Infor LN Enterprise Planning
User Guide for Order Planning

Publication Information

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About this document

About this document

This document describes the process used to manage planning data in the form of planned orders. The options, steps and conditions for the use of order planning are detailed.

Document summary

Enterprise Planning supports two types of planning processes: order planning and master planning. This document focuses on setting up and basic concepts that apply to this type of planning.

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:

For details, refer to *Scenarios*. To locate the referred section, please refer to the Table of Contents or use the Index at the end of the document.

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

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Chapter 1
Order Planning Concepts

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General overview and basic concepts

The planning logic within LN provides a mechanism where supply and demand are balanced taking into account existing receipts, supply and inventory levels. The planning takes care of fulfilling unfulfilled demand by generating various sorts of supply orders, such as these:

- Planned production orders (an order to make the item)
- Planned distribution orders (an order to get the item from another site)
- Planned purchase orders (an order to buy the item)

You can set up the planning system by specifying this data:

- **Scenarios**
  Specify multiple scenarios, in order to compare various planning strategies.
- **General item data**
  Specify the various items.
- **Clusters and plan items**
  Differentiate the item planning characteristics for different warehouses, production sites, and suppliers.

Item data structure

You can further differentiate between items at various suppliers:

- Locations (warehouses)
- Purpose (planning, purchase)
- Origin (supplier, warehouse)

Example

An item is supplied by two different suppliers.

Supplier A ships in lots of 100 pieces because the packing of the item determines so.

Supplier B ships the goods in units of 60 pieces.

You can define specific parameters for each supplier.

You can use the following sessions to define these characteristics:

- Items - Planning (cprpd1100m000)
- Check Item Data by Warehouse (whwmd2210m000)
- Item Supplier Plan (cpvmi0530m000)

These sessions define entities that have an n-to-1 relationship with the general item data.
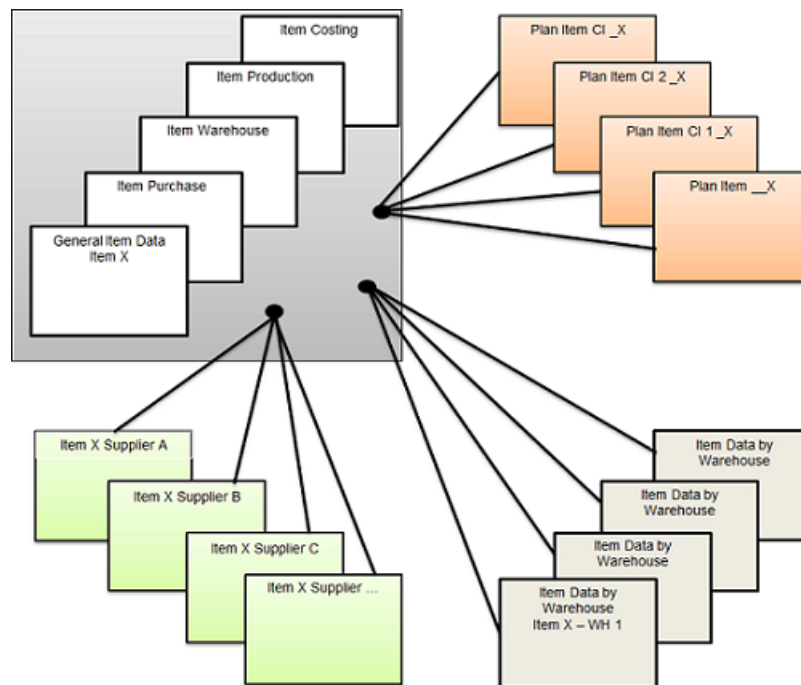
Item data structure

Scenarios

You can define several scenarios, each with its own set of planning parameters. A scenario is an umbrella for a set of planned orders that are planned according to scenario-dependent parameter settings. In this way, you can simulate several situations.

You can change the planning data manually after order generation. In this way, you can see the impact of his planning action compared to the generated plan.

