Supply Chain Setup Management
# Table Of Contents

1 Supply Chain Setup Management .............................................................. 6

2 Supply Chain Design Master Data ............................................................ 7
   2.1 Business Background ................................................................. 7
       Locations and Location Layouts .................................................... 7
       Simple Location Layout Creation .................................................. 12
       Complex Location Layout Creation ............................................... 15
       Ship-From Determination and Shipment Scheduling for Customer Demand . 30
       Resources .................................................................................... 37
   2.2 Locations View ........................................................................... 41
       Locations Quick Guide ................................................................. 41
       Tasks ............................................................................................ 42
   2.3 Storage Control Profiles View ....................................................... 60
       Storage Control Profiles Quick Guide ............................................. 60
       Business Background ................................................................. 62
       Tasks ............................................................................................ 63
   2.4 Resources View ........................................................................... 64
       Quick Guide for Resources (in Supply Chain Design Master Data) .... 64
       Tasks ............................................................................................ 69
   2.5 Resource Operating Profiles View ................................................ 72
       Resource Operating Profiles Quick Guide ...................................... 72
   2.6 Shift Program View ...................................................................... 74
       Shift Programs Quick Guide .......................................................... 74
   2.7 Transport Zones View .................................................................. 79
       Transport Zones Quick Guide ........................................................ 79
   2.8 Transport Lanes View .................................................................. 82
       Transport Lanes Quick Guide .......................................................... 82
   2.9 Product Groups View ................................................................... 84
       Product Groups Quick Guide .......................................................... 84

3 Planning and Production Master Data ......................................................... 87
   3.1 Business Background .................................................................. 87
       Production Models ........................................................................ 87
   3.2 Production Bills of Material View .................................................. 94
       Production Bills of Material Quick Guide ........................................ 94
       Tasks ............................................................................................ 96
   3.3 Production Bills of Operation View ............................................... 99
       Production Bills of Operation Quick Guide ..................................... 99
   3.4 Production Models View ............................................................... 101
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.5</td>
<td>Logistics Task Folders View</td>
<td>125</td>
</tr>
<tr>
<td></td>
<td>Logistics Task Folders Quick Guide</td>
<td>125</td>
</tr>
<tr>
<td></td>
<td>Business Background</td>
<td>129</td>
</tr>
<tr>
<td>3.6</td>
<td>Engineering Change Orders View</td>
<td>136</td>
</tr>
<tr>
<td></td>
<td>Engineering Change Orders Quick Guide</td>
<td>136</td>
</tr>
<tr>
<td>3.7</td>
<td>Product Specifications View</td>
<td>137</td>
</tr>
<tr>
<td></td>
<td>Product Specifications Quick Guide</td>
<td>137</td>
</tr>
<tr>
<td>3.8</td>
<td>Source Determination View</td>
<td>141</td>
</tr>
<tr>
<td></td>
<td>Source Determination Quick Guide</td>
<td>141</td>
</tr>
<tr>
<td>3.9</td>
<td>Product Groups View</td>
<td>142</td>
</tr>
<tr>
<td></td>
<td>Product Groups Quick Guide</td>
<td>142</td>
</tr>
<tr>
<td>4</td>
<td>Warehousing and Logistics Master Data</td>
<td>145</td>
</tr>
<tr>
<td>4.1</td>
<td>Business Background</td>
<td>145</td>
</tr>
<tr>
<td></td>
<td>Identified Stock Management</td>
<td>145</td>
</tr>
<tr>
<td>4.2</td>
<td>Logistics Units View</td>
<td>149</td>
</tr>
<tr>
<td></td>
<td>Logistics Units Quick Guide</td>
<td>149</td>
</tr>
<tr>
<td></td>
<td>Business Background</td>
<td>150</td>
</tr>
<tr>
<td>4.3</td>
<td>Logistics Models View</td>
<td>153</td>
</tr>
<tr>
<td></td>
<td>Logistics Models Quick Guide</td>
<td>153</td>
</tr>
<tr>
<td></td>
<td>Business Background</td>
<td>155</td>
</tr>
<tr>
<td>4.4</td>
<td>Logistics Task Folders View</td>
<td>160</td>
</tr>
<tr>
<td></td>
<td>Logistics Task Folders Quick Guide</td>
<td>160</td>
</tr>
<tr>
<td></td>
<td>Business Background</td>
<td>163</td>
</tr>
<tr>
<td>4.5</td>
<td>Identified Stock View</td>
<td>170</td>
</tr>
<tr>
<td></td>
<td>Identified Stock Quick Guide</td>
<td>170</td>
</tr>
<tr>
<td></td>
<td>Business Background</td>
<td>173</td>
</tr>
<tr>
<td>4.6</td>
<td>Product Groups View</td>
<td>179</td>
</tr>
<tr>
<td></td>
<td>Product Groups Quick Guide</td>
<td>179</td>
</tr>
<tr>
<td>4.7</td>
<td>Identified Stock Maintenance Run View</td>
<td>180</td>
</tr>
<tr>
<td></td>
<td>Quick Guide for Identified Stock Maintenance Run</td>
<td>180</td>
</tr>
<tr>
<td>5</td>
<td>Quality Planning</td>
<td>183</td>
</tr>
<tr>
<td>5.1</td>
<td>Business Background</td>
<td>183</td>
</tr>
<tr>
<td></td>
<td>Inspection Process</td>
<td>183</td>
</tr>
<tr>
<td></td>
<td>Sample Management</td>
<td>186</td>
</tr>
<tr>
<td></td>
<td>Integration of Quality Assurance and Production</td>
<td>190</td>
</tr>
<tr>
<td></td>
<td>Integration of Quality Assurance and Logistics</td>
<td>192</td>
</tr>
<tr>
<td>5.2</td>
<td>Inspection Plans View</td>
<td>195</td>
</tr>
<tr>
<td></td>
<td>Inspection Plans Quick Guide</td>
<td>195</td>
</tr>
<tr>
<td></td>
<td>Business Background</td>
<td>198</td>
</tr>
<tr>
<td></td>
<td>Tasks</td>
<td>201</td>
</tr>
<tr>
<td>5.3</td>
<td>Quality Code Catalogs View</td>
<td>209</td>
</tr>
<tr>
<td>Section</td>
<td>Page</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>Quality Code Catalogs Quick Guide</td>
<td>209</td>
<td></td>
</tr>
<tr>
<td>Business Background</td>
<td>212</td>
<td></td>
</tr>
<tr>
<td>Tasks</td>
<td>214</td>
<td></td>
</tr>
<tr>
<td>5.4 Quality Documents Quick Guide</td>
<td>219</td>
<td></td>
</tr>
<tr>
<td>5.5 Business Background</td>
<td>221</td>
<td></td>
</tr>
<tr>
<td>Quality Documents</td>
<td>221</td>
<td></td>
</tr>
</tbody>
</table>
1 Supply Chain Setup Management

Overview
The Supply Chain Setup Management business area gives you flexibility in modeling your supply chain and is the basis for creating the required master data. The solution provides a view of the distribution network to customers, as well as an internal view of a site, such as the layout of a warehouse or production site. You can also manage the flow of products within your warehouse, and between your warehouse and manufacturing as an integrated process. You can model your production and warehouse operations. You can achieve business process transparency between planning and execution using scalable production models that combine both the bill of material and bill of operations.

Relevance
The Supply Chain Setup Management business area is relevant if you work in the distribution or manufacturing industries. This business area covers your supply chain master data needs.

The following business packages are associated with the Supply Chain Setup Management business area, all of which are mandatory:
- Supply Chain Design
- Execution Design
- Production Models

Benefits
Flexible Distribution Processes and Location Setup
- Model the different locations of your company such as sites, storage locations, and ship-from and ship-to locations. You can also model your distribution processes including your business partners, by grouping customers that have similar transport conditions, for example, ship-from sites and shipping durations.

Integrated Material Flow Using a Common Logistics Layout
- Enable an integrated material flow for warehousing and production by means of a common logistics layout that you can use to tailor the way you manage products. Defining rules that determine how you pick, make, and put away products enables you to execute logistics tasks in a way that suits your company.

Reliable Logistics Processes
- Use logistics models to define the steps for your receiving, shipping, and internal logistics processes. Logistics models can define processes with single or multiple steps.

Integrated Planning and Manufacturing
- Enable full integration between supply chain planning and manufacturing execution by using a common production model. You can define a production model with different levels of granularity in planning and execution. A production model is based on bills of material and bills of operations and is a common basis for planning proposals and production orders.
2 Supply Chain Design Master Data

2.1 Business Background

2.1.1 Locations and Location Layouts

Overview

The location and location layout concept enables you to design a detailed model of your company’s supply chain. The location represents an external view of your company that helps you to communicate with your business partner. The location layout on the other hand represents an internal view of your company’s structure. It allows for an integrated material flow for warehousing and production through a common layout. This layout is represented by a hierarchical structure of logistics areas. You can centrally maintain the layouts of the different sites and locations within your company. Together with the logistics model, you can control and optimize the storage and movements of products within your company.

When you activate a business residence in the Organizational Management work center, the system creates a site. You can create multiple locations for a site and in order to store products, at least one of these must be a storage location. You can only have one process model active at any point in time in the system for each of your business processes and these are maintained at the site level in the Logistics Models view of the Warehousing and Logistics Master Data work center. To create a location layout, go to the Supply Chain Design Master Data work center, Locations view.

Locations

Locations enable you to model addresses that you need in your business processes for communication with your business partner, for example, a customer or supplier. Using the location role you can define how the location is used in your business processes. A location can have several roles simultaneously. The system provides the following location roles:

- **Site**
  The site is the physical location where your company or a part of your company resides.

- **Ship-from location**
  A location with this role defines the starting point in the physical transportation of goods to a customer.

- **Ship-to location**
  A location with this role defines the end point in the physical transportation of goods from a supplier.

- **Storage location**
  A location with this role defines a place for storing items, for example, a warehouse or other repository.

- **Logistics relevant**
  This option is only available on site level. You use this to enable your site for production and warehouse processes. When selecting the Logistics Relevant check box, the system creates a supply planning area and enables the Storage Location check box.

- **Service point**
  A location with this role defines a place where the customer can be provided with services, for example, a service point at a retail outlet.
The site represents the top level in your company’s supply chain. When you activate a business residence in the Organizational Management work center, the system creates a site. You can create multiple locations for a site. For example, the site has the address of your headquarter. However, since your warehouse is in a side street, you need a different address for inbound deliveries. To model a second address, you can create a storage location at your site that contains the delivery address.

You can create a location layout for each storage location in your company’s site. You can also define specific settings for negative stock that might occur during inventory posting. By setting the Negative Stock Allowed check box on storage location-level, you determine whether the Negative Stock Allowed check box is enabled for all lower-level logistics areas of this storage location.

Logistics Areas

In the Supply Chain Design Master Data work center, Locations view, you can structure a storage location by defining a hierarchy of logistics areas. In this way, you can create a scalable design of your company’s warehouse and production area. You can use logistics areas only for logistics processes within a site. External communication to other sites is only possible on location level. The system provides you with predefined logistics area types that you can use to model logistics areas according to their business use, for example, production area, receiving area, shipping area, and storage area. For example, you can model the structure of your warehouse by defining a logistics area for each aisle, rack, or bin.

Different storage control parameters allow you to set up the rules governing the way products are stored in a logistics area. By setting up these rules, you can store and move products efficiently within warehouses and production areas. The system provides you with the following storage control parameters:

- **Inventory-managed**
  
  If you want to store items in a logistics area, you must define it as inventory-managed. This would usually be a logistics area on the lowest level of the hierarchy, for example, a bin in a warehouse.

- **Negative stock allowed**
  
  If you want to allow inventory postings that lead to negative stock, you can set the Negative Stock Allowed check box. You can only allow negative stock if the Negative Stock Allowed check box has also been set for the higher-level storage location.

  A negative stock directly affects the determination of moving average prices for inventory valuation. If negative stocks are permitted, the correctness of accounting can no longer be guaranteed by the system. The system documents when and by whom the Negative Stock Allowed check box of the higher-level storage location was last changed on the Changes tab page of this location. However, to ensure transparency, it is mandatory that you also document which setting of this parameter is valid for which period for each logistics area.

  For more information on the relationship between negative stock and the effect on valuation for finance, see Negative Inventories.

- **Blocking status**
  
  Using the blocking status, you can prevent a logistics area from being used for put-away processes. For example, you want to clean a logistics area and, therefore, prevent it from being stocked up. To do so, you set the logistics area to “blocked for put-away” by selecting the corresponding status. The logistics area is then automatically emptied by the active picking processes.

- **Allocation type**
  
  Using the allocation type you can define whether you want to allocate the on-hand stock or expected stock. If this field is left empty, there is no reservation for the specific logistics area. Allocation Type settings are valid for all products in the logistics area.
○ **Immediate Product Allocation** means that you can only allocate the actual on-hand stock. If you use **Immediate Product Allocation**, it is recommended that you do not configure the logistics area to allow negative stock. This ensures that allocated stock is in fact physically present in the logistics area.

The allocation concept is independent of the negative stock settings.

○ **Expected Product Allocation** means that you can additionally allocate the stock which will be brought to the specific logistics area.

Allocation takes place during the warehouse processing of any logistics process. In an outbound process for example, which starts from an outbound delivery, the allocation will only take place once the system tries to find a logistics area for picking. In a task-based scenario, the system will allocate the goods as soon as the logistics area is proposed in the task.

The proposal of the logistics area in the task is dependent on the settings in the logistics model. The proposal takes place during one of the following:

- Task creation
- Task confirmation
- Manually on request

### Logistics use

The logistics use specifies the use of a logistics area within a logistics process as defined by the logistics model. A logistics use can be, for example, packing, receiving staging, storage, or production output. Using the logistics use, you can establish a link to a logistics model. The logistics area must have the same logistics use you specified in the corresponding logistics model.

### Restrictions

You can restrict what can be stored in a logistics area. You can set the system to only allow storage of products with certain characteristics. In addition, you can also restrict storage to particular products, logistics units, or storage groups.

### Replenishment and removal rules

For each inventory-managed logistics area, you can define replenishment and removal rules governing when a logistics area undergoes replenishment or removal. You can also determine the quantities replenished or removed.

For more information, see Replenishment and Removal.

If you want to use a logistics area in your logistics processes, you must activate it. If you want to prevent an active logistics area from being used in logistics processes, for example, for maintenance reasons, you must set the logistics area status to **Block**. Once you have blocked a logistics area, it is not available for any newly started logistics processes. However, you can still reverse partial confirmations of goods receipts and reconfirm them. Unplanned warehouse issues, scrapping, and inventory counts are also still possible.

### Storage Control Profiles

You can define a template containing predefined storage control parameters, which is provided by the storage control profile. In this case, the system simply copies all the storage control information that you have maintained in the storage control profile to the logistics area. The storage control profile enables you to update all logistics areas in a layout with the same storage control parameters. When you change the storage control profile, you need to update the information in the corresponding logistics area.
Interaction with Logistics Models

Location layouts are closely integrated with logistics models. The interaction between the location layout and logistics model enables you to automate your logistics processes in an efficient manner. The logistics model describes the complete logistics process that should be executed to fulfill inbound, outbound, and internal requests. The location layout together with the logistics model enables you to create logistics tasks with detailed logistics area information for the warehouse worker. A site can have two active logistics model for each logistics process, for example, one active logistics model for receiving goods with tasks or without tasks, one for shipping with tasks or without tasks, one for customer returns with tasks or without tasks and so on. If the active logistics model is with tasks, this can be a one-step or two-step model but you cannot have both of these active for the same process. For each active logistics model, you can define material flow rules to determine the search path through the location layout. For inbound and outbound processes you have to maintain generic material flow rules at the site. However, if you have a separate ship-to or ship-from location, you can also maintain detailed material flow rules here. The system always uses the rule of the location that is specified in the corresponding sales or purchase order. For internal replenishment and removal processes you can also maintain material flow rules on a lower level in the hierarchy. For example, for a production supply area, you can maintain a replenishment rule and a source determination rule. With the source determination rule, you specify from where the input products are taken to replenish the supply area. The same principle applies to the removal process. For each production output area, you can maintain a removal rule and a destination determination rule. With the destination determination rule, you define where the output products are transported to when being removed from the output area.

One-Step Inbound Logistics Model

Two-Step Inbound Logistics Model

The source and destination logistics use of a one and two-step inbound process model. The source logistics use of the first operation is always empty, because the inbound process always starts outside the site.

In the material flow, you can define basic and advanced rules for both source and destination determination. With the basic rules you can specify one source logistics area and one destination logistics area that serve as starting point for the source and destination determination. With the advanced rule definition, you can define simple and complex search sequences that can consider multiple logistics areas in different locations. In addition, you can define specific picking and put-away strategies for the source and destination logistics areas. For example, the source determination with the picking strategy Fixed Bin means that only a certain logistics area can be used for the defined...
logistics process. If you want to use a logistics area as a production area, you can also maintain a fixed supply and output area for the input and output products along with other resource details.

The key element for an interaction with a logistics model is the logistics use. With this, you can establish the link between a logistics model and location layout. To do so, you have to define the same logistics use in the logistics model, material flow, and the corresponding logistics area. In the logistics model, you maintain the logistics use in the operations. Here, you can define a source and destination logistics use, depending on the logistics process. When processing an inbound, outbound, or internal request, the system determines the location layout that has the same logistics use as defined in the logistics model. It then goes to the logistics area that is specified in the material flow rules and searches for all subordinate inventory-managed logistics areas that have the appropriate logistics use. The first logistics area that fulfills the picking and put-away rules appears as a proposal in the logistics task.

The picture below shows an example of the bin determination for a one-step inbound process. The destination logistics use in the logistics model is Storage. The material flow rules in the site represent the search instructions for the system. The system reads the material flow rules as follows: If the logistics use in the logistics model is Storage, search in the Storage Area for the next empty logistics area that is inventory-managed and has logistics use Storage. Since Bin Area 1 is empty, the proposal in the generated logistics task would be Bin Area 1.

Example of the search path for bin determination with a one-step inbound logistics model in a location layout.

For more information about the material flow rules, see Logistics Source and Destination Services.

**Logistics Areas and Resources**

If you want to use a resource in your production process, you must always specify a logistics area where the resource is located. You must also define where the input and output products need to be stored. The location layout enables you to define a supply and output area for a logistics area. A supply and output area must always be an inventory-managed logistics area. It can be the same logistics area where the resource is located or another logistics area.
### 2.1.2 Simple Location Layout Creation

#### Overview

The location and location layout concept enables you to design a detailed model of your company’s supply chain. The location represents an external view of your company that helps you to communicate with your business partner. The location layout on the other hand represents an internal view of your company’s structure. It allows for an integrated material flow for warehousing and production through a common layout. This layout is represented by a hierarchical structure of logistics areas. You can centrally maintain the layouts of the different sites and locations within your company. Together with the logistics model, you can control and optimize the storage and movements of products within your company.

