Infor LN User Guide for the Kanban supply system

Important Notices

Trademark Acknowledgements

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About this document

Objectives

The objectives of this book are to describe the purpose and the use of the Kanban supply system.

Intended Audience

This book is intended for those who want to learn how to set up and use the Kanban supply system.

Assumed Knowledge

Familiarity with the business processes involved in the supply of shop floor warehouses, 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.

References

Use this guide as the primary reference for the kanban supply system. 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*

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Chapter 1
Introduction

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Kanban

The kanban supply system is typically used for low-cost and high-volume component items used to manufacture products or assemble larger component items or subassemblies into end items. You can also use the kanban system to supply floor stock items.

Kanban supply orders are generated to supply the component items from a business partner, work center, or warehouse to a shop floor warehouse.

Kanban signals

A kanban signal is used to trigger the creation of a kanban supply order. A kanban signal includes a label code and a supply quantity, and is linked to a warehouse and item combination.

Typically, a kanban signal represents a kanban bin. When the user scans the label code on the empty bin, LN generates a supply order for the item quantity defined for the signal.

A signal can also represent more than one bin. For example, a label is attached to every second bin. When both bins are empty, the user scans the label of the second empty bin to generate a supply order for both empty bins.

Kanban loop

Kanban signals are defined for a warehouse and item combination in the Item Data by Warehouse (whwmd2110s000) session. You can link multiple kanban signals to a warehouse and item combination. The signals defined for an item and warehouse represent the kanban loop.

Depending on the demand for the item, you can increase or decrease the number of signals for the kanban loop.

You can either calculate or manually specify the number of signals for the loop. If calculated, the number of signals is determined by the average daily demand for a particular period.

Reusable or unique kanban signals

Kanban signals are reusable or non-reusable.

If reusable, a signal can be used continually to trigger supply orders in the kanban loop. If the demand for the item decreases and fewer signals are required, you can temporally deactivate the signals and reactivate them when the demand increases.

If non-reusable, a signal is linked to only one supply order. When the supply order is received in the shop floor warehouse, the signal is permanently closed and a new signal is generated.

Kanban orders

Kanban orders are generated or manually created using the Generate Orders (KANBAN) (whinh2200m000) session. Usually the creation of kanban supply orders is bar code driven and executed using a scanner. A kanban order is generated when the bar code of the kanban label is scanned.

However, users can also manually create kanban orders. In addition, if the **Generate Kanban Order Automatically** check box is selected in the Item Data by Warehouse (whwmd2110s000) session, a kanban order is generated for a newly created or activated signal.

Kanban setup

The kanban supply system setup includes:

- Optionally, defining shop floor warehouses and floor stock items
- Item and supply settings
- Signal settings
- Loop settings

Note

To easily respond to demand fluctuations, in the Global Update of KANBAN Parameters (whinh2200m100) session, you can adjust kanban supply settings for selected ranges of warehouses and items.

Chapter 2
Kanban Orders

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Kanban orders

Kanban orders are generated or manually created using the Generate Orders (KANBAN) (whinh2200m000) session. Usually the creation of kanban supply orders is bar code driven and executed using a scanner. A kanban order is generated when the bar code of the kanban label is scanned.

However, users can also manually create kanban orders. In addition, if the **Generate Kanban Order Automatically** check box is selected in the Item Data by Warehouse (whwmd2110s000) session, a kanban order is generated for a newly created or activated signal.

If you manually create a kanban order in the Generate Orders (KANBAN) (whinh2200m000) session, the *default order data (p. 11)* is automatically inserted if you specify the **Kanban Signal ID**. The order is generated when you click **Generate**. You can change the default order data before you click **Generate**.

Use the **Process Warehousing Transfer Orders** check box to specify whether the newly created order must be processed directly. If this check box is selected,, LN immediately executes the activities of the outbound and inbound procedures that are set to automatic and are linked to the warehousing-order type.