The following settings are scenario dependent:

- **Plan Period Definition** for master planning
- Aggregation Relationships (cprpd3110m000)
- **Supply Strategies** and **Sourcing Strategies**

The scenario-dependent supply-chain strategies and sourcing strategies help planners to evaluate whether they should buy more and produce less or choose another way of fulfilling demand.

Planners can balance the sources of supply and investigate the consequences of their choices regarding capacity utilization, material requirements, and so on.

Example

You must specify which of the scenarios is defined as the **Actual Scenario**. The actual scenario is the scenario of which the plans and orders are to be actually executed.

You can transfer only orders from the actual scenario to the execution level. The ATP checks that you can perform in Sales Control are also based on the actual scenario.

To determine which scenario is the actual scenario, use the **Actual Scenario** field in the Planning Parameters (cprpd0100m000) session.

General item data

Enterprise Planning plans by plan item. Each plan item derives its general properties from the related general item definition.

Order interval

Order interval is the minimum time interval (in days or hours) between two successive planned orders. The time interval is measured starting at the last generated order.

Example

If the order interval is a week and the first requirement falls on a Monday, the first order generation moment lies on that Monday.

The system will not generate the second planned order before the next Monday.

However, if there is no need to generate an order on that next Monday, then the next generated order determines the start of the new order interval.
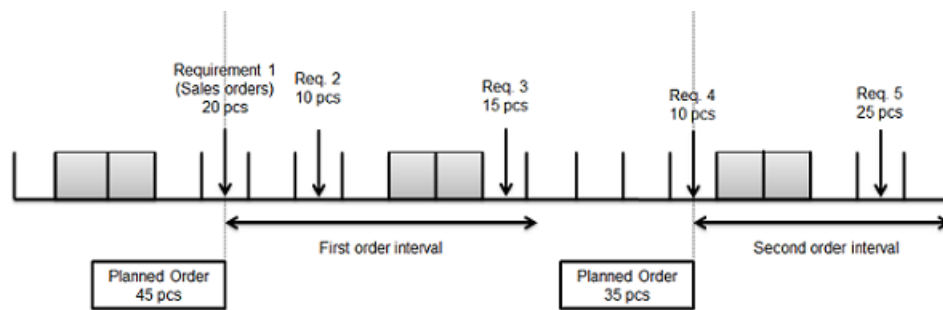
Order interval

Legend

	Weekend
Order Interval =	1 week

Some fields in the Items - Ordering (tcibd2100m000) session are explained in the following table.

Item ordering data

Field	Description
Customize	If this field is **No**, the item is made to stock (not ordered for a specific customer or project).
	If this field is **Yes**, the item is a customized item ordered for a specific customer or project.
	For more information, refer to the documents on **Engineer-to-Order**, Assemble-to-order, and Make-to-order order policies.
Critical in Master Planning	If this check box is selected, the item is critical in the production process. The item is by default part of the Bill of Critical Materials (BCM).
Warehouse	The default value for the warehouse for the plan items based on this item.
Reorder Point	This field is not used in Enterprise Planning.
Service Level	This field is not used in Enterprise Planning.

Safety Stock	The quantity that is planned to remain available in inventory at times when the stock is low. The purpose of the safety stock is to avoid that the item becomes out-of-stock if the demand is higher than expected.
	In the master-planning process, Enterprise Planning uses the safety stock to generate the inventory plan. The inventory plan is subsequently used to generate the orders.
	In the order-planning process, Enterprise Planning uses the safety stock directly for the generation of orders.
Safety Time	A time period (expressed in hours or days) that is added to the lead time as part of the lead-time offset in Enterprise Planning. For more information, refer to the topic document on lead times.
First Allowed Order Date	This field is not used in Enterprise Planning.
Order Costs	This field is not used in Enterprise Planning.
Planner	This field is not used in Enterprise Planning. You can define a plan item's planner in Enterprise Planning.
Shop Floor Planner	This field is not used in Enterprise Planning.
Seasonal Pattern for Safety Stock	This field affects a plan item's inventory plan.
Seasonal Pattern for Forecast	The seasonal pattern for forecast affects the demand forecast calculation.
Number of Periods	This field is not used in Enterprise Planning.
Net change date (display-only field)	The last time on which production orders, demand data, BOMs, routings, bills of critical materials, or bills of critical capacities have changed.
	Enterprise Planning uses the value of this field if you execute a net-change planning run.