The simplest location layout consists of a site with one logistics area with the Logistics Use, Storage. However, this simple location layout is not recommended because it cannot be easily enhanced to include multiple locations below the site at a later date. This is because the system only allows you to move a logistics area within one storage location and not from one storage location to another within your site. If you later need to change from this simplest location layout to a more complex location layout, the simple location layout must be set to obsolete and a new location layout created.

If a simple location layout is required, although the site can have the role Storage Location, the recommendation is that you create as a minimum, a location layout that includes a site with at least one (inventory-managed) location below it, and that this location has (at least) one logistics area with the Logistics Use, Storage assigned to it. Each logistics area ID must be unique within each site. This makes it easier to extend the hierarchy later if necessary.
Prerequisites

Before creating a location layout, the following prerequisites should be in place:

- **Site**
  When you activate a business residence in the *Organizational Management* work center, the system creates a site. You can create multiple locations for a site and in order to store products, at least one of these must be a storage location. For more information, see *Org Structures Quick Guide*.

- **Process Models for the Site**
  You can only have one process model active at any point in time in the system for each of your business processes and these are maintained at the site level in the *Logistics Models* view of the *Warehousing and Logistics Master Data* work center. Some examples of business processes modeled are the inbound, outbound, replenishment, and removal logistics processes. Others include the customer returns or return from supplier logistics processes. The process models are used to describe how the logistics processes should work and are template-based.
  The template that you select defines whether the process is a one step or a two step process, with or without tasks, and what sort of process it is (e.g. inbound, outbound). In the operations of the process model, you can specify for example, what type of logistics area you want to use for your process, and the type of operation and activities to be used in the process. You can specify for example, whether you want to use tasks for the confirmation of the logistics move, and that the system should look for a logistics area which has the *Logistics Use, Storage* assigned to it for the put-away. If you select the *Without Tasks* check box, you can also have one additional process model for each of these same processes active for the lean process.

- A process model must be consistent and released.

- For the inbound process, a *Destination Logistics Use of Storage* is required.

- For the internal process, a *Destination Logistics Use of Storage* is required.

- For a simple location layout, replenishment and removal are not required.

For more information, see *Logistics Models Quick Guide*  [page 153].

Process Flow

During the process of creating a location layout, you access the *Supply Chain Design Master Data* and the *Warehousing and Logistics Master Data* work centers. The process flow for creating a simple location layout consists of the following steps:

1. Create or edit a location.
2. Maintain the location layout.
3. Maintain the source and destination determination (SDD) rules for the inbound and outbound processes on the site level. (Use the *Source* and *Destination* tabs on the *Material Flow* tab.)

1. Create or Edit a Location

The location presents an external view of your company. You can either create a new location in a site or edit an existing location in a site. For more information, see *Create and Edit a Location* in the *Locations Quick Guide* [page 41].
2. Maintain the Location Layout

After creating your location, which should have the role *Inventory-Managed*, you can maintain the location layout. This is the internal view of your company. It allows you to structure your warehouse area. For more information, see [Create a Logistics Area in a Location Layout](page 55).

For a simple location layout, you do not usually need to maintain the following tabs:

- **Restrictions**
- **Resources**: Maintain this if you have production on site. If the *Inventory-Managed* check box for a logistics area has been checked, the system assigns a default *Fixed Supply Area* and a default *Fixed Output Area* for production. These are shown in the *Production Supply and Output Details* section and can be edited.
- **Material Flow Rules**
- **Replenishment and Removal Rules**: These are maintained on logistics area level.

An example of a simple location layout is shown below:

![Simple Location Layout Diagram]

The general details for the simple location layout in the example are shown below:

### Simple Location Layout

<table>
<thead>
<tr>
<th>General Tab</th>
<th>Field/Check Box</th>
<th>Entry/Selection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>Inventory-Managed</em></td>
<td>Yes, at least one logistics area</td>
</tr>
<tr>
<td></td>
<td><em>Blocked for Put-Away</em></td>
<td>Not Blocked</td>
</tr>
<tr>
<td></td>
<td><em>Allocation Type</em></td>
<td>Immediate Product Allocation</td>
</tr>
<tr>
<td></td>
<td><em>Logistics Use</em></td>
<td>Storage</td>
</tr>
<tr>
<td></td>
<td><em>Negative Stock Allowed</em></td>
<td>Determined by Company Financial Policy</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Replenishment and Removal Rules Tab</th>
<th>Entry/Selection</th>
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<tbody>
<tr>
<td></td>
<td>Not necessary</td>
</tr>
<tr>
<td></td>
<td>Not necessary</td>
</tr>
</tbody>
</table>
3. Maintain the Source and Destination Determination Rules for a Simple Location Layout

After maintaining the location layout, you can maintain the source and destination determination (SDD) rules for your inbound and outbound processes at the site (ship-to and ship-from location) level. In a simple layout, this is optional. The SDD rules for replenishment and removal are maintained on logistics area level. However, for a simple location layout, replenishment and removal are not required.

The supply area is proposed by the system in the simple location layout. The system proposes the ID of a logistics area with the Logistics Use, Storage. The system will also create a default SDD rule on the inventory-managed location level, if no specific rule is defined.

For more information, see Define the Material Flow Rules for the Logistics Area in Create a Logistics Area in a Location Layout [page 55].

See Also

Complex Location Layout Creation [page 15]

2.1.3 Complex Location Layout Creation

Overview

The location and location layout concept enables you to design a detailed model of your company’s supply chain. The location represents an external view of your company that helps you to communicate with your business partner. The location layout on the other hand represents an internal view of your company’s structure. It allows for an integrated material flow for warehousing and production through a common layout. This layout is represented by a hierarchical structure of logistics areas. You can centrally maintain the layouts of the different sites and locations within your company. Together with the logistics model, you can control and optimize the storage and movements of products within your company.

A location can have several roles simultaneously. For each storage location at your company’s site, you can create a location layout. The more complex location layouts are hierarchical structures consisting of a site with one or more locations below it, and for each of these locations, there can be one or more levels of logistics areas below. The location layout can be enhanced as necessary. Although the site can have the role Storage Location, the recommended option is that there must be at least one location below the site with the Role of Storage Location and at least one logistics area that is inventory-managed in order to be able to store products. This will make it easier to extend the hierarchy later. See the example below:
**Prerequisites**

**Site**

When you activate a business residence in the Organizational Management work center, the system creates a site. You can create multiple locations for a site and in order to store products, at least one of these must be a storage location. For more information, see Org Structure Quick Guide.

**Process Models for the Site**

You can only have one process model active at any point in time in the system for each of your business processes and these are maintained at the site level in the Logistics Models view of the Warehousing and Logistics Master Data work center. Some examples of business processes modeled are the inbound, outbound, replenishment, and removal logistics processes. Others include the customer returns or return from supplier logistics processes. The process models are used to describe how the logistics processes should work and are template-based.

The template that you select defines whether the process is a one step or a two step process, with or without tasks, and what sort of process it is (e.g. inbound, outbound). In the operations of the process model, you can specify for example, what type of logistics area you want to use for your process, and the type of operation and activities to be used in the process. You can specify for example, whether you want to use tasks for the confirmation of a logistics move, and that the system should look for a logistics area which has the Destination Logistics Use, Storage assigned to it for the put-away tasks and Source Logistics Use, Storage assigned to it for the picking tasks. If you select the **Without Tasks** check box, you can also have one additional process model for each of these same processes active for the lean process.

- A process model must be consistent and released.
- For the inbound process, a Destination Logistics Use of Storage is required.
- For the internal process, a Destination Logistics Use of Storage is required.

For more information, see Logistics Models Quick Guide [page 153].
**Process Flow**

During the process of creating a location layout, you access the Supply Chain Design Master Data and the Warehousing and Logistics Master Data work centers. The process flow for creating a complex location layout consists of the following steps:

1. Create or Edit a Location.
2. Maintain a Complex Location Layout.
3. Maintain Source and Destination Determination Rules:
   a. For Outbound Processes on the Site and on the Logistics Area Level (Material Flow).
   b. For Inbound Processes on the Site and on the Logistics Area Level (Material Flow).
   c. Maintain the Replenishment and Removal Rules on the Logistics Area Level (Automated Goods Movements), where relevant.
4. Automate the Replenishment and Removal Processes:
   a. Create a Replenishment or Removal Run.
   b. Schedule a Replenishment or Removal Run.

**1. Create or Edit a Location.**

The location presents an external view of your company. You can either create a new location in a site or edit an existing location in a site. For more information, see Create and Edit a Location in the Locations Quick Guide [page 41].

**2. Maintain a Complex Location Layout**

After creating your location, which should have the role **Inventory-Managed**, you can edit the location layout. A complex location layout is a multi-level layout. This is the internal view of your company. It allows you to structure your warehouse area. For more information, see Create a Logistics Area in a Location Layout [page 55]. An example of a complex multi-level location layout is shown below:
Warehouse Location Layout

In the example in this document, the logistics processes defined are a Two-Step Outbound (Standard), Two-Step Outbound (with LU), and a Two-Step Inbound process. There is production on site and therefore, Replenishment to Production and Removal from Production processes are also defined in the example. Resources have been assigned to the production logistics areas where necessary. The general details and restrictions for the complex location layout in the example are shown below.

Path: Select Site ➤ Click Edit Layout ➤ Outbound logistics area ➤ General tab ➤

The Outbound logistics area is used in step 2 of the outbound process, defined as loading the truck. In the first step you pick the products from the warehouse and put the products in the outbound area (confirmed with a warehouse task), in the second step you load the truck with the products from the outbound area (also with a warehouse task and a task confirmation). The general details and restrictions for the complex location layout in the example are shown below:

Two-Step Outbound Process (Standard)

Outbound Logistics Area

<table>
<thead>
<tr>
<th>General tab</th>
<th>Field/Check Box</th>
<th>Entry/Selection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Inventory-Managed</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Blocked for Put-Away</td>
<td>Not Blocked</td>
</tr>
<tr>
<td></td>
<td>Allocation Type</td>
<td>Immediate Product Allocation</td>
</tr>
<tr>
<td></td>
<td>Logistics Use</td>
<td>Shipping Staging</td>
</tr>
<tr>
<td></td>
<td>Negative Stock Allowed</td>
<td>Determined by Company Financial Policy</td>
</tr>
</tbody>
</table>

Path: Select Site ➤ click Edit Layout ➤ Inbound logistics area ➤ General tab or Restrictions tab ➤

The Inbound logistics area is used in step one of the inbound process, defined as unloading the products from the truck to the Inbound area. In the first step you unload the products from the truck to the inbound area of the warehouse (confirmed with a warehouse task), in the second step you put away the products from the inbound area to the storage areas in the warehouse (also with a warehouse task and a task confirmation).
Two-Step Inbound Process

Inbound Logistics Area

<table>
<thead>
<tr>
<th>General</th>
<th>Tab</th>
<th>Field/Check Box</th>
<th>Entry/Selection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Inventory-Managed</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Blocked for Put-Away</td>
<td>Not Blocked</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Allocation Type</td>
<td>Immediate Product Allocation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Logistics Use</td>
<td>Receiving Staging</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Negative Stock Allowed</td>
<td>Determined by Company Financial Policy</td>
</tr>
</tbody>
</table>

Restrictions Tab

Allow Logistics Units and Storage Groups Tab Management of Logistics Units Store Products With or Without Logistics Units

Path: Select Site ➤ click Edit Layout ➤ Bin_01 ➤ General tab or Restrictions tab

Bin_01

<table>
<thead>
<tr>
<th>General</th>
<th>Tab</th>
<th>Field/Check Box</th>
<th>Entry/Selection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Inventory-Managed</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Blocked for Put-Away</td>
<td>Not Blocked</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Allocation Type</td>
<td>Immediate Product Allocation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Logistics Use</td>
<td>Storage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Negative Stock Allowed</td>
<td>Determined by Company Financial Policy</td>
</tr>
</tbody>
</table>

Restrictions Tab

Allow Logistics Units and Storage Groups Tab Management of Logistics Units Only Store Products With Logistics Units
Production Location Layout

The general details, restrictions, and resources for the complex location layout in the example are shown below.

Path: Select Site > click Edit Layout > Production or Large_Parts > General tab

Production Logistics Area or Large_Parts Logistics Area

<table>
<thead>
<tr>
<th>General Tab</th>
<th>Field/Check Box</th>
<th>Entry/Selection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Inventory-Managed</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Blocked for Put-Away</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Allocation Type</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Logistics Use</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Negative Stock Allowed</td>
<td>Determined by Company Financial Policy</td>
</tr>
</tbody>
</table>

Both the Production logistics area and the Large_Parts logistics area in the example, have the same entries as shown above.

Path: Select Site > click Edit Layout > Large_Parts > Restrictions tab or Resources tab

Large_Parts Logistics Area

<table>
<thead>
<tr>
<th>Restrictions Tab</th>
<th>Field/Check Box</th>
<th>Entry/Selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allow Logistics Units and Storage Groups Tab</td>
<td>Management of Logistics Units</td>
<td>N/A</td>
</tr>
<tr>
<td>Resources Tab</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resource ID</td>
<td></td>
<td>Prod_Large_Parts</td>
</tr>
<tr>
<td>Resource Description</td>
<td></td>
<td>Machine</td>
</tr>
<tr>
<td>Resource Type</td>
<td></td>
<td>Equipment Resource</td>
</tr>
</tbody>
</table>

- Resources must be assigned for production in the Resources tab of the relevant logistics area.
- The resource must first be created for the site and then activated before you can add it to the Resources tab.
- If a logistics area is inventory-managed, the system assigns a default Fixed Supply Area ID and a default Fixed Output Area ID for production. If you have assigned a resource to the logistics area, you can change these proposed logistics areas.
  To add a resource, click Add Row. A row is added to the Assigned Resources table. In the Production and Supply Output Details section, you can edit the proposed Fixed Supply Area ID and Fixed Output Area ID details relating to production.

For more information, see Create a Resource [page 69].
3a. Maintain Source and Destination Determination Rules for the Outbound Process on the Site and Logistics Area Levels

After maintaining the location layout, you can maintain the source and destination determination (SDD) rules for your outbound process (material flow) at the site (ship-from location) level and then complete them by maintaining the outbound material flow as required at each logistics area. With these settings you can specify in which areas and in which sequence, the system should search for a logistics area that can then be proposed in the task confirmation of the outbound process. Additionally, you can determine other search areas for products, storage groups, restricted stock, and logistics units.

In this example complex location layout, the processes are defined as follows:

Two-Step Outbound
- Step 1: Warehouse to outbound area:
  Pick products from the warehouse and put them in the outbound area (done with tasks and task confirmations)
- Step 2: Loading the truck:
  Load the truck with the products from the outbound area (done with tasks and task confirmations)

For more information, see **Define the Material Flow Rules for the Logistics Area** in Create a Logistics Area in a Location Layout [page 55].

You can also use the instructions given for the Material Flow Rules tab entries made at logistics area level to assign the material flow rules at the site level.

SDD Rules for the Outbound Process

The material flow details for the site for step 2 of the outbound process, defined as loading the truck, are shown. In the first step you pick the products from the warehouse and put the products in the outbound area (confirmed with a warehouse task), in the second step you load the truck with the products from the outbound area (also with a warehouse task and a task confirmation).

Path:  
Select Site ➤ click Edit ➤ Material Flow tab ➤ Advanced Rule ➤ Source tab for outbound process

Two-Step Outbound Process (Standard)
If a restriction is applied to a logistics area, you can enter a sequence determination for the source determination rule.

Path: Select Site > click Edit > Material Flow tab > Advanced Rule > Source tab for outbound process

Site

<table>
<thead>
<tr>
<th>Material Flow Tab &gt; Advanced Rule &gt; Source Tab</th>
<th>Entry/Selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source Determination Rules</td>
<td></td>
</tr>
<tr>
<td>Sequence ID</td>
<td>OUTBOUND_LU</td>
</tr>
<tr>
<td>Logistics Area Use</td>
<td>Storage</td>
</tr>
<tr>
<td>Assigned Site/Storage Locations and Logistics Areas</td>
<td></td>
</tr>
<tr>
<td>Line Number</td>
<td>e.g. 10</td>
</tr>
<tr>
<td>Logistics Area</td>
<td>Right_Side, Left_Side</td>
</tr>
<tr>
<td>Location</td>
<td>N/A</td>
</tr>
<tr>
<td>Picking Strategy</td>
<td>Minimum Movements</td>
</tr>
</tbody>
</table>

Two-Step Outbound Process (with LU)
To edit the order of multiple search sequences with the same logistics area use, click [Sequence Determination]. If a search sequence determination is entered, the system will use the first Search Sequence ID in the table in the order from top to bottom, to check in sequence for a source logistics area. In the example below, there is a restriction (logistics unit), so the system will use the first Search Sequence ID (Outbound_LU) but if there were no restrictions, the system would use the second Search Sequence ID (Outbound_Standard).

If there is only one logistics area use of the same type (for example, one row with Logistics Area Use: Storage), the sequence determination is not needed. Only use the Sequence Determination if there are multiple sequences with the same logistics area use in the table.

<table>
<thead>
<tr>
<th>Search Sequence ID</th>
<th>Logistics Unit ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outbound_LU</td>
<td>Std_Pallet</td>
</tr>
<tr>
<td>Outbound_Standard</td>
<td></td>
</tr>
</tbody>
</table>

Complete the SDD Rules for the Outbound Process for the Warehouse Logistics Areas

The material flow details for the complex location layout in the example are shown below. This is for step 1 of the outbound process, defined as Warehouse to Outbound logistics area. In the first step you pick the products from the warehouse and put the products in the outbound area (confirmed with a warehouse task), in the second step you load the truck with the products from the outbound area (also with a warehouse task and a task confirmation).

Path: [Select Site] [click Edit Layout] [Warehouse] [Material Flow Rules tab] [Create] [Advanced Rule or Basic Rule]

Two-Step Outbound Process (Standard)
Warehouse Logistics Area

<table>
<thead>
<tr>
<th>Material Flow Rules</th>
<th>Tab</th>
<th>Field/Check Box</th>
<th>Entry/Selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create</td>
<td>Advanced Rule</td>
<td>Sequence ID</td>
<td>Enter meaningful ID (Outbound)</td>
</tr>
<tr>
<td>Source</td>
<td>Tab</td>
<td>Logistics Use</td>
<td>Shipping Staging</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Logistics Area ID</td>
<td>Enter meaningful ID e.g. Outbound</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pick Strategy</td>
<td>FIFO</td>
</tr>
</tbody>
</table>

3b. Maintain Source and Destination Determination Rules for the Inbound Process on the Site and Logistics Area Levels

After maintaining the location layout, you can maintain the source and destination determination (SDD) rules for your inbound process (material flow) at the site (ship-to location) level and then complete them by maintaining the inbound material flow as required at each logistics area. With these settings you can specify in which areas and in which sequence, the system should search for a logistics area that can then be proposed in the task confirmation of the inbound process. Additionally, you can determine other search areas for products, storage groups, restricted stock, and logistics units.