To enable LN to carry out the procedure automatically, you must define a warehousing-order type for which the outbound procedure only contains the Generate Outbound Advice (whinh4201m000) session. The automatic print steps in the shipment procedure can also be included, because these steps do not hinder direct processing of the order.

The following types of kanban orders can be generated:

- Warehousing orders of type **Transfer**, if the item is supplied from a warehouse. You can view the generated warehousing orders in the Warehousing Orders (whinh2100m000) session.
- Purchase orders, if the item is supplied by a business partner. You can view the generated purchase orders in the Purchase Orders - Overview (tdpur4500m500) session.
- Purchase schedule lines, if the item is supplied by a business partner. You can view the generated purchase schedule lines in the Purchase Schedule Lines (tdpur3111m000) session.
- Production orders (**Job Shop Control**), if the item is supplied from a work center. You can view these generated production orders in the Production Orders (tisfc0501m000) session.

Chapter 3
Setup

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Kanban setup

The kanban supply system setup includes:

- Optionally, defining shop floor warehouses and floor stock items
- Item and supply settings
- Signal settings
- Loop settings

Shop floor warehouse and items

The shop floor warehouses that are supplied using the **KANBAN** supply system can be defined as normal or shop floor warehouses. To define a warehouse as a shop floor warehouse, select **Shop Floor** in the **Warehouse Type** field of the Warehouses (whwmd2500m000) session.

Typically, the items are defined as **Manufactured**, **Purchased**, or **Product** items, but the kanban system also allows the use of floor stock items. To define an item as a floor stock item, select the **Floor Stock** check box in the Item - Warehousing (whwmd4600m000) session.

Item and supply settings

To enable the supply of items to a warehouse using the kanban supply system, in the Item Data by Warehouse (whwmd2110s000) session:

On the Supply tab

1. In the **Supply System** field, select **KANBAN**.
2. If the item is supplied from a warehouse, the **Supply from Warehouse** check box must be selected and the **Supply Warehouse** can be specified.

3. If the item is supplied by a supplier or a work center, the **Supply from Warehouse** check box must be cleared. The item type determines whether the item is supplied by a work center or a supplier:
   - If the item type is **Purchased**, the item is supplied by a supplier. A buy-from business partner and a ship-from business partner can be specified to supply the item. If no buy-from business partner and ship-from business partner are specified, LN retrieves the item's default supplier from the Items - Purchase Business Partner (tdipu0110m000) session.
   - If the item type is **Manufactured**, the item is supplied from a work center. LN retrieves the work center from the Job Shop Control module in Manufacturing.
   - If the item type is **Product**, the supply source of the item displayed in the **Actual Supply Source** field of the Items (tcibd0501m000) session determines from where supply takes place:
     - A business partner if the supply source is **Purchase**.
     - A work center if the supply source is:
       - **Job Shop**
       - **Repetitive**
       - **Assembly**
       - **Distribution**

Note

If you change the supply system from **KANBAN** into another supply system when active kanban signals are present, the question: "Active signals exist. Continue?" is displayed. If you click Yes, the active signals are set to inactive, and all signal related fields retain their values and become read-only. This is to ensure that you can easily switch back to supply system **KANBAN**.

Signal settings

1. On the **Kanban** tab of the Warehouse Master Data Parameters (whwmd0100s000) session:
   - Select the **Reuse Kanban Signals** check box to determine whether kanban signals are reusable by default.
   - Specify the default mask for kanban labels in the **ID Mask** field.
2. On the **Kanban** tab of the Warehouses (whwmd2500m000) session:
   - Select the **Reuse Kanban Signals** check box to determine whether kanban signals are reusable for the items stored in the warehouse.
   - Specify the kanban label mask for the warehouse in the **Kanban Signal ID Mask** field.
3. On the **Kanban** tab of the Item Data by Warehouse (whwmd2110s000) session, specify these fields:
   - **Signal Supply Quantity**
   - **Label Layout**
   - Select the **Generate Kanban Order Automatically** check box to generate kanban supply orders for newly created or activated signals. This is useful if bar code scanning is not used to generate kanban supply orders.