Net change flag (display-only field)	If this check box is selected, a change occurred in the static data or in the goods flow. In the next planning run, Enterprise Planning must take these changes into account.
	The net change date tells you from where the planning should be run. Before the net change date, the system does not have to re-execute the planning calculations, because no changes occurred there. If you execute a planning run, Enterprise Planning clears the check box.
Lot Size Calculation Allowed	This field is not used in Enterprise Planning.
PCS Project (Recommended OQ, OQ)	This field is not used in Enterprise Planning.

Items - Ordering (tcibd2100m000)

The cluster concept allows you to perform integrated planning over multiple sites. A cluster represents one or more warehouses located near each other – typically, the warehouses at a particular site or in a particular country.

You can define a plan item for each combination of cluster and item code.

The plan item code includes these segments:
- The cluster segment prefixes
- The item code segment

Therefore, the plan item represents the combination of item definition and location.

Clustered items and nonclustered items

You can also define a plan item with an empty cluster segment. The empty cluster is used to model the production environment; the other clusters are used for modeling the supply chain structure for Distribution Requirements Planning (DRP).

For plan items, we use the following terms:
- **Clustered item**
  Plan item with the cluster filled
- **Nonclustered plan item**
  Plan items with empty cluster segment

If it is not relevant if the cluster is filled, we will speak just of *plan items*.

The clustered item groups all inventory and planned inventory transactions of all warehouses that are assigned to the cluster.

The nonclustered plan item groups all inventory and transactions of all warehouses not linked to any cluster.

To view the planned inventory transactions, use the Planned Inventory Transactions (whinp1500m000) session.

Note

The planning system ignores inventory and planned inventory transactions of warehouses that are explicitly excluded from the planning process, such as a warehouse for rejected items or spare parts.

To exclude a warehouse from the planning process, clear the **Include in Enterprise Planning** check box in the Warehouses (whwmd2500m000) session.

Example of clusters

Suppose you defined item S-3501.

You also defined the following clusters:
- EUR (Europe)
- NA (North-America)
- JAP (Japan)

Now, you can define four plan items all representing the same physical item:
- EUR S-3501
- NA S-3501
- JAP S-3501
- S-3501

The planning engine treats these four plan items as four different items. For each plan item, the system maintains the anticipated receipts and issues, expected inventory levels, and forecast demand separately.

The plan item concept supports the following functionality:
- MRP (Material Requirements Planning)
- MPS (Master Planning Schedule)
- PRP (Project Requirements Planning)
- DRP (Distribution Requirements Planning)

Similarly, you can specify plan items for project items. In that case, the plan item code has three segments: cluster, project, and item code.

Items - Purchase Business Partner (tdipu0110m000)

Item-supplier information becomes relevant to Enterprise Planning, if you generate planned purchase orders. Enterprise Planning always searches for item-supplier information. If the item-supplier information is not available, Enterprise Planning generates the order without business partner.

The following table explains some of the parameter settings in the Items - Purchase Business Partner (tdipu0110m000) session.

Item – Purchase Business Partner

| Field	Description
Item	The item segment of the plan items to which this record applies. All plan items with the same item code as the item code in the item supplier information, can use this record. In this way, there can be a one-to-many relation between plan item and item-supplier information.
Item Group	You can leave the item code empty and fill this field. In this way, you can define the item-supplier information on two levels: item and item group. Enterprise Planning always searches for the item level first and then for the item-group level.
Ship-from Business Partner	The business partner from where the ordered item is shipped. Note: if the warehouse in the Ship-from Business Partners (tccom4521m000) session is not equal to the warehouse on plan item data, this supplier is ignored. An empty warehouse for the ship-from business partner means the business partner can deliver to any warehouse.
Effective date and expiry date	The dates between which the record is effective. If the supplier is not effective, LN does not consider the supplier during simulation.
Preferred	The preferred supplier among a group of alternative suppliers. At any single time, only one item supplier can be the preferred supplier.

