions (whinh6120m000) and Planning Priority Rules (whinh6122m000) sessions to define planning priority rules. When DMS is run, a priority is assigned to every demand. The priority is compiled based on these rules.

Step 3: Set up master data

DMS functionality must be enabled in the following sessions:

- Warehouses (whwmd2500m000)
- Items - Warehousing (whwmd4500m000)
- Item Data by Warehouse (whwmd2510m000)

The settings in the first two sessions provide the enabling of DMS on item and warehouse levels. In turn, the settings in the Item Data by Warehouse (whwmd2510m000) session determine how DMS is used for a warehouse-item combination.

In each of these sessions, select the **DMS Supplied** check box to enable the following fields:

- **DMS upon Receipt**
  Indicates whether DMS will be carried out after receipt of goods and, if so, in what way.

- **DMS upon JSC Receipt**
  Indicates whether DMS will be carried out after receipt of manufactured goods and, if so, in what way.
- **DMS on Inventory**
  Indicates whether DMS will be applied to on hand inventory and, if so, in what way.

Other DMS fields include the following:

Field	Refer to...
Priority Definition	Priority rules
Restriction Definition	*Cross-dock restrictions (p. 57)*
Cross-docking Time Fence	*Cross-docking time fence (p. 51)*
Force Cross-docking Range	Force cross-docking range
DMS Supply Location **DMS Demand Location**	*Supply location and demand location (p. 47)*
Planning Horizon for DMS upon Receipt **Planning Horizon for DMS on Inventory**	DMS planning horizon
Demand Type for DMS upon Receipt **Demand Type for DMS on Inventory**	DMS demand type

To facilitate master-data setup, you can also define the four major fields by item type and item group in the Items - Warehousing Defaults (whwmd4501m000) session. These settings serve as defaults for the Items - Warehousing (whwmd4500m000) session.

Step 4: Set up warehouse supply structure

Use the Warehouse Supply Structures (whinh6140m000) and Warehouse Supply Structure Relationships (whinh6141m000) sessions to define a warehouse supply structure. When you run DMS, LN takes this structure's supply relationships into account.

Chapter 5
Planning Priority Rules

5

Planning priority rules

If you use direct material supply (DMS), you can define *planning priority rules* for cross-docking. These rules specify conditions that can be applied to a specific situation and a specific order, and result in a priority figure when applied to a specific order. Aggregating the priority figures of all applicable priority rules results in a planning priority, which in turn is used as the system priority.

If you use planning priority rules and create a new cross-dock order or update an existing cross-dock order, LN recalculates and updates the system priorities of all other cross-dock orders for the item and warehouse combination of the new or changed cross-dock order. Canceled cross-dock orders and closed cross-dock orders are then ignored.

Note

- For cross-dock orders of type **Direct Material Supply**, you can use only planning priority rules.
- In case of **Dynamic** cross-docking, you can use either planning priority rules or cross-dock order priority definitions.

  For more information, refer to Cross-dock order priority.

Defining planning priority rules

To set up planning priorities, take the following steps:

1. In the Priority Definitions (whinh6120m000) session, create a priority definition code and a description.
2. On the appropriate menu, click **Planning Priority Rules**.
3. In the Planning Priority Rules (whinh6122m000) session, create planning priority rules.

Note

- The number of rules is unlimited.
- Planning priority rules work according to a penalty system. You can define penalty points by rule. If a rule applies to a specific demand, the penalty points are assigned to that demand. The lesser penalty points a demand has, the higher its priority.

- Points can be assigned by means of a priority constant and by using a priority factor. The factor is first applied to the rule. Next, the constant is added to the resulting penalty points.
- If a rule has been defined for a specific field, but the rule does not apply to the demand, no penalty points are assigned. For example, a rule has been defined specifying that a demand will receive 10 points if that demand is not a rush order. No rule has been defined for a demand that is a rush order. As a result, if the demand is a rush order, the demand receives zero points. If the demand is not a rush order, the demand receives 10 points.
- If none of the rules applies to a specific demand instance, this demand receives the maximum number of penalty points, that is, the lowest priority.

Example

The following table shows an example of how you can specify planning priority rules.