In this example complex location layout, the processes are defined as follows:

- Two-Step Inbound
  - Step 1: Unloading the truck to the inbound area
  - Unload the products from the truck to the inbound area (done with tasks and task confirmations)
  - Step 2: Inbound to warehouse:
  - Put-away of the products from the inbound area to the warehouse (done with tasks and task confirmations)

For more information, see Define the Material Flow Rules for the Logistics Area in Create a Logistics Area in a Location Layout [page 55].

You can also use the instructions given for the Material Flow Rules tab entries made at logistics area level to assign the material flow rules at the site level.

SDD Rules for the Inbound Process

The material flow details for the site for step 1 of the inbound process, defined as unloading the products from the truck to the inbound area, are shown. In the first step you unload the products from the truck to the inbound area of the warehouse (confirmed with a warehouse task), in the second step you put away the products from the inbound area to the storage areas in the warehouse (also with a warehouse task and a task confirmation).

Path: Select Site ➔ click Edit ➔ Material Flow tab ➔ Advanced Rule ➔ Destination tab for inbound process ➔
Two-Step Inbound Process

Inbound Logistics Area

<table>
<thead>
<tr>
<th>Material Flow Tab</th>
<th>Advanced Rule Tab</th>
<th>Destination Tab</th>
<th>Entry/Selection</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Destination Determination Rules</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sequence ID</td>
<td>INBOUND</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Logistics Area Use</td>
<td>Receiving Staging</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assigned Site/Storage Locations and Logistics Areas</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Line Number</td>
<td>e.g. 10, 20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Logistics Area</td>
<td>Inbound</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Put-Away Strategy</td>
<td>First Found</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Complete the SDD Rules for the Inbound Process for the Warehouse Logistics Areas

The material flow details for the complex layout in the example are shown below. This is for step 2 of the inbound process, defined as Inbound to Warehouse. In the first step you unload the products from the truck to the inbound area of the warehouse (confirmed with a warehouse task), in the second step you put away the products from the inbound area to the storage areas in the warehouse (also with a warehouse task and a task confirmation).

Path:  Select Site  click Edit Layout  Inbound  Material Flow Rules tab  Create  Advanced Rule
Two-Step Inbound Process

Inbound Logistics Area

<table>
<thead>
<tr>
<th>Material Flow Rules</th>
<th>Source</th>
<th>Destination</th>
<th>Logistics Use</th>
<th>Put-Away Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tab &gt; Create &gt; Advanced Rule</td>
<td>Tab</td>
<td>Tab</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Field/Check Box</td>
<td>Source Logistics Area</td>
<td>Sequence ID</td>
<td>Entry/Selection</td>
<td>N/A</td>
</tr>
<tr>
<td>Entry/Selection</td>
<td></td>
<td>Logistics Use</td>
<td>Storage</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Logistics Area ID</td>
<td>Warehouse</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Put-Away Strategy</td>
<td>First Found</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Path: Select Site ➔ click Edit Layout ➔ Bin_01 ➔ Resources tab ➔

The following table (Bin_01) is relevant for production logistics areas or storage logistics areas which have resources assigned to them only.

Bin_01

<table>
<thead>
<tr>
<th>Resources</th>
<th>Production Supply and Output Details</th>
<th>Field/Check Box</th>
<th>Entry/Selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tab</td>
<td>Section</td>
<td>Fixed Supply Area ID</td>
<td>Bin_01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fixed Output Area ID</td>
<td>Bin_01</td>
</tr>
</tbody>
</table>

SDD Rules for Production Logistics Area and Large Parts Logistics Area

Path: Select Site ➔ click Edit Layout ➔ Production and Large_Parts ➔ Resources tab or Material Flow Rules tab ➔ Create ➔ Basic Rule ➔

Production Logistics Area and Large_Parts Logistics Area

<table>
<thead>
<tr>
<th>Resources</th>
<th>Production Supply and Output Details</th>
<th>Field/Check Box</th>
<th>Entry/Selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tab</td>
<td>Section</td>
<td>Fixed Supply Area ID</td>
<td>Prod_Supply_Area</td>
</tr>
</tbody>
</table>
3c. Maintain the Replenishment and Removal Rules on the Logistics Area Level

After maintaining the source and destination determination (SDD) rules for your inbound and outbound processes at the site and logistics area levels, you can maintain where relevant, the replenishment and removal rules on logistics area level (automated goods movements). In this example complex location layout, the replenishment and removal processes are defined as follows:

- **Replenishment to Production:**
  - Replenishment from Bin 02b to Small Parts for small parts production
  - Replenishment from Bin 02 to Prod. Supply Area for large parts production
- **Removal from Production:**
  - From Small Parts to Bin 02
  - From Prod. Output Area to Bin 02

For more information, see **Define the Replenishment and Removal Rules for the Logistics Area** in **Create a Logistics Area in a Location Layout** [page 55].

---

**Replenishment to Production Logistics Areas**

[Diagram showing the replenishment process]

**Prod_Supply_Area Logistics Area or Small_Parts Logistics Area** (automated goods movements)

**Path:**  
Select Site ➔ click Edit Layout ➔ Prod_Supply_Area or Small_Parts ➔ Replenishment and Removal Rules tab
For replenishment to production supply, you require a source logistics area (Bin 02 or Bin 02b in this example, depending on the specific process) and this is entered as a **Basic Rule** in the **Material Flow Details** tab of the **Material Flow Rules** tab.

**Prod_Supply_Area Logistics Area or Small_Parts Logistics Area**

<table>
<thead>
<tr>
<th>Replenishment and Removal Rules Tab</th>
<th>Field/Check Box</th>
<th>Entry/Selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replenishment Tab</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Default Rule</strong></td>
<td><strong>Replenishment Type</strong></td>
<td>Demand Based</td>
</tr>
<tr>
<td></td>
<td><strong>Demand- Based Method</strong></td>
<td>As Late As Possible</td>
</tr>
<tr>
<td></td>
<td><strong>Threshold</strong></td>
<td>Enter quantity and units (e.g. 100 ea.)</td>
</tr>
<tr>
<td></td>
<td><strong>Time Horizon</strong></td>
<td>Enter the interval for the demand forecast. For example, 7 days. This means that if there is a demand that will reduce the quantity in the bin to less than 100 ea. in the next 7 days, trigger the replenishment.</td>
</tr>
<tr>
<td></td>
<td><strong>Replenishment Quantity Code</strong></td>
<td>Specify a constant quantity to be replenished or specify a target inventory level to be maintained.</td>
</tr>
<tr>
<td></td>
<td><strong>Constant Replenishment Quantity</strong></td>
<td>Enter a quantity if you selected Constant Quantity code above (e.g. 130 ea.)</td>
</tr>
<tr>
<td></td>
<td><strong>Storage Group Based Rules</strong></td>
<td>As necessary</td>
</tr>
<tr>
<td></td>
<td><strong>Product Based Rules</strong></td>
<td>As necessary</td>
</tr>
</tbody>
</table>

**Path:** [Select Site] [click Edit Layout] [Prod_Supply_Area or Small_Parts Resources tab or Material Flow Rules tab] [Create] [Basic Rule]

**Prod_Supply_Area Logistics Area or Small_Parts Logistics Area**

<table>
<thead>
<tr>
<th>Resources Tab</th>
<th>Production Supply and Output Details Section</th>
<th>Fixed Supply Area ID</th>
<th>Prod_Supply_Area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Fixed Output Area ID</strong></td>
<td>Prod_Output_Area</td>
<td></td>
</tr>
</tbody>
</table>

**Material Flow Rules Tab > Create > Basic Rule**

<table>
<thead>
<tr>
<th>Material Flow Details Tab</th>
<th>Source Logistics Area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>For Prod_Supply_Area: Bin 02</td>
</tr>
<tr>
<td></td>
<td>For Small_Parts: Bin 02b</td>
</tr>
</tbody>
</table>

**Removal from Production Logistics Areas**
Removal from Production

**Prod_Output_Area Logistics Area or Small_Parts Logistics Area** (automated goods movements)

**Path:** Select Site > click Edit Layout > Prod_Output_Area or Small_Parts > Replenishment and Removal Rules tab

For removal from production output, you require a destination logistics area (Bin 02, in the example) and this is entered as an **Advanced Rule** in the **Destination** tab of the **Material Flow Rules** tab.

---

### Prod_Output_Area Logistics Area or Small_Parts

<table>
<thead>
<tr>
<th>Replenishment and Removal Rules tab</th>
<th>Field/Check Box</th>
<th>Entry/Selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Removal Tab (<strong>Default Rule</strong>)</td>
<td>Threshold</td>
<td>100 ea</td>
</tr>
<tr>
<td></td>
<td>Target Inventory Quantity</td>
<td>0 ea</td>
</tr>
<tr>
<td></td>
<td>Storage Group Based Rules</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Product Based Rules</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Path:** Select Site > click Edit Layout > Prod_Output_Area or Small_Parts > Resources tab or Material Flow Rules tab > Create > Advanced Rule

---

### Prod_Output_Area Logistics Area or Small_Parts

<table>
<thead>
<tr>
<th>Resources Tab</th>
<th>Production Supply and Output Details Section</th>
<th>Fixed Supply Area ID</th>
<th>Prod_Supply_Area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fixed Output Area ID</td>
<td>Prod_Output_Area</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Material Flow Rules</th>
<th>Tab</th>
<th>Create</th>
<th>Advanced Rule</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Destination Tab</th>
<th>Sequence ID</th>
<th>Enter meaningful ID (REMOVE_LGE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logistics Use</td>
<td>Storage</td>
<td></td>
</tr>
<tr>
<td>Line number</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>
4a. Automate the Replenishment and Removal Processes: Create a Replenishment or Removal Run

After setting up your master data and material flow rules, you can automate the replenishment or removal processes. This is done in the Internal Logistics work center. For more information, see Create a Replenishment or Removal Run in the Quick Guide for Automated Actions View (in Internal Logistics).

4b. Automate the Replenishment and Removal Process: Schedule a Replenishment or Removal Run

Once you have created your replenishment or a removal run, you can then schedule the run for execution on a specific date and time in the future, for recurrence, or for after a job. A run has to be active for the system to execute it. You can use the same procedure to schedule a replenishment run or a removal run. For more information, see Schedule a Replenishment or Removal Run in the Quick Guide for Automated Actions View (in Internal Logistics).

You can also trigger the replenishment or removal run manually.

The replenishment or removal is triggered by the settings of the inventory-managed logistics area (for example, remove the products from the specified logistics area if it contains more than 100 pieces). If the replenishment or removal is triggered, the system checks in the process model for the logistics use and then checks the SDD rules for source or destination until it finds the correct usage in the location layout, which is maintained in the logistics area. In the SDD rules, it is the source area or destination area which will be used for the replenishment or removal respectively. Depending on the search strategy, the system will propose one logistics area in the replenishment task (depending on there being enough stock available) or removal task respectively. For more information, see Define the Material Flow Rules for the Logistics Area in Create a Logistics Area in a Location Layout [page 55].

See Also

Simple Location Layout Creation [page 12]

2.1.4 Ship-From Determination and Shipment Scheduling for Customer Demand

Overview

As supply planner, you can use ship-from determination and shipment scheduling for customer demand to determine the following:

- A site or supplier from which the product is delivered to the customer
- The date when the product must be available to ship (execution start date)
- The date on which the product is shipped to the customer (shipment date)
- The date on which the product arrives at the customer site (delivery date)
This information is used by planning, production, and logistics to ensure the customer order is fulfilled on time. Ship-from determination is triggered when a customer demand, such as a sales order, service order, project stock order, or sales quote is entered in the system. It determines the ship-from site or supplier for the products requested and is a prerequisite, for example, for planning runs and availability checks. Ship-from determination uses several sources of information (transport lanes, purchasing contracts, and list prices) to determine the site or supplier from which the product is delivered.

For stock transfer orders that you use to ship goods from one site of your company to another, the system uses the information about the sending and receiving sites that you enter to find the relevant transport lane, which is required for scheduling. As a prerequisite, you must have created a transport lane pointing from a ship-from site to a ship-to-site of the same company.

Master Data for Ship-From Determination

Different master data is required depending on whether you want to deliver the product requested by your customer from your own ship-from site or have it delivered to the customer by an external supplier (third-party order processing).

Shipment from Your Own Site

To find a ship-from site to deliver the product to the customer, the system uses the following data created in the Supply Chain Design Master Data work center:

- **Transport zone**
  Transport zones are geographical regions. You can use them to group customers according to their ship-to addresses, or according to their customer IDs. You can define transport zones for the following:
  - A single country
  - Several countries
  - One or more regions within a country
  - Ranges of postal codes within a country
  - Combinations of the above
  - A single customer
  - Several customers

  When you define a country, a region, and a postal code range in a transport zone, this transport zone is valid for all ship-to addresses matching either the country, or the country and region, or the country and postal code range.

  For more information on this task, see Transport Zones Quick Guide [page 79].

- **Transport lane**
  In transport lanes, you define connections as follows:
  - Between ship-from sites and transport zones
  - Between ship-from sites and ship-to sites of the same company (only relevant for intracompany stock transfer scenarios)

  You can define transport lanes for all products, or specify a set of products or product categories for which they may be used. Transport lanes also contain information about the shipping duration, which is required for shipment scheduling. Note that you can define a default shipping duration in business configuration, which is then used as the default value when you create a transport lane. You do this in the Supply Chain Setup Management activity group of the Activity List view in the Business Configuration work center.
In addition, you can prioritize transport lanes. You may want to do this if there are multiple ship-from sites available to deliver products to the same transport zone. Note that you always maintain transport lane priorities for the combination of lane and product. This means that a transport lane can have a different priority depending on the product that is shipped using the lane.
For more information on how to create and edit transport lanes, see Transport Lanes Quick Guide [page 82].

**Shipment by an External Supplier**

To find an external supplier to deliver the product to the customer, a purchasing contract or list price must have been created for the product in the *Sourcing and Contracting* work center or in the *Product Portfolio* work center respectively. When ship-from determination finds the purchasing contract or list price, the system creates a purchase order that you can send to the supplier. If the product can also be shipped from your own site but you do not want this site to be the default ship-from site, you can exclude the relevant ship-from site from automatic ship-from determination for this product. To do so, you select the *Disable Automatic Ship-From Determination* checkbox on the *Availability Confirmation* tab of the *Materials* view in the *Product Development* work center.
For more information on the direct shipment of products by an external supplier, see Third-Party Order Processing.

**Ship-From Determination for Sales Orders and Sales Quotes**

When determining sources from which to deliver products for sales orders and sales quotes, the system first finds all the transport zones in your company whose country, country and region, or country and postal code range matches the ship-to address information (country, region, postal code) given in the sales order or sales quote. If the system does not find anything among the transport zones you created, it uses the global transport zone that is delivered with the solution.

Note that the system does not check if a postal code given in the ship-to address matches a region in a transport zone or if a region given in a ship-to address matches a postal code range in a transport zone.

Once matching transport zones have been found, the system looks for sources from which to deliver the product requested by the customer. Since internal sources, that is ship-from sites of the same company, always take priority over external sources, that is suppliers, the system determines the following types of sources in the following sequence:

1. **Transport lanes**
   Based on the transport zone, the system finds possible transport lanes for the product. If it finds more than one matching transport zone, it uses all of them to find transport lanes and then takes the transport lane with the highest priority. If it finds more than one transport zone but no priorities have been maintained for the transport lanes, it uses the one that is more specific. This means that a lane that is to be used to transport the product requested in the order would be preferred over a lane for all products. If no priorities are maintained and none of the transport lanes is more specific than the others, the system selects any of the transport lanes found.
   The information from the transport zone and the transport lane selected determines the ship-from site. Note that the system always checks whether the ship-from site belongs to the seller company before it uses it as a source to deliver a product for a sales order or sales quote.
   Transport lanes also contain information on the shipping duration, which is necessary for scheduling the order.

2. **Purchasing contracts**
   If the system does not find any ship-from sites, it searches for external sources to cover the demand. The system checks all purchasing contracts that are valid for the product to be sold. If more than one contract is available, the system takes the contract that is defined as the fixed source of supply in the *Source Determination* view of the *Sourcing and Contracting* work center in purchasing and determines a supplier.
This results in a third-party order processing scenario where your company sells products directly from a supplier to a customer.

3. List prices
   If the system does not find any suitable purchasing contracts, it searches for list prices. If more than one list price is available, the system takes the list price that is defined as the fixed source of supply in the Source Determination view of the Sourcing and Contracting work center in purchasing and determines a supplier. This also results in a third-party order processing scenario.

Ship-From Determination for Service Orders

In pick-up scenarios where a service performer picks up the spare parts from the seller party directly, the party information about the service performer contains the address information that the system uses to find a transport zone and available transport lanes. Note that if no service performer address is maintained, the system uses the address of the ship-to party entered in the service order. The system then takes the transport lane with the highest priority and determines a ship-from site, that is, the pick-up site. Note that the system always checks if a logistics area of the type Storage Area with logistics use Movable Storage has been defined for the pick-up site before it uses it for a service order.

In pre-delivery scenarios where the spare parts are delivered to the service requester, the system uses the address information of the ship-to party given in the service order to determine a matching transport zone. Based on the transport zone and transport lane information, it finds a ship-from site in the same way as described for sales orders and sales quotes.

Ship-From Determination for Stock Transfer Orders

In intracompany stock transfer scenarios where you transport goods between the stocks of two sites belonging to the same company, you must enter information about the sending site and the receiving site in the stock transfer order. This means that the system does not need to find a ship-from site. It uses the information you entered to find the transport lane. In this way, the shipping duration required for shipment scheduling is determined.

Ship-From Determination for Project Stock Orders

In the Consumption at Site scenario where the project consumes the materials from a particular site, the system takes the ship-from site from the project stock order. In the absence of a ship-from site, the system uses the address information of the ship-to party given in the project stock order to determine a matching transport zone, and finds a ship-from site based on the transport zone and transport lane information. The system always checks if a logistics area of logistics use Project Stock has been defined for the ship-from site before it uses it for a project stock order.

In the Pick-up scenario where a service performer carries the material to the site of consumption, the party information about the person responsible contains the recipient address information that the system uses to find a transport zone and available transport lanes. If no recipient address is maintained, the system uses the address of the ship-to party entered in the project stock order. The system then takes the transport lane with the highest priority and determines a ship-from site, that is, the pick-up site. The system always checks if a logistics area of logistics use Movable Storage has been defined for the pick-up site before it uses it for a project stock order.