Status	This field indicates whether the supplier is blocked.
Priority (Sourcing tab)	LN uses the priority of the item-supplier record for the supplier choice during the order generation process. Zero is the highest priority, 999 is lowest priority.
Sourcing Percentage (Sourcing tab)	LN uses the sourcing percentage of the item-supplier record for the supplier choice during the order generation process. The sourcing percentage is always used as a relative percentage compared to the other item supplier records with the same priority
Order Quantities (Ordering tab)	Each item-supplier record has its own order-quantity settings. Enterprise Planning applies the rules of the most detailed level. The order-quantity settings fulfil the same role as the order-quantity settings on Item Ordering level.
Carrier (Receiving tab)	Determines the transportation time that is used for the lead time calculation of the planned order.
Lead Time Horizon	Determines the date from where the planning of the order lead time is done. Planning is done only on the calculated lead time and not the individual lead-time components. The use of a lead-time horizon saves system performance of the order generation process. This horizon fulfills the same role as the fixed-lead-time horizon in Enterprise Planning for planned production orders.
Calculated Lead Time (display only)	The calculated lead time that represents the lead time components. The calculated lead time is a combination of internal processing time, safety time, supply time, transportation time and warehouse in-bound time. The calculated lead time fulfills the same role for planned purchase orders as the order lead time on plan item data for planned production orders
Supplier Capacity (Shipments tab)	Reflects what the supplier can ship during a predefined span of time. The supplier capacity is a constraint for order generation. When the total supply of all the orders that were generated for this item-

	supplier combination within the capacity time unit exceeds the capacity, Enterprise Planning generates no more orders. The constraint is not only determined by the supplier capacity, but also by the maximum capacity tolerance.
Maximum Capacity Tolerance	Tolerance that indicates how far the supplier capacity can be exceeded for order generation. The constraint for order generation is thus determined by the following formula: `(order quantities of all supply orders) per capacity time unit ] <= [ Supplier capacity * (1 + Maximum Capacity Tolerance/100)`
Capacity Time Unit	Defines the bucket length for supplier capacity. LN calculates the bucket start dates starting from the scenario start date

Item structures

Bill of Material (tibom1110m000)

For production planning, Enterprise Planning and Job Shop Control make use of the item structure and the routing for these items. The item structure, also called the Bill of Materials (BOM), describes the relationships between items in a production environment. Items that are related to each other have a parent-child relation:

A is parent of B and C
B and C are child of A

C is parent of D
D is child of C
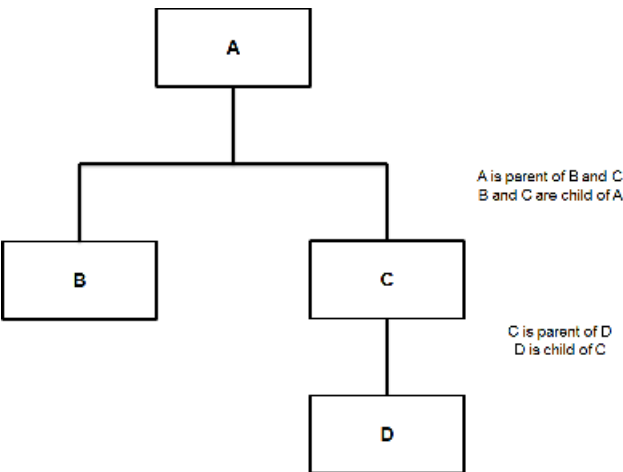
Each parent-child relation has specific characteristics that are defined on the BOM line, such as scrap percentage, scrap quantity, and net quantity.

Enterprise Planning uses the bill of material for several purposes:

- Material explosion for order planning
- BOM generation for customized items (customized item derived from a standard item) (Make to Order (MTO).
- The BOM is the basis for the Bill of Critical Materials (BCM) generation. Enterprise Planning uses the BCM for material explosion for master planning and for available to promise (ATP) checks across the whole planning horizon.