Planning Priority Definition A

Rule	Priority Field	Order Type	Field Value	From Value	To Value	Time Unit	Priority Factor	Priority Constant
1	**Not Applicable**	**Forecast**	--	--	--	--	--	200
2	**Order Priority**	**Sales Order**	--	0	10000	--	0	10
3	**Order Priority**	**Sales Order**	--	10001	999999	--	0	20
4	**Order Priority**	**Not Applicable**	--	0	999999	--	0	30
5	**Rush Order**	**Not Applicable**	**No**	--	--	--	--	100
6	**Back Order**	**Not Applicable**	**No**	--	--	--	--	20
7	**Shipping Constraint**	**Sales Order**	Order Complete	--	--	--	--	10
8	**Shipping Constraint**	**Not Applicable**	not specified	--	--	--	--	20

9	**Customer Priority**	**Sales Order**	--	0	99	--	1	0
10	**Customer Priority**	**Not Applicable**	--	0	99	--	0	50
11	**Time Remaining**	**Planned Production Order**	--	0	5	**Days**	0	10
12	**Time Remaining**	**Planned Production Order**	--	6	99	**Days**	1	5
13	**Time Remaining**	**Not Applicable**	--	0	99	**Days**	1	15
14	**Lateness**	**Planned Production Order**	--	0	99	**Days**	- 0.1	10
15	**Lateness**	**Not Applicable**	--	0	99	**Days**	- 0.1	15
16	**Warehouse**	**Not Applicable**	A	--	--	--	--	0
17	**Warehouse**	**Not Applicable**	not specified	--	--	--	--	10
18	**Order Quantity**	**Not Applicable**	--	0	1000	--	- 0.01	10

Note: "--" = not available

Explanation of **Priority Field** values:

- **Not Applicable**
  LN only considers the order type. You can only set a priority constant.

- **Order Priority**
  Rules 2 and 3 are defined for order priorities for sales orders. Rule 4 is for other order types. You can set a priority constant and a priority factor. The default value for both fields is zero.
- **Rush Order**
  To assign zero priority to rush orders, define a priority constant for non-rush orders. However, to prevent that no rule applies, and a high planning priority figure (= low priority) results, Infor recommends that you also add a rule for rush orders.
- **Back Order**
  To assign zero priority to back orders, define a priority constant for non-back orders. However, to prevent that no rule applies, and a high planning priority figure (= low priority) results, Infor recommends that you also add a rule for back orders.
- **Shipping Constraint**
  To assign higher priority to specific shipping constraints, define higher priority constants for other shipping constraints.
- **Customer Priority**
  To restrict the figures within the ranges to meaningful numbers, define priority factors between 0 and 1.
- **Time Remaining**
  Use a mix of priority constants and factors to prioritize time remaining for various order types.
- **Lateness**
  Because a greater lateness should translate to a higher priority, the priority factor must, in this case, be negative.
- **Warehouse**
  Specify a warehouse to assign the warehouse a higher or lower priority than other warehouses.
- **Order Quantity**
  Because greater order quantities usually receive higher priority, the priority factor here must also be negative.

Validating planning priority rules

Because rules can contradict each other, LN provides an option to validate the priority definition. You must validate a priority definition before you can use it. To make changes to a validated priority definition, you must first click the **Undo Validate** on the appropriate menu in the Priority Definitions (whinh6120m000) or the Planning Priority Rules (whinh6122m000) session.

Validation checks that are blocking:

- A higher order priority figure should result in a higher priority figure.
- A rush order usually results in a lower priority figure (higher priority) than no rush order.
- A greater time remaining usually results in a higher priority figure than less time remaining.
- A greater lateness usually results in a lower priority figure than shorter lateness.
- An overlap in defined ranges. This precludes the compilation of a priority.
- A gap in defined ranges. This precludes the compilation of a priority.

Validation checks that are not blocking:

- A back order usually results in a lower priority figure (higher priority) than no back order.
- Shipping constraints usually result in lower priority figures than no shipping constraints.
- Lateness usually has a lower priority figure than time remaining.
- A greater order quantity usually results in a lower priority figure.

Using planning priority rules

You can define priority definitions on various levels:

- In the Inventory Handling Parameters (whinh0100m000) session. The priority defintion you specify here is the default for every warehouse.
- In the Warehouses (whwmd2500m000) session. The priority defintion you specify here becomes the default for each new item linked to that warehouse.
- In the Item Data by Warehouse (whwmd2510m000) session.