In the Pre-delivery scenario where the materials are pre-delivered to the site of consumption, the system uses the address information of the ship-to party given in the project stock order to determine a matching transport zone. Based on the transport zone and transport lane information, it finds a ship-from site in the same way as described for sales orders and sales quotes.
For any customer, transport lanes comprising of customer-specific transport zones take priority over other transport lanes. For example, when the system finds a transport lane with a customer-specific transport zone, that transport lane is picked up by sourcing, and not the transport lane with a transport zone based on the customer’s country, region, or postal code.

The following table gives an overview of the possible results of ship-from determination for customer demand:

<table>
<thead>
<tr>
<th>Ship-From Determination Results</th>
<th>Sales Orders</th>
<th>Sales Quotes</th>
<th>Service Orders</th>
<th>Stock Transfer Orders</th>
<th>Project Stock Orders</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Transport lanes leading to ship-from sites (or the ship-to location)</td>
<td>1. Transport lanes leading to ship-from sites (or the ship-to location)</td>
<td>* Pick-up scenario: Transport lanes leading to pick-up sites (using the transport zone of the service performer)</td>
<td>Transport lanes required for scheduling (using the ship-to site and ship-from site information)</td>
<td>* Consumption at Site scenario: Transport lanes leading to ship-from sites (or the ship-to location)</td>
</tr>
<tr>
<td></td>
<td>2. Purchasing contracts</td>
<td>2. Purchasing contracts</td>
<td>* Pre-delivery scenario: Transport lanes leading to ship-from sites (or the ship-to location)</td>
<td></td>
<td>* Pick-up scenario: Transport lanes leading to pick-up sites (using the transport zone of the person responsible)</td>
</tr>
<tr>
<td></td>
<td>3. List prices</td>
<td>3. List prices</td>
<td></td>
<td></td>
<td>* Pre-delivery scenario: Transport lanes leading to ship-from sites (or the ship-to location)</td>
</tr>
</tbody>
</table>

**Ship-From Determination for Complete Delivery Sales Orders or Service Orders**

If the **Complete Delivery** checkbox is selected for a sales order or service order, the source of supply must be the same for all order items in the same delivery group. The system therefore determines all alternative sources of supply for each item of a delivery group to find the one source that is valid for all items. If one of the items cannot be delivered from the same source as the other items, a warning message is displayed on the order screen and the availability check cannot be performed.

If the source is changed manually for one item on order screen, ship-from determination is repeated for all items to verify that they can all be delivered from the selected source. If this is not possible, a warning message is displayed and the confirmations are canceled.

**Manual Ship-From Selection**

If you want to use a different ship-from site or supplier for a customer demand than the one determined by the system, you can select any of the alternative sources displayed in the **Sales Order Logistics Details** screen before you release the customer demand. You can access the screen from the **Customer Demand** view of the **Outbound Logistics Control** work center or the **Supply Planning** work center.
Examples for Ship-From Determination

The following examples illustrate how you create transport zones and transport lanes in the system to meet your company’s requirements and how the system finds the site from which to ship your goods to your customers in a sell-from stock scenario.

Example A

Your company has customers all over the United States and a smaller number of customers in Canada. You have two warehouses in the United States (Texas and Massachusetts) from which you ship goods and one ship-from site in Canada (British Columbia). For this reason, you have created the following transport zones for your company:

<table>
<thead>
<tr>
<th>Transport Zone</th>
<th>Regions</th>
<th>Postal Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>United States</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Canada</td>
<td></td>
</tr>
</tbody>
</table>

To be able to ship goods from your ship-from sites to your customers in the different transport zones, you have created the following transport lanes between your ship-from sites and transport zones:

<table>
<thead>
<tr>
<th>Transport Lane</th>
<th>Ship-From Site</th>
<th>Transport Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>Texas, US</td>
<td>A (United States, all regions)</td>
</tr>
<tr>
<td>002</td>
<td>Massachusetts, US</td>
<td>A (United States, all regions)</td>
</tr>
<tr>
<td>003</td>
<td>British Columbia, Canada</td>
<td>B (Canada)</td>
</tr>
</tbody>
</table>

If your company receives a sales order with the ship-to party address “New York NY 10001, United States”, the system finds transport zone A as it is valid for all ship-to addresses in the United States. Transport zone A, in turn, leads to transport lanes 001 and 002, that is, to your ship-from sites in Texas and Massachusetts. Since you have not prioritized any of the two lanes and none of them is more specific, the system selects any of the two. Note that if you do not want to leave it entirely up to the system which ship-from site is selected, you would need to prioritize one of the two transport lanes.

Example B

Your company’s customers in New York are becoming more important and you want to make sure that they receive the products they order as quickly as possible. For this reason, you create transport zone C for the New York region and transport lane 004 between your ship-from site in Massachusetts and transport zone C. To ensure that this transport lane is always used to ship goods to your customers in New York, you prioritize this lane over the two lanes for all US regions.

The transport zones in your system are now as follows:

<table>
<thead>
<tr>
<th>Transport Zone</th>
<th>Regions</th>
<th>Postal Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>United States</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Canada</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>United States</td>
<td>New York</td>
</tr>
</tbody>
</table>
If your company now receives another sales order with the ship-to party address “New York NY 10001, United States”, the system finds transport zone A since it is valid for all ship-to addresses in the United States and transport zone C since the ship-to address matches the region defined for this zone. Again, transport zone A leads to transport lanes 001 and 002 and transport zone C leads to transport lane 004. Since you prioritized transport lane 004, the system selects this transport lane. This is illustrated in the following table:

<table>
<thead>
<tr>
<th>Transport Lane</th>
<th>Ship-From Site</th>
<th>Transport Zone</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>Texas, US</td>
<td>A (United States, all regions)</td>
<td></td>
</tr>
<tr>
<td>002</td>
<td>Massachusetts, US</td>
<td>A (United States, all regions)</td>
<td></td>
</tr>
<tr>
<td>004</td>
<td>Massachusetts, US</td>
<td>C (United States, New York)</td>
<td>1</td>
</tr>
</tbody>
</table>

**Example C**

Several of your company’s new customers are located in Alaska. Since Alaska is so close to Canada, you want to be able to use your Canadian ship-from site to ship goods to these customers. Therefore, you add the US postal code range of Alaska to your existing transport zone B for Canada and prioritize transport lane 003 over the two lanes for all US regions.

The transport zones in your system are now as follows:

<table>
<thead>
<tr>
<th>Transport Zone</th>
<th>Regions</th>
<th>Postal Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>United States</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Canada</td>
<td>99500-99950</td>
</tr>
<tr>
<td>C</td>
<td>United States</td>
<td>New York</td>
</tr>
</tbody>
</table>

If your company receives a sales order with ship-to address “Anchorage, AK 99518, United States”, the system finds transport zone A since it is valid for all ship-to addresses in the United States and transport zone B since the postal code of the ship-to party address matches the US postal code range defined for this zone. Transport zone A leads to transport lanes 001 and 002 and transport zone B leads to transport lane 003, that is to your ship from site in Canada. Since you prioritized transport lane 003, the system selects this lane. This is illustrated in the following table:

<table>
<thead>
<tr>
<th>Transport Lane</th>
<th>Ship-From Site</th>
<th>Transport Zone</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>Texas, US</td>
<td>A (United States, all regions)</td>
<td></td>
</tr>
<tr>
<td>002</td>
<td>Massachusetts, US</td>
<td>A (United States, all regions)</td>
<td></td>
</tr>
<tr>
<td>003</td>
<td>British Columbia, Canada</td>
<td>B (Canada)</td>
<td>1</td>
</tr>
</tbody>
</table>

**Shipment Scheduling**

Following ship-from determination, the customer demand must be scheduled. Starting from the requested delivery date in the sales order, sales quote, service order, or stock transfer order, backward scheduling determines the following dates:

- The requested shipment date, based on the shipment duration maintained in the transport lane
  This is the date when the product must be shipped to guarantee on-time delivery.
- The requested execution start date, based on the goods issue processing time maintained in the product master data
This is the date when the products must be available from production or procurement so that the logistics process can begin.

If you only schedule the order and do not want to check the demand against your supply, the system sets the requested delivery date as the confirmed delivery date, that is the date when the products will be delivered to the customer. For more information, see Availability Checking Based on Scheduling.

If you want to check the demand against your supply, a product availability check is performed after backward scheduling. It checks if the requested execution start date from backward scheduling can be confirmed. The check is based on the availability check scope determined in the product master data. For more information, see Availability Checks.

Note that if ship-from determination found a supplier from which the product is to be delivered (third-party order processing scenario), the system takes the supplier lead time (from the purchasing contract or from the product master if you do not have a purchasing contract with your supplier) into account to determine the order date. Since the system does not know the goods issue processing time, the requested execution start date is the same as the order date. Based on the confirmed execution start date, which is the same as the requested execution start date, the system determines the confirmed delivery date. For more information, see Availability Checking in Third-Party Order Processing Scenarios.

**Example for Shipment Scheduling**

Your company receives a sales order requesting 100 units of boilers to be delivered on October 10, 2009. After the sales order is entered into the system, ship-from determination finds from which of your sites the order will be delivered. Starting from the requested delivery date (October 10, 2009), the system runs backward scheduling to find the requested execution start date when the products have to be available from your production or purchasing department to deliver on time. The requested execution start date generated by backward scheduling is October 1, 2009.

Your company has chosen to use availability checking with availability check scope and so the system executes an availability check for the boilers. The availability check cannot confirm the requested execution start date (October 1, 2009) because there are not enough supplies and therefore creates a late confirmation for October 5, 2009 (confirmed execution start date).

The system then executes forward scheduling using the confirmed execution start date (October 5, 2009) as its starting point. Forward scheduling provides your planning department with the confirmed delivery date (October, 14 2009) when the boilers should arrive at the customer site.

The key figures determined by ship-from determination and scheduling are then used by your planning, production, and logistics departments to plan and execute their functions. Note that material planning uses the requested dates and outbound delivery logistics uses the confirmed dates.

### 2.1.5 Resources

**Overview**

The resource is a central master data object that you can use to define all the data of a machine, tool, vehicle, or employee relevant to planning and executing a production process, as well as valuating the costs of the same. The *Supply Chain Design Master Data* work center enables you to maintain all the necessary parameters to integrate your resources into supply planning, production execution, and financials.
Resource Types

The Resources view in the Supply Chain Design Master Data work center provides you with several resource types that you can use to model your resources according to their nature and usage in planning, execution, and financials. You can define the following resource types:

- **Equipment resource**
  You define an equipment resource to model, for example, a machine or tool, as a resource in the system.

- **Vehicle resource**
  You define a vehicle resource to model, for example, a forklift, as a resource in the system.

- **Labor resource**
  You define a labor resource to model an employee that, for example, operates a production activity, as a resource in the system.

In addition, you can combine multiple resources to a resource group for planning purposes. Depending on the resource type, the system controls which data needs to be maintained. For example, for each labor resource, you can maintain specific job data.

Resource Use

Using the resource use, you define how the resource is to be used by the system in the different business processes and application areas. The system enables and disables all the relevant attributes depending on the selected resource use.

- **Resource Relevant for Financials**
  If you want to incorporate the resource in the valuation of business transactions in financial accounting, you must define it as relevant for financials. If you select the Resource Relevant for Financials check box, the Valuation tab is visible. Here you can enter the specific attributes that are relevant for cost calculation.

- **Resource Relevant for Capacity Planning**
  In supply planning, you can plan production proposals on the basis of the resource load. To do so, you need to define the resource as relevant for planning to include them in the planning view of the bill of operations. Here, the system determines the capacity requirements that are required to fulfill the production process. When releasing the production model, the system creates the released planning model (RPM) using the planning information from the bill of operations’ planning view. The released planning model serves as the basis for the production proposal in supply planning. Here, you can determine the resource load using the resource’s available capacity, operating times, and capacity requirements.

  If you want to assign a single resource to a resource group, the single resource must not be planning-relevant.

- **Main Production Resource**
  If you want to use a resource in your production process, you need to assign it to an operation or activity in the bill of operations. However, if you want to assign a resource to an operation, you must define it as a main production resource. Main production resources are important for scheduling operations in production.
execution. When creating a production order in production execution, the operations are scheduled by the system according to the availability of the main production resources. Each main production resource needs a logistics area to determine the corresponding supply and output area for the input and output products.

- **Multiple Resources**
  You can define a single resource as a representative for multiple similar resources. If you select the *Multiple Resources* check box, the system enables the *Number of Resources* field on the *Operating Times* tab. In this way, the resource becomes faster. For example, if you have three identical drilling machines, you can model them in the system as multiple resources. However, you can also achieve this by using the resource group. In this case, you can model each resource as an individual resource in the system and group them to a resource group for planning.

**Operating Times**

For each resource that is a main production resource, you need to define operating times. The operating times define the availability of a resource based on the working time calendar of the corresponding site. In the *Operating Times* tab, you can define standard and time-dependent operating times by using a shift program or a recurrence pattern of operating hours. In contrast to standard operating hours, time-dependent operating hours are only valid for a certain validity period. In addition, you can maintain single downtime events (for example, short term repair actions), or additional times (for example, working time needed for an unplanned order).

The number of resources and the resource utilization are time dependent. You can specify them separately on the basis of the different operating times. The resource utilization allows you to define the resource’s total capacity that is available within the defined operating times. For example, the capacity of a resource would usually be 100%. However, if the resource is able to process two operations at the same time, you can increase the resource utilization to 200%. You can also decrease the value to 50% if the resource cannot operate with full capacity for maintenance reasons.

You can also define a template containing predefined operating times, which is provided by the resource operating profile. In this case, the system simply copies all the operating time information that you have maintained in the operating profile to the resource. When you change the copied operating times in the resource, the link to the resource operating profile is broken.

**Capacity and Scheduling**

The *Capacity and Scheduling* tab in the *New Resource* editor allows you to define specific attributes for production scheduling and capacity planning.

- **Scheduling Buffer**
  The scheduling buffer is a fixed duration that is added to the lead time of the planning operation. It shall protect against fluctuations in the lead time due to unforeseen issues such as missing components or resource queue time. As a result, the scheduling buffer extends the lead time of the production order in manufacturing. It creates a time interval of earliest and latest start date, where the production order processing shall start.

- **Bucket Type**
  The bucket type enables you to specify the period in which you want to plan the resource, for example, day or week.
• **Bucket Utilization**

  With the bucket utilization, you specify the percentage of the resource’s total capacity that is to be considered in planning. This means, you can define the actual load for a resource in production to achieve greater planning security. For example, a machine operates 8 hours a day, the resource utilization for this machine is 100%, so 8 hours are considered for production. However, you know from experience that the machine often causes delays when carrying out specific operations. In this case, you can define a bucket utilization of 80%. For a bucket of a 5 day week, the resource will be planned with a capacity of 32 hours. Bucket utilization can only be maintained on the **Capacity and Scheduling** tab if you have defined the resource as relevant for capacity planning on the **General** tab.

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**Valuation**

Each resource provides a service that you can use to valuate the service consumption for a certain production process. To do so, you need to define the resource as relevant for financials. This enables you to maintain the valuation data of the resource. For each financial-relevant resource you need to specify a cost center and the cost rate for the service provided by the resource. If the resource provides only one service, you can maintain the cost rate on the **Valuation** tab in the **New Resource** editor. However, if the resource provides multiple services with different cost rates, you can add these services to the resource on the **Services** tab. For example, if you want to define different cost rates for the setup and the produce activity for a machine, you can define two different services for these activities.

The consumption of a service can be calculated either based on the resource utilization or based on the operation quantity. By setting the calculation method, you can define the way the service product consumption is calculated. If the service consumption is measured as duration, its value can be equal to the duration of the resource utilization. If the service product consumption is measured in an arbitrary unit of measure, its value can be proportional to the operation quantity.

You can maintain the cost rate of a service in the **Product Data** work center. If a resource contains both services on the **Service** tab and a cost rate maintained on the **Valuation** tab, the system always uses the cost rate on the **Valuation** tab.

The **New Resource** editor is accessed by either of the following paths:

- In the **Resources** view, click **New** and choose the **New Resource** type that you want to create.
- In the taskbar, click **Common Tasks** and choose the **New Resource** type that you want to create.

Once you have maintained the cost rate on the **Valuation** tab, the system will use this cost rate. You can define the limit of the period for which the cost rate is valid using the delimit function. This enables you to enter a date until which this cost rate is valid.

For a labor resource, you can also specify the job that describes the role of the employee that is assigned to this resource. If a resource represents an asset in financials, you can assign the corresponding individual material to the resource for documentation purposes.

**See Also**

- **Bills of Operations**  [page 110]
- **Supply Planning**
- **Logistics Task Management**  [page 129]
2.2 Locations View

2.2.1 Locations Quick Guide

The Locations view enables you to view and create the hierarchical structure that determines the physical arrangement of logistics areas and resources in your company. You can use this view to create both locations related to your sites and location layouts related to these locations. You can create logistics areas within a location layout and assign resources such as machines and labor to each logistics area.

In the Locations view, logistics area hierarchies are displayed in the system using structures and trees. You can use these navigation methods to access a detailed level and to review, create, or change logistics areas. You can access the Locations view from the Supply Chain Design Master Data work center.

Business Background

The location and location layout concept enables you to design a detailed model of your company’s supply chain. The location represents an external view of your company that helps you to communicate with your business partner. The location layout on the other hand represents an internal view of your company’s structure. It allows for an integrated material flow for warehousing and production through a common layout. This layout is represented by a hierarchical structure of logistics areas. You can centrally maintain the layouts of the different sites and locations within your company. Together with the logistics model, you can control and optimize the storage and movements of products within your company.

For more information, see:
- Locations and Location Layouts [page 7]
- Simple Location Layout Creation [page 12]
- Complex Location Layout Creation [page 15]

Tasks

Create and Edit a Location

A location is a logistics-relevant geographic point within a site. You can determine the address, roles, and material flow rules for each of your locations. Each location can have one or more related location layouts.

For the full process from creating a site to creating material flow rules, and replenishment and removal rules for a location, see Create and Edit a Location [page 42].

Change the Status of a Location

1. Select the location ID that you want to edit and click Edit to open the editor.
2. Click Change Status and choose the desired action.
3. Click Save and Close. The new status is set.
You can also set the status in the New Location quick activity.
You can only change the status of a site in the Organizational Management work center.

Delete a Location
1. Select the location ID that you want to delete.
2. Click Delete.
   The location is deleted.

A site cannot be deleted.
You can only delete a location, in the hierarchy below the site, that has status In Preparation.

Create a Logistics Area in a Location Layout
For information about this task, see here [page 55].

Change the Status of a Logistics Area in a Location Layout
1. Select the location ID that you want to edit and click Edit Layout to open the editor.
2. Select the logistics area or hierarchy that you want to set the status for and click Change Status.
3. Choose the desired action.
4. Click Save and Close.
   The new status is set.