Item - Routings (tirou1101m000)

An item can have a routing and a routing can have one or more routing operations. Each operation describes a process step on a specific work center.
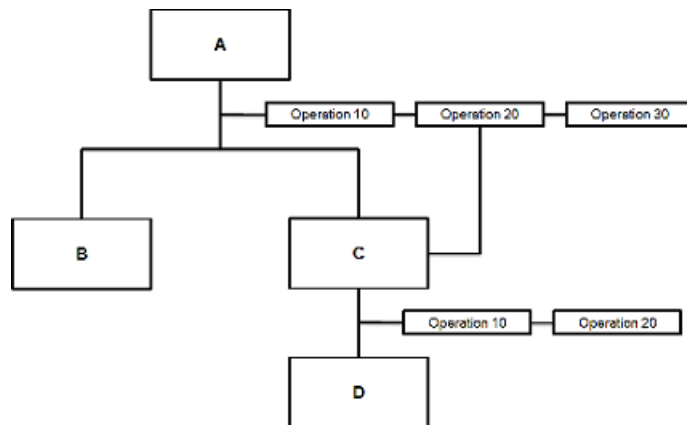
The operation defines the processing and waiting times and things such as scrap and yield. Enterprise Planning uses the routing to perform the following:

- Generate the operations of the planned production orders. All operations together determine the planned start and finish date of the order.
- Generate the project routing.
- As the basis for the Bill of Critical Capacities (BCC). The BCC is used for master planning and Capable to Promise (CTP) checks of the resources. BCC is also used for CTP checking in the order planning horizon.

In the example above item A has a routing with 3 operations.

Operation 10 is the first operation and 30 the last operation.

Item C has two operations.

Note

The materials are always planned at the beginning of the routing except when on the BOM line it is defined that the material should be available at a specific routing operation (like C) that is linked to operation 20.

This link is defined on the **Operation** field of the BOM line.

When the **Operation** field is empty, the material is planned at the start of the routing which is at the start of operation 10.

BOM Line - Material-Routing Relationships (tibom0140m000)

The material-routing relationship is an extension of the Operation-on-BOM-line concept. The link between material and operation is dependent on the selection of the (quantity dependent) routing.

The screen dump below shows the material-routing relationship for a BOM line. The header defines the item and position of the BOM line in the BOM. Each line (record) defines a relation of this BOM-line item (component) to an operation for each specific routing.

With this relationship, you can link BOM lines to an operation of a specified routing.
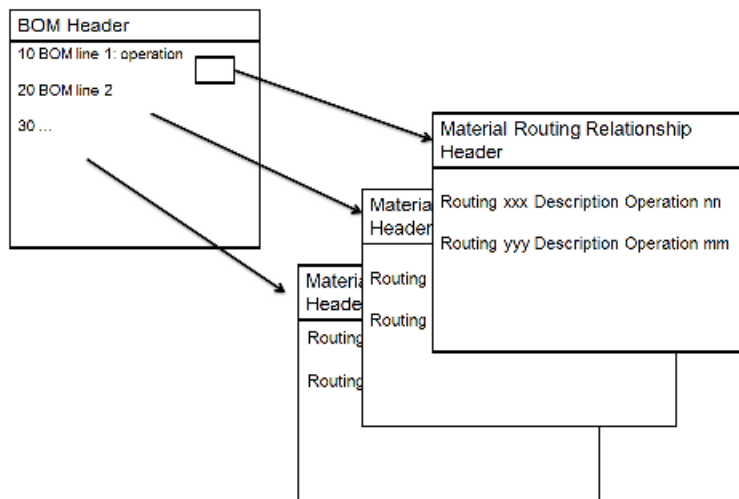
Supply chain modeling

Supplying Relationships (cprpd7130m000)

The supplying relationships model the distribution structure for Distribution Requirements Planning (DRP). Supplying relationships model a plan item relation and not a location-to-location relation. The plan item itself defines the location by the cluster code and the default warehouse of the plan item.