When prioritizing a number of demand orders, LN first uses a planning priority definition from the warehouse-item level. If no priority definition is specified on this level, LN uses the definition as specified on warehouse level. If no priority definition exists on this level either, LN uses the definition as specified in the parameters session. If no defintion exists here either, no prioritizing takes place. LN calculates planning priorities whenever you run DMS planning.

When LN prioritizes demand based on priority definitions, all demand data for a specific item in the relevant warehouses is gathered, and a planning priority is calculated for each demand instance.

Example

The following DMS example assumes that all demand is in the same warehouse-item combination, and for that reason use the same planning priority definition.

First, a number of orders with relevant attributes for the priority calculation is listed. Next, this section describes the calculation for each demand instance.

Demand

Nr.	Order Type	Order Priority	Rush Order	Back Order	Shipping Constraint	Customer Priority	Time Remaining	Lateness	Warehouse	Order Quantity
1	**Forecast**	-	-	-	-	-	20	-	A	50
2	**Sales Order**	5000	**Yes**	-	-	10	5	-	B	50

3	**Sales Order**	25000	-	**Yes**	-	20	2	-	B	100
4	**Sales Order**	10000	-	0	Order Complete	10	-	2	A	200
5	**Service Order**	20000	-	-	-	5	1	-	B	100
6	**Service Order**	5000	-	-	-	20	-	4	A	50
7	**Planned Production Order**	10000	-	-	-	-	2	-	A	100
8	**Planned Production Order**	20000	-	-	-	-	-	3	C	200

Based on the planning priority definition example, the following priorities are calculated:

	Order/Demand							
Rule	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1	200	-	-	-	-	-	-	-
2	-	10	-	10	-	-	-	-
3	-	-	20	-	-	-	-	-
4	-	-	-	-	30	30	30	30
5	100	-	100	100	100	100	100	100
6	20	20	-	20	20	20	20	20
7	-	-	-	10	-	-	-	-

8	20	20	20	-	20	20	20	20
9	-	10*1	20*1	10*1	-	-	-	-
10	50	-	-	-	50	50	50	50
11	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-
13	20*1+15	5*1+15	2*1+15	-	1*1+15	-	-	-
14	-	-	-	-	-	-	-	-0.1*3+10
15	-	-	-	-	-	-	-	-
16	0	-	-	0	-	0	0	0
17	-	10	10	-	10	-	-	10
18	-0.01*50 +10	-0.01*50 +10	-0.01*100 +10	-0.01*200 +10	-0.01*100 +10	-0.01*50 +10	-0.01*100 +10	-0.01*200 +10
Priority	**464**	**99**	**196**	**173**	**255**	**244**	**239**	**248**

Based on these outcomes, available supply is distributed in the following order:

1. Order 2 (rush order)
2. Order 4 (overdue)
3. Order 3 (back order)
4. Order 7
5. Order 6 (overdue)
6. Order 8 (overdue)
7. Order 5
8. Order 1 (forecast)

Chapter 6
Warehouse Supply Structures

6

Warehouse supply structures

Before you can start to use direct material supply (DMS), you must define at least one warehouse supply structure.

Defining warehouse supply structures

To set up a warehouse supply structure, take the following steps:

1. In the Warehouse Supply Structures (whinh6140m000) session, enter a new code and an appropriate description.
2. Double-click the newly created record.
3. In the Warehouse Supply Structure Relationships (whinh6141m000) session, add relationships, as required.

Example

To create the following supply structure...

Warehouse Supply Structure STRUCT1

Supply Warehouse	Destination Warehouse	Allow Supply from Receipt	Allow Supply from JSC Receipt	Allow Supply from Inventory
A	B, B1, B2, E	**Yes**	**Yes**	**Yes**
A	C, C1, C2	**Yes**	**No**	**Yes**
B	B1, B2	**Yes**	**Yes**	**No**
C	C1, C2	**No**	**No**	**Yes**
E	E1, E2	**Yes**	**Yes**	**No**

...you must define the following one-to-one relationships:

Warehouse Supply Structure STRUCT1

Supply Warehouse	Destination Warehouse	Allow Supply from Receipt	Allow Supply from JSC Receipt	Allow Supply from Inventory
A	B	Yes	Yes	Yes
A	B1	Yes	Yes	Yes
A	B2	Yes	Yes	Yes
A	E	Yes	Yes	Yes
A	C	Yes	No	Yes
A	C1	Yes	No	Yes
A	C2	Yes	No	Yes
B	B1	Yes	Yes	No
B	B2	Yes	Yes	No
C	C1	No	No	Yes
C	C2	No	No	Yes
E	E1	Yes	Yes	No
E	E2	Yes	Yes	No

To define a relationship between a single warehouse and all other warehouses, leave the opposite warehouse type field empty. In the following example, supply from inventory is permitted for supply warehouse A to all other destination warehouses:

Warehouse Supply Structure STRUCT1

Supply Warehouse	Destination Warehouse	Allow Supply from Receipt	Allow Supply from JSC Receipt	Allow Supply from Inventory
A		No	No	Yes

Important!