Loop settings

On the **Kanban** tab of the Item Data by Warehouse (whwmd2110s000) session, specify a value for these fields:

- **Number of Signals**
- **Total Supply Quantity**

The number of kanban signals can be specified manually or calculated by LN. To calculate the number of signals, you must also specify a value for these fields:

- **Horizon for Historical Demand**
- **Horizon for Future Demand**
- **Offset Date**
- **Offset Date**
- **Average Daily Demand**
- **Buffer**
- **Stock Coverage**

Note

To easily respond to demand fluctuations, in the Global Update of KANBAN Parameters (whinh2200m100) session, you can adjust kanban supply settings for selected ranges of warehouses and items.

Chapter 4
Kanban Labels

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Kanban label layout and printing

To create and maintain label layouts for labels to be used for kanban, use the Label Layouts (whwmd5520m000) session.

To print the labels, use the Print Labels for Kanban Signals (whwmd5422m000) session.

To be able to generate a kanban ID in the Item Data by Warehouse (whwmd2110s000) session, first the default **ID Mask** must be specified in the Warehouse Master Data Parameters (whwmd0100s000) session.

Chapter 5
Calculations

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Calculation of supply quantity, number of signals, and average daily demand

The calculation of the supply quantity for kanban loops, the number of kanban signals, and the average daily demand is performed in the Item Data by Warehouse (whwmd2110s000) session.

LN calculates the default supply quantity for kanban loops by multiplying the signal supply quantity with the number of kanban signals.

The number of kanban signals is specified or calculated by LN. If calculated, this formula is used:

```
Number of kanban signals = D * T * (1+B/100)/Q
```

Legend

D	**Average Daily Demand**
T	**Stock Coverage**
B	**Buffer**
Q	**Supply Quantity**

Average daily demand

The average daily demand for (end) items from the current warehouse is based on **Job Shop Control** production orders. The items supplied by the kanban order are used to assemble or produce the (end) items. The average daily demand is used to calculate the number of kanban signals required to effectively supply a shop floor warehouse.

The value of the **Average Daily Demand** field can be manually specified or calculated. If calculated, LN determines this demand for the period defined by the future and history horizons specified in the **Horizon for Historical Demand** and **Horizon for Future Demand** fields.

For the future horizon, LN checks the planned issues for production orders in the Planned Inventory Transactions (whinp1500m000) session. Planned issues with a date in the past are also included.

For the history horizon, LN checks the completed issues for production orders in the Item - Warehouse - Inventory Transactions (whinr1510m000) session.

The demand quantity thus found is divided by the number of work days with or without planned or completed issues for production within the horizons defined.

The **Use Zero-Usage Days for Average Daily Demand** field in the Warehouse Master Data Parameters (whwmd0100s000) session is used to determine whether work days without production can be included in the calculation of the average daily demand.

For example, if the future and history horizons span five days, but there is planned or actual production on four days within these horizons, the average daily demand is based on 4 days if zero production days are not included. If included, the average daily demand is based on 5 days.

If zero-production work days are included, the average daily usage is lower than it would be without including zero-production work days.

Stock coverage

This is the number of days within the future horizon, which usually represents the lead time of an end product for which the component demand is covered by the available stock. The lead time is the transport time added with the production time.

The stock coverage is used to calculate the number of kanban signals. The value in the **Stock Coverage** field is manually specified.

Buffer

A percentage of the average daily demand used to calculate the number of kanban signals and the default supply quantity of kanban orders. This percentage is added to the average daily demand, which results in a higher default supply quantity for the kanban orders. This is used to prevent underdeliveries.

Percentages in excess of 100% are allowed.

Offset date

For the future horizon, you can specify an offset date.