You can define supplying relationships on these levels:

- Plan item
- Cluster
- Item group

Enterprise Planning searches for supplying relationships on each level (first on plan item level, then on cluster level, and so on) until an applicable supplying relationship is found.

Capable-to-Promise (CTP) checks are also performed by using supplying relations but never more than only one level deep.

The following table explains some of the parameter settings in this session.

Supplying relationships

Field	Description
Supplying Site	Defines the site were the supplying item is defined. You can define a supplying relationship over multiple sites.
Effective Date and Expiry Date	Determine if the supplying relation can be selected for order generation.
Supply Costs	Enterprise Planning uses the supply costs for the supplier choice when a supply strategy is defined for an item. The supply source can be determined at least costs.
Percentage	This field is used as a relative percentage in the supply allocation
Priority	This field is used to order the supplying sources based on the priority rules as defined in the supply strategies.
Supply Resource, Supply Lead Time and Carrier	These fields are used for lead-time calculations.
Supply Lead Time	The transportation time from supplying warehouse to the receiving warehouse.
Carrier	The carrier responsible for moving the goods between the supplying and the receiving warehouse.

|	
Minimum Volume	This field is used in the process of assigning planned supply to this supply source.
Maximum Volume	The maximum is a hard constraint. When the total amount of supply that is generated for this supplying relation meets the maximum volume, no further supply can be generated.
	Note that this constraint is not bound to a time unit, but is valid for the whole time between effective and expiry date (total amount of supply = planned orders, interplant planned distribution orders, adjustment orders (cycle counting), transfer orders, assembly orders)
Maximum Days Overdue	The number of days that a supplying relation can be selected before or after the planned finish date.

Supply chain strategies

The supply chain strategies consist of two layers:

- **Sourcing Strategies**
  The sourcing strategy defines how Enterprise Planning must choose between the sources of supply, which are manufacture, purchase or distribution. The sourcing strategy determines how demand is fulfilled by what kind of supply.

- **Supply Strategies**
  The supply strategy defines per source the supplier choice within that source. For example: when Enterprise Planning decides on the basis of the sourcing strategy that a planned purchase order should be generated, the supply strategy determines which supplier will be selected.

Therefore, the process of sourcing and supplier choice is a two-step approach.
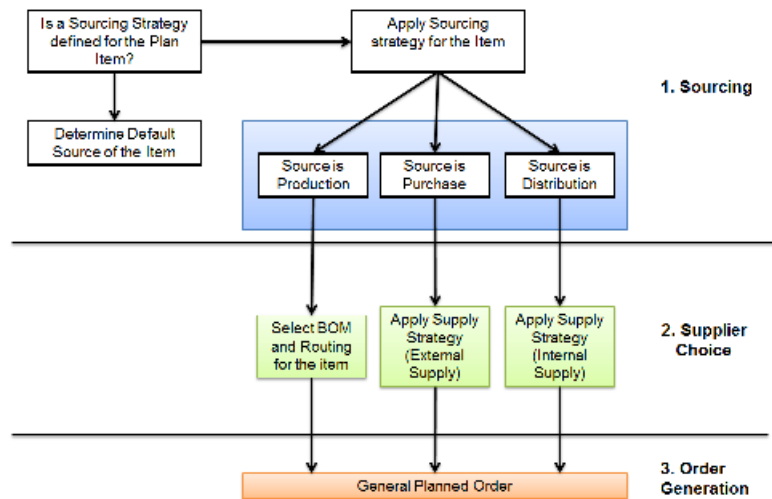
Sourcing Strategy

Enterprise Planning can generate orders for different types (production, purchase, and distribution) for the same plan item. The a plan item's sourcing strategy determines how the supply is distributed over these sources.

You can define sourcing strategies on these levels:

- **Cluster**
- **Item Group** (within a cluster)
- **Plan Level**

Supply Strategy

In the order generation process, Enterprise Planning first determines the source (purchase, or distribution) and then the supplier.

The supply strategy defines how Enterprise Planning selects the supplier.You can define two kinds of supply strategies. The supply type can be either **Purchase** (external) or **Distribution** (internal).

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