After you define a supply structure, you must specify the structure in the corresponding field on the **Miscellaneous** tab of the Warehousing User Profiles (whwmd1540m000) session. Otherwise, you cannot use DMS.

Using warehouse supply structures

Warehouse supply structure relationships are taken into account when DMS planning is carried out.

If you start DMS planning for a specific warehouse-item combination, LN checks which supply relationships apply to the current process. For each applicable supply relationship, the warehouse supply structure is consulted to check for which destination warehouses demand should be considered.

For the previous example, this means that after a receipt confirmation of an JSC order in warehouse A, demand in warehouses B, B1, B2 and E is taken into account.

Note

Only demand from DMS-supplied warehouses in the same warehouse supply cluster is taken into account. This includes demand directly on the supply warehouse.

To determine whether a destination warehouse can be supplied, LN performs the following steps:

1. If, in the Inventory Handling Parameters (whinh0100m000) session, the **Use Warehouse Supply Structures** check box is cleared, no restrictions on supply relationships exist and all supply relationships are permitted. LN performs no further checks.
2. If the **Use Warehouse Supply Structures** check box is selected, the user profile for the current user is retrieved. If no user profile exists or if the supply structure is empty for the user, the user is not authorized to run DMS and, consequently, the destination warehouse cannot be supplied.
3. If the user is authorized to run DMS for a supply structure, the relationship for the supply warehouse and the destination warehouses is searched in the warehouse supply structure relationships. If such a relationship applies (current date is between **Effective Date** and **Expiry Date**), this relationship is used to determine whether the destination warehouse can be supplied.
4. If, in the supply structure, no relationship exists for the supply warehouse and the destination warehouse, or if that relationship no longer applies, a relationship for the supply warehouse and an empty destination warehouse is searched. If this type of relationship applies (current

date is between **Effective Date** and **Expiry Date**), this relationship is used to determine whether the destination warehouse can be supplied.

5. If, in the supply structure, no relationship exists for the supply warehouse and an empty destination warehouse, or if that relationship no longer applies, a relationship for an empty supply warehouse and an empty destination warehouse is searched. If this type of relationship appliies (current date is between **Effective Date** and **Expiry Date**), this relationship is used to determine whether the destination warehouse can be supplied.
6. If no (effective) relationship is found, the destination warehouse cannot be supplied.

Dock locations - search criteria

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

LN selects the dock location based on the following criteria:

Warehousing criteria for dock selection

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

Note

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

LN selects the dock location based on the following criteria:

Freight criteria for dock selection

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

Note

- If dock locations are not defined, LN selects the default receiving or staging location defined in the Warehouses (whwmd2500m000) session.
- If a receiving or staging location is blocked, that location is not taken into account.
- The search criteria defined for dock selection apply to both the **Receiving** and **Staging** dock locations.

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

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

Example

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

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

Note

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

Chapter 7
Supply Location and Demand Location

7

Supply location and demand location

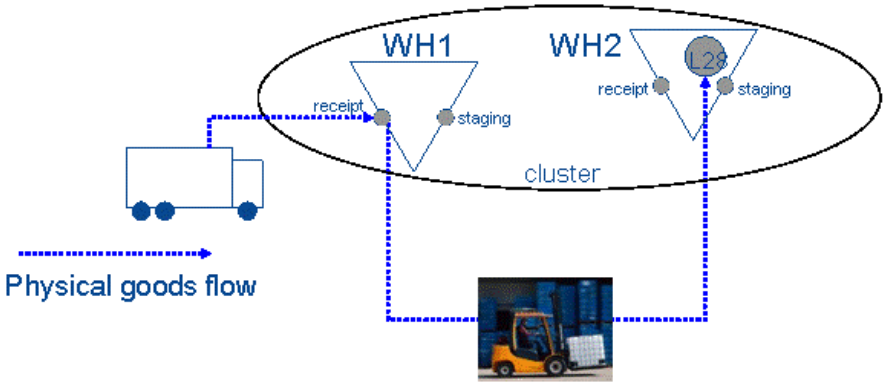
In the Item Data by Warehouse (whwmd2510m000) session, you can define the following locations, particularly for DMS:

- **DMS Supply Location**
  The default location from which materials for a production order are supplied. If the warehouse is **DMS Supplied**, this location appears on the material line of a production order.
  Usually, the supply location is a location in the shop floor warehouse near the work center.
- **DMS Demand Location**
  The default location to which the end item of a production order is supplied. If the warehouse is **DMS Supplied**, this location appears on the production order header.
  To DMS, the production order represents demand on the shop floor warehouse.

Goods flow

If materials are received in the main warehouse and these materials are supplied to the shop floor warehouse by means of a DMS run, the DMS run creates a transfer order from the main warehouse to the shop floor warehouse with the DMS supply location as defined for the material and the shop floor (destination) warehouse.

The following figure illustrates this flow of goods.



Explanation

- WH1 is the warehouse where the materials are received and from which the materials are distributed.
- WH2 is the shop floor warehouse with supply location L28.
- After the production order is finished, the end item is received in the destination location as defined for the end item and destination warehouse. The destination warehouse can be the shop floor warehouse itself or another warehouse.

Chapter 8
Possible Issues and Recommendations

8

Possible issues and recommendations

Physical flow versus information flow

In your organization, the physical flow can differ from the informational flow. In that case, Infor recommends that you use automatic activities for the warehousing procedures in LN as much as possible.

Static cross-dock orders

If a received purchase order line is generated from a sales order line, the received goods must be cross-docked for this sales order line (**Static** cross-docking). Therefore, if this type of purchase order line is received, the Direct Material Supply Distribution (whinh6130m000) session cannot or will not be started. The goods are cross-docked for the sales order nonetheless.

Using item and order-related features

When LN determines demand, the Direct Material Supply Distribution (whinh6130m000) session also considers item and order-related features, such as specific lots and serials, effectivity units, package definitions, and binding units. However, the use of such specific item and order-related features adversely impacts DMS functionality.

DMS and other warehousing activities

When a receipt takes place for a warehouse-item combination that has the **DMS upon Receipt** or the **DMS upon JSC Receipt** check box selected, DMS will or must always precede the next warehousing activity. This also applies if the next activity, for example, **Generate Inbound Advice**, is an automatic activity.

DMS in a non-location controlled environment

If a DMS run is carried out in a non-location controlled environment, that is, the item and/or the warehouse is not location controlled, **DMS upon Receipt** is also possible. If, in this case, items are received, the items are immediately placed in stock, and the location of the items is unknown. You can then still apply DMS to the received quantity in the same way as in a location-controlled environment, with one exception: instead of cross-dock orders, LN generates outbound advice, similar to **DMS on Inventory**.

If the warehouse and/or item are not location controlled, you can define a storage zone in the Item Data by Warehouse (whwmd2510m000) session. In the DMS Transfer Report, this zone is used instead of a location.

DMS and Enterprise Planning

All DMS-supplied warehouses in a cluster are considered, whereas Enterprise Planning only considers warehouses in a cluster with the **Include in Enterprise Planning** check box selected in the Warehouses (tcmcs0503m000) session. Therefore, if Enterprise Planning is used for purchase planning, Infor strongly recommends that you select the **Include in Enterprise Planning** check box for warehouses that are **DMS Supplied**.

Preventing goods from moving back and forth

You can move goods back to the warehouse where they originated if, in the interval between DMS planning runs, highest priority demand shifts to the warehouse from where those goods were sent. Therefore, to prevent goods from moving back and forth between warehouses, be sure to have an adequate interval between DMS runs, and beware of sudden priority shifts.

Chapter 9
Cross-Docking Time Fence

9

Introduction

In the Item Data by Warehouse (whwmd2510m000) session, to define a time fence for the planned delivery date of specific demand (outbound order line) you can specify minimum and maximum time tolerances. In the same session, you can also define a cross-dock lead time.

If you set both the minimum and maximum time tolerances to zero, LN ignores the time fence.