The **offset date** helps you identify a peak or a slump in demand for a future period, so you can adjust the supply quantities in advance.

Signal supply quantity

The quantity of items that must be supplied by a kanban signal. This quantity is manually specified.

Chapter 6
Decrease or Increase Kanban Signals

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Increase or decrease the number of kanban signals

You can increase or decrease the number of kanban signals using these sessions:

- Item Data by Warehouse (whwmd2110s000)
- Global Update of KANBAN Parameters (whinh2200m100)
- Update KANBAN Parameters (whwmd2113m000)

Reusable signals

If you increase the number of signals, either manually or by calculation, you are asked if the number of **Active** signals must be increased.

If yes, and **Inactive** signals are present, first the **Inactive** signals are activated. The signals are activated in alphabetical order. If this does not cover the total quantity by which you want to increase the number of signals, LN creates new **Active** signals for the remaining quantity. Kanban signals are displayed in the Kanban Signals (whwmd2111m000) session.

If no, the number of signals is not updated.

If you decrease the number of signals, LN sets the required number of active signals to **Inactive**.

Non-reusable signals

If you increase the number of signals, you are asked whether the number of signals must be increased. If yes, new **Active** signals are created. If the number of signals is decreased, the required number of active signals is closed in alphabetical order.

Appendix A
Glossary

A

floor stock

A stock of inexpensive material present in the job shop that can be used in production without recording each issue of material individually. Floor stock is not backflushed and is not part of the estimated costs.

kanban

A demand-pull system of just-in-time production that regulates the supply of items to shop floor warehouses.

Kanban uses standard containers or lot sizes (also called bins) to deliver items to shop floor warehouses. In the shop floor warehouse, two or more bins are available with the same items. Items are only taken from one bin. Typically, if a bin is empty, a new bin is ordered and the items are taken from the (second) full bin. To each bin a label is attached. The line stations use the label to order a full bin with the required items.

Sometimes, not every bin is provided with a label. For example, a label is attached to every second bin. When both bins are empty, the user scans the label of the second empty bin to generate a supply order for both empty bins.

kanban loop

The kanban signals defined for an item and warehouse combination.

kanban signal

A signal used to trigger the creation of a kanban supply order. A kanban signal includes a label code and a supply quantity, and is linked to a warehouse and item combination.

Typically, a kanban signal represents a kanban bin. When the user scans the label code on the empty bin, LN generates a supply order for the item quantity defined for the signal.

A signal can also represent more than one bin. For example, a label is attached to every second bin. When both bins are empty, the user scans the label of the second empty bin to generate a supply order for both empty bins.

production order

An order to produce a specified quantity of an item on a specified delivery date.

purchase order

An agreement that indicates which items are delivered by a buy-from business partner according to certain terms and conditions.

A purchase order contains:

- A header with general order data, buy-from business partner data, payment terms, and delivery terms
- One or more order lines with more detailed information about the actual items to be delivered

purchase schedule

A timetable of planned supply of materials. Purchase schedules support long-term purchasing with frequent deliveries and are usually backed by a purchase contract. All requirements for the same item, buy-from business partner, ship-from business partner, purchase office, and warehouse are stored in one schedule.

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.

warehouse order

See: *warehousing order (p. 25)*

warehousing order

An order for handling goods in the warehouse.

A warehouse order can be of the following inventory-transaction types:

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

Each order has an origin and contains all the information required for warehouse handling. Depending on the item (lot or non-lot) and warehouse (with or without locations), lots and/or locations can be assigned. The order follows a predefined warehousing procedure.

Note
In Manufacturing a warehousing order is often called a warehouse order.

Synonym: warehouse order

warehousing order type

A code that identifies the type of a warehousing order. The default warehousing procedure that you link to a warehousing order type determines how the warehousing orders to which the order type is allocated are processed in the warehouse, although you can modify the default procedure for individual warehousing orders or order lines.

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