Delete a Logistics Area in a Location Layout
1. Select the location ID that you want to edit and click Edit Layout to open the editor.
2. Select the logistics area that you wish to delete and click Delete Logistics Area.
   The logistics area is deleted.

You can only delete a logistics area that has status In Preparation.

2.2.2 Tasks

2.2.2.1 Create and Edit a Location

Overview
The location and location layout concept enables you to design a detailed model of your company’s supply chain. The location represents an external view of your company that helps you to communicate with your business partner.
The location layout on the other hand represents an internal view of your company’s structure. It allows for an integrated material flow for warehousing and production through a common layout. This layout is represented by a hierarchical structure of logistics areas. You can centrally maintain the layouts of the different sites and locations within your company. Together with the logistics model, you can control and optimize the storage and movements of products within your company.

A location can have several roles simultaneously. For each storage location at your company’s site, you can create a location layout. The more complex location layouts are hierarchical structures consisting of a site with one or more locations below it, and for each of these locations, there can be one or more levels of logistics areas below. The location layout can be enhanced as necessary. There must be at least one location below the site with the Role of Storage Location and at least one logistics area that is inventory-managed in order to be able to store products. Products can be stored separately or in a logistics unit (LU). You can access the Locations view from the Supply Chain Design Master Data work center.

For more information, see the example below:

![Complex Location Layout](image)

**Prerequisites**

**Create a Site**

1. **Create a Business Residence**: In the Org Structures view of the Organizational Management work center, flag at least one org unit of your org structure as a Business Residence. The business residence flag establishes a geographical connection (site) between the org structure and physical locations.

2. **Activate the Business Residence**: Activate the business residence and the system automatically creates a site and assigns it to that specific business residence. The business residence represents the legal aspects of the location and the associated site is the physical place of the location.

3. **Enable a Site to Be Used in Supply Chain Management**: Choose the Logistics Relevant check box. This option is only available on site level. You use this to enable your site for production and warehouse processes. The system then creates a supply planning area and enables the Storage Location check box.

Further locations can be defined in relation to the site, and the site can be used for logistics master data, production, and warehousing. Finance-relevant changes are posted to the profit center that is evaluated via the business residence. In purchasing, the associated site can initially be used as a ship-to location for a supplier. In product data, both the production group and the logistics group are site-dependent.
Multi-Company Structure

You can create a multi-company structure in the Organizational Management work center. Each company can have multiple sites. After entering the MOM data as described above and activating the business residence, the sites are created automatically. Enable the sites for supply chain management and then follow the rest of the steps in this Create and Edit a Location document to complete the multi-company location layout.

For more information, see Org Structure Quick Guide, in the following path: Create and Edit the Org Structure > Definitions tab > Definitions > Business Residence > Associated Site.

Process Flow

Edit the Site Details

If you have not entered all the site details in the Organizational Management work center, you can finish entering site details in the Locations view of the Supply Chain Design Master Data work center.

1. Select the site and click Edit.
2. On the General tab, enter the general details of the site including address details.
3. Choose the roles for the site.
   - Choose the role Logistics Relevance at site level to enable the Storage Location check box.
   - If you want to be able to store products in a site, choose the role of Storage Location.
   - If the site has the role Storage Location, choose whether to allow negative stock or not.
   - If the site has the role Storage Location, you can create material flow rules for inbound and outbound processes at site level. This can be done now or after to have created your location layout. For more information see the Create Material Flow Rules for Inbound and Outbound Processes at Site Level section in this document.
   - Choose the role Ship-From Location if you want this site/location to be used in outbound processes. The goods in the sales order will be shipped from this address in the site.
   - Choose the role Ship-To Location if you want this site/location to be used in inbound processes. The purchase order will show this as the address in the site to which the goods should be shipped.
   - Choose the role Service Point if you want the site/location to be used for the pickup of items by the service engineer in a field service and repair scenario.
   - Choose the role Externally-Managed Location if you want the site/location to be used as an externally-managed warehouse. For an externally-managed warehouse, restrictions such as the site cannot have a location layout nor a location below it will apply.
     - If you check the Externally-Managed Location check box, you will enable the Warehouse Provider ID field. Enter the ID of the warehouse provider who manages the external warehouse.
     - If you check the Externally-Managed Location check box, it is recommended that you also check the Negative Stock Allowed check box.
4. Activate the site and save.
Add One or More Locations to the Site

You can add one or more locations to the site creating a hierarchical structure which is known as the layout. In the Locations view of the Supply Chain Design Master Data work center:

1. Select a site and click New Location to open the New Location quick activity.
2. Enter the general details and address information for the new location.

   - The system allows only one supply planning area per site. The default ID proposed by the system is the same as the site ID.

3. In the Roles section, select the check boxes to determine the roles for the new location.
   - You cannot create a location with the role of Site in the Supply Chain Design Master Data work center; you can only create sites in the Organizational Management work center.
   - If you want to use this location in SCM, the Logistics Relevance check box must be checked. This is done at the Site level. Once set, this cannot be reversed.
   - If you want to use this location for storage, check the Storage Location check box.

4. Click Change Status and then choose Activate to activate the new location and be able to use it.
5. Click Save to save the new location.

   The changes are saved to the system. A supply planning area (SPA) is generated in the background. The system allows only one SPA per site and it has the same ID as the site.

6. Click Close to close the editor and go back to the Locations view.

   The new location appears in the worklist under the site you selected initially.

   Refresh the screen if you do not see the location you created.

Edit the Location Details

If you did not enter all the location details while adding a location to your site, you can now complete these for each new location and save them. In the Locations view of the Supply Chain Design Master Data work center:

1. Select a location and click Edit to open the editor.
2. In the General tab, edit the general details and address information for the location as necessary.

   - The system allows only one supply planning area per site. The default ID proposed by the system is the same as the site ID.
   
   In the General tab of the site, you can view the assigned locations and the relevant logistics models for the site in the corresponding tables.

3. In the Roles section, select the check boxes to determine the roles for the location.
   - You cannot create a location with the role of Site in the Supply Chain Design Master Data work center; you can only create sites in the Organizational Management work center.
   - If you want to use this location in SCM, the Logistics Relevance check box must be checked. This is done at the Site level. Once set, this cannot be reversed.
   - If you want to use this location for storage, check the Storage Location check box.

4. In the Negative Stock Details section, check the Negative Stock Allowed check box if you wish to allow the posting of negative stock. This can be done at the site level or in the lower levels of the hierarchy according to your company policy.
Add Logistics Areas to a Location and Edit the Logistics Area Details

You can add one or more logistics areas to a location creating a hierarchical structure which is known as the location layout. To do this, the location must have the role Inventory-Managed. The layout can be simple or complex depending on the number of layers you introduce to the tree structure. A simple location layout has only one level whereas a complex location layout is a multi-level layout. The location layout represents the internal view of your company and allows you to structure your warehouse area.

An example of a complex multi-level location layout is shown below:

In the Locations view of the Supply Chain Design Master Data work center:
1. Select a location and click Edit Layout.
2. Click Add Child Logistics Area or Add Multiple Logistics Areas. For each logistics area:
   1. On the General tab, enter the details including a logistics area ID which must be unique within a site.
   2. Check the Inventory-Managed check box. This enables the following:
      • Negative Stock Allowed check box
      • Allocation Type settings
      • Blocked for Put-Away status
      • Logistics Use settings
      • Restrictions tab
      • Replenishment and Removal Rules tab
Specify a Logistics Area as Inventory-Managed

- If you want to store items in a logistics area, you must first define it as inventory-managed. This is usually a logistics area on the lowest level of the hierarchy, for example, a bin in a warehouse.
- If a location is inventory-managed, you can create a location layout, assign process models to it and create material flow rules for inbound and outbound processes at the site level as well as create material flow rules for replenishment and removal processes at all relevant levels. If your location is inventory-managed, for more information, see the following sections.

3. On the **General** tab, define how a specific logistics area will work and be used. Define the following:
   - **Negative Stock Allowed**
   - **Allocation Type**
   - **Allocation Scope**
   - **Blocked for Put-Away**
   - **Logistics Use**

4. On the **Restrictions** tab, restrict which products can be stored in a logistics area and specify which logistics units, storage groups, or products are allowed to be stored in a logistics area.

5. On the **Resources** tab, assign resources for use in production and edit the production fixed supply and output area details. If the **Inventory-Managed** check box for a logistics area has been checked, the system assigns a default **Fixed Supply Area** and a default **Fixed Output Area** for production which can be changed. To add a resource:
   1. Click [Add Row]. A row is added to the **Assigned Resources** table.
   2. Select the resource.

   - Resources must be assigned for production in the **Resources** tab of the relevant logistics area.
   - The resource must first be created for the site and then activated before you can add it to the **Resources** tab.

   For more information, see [Create a Resource](page 69).

3. Activate each logistics area or activate the hierarchy and save.

If you create a one level location layout, you do not need to maintain the following tabs:

- **Restrictions**
- **Resources**
- **Material Flow Rules**
- **Replenishment and Removal Rules**

However, it is recommended that you create as a minimum, a location layout that includes a site with at least one (inventory-managed) location below it, and that this location has (at least) one logistics area with the **Logistics Use, Storage** assigned to it.

For more information, see:

- [Create a Logistics Area in a Location Layout](page 55).
Maintain a Complex Location Layout section in Complex Location Layout Creation [page 15], which includes an example of a warehouse with a complex location layout and its settings.

Create Process Models

You can only have one process model active at any point in time in the system for each of your business processes and these are maintained at the site level in the Logistics Models view of the Warehousing and Logistics Master Data work center. The process models are used to describe how the logistics processes should work and are template-based.

- A process model must be consistent and released.
- For the inbound process, a Destination Logistics Use of Storage is required.
- For the internal process, a Destination Logistics Use of Storage is required.

For more information, see Logistics Models Quick Guide [page 153].

Create Material Flow Rules for Inbound and Outbound Processes at Site Level

After maintaining the location layout, you can maintain the source and destination determination (SDD) rules for your inbound and outbound processes (material flow) at the site (ship-to and ship-from location) level. With these settings you can specify in which areas and in which sequence, the system should search for a logistics area that can then be proposed in the task confirmation of the respective inbound or outbound process. Additionally, you can determine other search areas for products, storage groups, restricted stock, and logistics units. You can specify, for example, that for an inbound process the returned products, (which are restricted) should be taken to a special “Restricted Stock” area and all other products should go to the warehouse.

You can use basic or advanced rules. The advanced rules are described in the example below. Basic rules hide the complexity of the advanced rules from the user.

If you enter a basic rule, this provides one logistics area only for the source search and one logistics area for the destination search. The system defaults the rest of the data. If you then switch to the advanced rule view, you will see all the system proposed values for the source and destination determination search rules. For example, you will see the logistics area use and the picking or put-away strategy.

As an example the processes can be defined as follows:

- Two-Step Outbound:
  - Step 1: Warehouse to outbound area: Pick products from the warehouse and put them in the outbound area (done with tasks and task confirmations)
  - Step 2: Loading the truck: Load the truck with the products from the outbound area (done with tasks and task confirmations)

- Two-Step Inbound
  - Step 1: Unloading the truck to the inbound area: Unload the products from the truck to the inbound area (done with tasks and task confirmations)
  - Step 2: Inbound to warehouse: Put-away of the products from the inbound area to the warehouse (done with tasks and task confirmations)
2 Step Outbound Process (Standard)

In the Locations view of the Supply Chain Design Master Data work center:

1. Select the site and click Edit.
2. Choose the Material Flow tab and select the Advanced Rule.
   
   To show the Material Flow tab, at least one of the following roles must be set for the Site: Ship-From Location, Ship-To Location, or Storage Location.

3. Step 2 of a Two-Step Outbound Process: On the Source tab, in the Source Determination Rules section, enter the following:
   - Sequence ID
   - Logistics Area Use

4. On the Source tab, in the Details: Assigned Site/Storage Locations and Logistics Areas section, enter the following:
   - Line Number
5. You can also enter a search sequence by clicking **Sequence Determination** and entering the details as needed.

6. **Step 1 of a Two-Step Inbound Process**: On the [Destination] tab, in the **Destination Determination Rules** section, enter the following:
   - **Sequence ID**
   - **Logistics Area Use**

7. On the [Destination] tab, in the **Details: Assigned Site/Storage Locations and Logistics Areas** section, enter the following:
   - **Line Number**
   - **Logistics Area**
   - **Location**
   - **Put-Away Strategy**

8. You can also enter a search sequence by clicking **Sequence Determination** and entering the details as needed.

For more information, see:

- **Define the Material Flow Rules for the Logistics Area** in *Create a Logistics Area in a Location Layout* [page 55].
- **Maintain Source and Destination Determination Rules for the Outbound Process on the Site and Logistics Area Levels** and **Maintain Source and Destination Determination Rules for the Inbound Process on the Site and Logistics Area Levels** sections in *Complex Location Layout Creation* [page 15], which includes an example of a warehouse with a complex location layout and its settings.

### Complete Material Flow Rules for Inbound and Outbound Processes at Logistics Area Level

As an example the processes can be defined as follows:

- **Two-Step Outbound**
  - Step 1: Warehouse to outbound area: Pick products from the warehouse and put them in the outbound area (done with tasks and task confirmations)
  - Step 2: Loading the truck: Load the truck with the products from the outbound area (done with tasks and task confirmations)

- **Two-Step Inbound**
  - Step 1: Unloading the truck to the inbound area: Unload the products from the truck to the inbound area (done with tasks and task confirmations)
  - Step 2: Inbound to warehouse: Put-away of the products from the inbound area to the warehouse (done with tasks and task confirmations)

To complete the source and destination determination (SDD) rules for your inbound and outbound processes (material flow), you must next edit the inbound and outbound material flow as required at the logistics area level. This is achieved by maintaining the inbound and outbound material flow as required at each logistics area.
2 Step Outbound Process (Standard)

1. Select the site and click **Edit Layout**.
2. Select the relevant logistics area.
3. Choose the **Material Flow Rules** tab from the **Material Flow Details** tab for basic rule details and enables the **Source** and **Destination** tabs for advanced rule details.
4. **Step 1 of a Two-Step Outbound Process** In your warehouse logistics area: Enter the details for step 1 of an outbound process (note that step 2 was already completed above) by doing the following:
   - Click the **Create** and **Delete** buttons to add or delete a material flow rule.
   - Create enables the **Material Flow Details** tab for basic rule details and enables the **Source** and **Destination** tabs for advanced rule details.
- Delete enables existing rules to be deleted and hides the Material Flow Details tab for basic rule details and hides the Source and Destination tabs for advanced rule details.
- Select the Advanced Rule and enter the details in the Destination tab.
- Select the Basic Rule and enter the Source Logistics Area details in the Material Flow Details tab.

5. **Step 2 of a Two-Step Inbound Process** In your inbound logistics area: Enter the details for step 2 of an inbound process (note that step 1 was already completed above) by doing the following: Select the Advanced Rule and enter the details in the Destination tab.

6. If you have production logistics areas, do the following:
   - In the bin logistics area that supplies production: On the Resources tab, in the Production Supply and Output Details section, edit the Fixed Supply Area and Fixed Output Area details.
   - In your production logistics area: On the Resources tab, in the Production Supply and Output Details section, enter the Fixed Supply Area and Fixed Output Area details.
   - In your production logistics area: On the Material Flow Rules tab, select the Basic Rule, and enter the Source Logistics Area and Destination Logistics Area details.

For more information, see:
- Define the Material Flow Rules for the Logistics Area in Create a Logistics Area in a Location Layout [page 55]
- Maintain Source and Destination Determination Rules for the Outbound Process on the Site and Logistics Area Levels and Maintain Source and Destination Determination Rules for the Inbound Process on the Site and Logistics Area Levels sections in Complex Location Layout Creation [page 15], which includes an example of a warehouse with a complex location layout and its settings.

**Create Material Flow Rules for Replenishment and Removal Processes**

You can create material flow rules for replenishment and removal processes at the following levels depending on the layout of your location. The same process is followed for all the following levels:
- Site
- Inventory-Managed Location Level
- Location Layout Level

**Replenishment to Production Supply Logistics Areas**

In the Locations view of the Supply Chain Design Master Data work center:
1. Select the site and click Edit Layout.
2. Select your production supply logistics area.
4. On the Replenishment tab, in the Default Rule section, click Create. Enter the following:
   - **Replenishment Type**: If you select Demand-Based replenishment type, you must also select a Demand-Based Method.
   - **Threshold**: Enter quantity and units.
   - **Time Horizon**
   - **Replenishment Quantity Code**: If you select Constant Quantity, specify a Constant Replenishment Quantity. If you select Target Inventory Level, specify a Target Inventory Quantity to be maintained.
5. In the Storage Group Based Rules section, enter the following as required:
- Storage Group.
- Replenishment Type.
- Demand-Based Method.
- Threshold.
- Time Horizon: Enter the interval for the demand forecast. For example, 7 days. This means that if there is a demand that will reduce the quantity in the bin to less than 100 ea. in the next 7 days, trigger the replenishment.
- Replenishment Quantity Code.
- Replenishment Quantity

6. In the Product Based Rules section, enter the following:
   - Product
   - Replenishment Type.
   - Demand-Based Method.
   - Threshold.
   - Time Horizon: Enter the interval for the demand forecast. For example, 7 days. This means that if there is a demand that will reduce the quantity in the bin to less than 100 ea. in the next 7 days, trigger the replenishment.
   - Replenishment Quantity Code.
   - Replenishment Quantity.

7. On the Resources tab, in the Production Supply and Output Details section, enter the Fixed Supply Area and Fixed Output Area details.

8. On the Material Flow Rules tab, select the Basic Rule, and enter the Source Logistics Area and Destination logistics Area.

Removal from Production Output Logistics Areas

In the Locations view of the Supply Chain Design Master Data work center:
1. Select the site and click Edit Layout.
2. Select your production output logistics area and choose the Replenishment and Removal Rules tab.
   - For removal from production output logistics areas, you require a destination logistics area and this is entered as an Advanced Rule in the Destination tab of the Material Flow Rules tab.

3. On the Removal tab, in the Default Rule section, click Create. Enter the following:
   - Threshold: Enter quantity and units.
   - Target Inventory Quantity.
4. On the Resources tab, in the Production Supply and Output Details section, you can change the Fixed Supply Area and Fixed Output Area details if necessary.
5. In the Assigned Resources section, you can assign resources to be used in this logistics area for production only.
   - Fill the details on the Resources tab, only if there is a production logistics area at your site.
   - The resource must first be created for the site and then activated before you can add it to the Resources tab.
   - Resources must be assigned for production in the Resources tab of the relevant logistics area.
6. On the **Material Flow Rules** tab, select the **Advanced Rule**, and in the **Destination** tab enter the following as necessary:
   - **Sequence ID**
   - **Logistics Use**
   - **Line Number**
   - **Logistics Area**
   - **Put-Away Strategy**

To show the **Material Flow Rules** tab, you must activate the logistics area, which must be inventory-managed.