Cross-docking time fence

Introduction

In the Item Data by Warehouse (whwmd2510m000) session, to define a time fence for the planned delivery date of specific demand (outbound order line) you can specify minimum and maximum time tolerances. In the same session, you can also define a cross-dock lead time.

If you set both the minimum and maximum time tolerances to zero, LN ignores the time fence.

Time fence in a DMS environment

If you run DMS planning and process distribution, cross-dock orders and transfer orders are generated. Whether cross-dock orders are actually generated can be influenced by the time fence and the force cross-docking range.

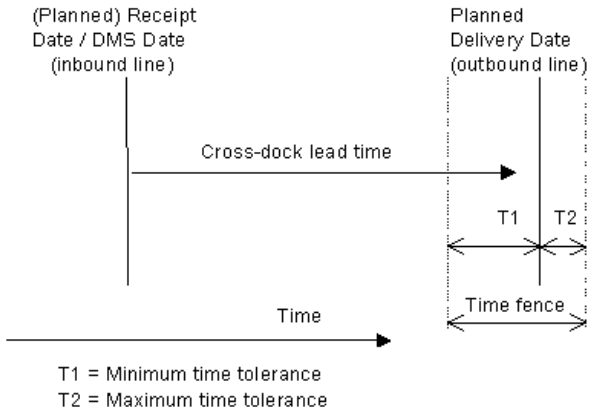
Received goods are only cross-docked if the total of the receipt date plus the cross-dock lead time falls within the time fence. Otherwise, the received goods are inbound.

The date considered by LN depends on the way in which you run DMS:

If you run DMS...	LN considers...
During confirm receipt	Actual receipt date
After reporting an operation complete	Planned receipt date
Manually after confirm receipt	Actual (DMS) date

Example

This example assumes that you run DMS during confirm receipt. As shown in the following figure, the receipt date plus the cross-dock lead time falls within the time fence.



Cross-docking time fence

In this case, the cross-dock order is generated. If the result of receipt date and cross-dock lead time would fall outside the time fence, no cross-dock order is generated. The goods would then be inbounded rather than cross-docked.

By setting a time fence, you can prevent goods from being cross-docked too early, which results in goods remaining a long time on the staging location. On the other hand, you can also cross-dock goods that are already overdue, taking the time fence limit into account.

Note

Minimum and maximum time fence tolerances are always considered for the warehouse-item combination for which the cross-dock order must be generated. If, for example, a cross-dock order is created for supply warehouse WH1 and item X, another time fence might be used for a cross-dock order created in destination warehouse WH2 for item X.

Time fence in a non-DMS environment

The cross-docking time fence is closely linked to the force cross-docking range and the setting of the **Generate Cross-dock Order Lines when Confirming Receipt** option, which is also defined in the Item Data by Warehouse (whwmd2510m000) session:

- If this check box is selected, cross-dock order lines are only generated during confirm receipt for cross-dock orders that meet the time fence.
- If this check box is cleared, cross-dock orders and cross-dock order lines are only generated if the force cross-docking range is set. If applicable, the time fence must also be met.

Chapter 10
Force Cross-Docking Range

10

Introduction

In the Item Data by Warehouse (whwmd2510m000) session, you can specify force cross-dock minimum and maximum quantities, which enable you to force cross-docking whenever a quantity is received that lies within the range specified.

Impact of force cross-docking

- If the force cross-dock minimum and maximum quantities are both set to zero, LN does not try to force cross-docking of the received quantity.

  For DMS, this means that LN always first tries to supply from inventory if **DMS on Inventory** is set to **Receipt and Outbound**. If demand exceeds available inventory, LN cross-docks the received quantity to meet remaining demand.

- If you set the force cross-dock maximum quantity to the maximum and the force cross-dock minimum quantity to zero, LN always first tries to cross-dock the received goods.

  For DMS, this means that first the received quantity is used to meet demand. If demand exceeds the received quantity, the remaining quantity is supplied from inventory, if **DMS on Inventory** is set to **Receipt and Outbound**.

  The same applies when the force cross-dock maximum and minimum quantities are set to specifc values, and the received quantity falls within this range.

Force cross-docking in a DMS environment

Depending on the force cross-dock quantities, LN first assigns either the received quantity or the on-hand quantity. The following examples assume that you specified a force cross-docking range of zero to 20.