For more information, see:

- **Define the Replenishment and Removal Rules for the Logistics Area** in Create a Logistics Area in a Location Layout [page 55].
- **Maintain the Replenishment and Removal Rules on the Logistics Area Level** section in Complex Location Layout Creation [page 15], which includes an example of a warehouse with a complex location layout and its settings.

**Automate Replenishment and Removal**

After setting up your master data and material flow rules, you can automate the replenishment or removal processes. This is done in the **Internal Logistics** work center. For more information, see Create a Replenishment or Removal Run in the Quick Guide for Automated Actions View (in Internal Logistics).

This is optional for locations with replenishment and removal processes.

**Schedule a Replenishment and Removal Run**

Once you have created your replenishment or a removal run, you can then schedule the run for execution on a specific date and time in the future, for recurrence, or for after a job. A run has to be active for the system to execute it. You can use the same procedure to schedule a replenishment run or a removal run. This is done in the **Internal Logistics** work center. For more information, see Schedule a Replenishment or Removal Run in the Quick Guide for Automated Actions View (in Internal Logistics).

This is optional for locations with replenishment and removal processes. You can also trigger the replenishment or removal run manually.

The replenishment or removal is triggered by the settings of the inventory-managed logistics area (for example, remove the products from the specified logistics area if it contains more than 100 pieces). If the replenishment or removal is triggered, the system checks in the process model for the logistics use and then checks the SDD rules for source or destination until it finds the correct usage in the location layout, which is maintained in the logistics area. In the SDD rules, it is the source area or destination area which will be used for the replenishment or removal respectively. Depending on the search strategy, the system will propose one logistics area in the replenishment task (depending on there being enough stock available) or removal task respectively. For more information, see Define the Material Flow Rules for the Logistics Area in Create a Logistics Area in a Location Layout [page 55].

**See Also**

Simple Location Layout Creation [page 12]
2.2.2.2 Create a Logistics Area in a Location Layout

Overview
A location is a logistics-relevant geographic point within a site. Each location can have one or more related location layouts. A location layout consists of one or more interlinked storage structures for production areas and warehouses. These structures are called logistics areas. You can use a layout to tailor the way you store material to your own requirements. You can also define rules that determine how you pick and put away material in order to perform logistics execution tasks in a way that best suits your company.

You can create logistics areas within a location layout. Logistics Areas in a logistics environment include bins, racks, and aisles in a warehouse, and drilling, assembly, and painting areas in a production layout. You can assign resources such as machines and labor to each logistics area. You can access the Locations view from the Supply Chain Design Master Data work center.

Procedure

1. In the Locations view worklist, choose an active storage location and click Edit Layout to open the Location Layout editor.

2. Select the logistics area you want to edit and click one of the following:
   - Add Child Logistics Area to add a logistics area one hierarchy level below the selected logistics area. The new logistics area appears in the hierarchy.
   - Add Multiple Logistics Areas to add multiple logistics areas one hierarchy level below the selected logistics area. The new logistics areas appear in the hierarchy.
   - Delete Logistics Area to delete the selected logistics area.
   - If you want to update the location layout, click Update Layout and choose:
     a. Update Child Logistics Areas to update all the child logistics areas below the selected logistics area with the updated storage control profile data or blocking status.
     b. Move Hierarchy to move the selected hierarchy to a different logistics area or location.

3. Edit General Information for a Logistics Area
   In the editor, you can edit the general information for the new logistics area as follows:
   a. On the General tab, enter the logistics area ID, logistics area description, and the logistics area type. You can choose a storage control profile ID that will automatically fill in the fields on the General tab, Restrictions tab, and Replenishment and Removal Rules tab.
b. **Enable the Logistics Area to be Inventory-Managed**

On the **General** tab, select the **Inventory-Managed** check box if you want to use this area for storing products. This enables the following:
- **Negative Stock Allowed** check box
- **Allocation Type** settings
- **Blocked for Put-Away** status
- **Logistics Use** settings
- Restrictions tab
- **Replenishment and Removal Rules** tab


c. **Enable the Logistics Area to Allow Negative Stock**

Select the **Negative Stock Allowed** check box if you want to allow inventory postings that lead to negative stock.

The **Negative Stock Allowed** check box only shows if the **Inventory-Managed** check box is checked for the logistics area.

Negative stock directly affects the determination of moving average prices for inventory evaluation. By setting the **Negative Stock Allowed** check box on storage location level, it can be determined whether the **Negative Stock Allowed** check box is enabled for all lower level logistics areas of this storage location. The system documents when and by whom the **Negative Stock Allowed** check box on storage location level was last changed on the **Changes** tab of this location.

For more information on the relationship between negative stock and the effect on valuation for finance, see Negative Inventories.

d. **Define the Type of Stock Allocation for the Logistics Area**

Define whether you want to allocate on-hand stock or expected stock by choosing the corresponding allocation type from the **Allocation Type** list. If this field is left empty, there is no reservation for the specific logistics area. **Allocation Type** settings are valid for all products in the logistics area.
- **Expected Product Allocation** means that you can additionally allocate the stock which will be brought to the specific logistics area.
- **Immediate Product Allocation** means that you can only allocate the actual on-hand stock. If you use **Immediate Product Allocation**, it is recommended that you do not configure the logistics area to allow negative stock. This ensures that allocated stock is in fact physically present in the logistics area.

The **Allocation Type** settings only show if the **Inventory-Managed** check box is checked for the logistics area.

The allocation concept is independent of the negative stock settings.

Allocation takes place during the warehouse processing of any logistics process. In an outbound process for example, which starts from an outbound delivery, the allocation will only take place once the system tries to find a logistics area for picking. In a task-based scenario, the system will allocate the goods as soon as the logistics area is proposed in the task.
The proposal of the logistics area in the task is dependent on the settings in the logistics model. The proposal takes place during one of the following:

- Task creation
- Task confirmation
- Manually on request

e. **Define the Blocking Status for the Logistics Area**

Select the required *Blocked for Put-Away* status. If you want to prevent the logistics area from being used in put-away tasks, select *Blocked*.

The *Blocked for Put-Away* status settings only show if the *Inventory-Managed* check box is checked for the logistics area.

f. **Define the Logistics Use for the Logistics Area**

In the *Logistics Use* section, click *Add Row* and then click the arrow in the new row to select a logistics use for the new logistics area. This defines how the logistics area is to be used in the logistics process. The logistics use must be the same logistics use you specified in the corresponding logistics model.

The *Logistics Use* section only shows if the *Inventory-Managed* check box is checked for the logistics area.

**Complex Location Layout**

The complex location layout is a hierarchical structure consisting of a site with one or more locations below it, and for each of these locations, there can be one or more levels of logistics areas below. The following notes are relevant mainly for a complex location layout:

- For each level of the hierarchy, enter the logistics area ID and other details in the editor as necessary. The site and storage location are proposed for you and cannot be edited here.
- The logistics area ID must not contain spaces between the alphanumeric characters.
- On the *General* tab, it is only necessary to fill the details if the logistics area is inventory-managed.
- If you select the *Inventory-Managed* check box, the *Replenishment and Removal Rules* tab is displayed.
- The *Inventory-Managed* check box should be set at the lowest level possible in your hierarchy of designated storage areas.
- You can only store products on logistics areas which are set to inventory-managed.
- You can not have more than one inventory-managed logistics area in the same direct hierachical path.
- Negative stock directly affects the determination of moving average prices for inventory valuation.
- If a logistics area is inventory-managed, the system assigns a default *Fixed Supply Area ID* and a default *Fixed Output Area ID* for production. These are shown in the *Resources* tab, *Production Supply and Output Details* section and are editable.
- Both the Fixed Supply Area and the Fixed Output Area for production must be inventory-managed in order to store products. In the production process the components will be picked from the Fixed Supply Area and the finished goods from production will be put away in the Fixed Output Area.
4. **Define the Storage Restrictions and Assign Resources to the Logistics Area**

Define the restrictions placed on storage and assign resources to the logistics area by doing the following:

a. On the **Restrictions** tab, in the **Only Store Same** section, select the check boxes according to the restrictions you require for storage in this logistics area. Only products that have these criteria in common can be stored here. For example, if you select the **Product** check box, only same products can be stored here.

b. In the **Allowed Logistics Units and Storage Groups** and **Allowed Products** tabs, enter further restrictions for what is allowed to be stored in the logistics area. If you do not enter anything, all products can be stored in this logistics area.

c. On the **Resources** tab, click **Add Row**, and in the **Resource ID** field, click the open selection dialog icon to select a resource to add to this logistics area.

- On the **Resources** tab, it is only necessary to fill the details here if there is a production logistics area at your site.
- Resources must be assigned for production in the **Resources** tab of the relevant logistics area. The resource must first be created for the site and then activated before you can add it to the **Resources** tab.
- If a logistics area is inventory-managed, the system assigns a default **Fixed Supply Area ID** and a default **Fixed Output Area ID** for production. These are shown in the **Resources** tab, **Production Supply and Output Details** section and are editable. If you have assigned a resource to the new logistics area, you can change the proposed **Fixed Supply Area ID** and the **Fixed Output Area ID**.

5. **Define the Material Flow Rules for the Logistics Area**

Define the material flow rules and criteria used by the system for internal logistics processes as follows:

a. On the **Material Flow Rules** tab, you can define material flow rules for warehouse and logistics processes.

If you want to maintain material flow rules, at least one of the following roles must be set: **Ship-From Location**, **Ship-To Location**, or **Storage Location**. You must also activate the logistics area in order for the **Rule Definition Type** to be visible.

b. Click the **Create** and **Delete** buttons to add or delete a material flow rule.
- **Create** enables the **Material Flow Details** tab for basic rule details and enables the **Source** and **Destination** tabs for advanced rule details.
- **Delete** enables existing rules to be deleted and hides the **Material Flow Details** tab for basic rule details and hides the **Source** and **Destination** tabs for advanced rule details.

c. Choose **Basic Rule** or **Advanced Rule** to select the rules used by the system for goods movements related to this area. Select each tab and enter the required details. Not all logistics areas require the information on the **Material Flow Details**, **Source**, and **Destination** tabs. This information is normally only maintained on site level unless you require specific rules for internal logistics.
6. **Define the Replenishment and Removal Rules for the Logistics Area**

You can define the replenishment and removal rules used by the system for automated goods movements. If you selected the *Inventory-Managed* check box on the **General** tab, the **Replenishment and Removal Rules** tab is visible. Here you can define default rules, storage group-based rules, and product-based rules for replenishment and removal as follows:

a. On the **Replenishment and Removal Rules** tab, go to the **Replenishment** tab to define the rules you want the system to use for automated replenishment in this logistics area. To create a default rule, click **Create** to enable the fields in the **Default Rule** section. You can choose between consumption based and demand based replenishment. The meaning of the fields on the **Replenishment** tab changes depending on the replenishment type.

b. On the **Removal** tab, define the rules you want the system to use for automated removal in this logistics area. To create a default rule, click **Create** to enable the fields in the **Default Rule** section.

On the **Replenishment and Removal Rules** tab, it is only necessary to fill the details here if the logistics area is inventory-managed.

- Automated goods movement for replenishment and removal are usually production-relevant but can also be set up for use in logistics processes.
- You do not have to specify the replenishment and removal rules in the specific logistics area. You can maintain them at a higher level logistics area for all the logistics areas below in the same direct hierarchical path.
- If you do not have source and destination determination (SDD) rules maintained for a specific logistics area, the system will search in the order from bottom to top in the hierarchy, until it finds an SDD rule that matches the logistics use in the related process model.
- As soon as you have entered something in the **Replenishment and Removal Rules** tab, the system will trigger the replenishment and removal process. You can trigger the replenishment or removal manually or you can run a periodic background job which will automatically create the replenishment and removal tasks.
Production

- If a logistics area is inventory-managed, the system assigns a default Fixed Supply Area ID and a default Fixed Output Area ID for production. These are shown in the Resources tab, Production Supply and Output Details section and are editable. If you have assigned a resource to the new logistics area, you can change the proposed Fixed Supply Area ID and the Fixed Output Area ID. These logistics areas are used in the production process relating to a specific resource of the production order. This determines from where components are picked (Fixed Supply Area) and to where finished products should be put away (Fixed Output Area). The logistics areas used for the production process are fixed; there is no search available as in the logistics processes.

- Production supply requires a replenishment rule and production output requires a removal rule to be entered. This is true only if the components for production are not already put away in the production area or if you need to remove products to a storage area other than the production area.

7. Activate the Logistics Area

Click Change Status and choose Activate to activate the new logistics area. At the top of Location Layout editor, click Save to save the new logistics area.

The new logistics area is saved to the system and added to the location layout for the selected location. To open the location layout, click the link on the appropriate location.

Complex Location Layout

The following notes are relevant mainly for a complex location layout:

- You can create the whole hierarchy initially and then fill the details in later.
- You must activate the lower levels of the hierarchy before activating the higher levels. Alternatively, you can activate the whole hierarchy simultaneously when you are finished.

2.3 Storage Control Profiles View

2.3.1 Storage Control Profiles Quick Guide

Large amounts of products are moved to and from storage locations within warehouses and production areas everyday. It is essential for logistics departments to efficiently store these products. The Storage Control Profiles view facilitates this by helping you to set up the rules governing the way products are stored in logistics areas.

The Storage Control Profiles view provides you with an overview of the storage control profiles in your logistics area. Within this view you can create new storage control profiles and edit existing ones. You can specify constraints and conditions for replenishing and removing products, as well as the logistics area type and logistics use. You can access the Storage Control Profiles view from the Supply Chain Design Master Data work center.
Business Background

Locations and Location Layouts

The location and location layout concept enables you to design a detailed model of your company’s supply chain. The location represents an external view of your company that helps you to communicate with your business partner. The location layout on the other hand represents an internal view of your company’s structure. It allows for an integrated material flow for warehousing and production through a common layout. This layout is represented by a hierarchical structure of logistics areas. You can centrally maintain the layouts of the different sites and locations within your company. Together with the logistics model, you can control and optimize the storage and movements of products within your company.

For more information, see: Locations and Location Layouts  [page 7].

Tasks

Create a Storage Control Profile

For information about this task, see here  [page 63].

Edit a Storage Control Profile

1. Select the storage control profile ID that you want to edit and click **Edit** to open the **Storage Control Profile** editor.

2. Enter the updated details and click **Save**.

   For more information, see Create a Storage Control Profile  [page 63].

Change the Status of a Storage Control Profile

1. Select the storage control profile ID that you want to edit and click **Change Status**.

2. Choose the desired action.
   The new status is set.

   You can also change the status in the **Storage Control Profile** editor.

Delete a Storage Control Profile

1. Select the storage control profile ID that you want to delete.

2. Click **Delete**.
   The storage control profile is deleted.

   You can only delete a storage control profile that has the status **In Preparation**.
2.3.2 Business Background

2.3.2.1 Non-Specified Identified Stock Allocation

Overview

Non-specified identified stock allocation, sometimes called wildcard allocation of identified stock, can be used in the outbound process to allocate identified stock where the selection of a specific identified stock is not important. Allocation and availability calculations take into consideration the current levels of physical stock as well as any expected changes for a specific period of time. In warehouse management, availability calculations are based on existing physical stock, taking into consideration any open allocations. The availability of stock for allocation is calculated in a way that ensures that stock is available for picking.

There are two allocation types:

- **Immediate stock allocation**, the most common type, is the reservation of stock that is currently physically available in the storage location.
- **Expected stock allocation**, is the reservation of expected incoming stock for picking, based on the assumption that the outbound task can be created in advance of the receipt of the stock.

In a typical scenario, there are 20 pieces of a product in a warehouse and 20 more pieces are expected to arrive. 10 pieces of the same stock leave the warehouse. The on-hand or immediate availability of stock is 10 pieces (10 pieces remain after supplying 10 pieces from our current supply of 20 pieces). The expected availability in this situation is 30 pieces, the 10 remaining pieces and the expected receipt of another 20 pieces.

However, when working with identified stock, concrete identified stock allocation may lead to stock availability errors as a result of cross-allocation.

There are 20 pieces of material in a particular bin, 10 pieces of Identified Stock 1 and 10 pieces of Identified Stock 2. Two separate tasks have been created, one for Identified Stock 1 and one for Identified Stock 2. On the warehouse floor, the warehouse worker cannot physically access the identified stock (Identified Stock 1) but can access Identified Stock 2. When this first task is confirmed in the system for Identified Stock 2, it raises a stock availability error, which must then be re-allocated during execution to resolve the error.

There are two types of allocation scope, specified identified stock and non-specified identified stock. Using non-specified identified stock allocation, the system calculates the availability of stock on the area level, rather than on concrete identified stock level so, in the case above, the system does not propose concrete identified stock on that level, making it easier for the warehouse employee to locate the stock. The identified stock must then be entered into the system during task confirmation. Here a value help proposes all identified stocks and the quantities available of each.

The use of non-specified identified stock allocation may conflict with the first in first out (FIFO) picking strategy. If identified stocks are distributed over a few different bins, with concrete allocation, the system will try to propose the older identified stock first. However, if there are a few identified stocks stored in the same bin, with non-specified identified stock allocation, the system does not distinguish between the different identified stocks and the newer one may be chosen first.
Benefits

- You can save time by not having to look for a specific identified stock within the warehouse. The identified stock is not proposed by the system during task creation, rather, it is determined by the warehouse worker during task execution.
- It avoids cross-allocation and reduces the necessity to change allocation or identified stock before and during the execution of tasks.
- Restrictions in physically accessing the right identified stock can be avoided, for example, if a specific identified stock is located at the very bottom of a bin.

Prerequisites

- The allocation scope Non-Specified Identified Stock has been enabled in the master data for the required logistics area. You can select the Non-Specified Identified Stock option in the Supply Chain Master Data work center. Go the Storage Control Profiles view and choose New Storage Control Profile. Under the Allocation Scope option, select the Non-Specified Identified Stock check box.
- The source document which requires the allocation has not specified a particular identified stock.

2.3.3 Tasks

2.3.3.1 Create a Storage Control Profile

Overview

You can create a storage control profile to help you to set up the rules governing the way products are stored in logistics areas. By setting up these rules, a logistics department can efficiently store and move products within warehouses and production areas.

Procedure

1. Go to [Supply Chain Design Master Data ➤ Storage Control Profiles](#) and click [New](#) to open the Storage Control Profile editor.
2. On the General tab page, under Allocation and Strategy, enter the allocation and strategy information by doing the following:
   a. In the Storage Control Profile ID field, enter a storage control profile ID.
   b. In the Storage Control Profile Description field, enter a description of the storage control profile.
   c. Select the Negative Stock Allowed check box if you want to allow inventory postings that lead to negative stock.
      
      Negative stock directly affects the determination of moving average prices for inventory valuation.

   d. Enter other details as necessary.
3. Add the logistics use by doing the following:
a. Select the **Inventory-Managed** check box.
b. In the **Allocation Type** field, select whether you want to allocate on-hand stock or expected stock.
c. Under **Logistics Use**, click **Add Row**.
d. In the **Logistics Use** list, choose the logistics use of the storage control profile. Repeat the steps outlined above to add other logistics uses.

4. Set the storage criteria by doing the following:
   a. Choose the **Restrictions** tab page.
   b. Under **Only Store Same**, select the appropriate check box or check boxes to define the storage criteria.
   c. Enter further information as required if you want to store only specific logistics units, storage groups, or products.

5. Specify replenishment and removal conditions by doing the following:
   a. In the **Storage Control Profiles** view, choose the **Replenishment and Removal Rules** tab page.

   The system does not display the **Replenishment and Removal Rules** tab page automatically. You must select the **Inventory-Managed** check box on the **General** tab page for the system to display the **Replenishment and Removal Rules** tab page.

   b. Choose the **Replenishment** tab and click **Add** to specify the details for a default replenishment rule.
   c. In the **Replenishment Type** list, choose whether you want replenishment to be consumption based or demand based. Enter further information as required.
   d. Choose the **Removal** tab and click **Add** to specify the details for a default removal rule.
   e. Enter the threshold and the target inventory quantity you want to reach when removing products.

6. Click **Save** to save the storage control profile, then click **Close** to return to the **Storage Control Profiles** view.

The new storage control profile is saved to the system and added to the list in the **Storage Control Profiles** view. To open the storage control profile, select the appropriate storage control profile ID and click **Edit**.

You need to activate a storage control profile before it can be used by your logistics department. To activate a storage control profile, click **Change Status** and select **Activate**.

2.4 Resources View

2.4.1 Quick Guide for Resources (in Supply Chain Design Master Data)

The **Resources** view allows you to define resources of various types, including their scheduling, capacity, cost rate and services. The resource types in the system are equipment, vehicle, and labor. You can access the **Resources** view from the **Supply Chain Design Master Data** work center.

- **Multiple Resources**:
  - A multiple resource is defined as a single resource which acts as a representative for multiple similar resources. Each of the individual resources represented by the multiple resource should have identical capacity. The use of multiple resources makes the set up and maintenance processes easier. If you select the **Multiple Resources** check box, the system enables the **Number of Resources** field on the **Operating Times** tab. The multiple resource acts as a factor that multiplies the available capacity of the defined
resource. For example, if you have three identical drilling machines, you can model them in the system as multiple resources. The planner defines one of the drilling machines, resource A, with a capacity of 8hrs/day. If the multiple resource factor is 3, it means that there are 3 resources with the same available capacity. The overall available capacity is therefore 3 x 8hrs/day.

- **Each of the individual resources must have the same valid cost rate which is taken into account for the actual cost calculation.**

**Resource Group:**
- You can group different resources for easier planning. A resource group is made up of individual resources and the available capacity of the resource group is calculated by summing up the available capacity of each individual resource in the group. The available capacity of a resource group as a whole will be taken into account when planning how to distribute the capacity. The capacity can be different for each resource. During production task confirmation in a production process, the ID of the resource used in the activity can be entered into the task confirmation and the details viewed in the production order. For example, if there are three machines with different capacities a, b, and c, the overall available capacity will be capacity a + capacity b + capacity c.

- **Each of the individual resources has its own individual cost rate which is taken into account for the actual cost calculation.**

For more information, see:
- *Create a Resource* in this document.
- *Quick Guide for Task Control (in Production Control)*
- *Resource Load Quick Guide*

**Shifts and Shift Breaks:** A shift program is a template that describes working times for resources and can be used for capacity planning. It contains information such as shift start and end times, and break times. You can use the shift program, for example, combined with a working day calendar to define the final work schedule for your business in the *Resources* view of the *Supply Chain Design Master Data* work center. For more information, see *Shift Programs Quick Guide* [page 74].

**Operating Times:** For each resource that is a main production resource, you need to define operating times. The operating times define the availability of a resource based on the working time calendar of the corresponding site. You can define standard and time-dependent operating times by using a shift program or a recurrence pattern of operating hours. In contrast to standard operating hours, time-dependent operating hours are only valid for a certain validity period. In addition, you can maintain single downtime events, or additional times. The number of resources and the resource utilization are time-dependent. You can specify them separately on the basis of the different operating times. The resource utilization allows you to define the resource’s total capacity that is available within the defined operating times. For more information, see *Create a Resource* in this document.

Resources are used in the following:

- **Production:** A production process uses a production model. A prerequisite for a production model is an active resource. To use a resource in your production process, you need to assign it to an operation or to an activity in the bill of operations. The main production resource is assigned to an operation, and additional resources can be assigned to a production activity. The production model used in a production process is copied into the production order. For more information, see *Production Models Quick Guide* [page 101].

During production task confirmation in a production process, the ID of the resource used in the activity can be entered into the task confirmation and the details viewed in the production order. For more information, see *Quick Guide for Task Control (in Production Control)*. In the production process the resource is also used for cost determination. For more information, see *Determining Cost Rates* below.

- **Load Leveling in Supply Planning:** In supply planning, you can plan production proposals on the basis of the resource load. To enable this, the resource must first be defined as relevant for planning in order to include...
it in the planning view of the bill of operations. The resource is then used to plan the capacity requirements for the production process. The released planning model serves as the basis for the production proposal in supply planning. In the Resource Load view of the Supply Planning work center, you can see a comparison of the available capacity and the required load for a specific resource. The run load leveling action can be used to fit the available capacity to the load. For more information, see Resource Load Quick Guide.

- **Supply Chain Management Processing:** During task confirmation in a production process, the ID of the resource used in the activity can be entered into the task confirmation and the details viewed in the production order. For more information, see Quick Guide for Task Control (in Production Control).

- **Financial Evaluation:** The resource is not visible to the user but the cost is calculated based on the resource defined by the user.
  - **Determining Cost Rates:** A resource can define a cost rate and services. The resource cost rate or the service cost rate, in that order, enable financial evaluation. To define a resource cost rate, the resource must be defined as relevant for financials. If the Resource Relevant for Financials check box is selected, the Valuation tab is visible in which you can enter the specific attributes that are relevant for cost calculation. You can define the limit of the period for which a cost rate is valid using the delimit function. This enables you to enter a date until which a specific cost rate is valid. A service is used to value the service consumption of a specific activity used in the production model. You can maintain the cost rate of a service in the Product Data work center. For more information, see Create a Resource in this document.

- **Processes Using Resources for Financial Evaluation:**
  - **Employee Time Sheet Reporting To Projects:** Employees or their time administrators enter confirmations for working time in the employee time sheet. The time sheet records the time worked and the projects and project tasks for which the work was performed. Each labor resource is assigned to a cost center and one or more jobs. This assignment is time-based. Each employee is assigned to a cost center and a job. With the cost center/job combination from the employee it is possible to find exactly one labor resource (with the same cost center/job combination) and then determine the cost rate from the resource. The system always needs to be able to find a unique labor resource. If a cost rate has been maintained for the labor resource, the system uses that rate to valuate the working time. If no labor resource cost rate exists, the service cost rate is used instead. When an employee enters an activity confirmation, the system derives the resource from the employee’s cost center and job, and automatically defaults the resource in the confirmation. For more information, see Service Cost Allocation to Projects.

  - **Service and Repair Scenario:** Resources relevant for cost calculation can be used in the time posting for a service engineer’s cost calculation. During the valuation of a labor resource such as a service engineer, the combination of cost center and job assignment is used to determine the cost rate assigned to the labor resource, which is then used in the cost calculation. In the service confirmation, the employee is entered as the Service Performer. The system then determines the labor resource and thus cost rate according to the following:
    
    1. The employee (Service Performer) is assigned to a cost center and a job.
    2. The system searches for a labor resource assigned to the same cost center.
    3. The system searches for the labor resource which has the same job assignment as the employee.
    4. This resource is then used for the cost calculation for this service. In the Resources view of the Supply Chain Design Master Data work center, you can view the cost center assignment and the job assignment for each labor resource. The cost center assignment and the job assignment are assigned to the employee by Human Resources.

For more information, see:
Business Background

Resources
The resource is a central master data object that you can use to define all the data of a machine, tool, vehicle, or employee relevant to planning and executing a production process, as well as valuating the costs of the same. The Supply Chain Design Master Data work center enables you to maintain all the necessary parameters to integrate your resources into supply planning, production execution, and financials.
For more information, see Resources [page 37].

Resources Quick Guide (in Cost and Revenue)
Resources provide services for projects, sales orders, service orders, and production lots. Through service cost allocation the system automatically debits the receiver of the service and credits the cost center providing the resource.
For more information, see Resources Quick Guide (in Cost and Revenue)

Tasks
Create a Resource
For information about this task, see here [page 69].

Edit a Resource
1. Select the resource ID that you want to edit and click Edit to open the Resource editor.
2. Enter the updated details and click Save.
For more information, see Create a Resource.

Change the Status of a Resource
1. Select the resource ID that you want to edit and click Change Status.
2. Choose the desired action.
The new status is set.

Delete a Resource
1. Select the resource ID that you want to delete.
2. Click Delete.
The resource is deleted.

You can only delete a resource that has status In Preparation.
Create a Resource Group

1. Click New and then choose Resource Group or in the taskbar, click Common Tasks and choose New Resource Group to open the New Resource Group editor.

2. On the General tab, under Resource Group Details, enter a resource group ID and resource group description.
   - If you want to use the resource group in production control, select the Relevant for Production Control check box.
   - Enter resource location data.

   The Resource Relevant for Capacity Planning check box is checked by default to allow the resource group to be used for calculating capacity and load planning.

3. On the Grouping tab, you can assign resources to the resource group by doing the following:
   - Under Assigned Resources, click Add Row.
   - In the new row, choose or enter a Resource ID. The system will automatically display the related resource data.

   All resources in a resource group must be assigned to the same site as the resource group itself.

   - Check the Relevant for Material Costing check box, if this resource’s cost rates are to be used by finance to calculate the product cost.

   Only one financial-relevant resource per resource group can be checked relevant for material costing. This resource cost rates are then used to calculate product costs by finance.
   - Once a resource in a resource group has been checked relevant for material costing and saved, you cannot then deselect financial relevance for the resource itself.
   - You can also remove a resource from the assigned resources list by clicking Remove.

   Click Save.

4. On the Planning tab, you can add planning details such as bucket type and bucket utilization. You can also view the planning capacity and downtimes and additional times as a reference.

5. On the Services tab, you can add the services that are provided by the resource group for cost calculating and reporting purposes.

   Services are only relevant for resource groups that are relevant for production control.
   - A resource group can only have one service for each activity type.

   Under Provided Services, click Add Row.
   - In the newrow, enter a Service ID. The system will automatically display the related service data.
You can also remove a service from the resource group by clicking Remove.

6. Enter further information as required.
7. To activate the new resource group, click Change Status and then choose Activate.

You can activate the resource group from here, or you can activate it at a later time from the Resources view.

8. To save the new resource group click Save and then click Close to return to the Resources view.

The new resource group is saved to the system.

**Edit a Resource Group**

1. Select the resource group that you want to edit and click Edit to open the Resource Group editor.
2. Enter the updated details and click Save.

For more information, see Create a Resource Group.

**Change the Status of a Resource Group**

1. Select the resource group that you want to edit and click Change Status.
2. Choose the desired action.

The new status is set.

You can also change the status in the Resource Group editor.

**Delete a Resource Group**

1. Select the resource group that you want to delete.
2. Click Delete.

The resource group is deleted.

You can only delete a resource group that has status In Preparation.

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**2.4.2 Tasks**

**2.4.2.1 Create a Resource**

**Overview**

You can create a new equipment resource, labor resource, or vehicle resource using the Resources view in the Supply Chain Design Master Data work center.
Procedure

1. Click **New**, then choose the resource type you want to create. You can choose between *Equipment Resource*, *Labor Resource*, and *Vehicle Resource*.

   You can also open the corresponding resource editor from the taskbar. Click **Common Tasks** and choose *New Equipment Resource*, *New Labor Resource*, or *New Vehicle Resource*.

2. On the **General** tab, enter the general data for the new resource by doing the following:
   a. Under **Resource Details**, enter an ID and a description for the new resource.
   b. You must choose a resource capacity unit of measure (UoM).
   c. Under **Resource Use**, define how the resource is used in the different business processes and application areas:
      - If you want to incorporate the resource in the valuation of business transactions in financial accounting, select the **Resource Relevant for Financials** check box.
      - If you want to plan production proposals on the basis of the resource load, select the **Resource Relevant for Capacity Planning** check box.
      - If you want to define this resource as the main production resource used in the production model, select the **Main Production Resource** check box.
      - If you want to use the resource as a representative for multiple similar resources, select the **Multiple Resources** check box. You define the number of resources in a later step on the **Operating Times** tab.
   d. Under the **Resource Location Data**, enter the relevant details.

   The **Valuation** tab only shows when the **Resource Relevant for Financials** check box is selected.

3. On the **Valuation** tab, assign the new resource to cost centers according to date by doing the following:
   1. Under **Current Cost Center Assignment**, you can view the cost center, company, and validity dates for the current cost centers assignment.

      For **Labour Resources**:
      - For a specific validity period, you must assign a cost center to a labor resource.
      - If you have more than one labor resource for the same cost center and validity period, you must have a unique job assignment for each labor resource.

   2. Under **All Cost Center Assignments**, click **Add Row** to assign the resource to a new cost center for a time period. You can update the date and cost center details for future assignments.
   3. If you create a labor resource, you can assign a job that describes the role of the employee that is assigned this resource. To do so, under **Job Assignment**, click **Add Row**, and enter the job data.
   4. Under **Cost Rates**, select a row and click **Maintain Cost Rate** to maintain the **Valid From** date, **Cost Rate**, and **Cost Unit**. Any value from and including zero is a valid cost rate and enables you to define the limit of the period for which the cost rate is valid.
You can maintain the cost rate of a resource, which is relevant for finance. To enable this, the resource must be activated. The system will use this cost rate to calculate the cost of the resource used in the process. You can define the limit of the period for which the cost rate is valid using the delimit function. This enables you to enter a date until which this cost rate is valid.

5. To delimit a resource cost rate, select the line of the cost rate you want to delimit, and click **Delimit**. The **Delimit Cost Rates** dialog box appears.

6. Select the **Valid To** date and click **OK**. The cost rate you maintained is now valid until the **Valid To** date that you entered.

   The **Valid To** date has to be within the same time period as that of the selected line.

4. On the **Operating Times** tab, assign a resource operating profile or enter operating time details for the new resource by doing the following:
   a. Under **Resource Operating Profile Reference**, enter an operating profile ID. In the **Working Calendar ID** list, choose a working calendar.
      
      You can use the **Reassign Operating Profile** button to update the time definition of the resource with the latest data from the entered resource operating profile. This function can be used when a user has changed some data in the resource or when the data of the resource operating profile has been changed.

      For more information, see Resource Operating Profiles Quick Guide [page 72].
   b. Define operating times for the resource by doing the following:
      1. On the **Standard Operating Times** tab, you can define recurring working times using a reference to local operating times.
         - If you choose **Shift Program**, you can select a predefined shift program. The shift program defines start and end times for the shift as well as when a break should occur and how long it should be.
         - If you choose **Operating Hours**, you can define a weekly recurrence pattern of work hours for the resource that includes the days to be worked per week including the actual hours, and whether public holidays should be included in the shift or not.
      2. On the **Time-Dependent Operating Times** tab, you can define working times by overwriting the standard operating times for a certain time period by clicking **Add Row**.
      3. On the **Downtimes and Additional Times** tab, you can add downtimes and additional times as required. These will overwrite the standard operating times.

5. On the **Capacity and Scheduling** tab, enter capacity and scheduling details by doing the following:
   a. In the **Scheduling Buffer** field, you can specify a buffer time that is added to the lead time of the production order in manufacturing. In this way, you can protect the lead time against fluctuations due to unforeseen issues.
   b. In the **Bucket Type** list, choose the bucket type according to which you want to plan the resource.
   c. In the **Bucket Utilization** field, specify the percentage of the available capacity to be used for planning. This field is only available if you have defined the resource as relevant for capacity planning on the **General** tab.

6. Assign services and individual materials to the resource by doing the following:
   a. In the **Services** view:
      - Click **Add Row** and enter a service ID.
Select the activity type for which you want to use the resource in the bill of operations.
Choose a calculation method to define how the service consumption is calculated.
b. If you create an equipment or vehicle resource that represents an asset in financials, go to the Individual Materials tab. Click Add Row and enter the ID of the corresponding individual material. The system automatically enters the individual material description.

7. Activate and save the new resource by doing the following:
a. To activate the new resource, click Change Status and then choose Activate.
b. To save the new resource, click Save, and then Close to return to the Resources view.

The new resource is saved to the system.

You can activate the resource from the editor, or you can activate it at a later time from the Resources view.

2.5 Resource Operating Profiles View

2.5.1 Resource Operating Profiles Quick Guide

The Resource Operating Profiles view allows you to set up and work with resource operating profiles. A resource operating profile is a central definition of working time that contains all the information necessary to maintain the operating times for multiple resources. It offers a central location for the maintenance of working times. You can access the Resource Operating Profiles view from the Supply Chain Design Master Data work center.

Business Background

Resources

The resource is a central master data object that you can use to define all the data of a machine, tool, vehicle, or employee relevant to planning and executing a production process, as well as valuating the costs of the same. The Supply Chain Design Master Data work center enables you to maintain all the necessary parameters to integrate your resources into supply planning, production execution, and financials.

For more information, see Resources [page 37].

Tasks

Create a Resource Operating Profile

1. Click New or in the taskbar, click Common Tasks and choose New Resource Operating Profile to open the Resource Operating Profiles editor.
2. Under Resource Operating Profile Details enter an ID and a description for the operating profile.
3. Under Resource Calendar Details, in the Working Calendar ID field, choose an appropriate working calendar.
4. Under Operating Times Selection, in the Operating Time Type field, specify a time type for the operating profile.

- If you select the operating time type Shift Program: In the Shift Program Details tab, enter an ID for the shift program.
- If you select the operating time type Operating Hours: In the Operating Hours tab, click Create Operating Hours and Add Row. Then enter operating hours and recurrence details.

5. To maintain the resource operating profile details, click View All.

- To enable the View All button, you must first save the new resource operating profile details you have entered.

6. On the Standard Operating Times tab, you can define recurring working times, using a reference to local operating times.