Chapter 11
Cross-Dock Restrictions

11

Cross-dock restrictions

For cross-docking, you can define *restriction rules*. LN uses the set of rules included in a restriction definiton to determine whether to create cross-dock orders. The rules are checked one after the other. If a valid condition is met, no cross-dock orders will be created. If no rule applies, LN permits the creation of cross-dock orders.

When trying to determine whether to create cross-dock orders, LN first uses a restriction definition from the warehouse-item level. If no restriction definition is specified on this level, LN uses the definition as specified on warehouse level. If no restriction definition exists on this level either, LN uses the definition as specified in the parameters session. If no restriction defintion exists here either, this implies that no restrictions apply, and that the cross-dock order can be generated.

Note

- To maintain cross-dock restriction definitions, use the following sessions:
  - Cross-dock Restriction Definitions (whinh6150m000)
  - Cross-dock Restriction Rules (whinh6151m000)
- Cross-dock restrictions are taken into account regardless of the use of direct material supply (DMS).

Example

Cross-dock restriction definition: CDRD1

Rule	Order Origin	Order Type	Supply System	Shortage

1	**Sales**	SP1	**None**	**Not Applicable**
2	**None**		**Order Controlled/ Single**	**No**
3	**Transfer**		**None**	**Yes**

Explanation

For the following orders, no cross-dock orders must be generated:

- Sales orders with order type SP1 and no shortage occurring.
- JSC production order with warehouse order type P01 and supply method **Order Controlled/Single**.
- Transfer order with order type T01 and a shortage occuring.

For the following orders, cross-dock orders can be generated:

- Sales order with order type SP2 and no shortage occuring.
- JSC production order with warehouse order type P01 and supply method **Order Controlled/Batch**.
- Transfer order with order type T01 and no shortage occuring.

Chapter 12
Impact of Cross-Docking Settings

12

Introduction

The impact of the *cross-docking time fence (p. 51)*, force cross-docking range, and *cross-dock restrictions (p. 57)* depends on whether these settings are used in a DMS environment or a non-DMS environment.

Impact in a DMS environment

The following table summarizes the impact of cross-docking settings on receipts if you use **DMS upon Receipt**. The Result column describes what happens during a DMS run.

Setting:				Result
CR	**FC**	**TF**	**RA**	
N/A	N/A	N/A	Y	Cross-dock orders and cross-dock order lines cannot be generated if a cross-dock restriction is met.
N/A	Y	Y	N	Cross-dock orders and cross-dock order lines are only generated before inventory is used to supply demand, if the force cross-docking range and

				the time fence are met. If demand remains after goods are supplied from inventory, cross-dock orders and cross-dock order lines are only generated if the time fence is met.
N/A	Y	N	N	Cross-dock orders and cross-dock order lines are only generated before inventory is used to supply demand, if the force cross-docking range is met. If demand remains after goods are supplied from inventory, cross-dock orders and cross-dock order lines are generated.
N/A	N	Y	N	Cross-dock orders and cross-dock order lines are only generated if the time fence is met.
N/A	N	N	N	In contrast with a non-DMS environment, cross-dock orders and cross-dock order lines are always generated. If demand remains after goods are supplied from inventory, cross-dock or-

ders and cross-dock order lines are generated.

CR -	**Generate Cross-dock Order Lines when Confirming Receipt** (not applicable for DMS)
FC -	**Force Cross-docking Range** set: ■ Yes = Range is, for example, from 10 to 100. ■ No = Range is from zero to zero.
TF -	**Cross-docking Time Fence** set: ■ Yes = Minimum tolerance is, for example, 10 hours and maximum tolerance is 15 hours. ■ No = Minimum and maximum tolerance have value zero.
RA -	**Restriction Definition** set (Yes/No).

Appendix A
Glossary

A

appropriate menu

Commands are distributed across the **Views**, **References**, and **Actions** menus, or displayed as buttons. In previous LN and Web UI releases, these commands are located in the *Specific* menu.

cross-dock lead time

The time interval, defined in hours or days, between receiving the goods on the receiving location until the moment the goods leave the warehouse from the staging location. It includes the normal waiting times on the receiving location and/or staging location, and inspection time.

Note

You can define cross-dock lead times for warehouses and/or item-warehouse combinations.

cross-dock order

An outbound order line for which the goods must be cross-docked. A cross-dock order can be fulfilled by creating cross-dock order lines for it.

See: cross-dock order line

cross-dock order priority definition

A user-defined set of priorities assigned to one or more LN table fields. LN uses the cross-dock order priority definition to generate the cross-dock order system priority.

Note

- You can use cross-dock order priority definitions for **Dynamic** cross-docking only.
- Instead of cross-dock order priority definitions, and dependent on a parameter setting, you can apply planning priority rules to **Dynamic** cross-docking.

See: system priority, planning priority rule

direct material supply

A supply method in which (pending) receipts and available inventory on hand are used to meet high-priority demand within a user-specific cluster of warehouses. This supply method can be run either automatically, interactively, or manually, using the Direct Material Supply Distribution (whinh6130m000) session.

Abbreviation: DMS

See: cross-docking, warehouse supply structure

DMS

See: *direct material supply (p. 64)*

inventory commitment

The reservation of inventory for an order without taking into account the physical storage of the goods within the warehouse. Previously referred to as hard allocation.

item group

A group of items with similar characteristics. Each item belongs to a particular item group. The item group is used in combination with the item type to set up item defaults.

item type

A classification of items used to identify if the item is, for example, a generic item, a service item, or an equipment item. Depending on the item's type, certain functions will only apply to that item.

outbound advice

A list generated by LN that advises you the location and lot from which goods must be picked and possibly issued, taking into account factors such as blocked locations and the outbound method.

plan item

An item with the order system **Planned**.

The production, distribution, or purchase of these items is planned in Enterprise Planning based on the forecast or the actual demand.

You can plan these items by means of the following:

- Master-based planning, which is similar to master production scheduling techniques.
- Order-based planning, which is similar to material-requirements planning techniques.
- A combination of master-based planning and order-based planning.

Plan items can be one of the following:

- An actual manufactured or purchased item.
- A product family.
- A basic model, that is, a defined product variant of a generic item.

A group of similar plan items or families is called a product family. The items are aggregated to give a more general plan than the one devised for individual items. A code displayed by the item code's cluster segment shows that the plan item is a clustered item that is used for distribution planning.

planning priority rule

A user-defined condition that you can apply to a specific situation and a specific order, and that results in a priority figure when applied to a specific order. Aggregating the priority figures of all applicable priority rules results in a planning priority, which in turn is used as the system priority.

Note

- For cross-dock orders of type **Direct Material Supply**, you can only use planning priority rules.
- In case of **Dynamic** cross-docking, you can use either planning priority rules or cross-dock order priority definitions.

See: cross-docking, cross-dock order priority definition, system priority

shop floor warehouse

A warehouse that stores intermediate inventory in order to supply work centers. A shop floor warehouse is linked to an individual work cell, an assembly line, or one or more work centers. A shop floor warehouse can be supplied with goods using replenishment orders, or by pull-based material supply.

The pull-based material supply methods are:

- **Order Controlled/Batch** (only applicable in Assembly Control).
- **Order Controlled/SILS** (only applicable in Assembly Control).
- **Order Controlled/Single** (only applicable in Job Shop Control).
- **KANBAN**.
- **Time-Phased Order Point**.

The items stored in the shop-floor warehouse are not part of the work in process (WIP). When items leave the shop floor warehouse for use in production, their value is added to the WIP.

system priority

A priority that is based on the planning priority rules or the cross-dock order priorities. LN uses the system priority along with the user priority to determine a cross-dock order's priority. LN generates cross-dock order lines and, during inbound advice, advises cross-dock order lines for cross-dock orders with the highest priority first.

Note

- If you use planning priority rules, in case of **Direct Material Supply** and, optionally, in case of **Dynamic** cross-docking, the system priority of generated cross-dock orders matches the planning priority.
- For cross-dock orders of type **Direct Material Supply**, the system priority is used as default value for the user priority.
- The user priority is taken into account before the system priority.

See: user priority, cross-dock order priority definition, planning priority rule, direct material supply

transfer order

A type of warehousing order that is created to register inventory transactions from an issuing warehouse to a destination warehouse, or between two locations in a warehouse. A transfer order can be created manually or be generated by other packages or modules in LN. A transfer order has transaction type **Transfer**.

Synonym: warehouse transfer, warehousing transfer order

warehouse supply structure

Defined for direct material supply, a user-specific cluster of warehouses, which consists of one or more supply warehouses and a number of destination warehouses.

See: direct material supply

warehouse transfer, warehousing transfer order

See: *transfer order (p. 66)*

Index