7. On the Time-Dependent Operating Times tab, you can define working times by overwriting the standard operating times for a certain time period by clicking Add Row.

8. On the Downtime and Additional Times tab, you can add downtimes and additional time details for the new operating profile by clicking Add Row.

9. On the Assigned Resources tab, you can view the resources that are assigned to this operating profile. Click Update Resources to update the data in the assigned resources if you have changed the resource operating profile.

10. On the Assigned Locations tab, you can assign the locations for which the resource operating profile is valid. Click Add Row and enter an ID for the location. The system enters the description for the location.

11. To activate the new resource operating profile, click Change Status and then choose Activate.

- You can activate the resource operating profile from here, or you can activate it at a later time from the Resource Operating Profile view.

12. To save the new resource operating profile, click Save, and then click Close to return to the Resource Operating Profiles view.

The new resource operating profile is saved to the system.

For more information about resources, see Quick Guide for Resources (in Supply Chain Design Master Data) [page 64].

**Edit a Resource Operating Profile**

1. Select the operating profile ID for the profile you want to edit and click Edit to open the Resource Operating Profiles editor.
2. Enter the updated details and click Save.

For more information, see Create a Resource Operating Profile.

**Change the Status of a Resource Operating Profile**

1. Select the operating profile ID for the profile you want to edit and click Change Status.
2. Choose the desired action.
The new status is set.

You can also change the status in the Resource Operating Profiles editor.

Delete a Resource Operating Profile

1. Select the operating profile ID for the profile you want to delete.
2. Click [Delete].
The profile is deleted.

You can only delete a resource operating profile that has status In Preparation.

2.6 Shift Program View

2.6.1 Shift Programs Quick Guide

In a busy production environment, with many workers working a variety of shifts, it is important that you make the most of available resources and staff to maximize productivity. You can use the Shift Programs view to work with shift programs.

A shift program is a template that describes working times, for example, resources, and can be used for capacity planning. It contains information such as shift start and end times, and break times. You can use the shift program, for example, combined with a working day calendar to define the final work schedule for your business in the Resources view of the Supply Chain Design Master Data work center.

The Shift Programs view in the Supply Chain Design Master Data work center has four subviews: Shift Programs, Shift Templates, Shift Break Templates, and Fixed Break Templates.

You can define:

- Shifts with specified start and end times.
- Fixed breaks occurring at the same time every day.
- Shift breaks that start at a time specified relative to the shift start time.
- Recurring day programs that define the shifts and breaks that make up the working day. You can specify multiple recurring day programs within a single shift program.

A shift program is a combination of all of these and can be set to recur on a daily, weekly, monthly, or on an annual basis.

Business Background

Resources

The resource is a central master data object that you can use to define all the data of a machine, tool, vehicle, or employee relevant to planning and executing a production process, as well as valuating the costs of the same. The
Supply Chain Design Master Data work center enables you to maintain all the necessary parameters to integrate your resources into supply planning, production execution, and financials. For more information, see Resources [page 37].

Tasks

Create a Shift Program

1. Choose the Shift Programs subview.
2. Click New or in the taskbar, click Common Tasks and choose New Shift Program to open the New Shift Program editor.
3. Enter a Shift Program ID and a Shift Program Description.
4. Under Recurring Day Programs, do the following:
   a. Click Add Row, and enter a Recurrence description.
   b. Fixed Break
      Do one of the following:
      - Choose a fixed break ID from the value selection in the table.
      - Create a new fixed break template. To do this, click Fixed Break Template and choose New to open the New Fixed Break Template editor. For more information, see Create a Fixed Break Template.
   c. Define the settings for public holidays.

The public holidays are specified in the working day calendar. For all public holidays there is NO available capacity created. In the shift program you can specify with the On Public Holiday parameter what should happen if the working time from the shift is scheduled on a public holiday. You can specify multiple recurrences in the shift program and depending on the settings it could be that a shift is scheduled on a public holiday. Example: You have set up a shift program with a weekly recurrence on Thursday (working times 08:00 – 18:00 hours). Usually each week, the working time is scheduled for Thursday from 08:00 – 18:00 hours and the resource where the shift program is used is calculating the available capacity. But, if in Germany there is a public holiday on Thursday 11th January 2011, then on this day the shift program will be decided based on the On Public Holiday parameter.

- If you selected Skip: The working time is skipped and there is no capacity available for the resources which are using this shift program.
- If you selected Move forward: The working time is moved one day forward to the 10th of January 2010. Note that if there is already a working time scheduled on this day, the capacity will not be doubled.
- If you selected Move backwards: The working time is moved one day backwards to the 12th of January 2010. Note that if there is already a working time scheduled on this day, the capacity will not be doubled.
The **Start/End on Public Holiday** parameter is only relevant when the time of the recurrence starts on the day before or ends on the next day. For example, if the evening shift starts at 18:00 hours and ends on 02:00 hours in the morning on the next day and you have a weekly recurrence which is on Monday to Friday, from Monday until Thursday there is no issue. The evening shift is scheduled as planned. However, on Friday (if the Saturday is a public holiday according to the working day calendar) the shift is scheduled depending on the settings for **Start/End on Public Holiday** parameter.

- If you selected **Skip inactive**: The Friday evening shift is not scheduled.
- If you selected **End on inactive**: The Friday evening shift is scheduled even if the next day is a public holiday.
- If you selected **Start on inactive**: A morning shift that starts for example, on Sunday evening, is scheduled even if the Sunday is a public holiday.
- If you selected **Start and end on inactive**: The shifts are always scheduled, they can start on a public holiday and they can end on a public holiday.

5. On the **Recurrence** tab, choose a recurrence pattern.
6. On the **Shifts** tab, specify a **Shift Template** by doing one of the following:
   - Choose a shift template ID from the value selection in the table.
   - Create a new shift template. To do this click **Shift Template** and choose **New** to open the **New Shift Template** editor. For more information, see **Create a Shift Template**.
7. Specify a **Shift Break Template** for the specified shift template by doing one of the following:
   - Choose a shift break template ID from the value selection in the table.
   - Create a new shift break template. To do this, click **Shift Break Template** and choose **New** to open the **New Shift Break Template** editor. For more information, see **Create a Shift Break Template**.
8. Click **Save**.
   The new shift program is created. You can work with it in the **Shift Programs** subview.

**Edit a Shift Program**

1. Choose the **Shift Programs** subview.
2. Select the shift program ID that you want to edit and click **Edit** to open the **Shift Program** editor.
3. Enter the updated details and click **Save and Close**. The shift program is updated. For more information, see **Create a Shift Program**.

**Delete a Shift Program**

1. Choose the **Shift Programs** subview.
2. Select the shift program ID that you want to delete and click **Delete**.
   The shift program is deleted.
Create a Shift Template

1. Choose the Shift Templates subview.
2. Click New to open the New Shift Template editor.
3. Enter a Shift Template ID and a Shift Template Description.
4. Click the Start Time arrow and choose the time at which the shift starts.
5. Click the End Time arrow and choose the time at which the shift ends.
6. Select a Shift Break Template ID and add it.
7. Click Save.
   The new shift template is created.

Edit a Shift Template

1. Choose the Shift Templates subview.
2. Select the shift template ID that you want to edit and click Edit to open the Shift Template editor.
3. Enter the updated details and click Save. The shift template is updated.
   For more information, see Create a Shift Template.

Delete a Shift Template

1. Choose the Shift Templates subview.
2. Select the shift template ID that you want to delete and click Delete.
   The shift template is deleted.

Create a Shift Break Template

1. Choose the Shift Break Templates subview.
2. Click New to open the New Shift Break Template editor.
3. Enter a Shift Break Template ID and a Shift Break Template Description.
4. Under the Shift Break Program section, click Add Row.
5. Click the Shift Break Starts After arrow and choose the time interval after which the break starts.
6. Click the Duration arrow and choose the break duration.
7. Click Save.
   The new shift break template is created and is available for you to use when working with shift templates.

Edit a Shift Break Template

1. Choose the Shift Break Templates subview.
2. Select the shift break template ID that you want to edit and click **Edit** to open the *Shift Break Template* editor.

3. Enter the updated details and click **Save**. The shift break template is updated.

   For more information, see *Create a Shift Break Template*.

**Delete a Shift Break Template**

1. Choose the *Shift Break Templates* subview.
2. Select the shift break template ID that you want to delete and click **Delete**.

   The shift break template is deleted.

   *You can only delete a shift break template that is not being used in the system.*

**Create a Fixed Break Template**

1. Choose the *Fixed Break Templates* subview.
2. Click **New** to open the *New Fixed Break Template* editor.
3. Enter a *Fixed Break Template ID* and a *Fixed Break Template Description*.
4. Under *Fixed Break Program*, click **Add Row**.
5. Click the *Start Time* arrow and choose the time at which the break starts.
6. Click the *End Time* arrow and choose the time at which the break ends.
7. Click the *Start of Fixed Break* arrow and choose the day on which the break starts.
8. Click **Save**.

   The new fixed break template is created and is available for use when you work with shift program.

**Edit a Fixed Break Template**

1. Choose the *Fixed Break Templates* subview.
2. Select the fixed break template ID that you want to edit and click **Edit** to open the *Fixed Break Template* editor.
3. Enter the updated details and click **Save**. The fixed break template is updated.

   For more information, see *Create a Fixed Break Template*.

**Delete a Fixed Break Template**

1. Choose the *Fixed Break Templates* subview.
2. Select the fixed break template ID that you want to delete and click **Delete**.

   The fixed break template is deleted.

   *You can only delete a fixed break template that is not being used in the system.*
2.7 Transport Zones View

2.7.1 Transport Zones Quick Guide

The Transport Zones view enables you to display, create, and edit transport zones. A transport zone is a logical division of geographic areas for which you can perform logistics tasks. There is no limit to the geographic areas you can add to a transport zone. During the sales process, the system combines the data from transport zones and transport lanes to determine shipping durations and available ship-from sites. This information forms the basis of the availability check.

You can use transport zone to group customers according to their ship-to addresses or according to their customer IDs, but not both.

You can access the Transport Zones view from the Supply Chain Design Master Data work center.

Business Background

Ship-From Determination and Shipment Scheduling for Customer Demand

As supply planner, you can use ship-from determination and shipment scheduling for customer demand to determine the following:

- A site or supplier from which the product is delivered to the customer
- The date when the product must be available to ship (execution start date)
- The date on which the product is shipped to the customer (shipment date)
- The date on which the product arrives at the customer site (delivery date)

This information is used by planning, production, and logistics to ensure the customer order is fulfilled on time. Ship-from determination is triggered when a customer demand, such as a sales order, service order, project stock order, or sales quote is entered in the system. It determines the ship-from site or supplier for the products requested and is a prerequisite, for example, for planning runs and availability checks. Ship-from determination uses several sources of information (transport lanes, purchasing contracts, and list prices) to determine the site or supplier from which the product is delivered.

For more information, see Ship-From Determination and Shipment Scheduling for Customer Demand [page 30].

Tasks

Create a Transport Zone

1. In the Transport Zones view, click New or in the taskbar, click Common Tasks and choose New Transport Zone to open the New Transport Zone quick activity.

2. Enter the transport zone ID and, if required, a transport zone description.

3. Do the following:
   - If you want to create a transport zone based on region, select the Regions tab. Click Add Row and choose the country you want to add to the transport zone.
from the Country list or directly enter the country ID or name. Follow the steps 4 to 9.

- If you want to create a transport zone based on customer, select the Customers tab. Click Add Row and use the Including or Excluding list and the Search Pattern list to specify and define which customers to include or exclude from the transport zone. The included customers will be grouped under the transport zone. Following this, skip to step 10.

4. Choose a region from the Region list if you want your transport zone also to be valid for a specific region within the country.
   If you do not specify a region, the transport zone is valid for all regions of the country you added. Defining regions within a country is useful if you want to use different ship-from sites to ship products to different regions.

5. Repeat the steps for each country and region you want to add to the transport zone.

6. On the Postal Codes tab, you can enter details to make the transport zone valid for a specific postal code or range of postal codes of a specific country, or to exclude a specific postal code or postal code range from the transport zone.
   To do this, click Add Row and use the Including or Excluding list and the Search Pattern list to specify and define which postal code or postal code ranges to include or exclude from the transport zone.

- Once you have specifically included a region in the transport zone on the Regions tab, you cannot exclude certain postal codes or postal code ranges of this region from the transport zone.
- To exclude a postal code or postal code range of a specific country from the transport zone, you must first include the complete postal code range of the country.

7. Choose the country whose postal code or postal code range you want to add to or exclude from the transport zone from the Country list or directly enter the country ID or name.

8. Enter the following postal code information depending on what you selected from the Search Pattern list:
   - If you selected Between from the Search Pattern list, enter the first postal code you want to include in or exclude from the transport zone in the Postal Code From column. In the Postal Code To column, enter the last postal code you want to include in or exclude from the transport zone.
   - If you selected Equal To, Greater Than, or Greater Than or Equal To, enter the postal code you want to include or exclude from the transport zone in the Postal Code From column.
   - If you selected Less Than or Less Than or Equal To, enter the postal code you want to include or exclude from the transport zone in the Postal Code To column.

9. Repeat the steps for each set of postal codes you want to add to or exclude from the transport zone.

10. Click Change Status and then choose Activate to activate the transport zone and be able to use it.

You can also later activate the transport zone in the Transport Zones view.
11. Click [Save] to save the new transport zone.
   The new transport zone is saved to the system and added to the list in the Transport Zones view.

If you create multiple transport zones that contain the same region and postal code information, the system sends you a warning message that the defined region or postal code is already covered by another transport zone.

Edit a Transport Zone

1. Select the transport zone ID that you want to edit and click [Edit] to open the Transport Zone editor.
2. Enter the updated details and click [Save].
   For more information, see Create a Transport Zone.

You can edit existing transport zones to remove or add countries, regions, postal codes, or customers, even when the transport zone is being used in a transport lane.
Since the system does not perform a check, please verify the changes carefully before saving changes in an active transport zone.

Change the Status of a Transport Zone

1. Select the transport zone ID that you want to edit and click [Change Status].
2. Choose the desired action.
   The new status is set.

- You can still edit the transport zone after you have activated it.
- You can set an active transport zone to obsolete if you no longer want to use it, you can also block an active transport zone, in which case you tell the system not to ship items to this transport zone.
- You can undo both the obsolete and block actions.
- You can also change the status in the Transport Zone editor.

Delete a Transport Zone

1. Select the transport zone ID that you want to delete.
2. Click [Delete].
   The transport zone is deleted.

- You can only delete a transport zone that has status In Preparation.
2.8 Transport Lanes View

2.8.1 Transport Lanes Quick Guide

The Transport Lanes view enables you to display, create, and edit transport lanes. A transport lane is a set of guidelines for controlling the movement of products between a ship-from site and a transport zone or between two sites of the same company. It provides information about the shipping duration and the products that can be transported using this lane.

You can also use this view to define the priority of a transport lane in comparison to transport lanes from other ship-from sites. The transport lane priority affects the probability of the system selecting the transport lane during ship-from determination for a customer order. You can access the Transport Lanes view from the Supply Chain Design Master Data work center.

Business Background

Ship-From Determination and Shipment Scheduling for Customer Demand

As supply planner, you can use ship-from determination and shipment scheduling for customer demand to determine the following:

- A site or supplier from which the product is delivered to the customer
- The date when the product must be available to ship (execution start date)
- The date on which the product is shipped to the customer (shipment date)
- The date on which the product arrives at the customer site (delivery date)

This information is used by planning, production, and logistics to ensure the customer order is fulfilled on time. Ship-from determination is triggered when a customer demand, such as a sales order, service order, project stock order, or sales quote is entered in the system. It determines the ship-from site or supplier for the products requested and is a prerequisite, for example, for planning runs and availability checks. Ship-from determination uses several sources of information (transport lanes, purchasing contracts, and list prices) to determine the site or supplier from which the product is delivered.

For more information, see Ship-From Determination and Shipment Scheduling for Customer Demand [page 30].

Tasks

Create a Transport Lane

1. Choose [New] or in the taskbar, click Common Tasks and choose New Transport Lane to open the New Transport Lane quick activity.
2. Enter a transport lane description if required.
3. In the Shipping Duration field, enter the number of days and choose a number of hours from the list if required.
4. Enter the Ship-from Site ID.
5. If you want to ship goods from one site of your own company to another site of your company, enter the **Ship-to Site ID** and the **Transport Zone ID**.

6. In the **Allowed Products** section, click **Add Row** to select products allowed to be transported on the transport lane.

7. From the drop-down list in the **Valid For** column, select either **All Products**, **Product**, or **Product Category**.

8. Enter the following product information depending on what you selected for the **Valid For** column:
   - If you selected **Product**, enter the product ID. If necessary, click the value selection icon to search for the product ID.
   - If you selected **Product Category**, enter the product category ID. If necessary, click the value selection icon to search for the product category ID.

9. Repeat the steps to add more products or product categories to the transport lane.

10. Click **Change Status** and then choose **Activate All** to activate the transport lane and all allowed products.

   - You can set two different types of status; one for the transport lane itself to specify whether the lane can be used, and another one for the individual products or product categories that you want to ship using the lane.
   - You can activate a transport lane in order to use it to ship your products. Note that you can activate a transport lane on its own or activate all, in which case you also activate all products that you want to ship using this lane.
   - You can also later activate the transport lane in the **Transport Lanes** view.

11. Click **Save** to save the new transport lane.

    The new transport lane is saved to the system and added to the list in the **Transport Lanes** view.

### Edit a Transport Lane

1. Select the transport lane ID that you want to edit and click **Edit** to open the **Transport Lane** editor.

2. Enter the updated details and click **Save**.

   For more information, see **Create a Transport Lane**.

   You can edit existing transport lanes to change the shipping duration, or add or remove products or product categories.

### Edit a Transport Lane Priority

1. Select an active transport lane from the transport lane worklist and click **Edit Priority** to open the **Change Transport Lane Priority** screen.

   A list of all active product and transport lane combinations for a specific transport zone appears.

2. In the **Priority** column, enter the transport lane priority you want to use for the relevant transport lane and product combination.

3. Repeat the step to assign priorities to other transport lane and product combinations.
4. Click **Save** to save the edited transport lane priority, then click **Close** to return to the *Transport Lanes* view.

The changes made to the transport lane priorities are saved in the system.

**Change the Status of a Transport Lane**

1. Select the transport lane ID that you want to edit and click **Change Status**.
2. Choose the desired action.

The new status is set.

- You can set two different types of status; one for the transport lane itself to specify whether the lane can be used, and another one for the individual products or product categories that you want to ship using the lane.
- You can activate a transport lane in order to use it to ship your products. Note that you can activate a transport lane on its own or activate all, in which case you also activate all products that you want to ship using this lane.
- You can set an active transport lane to obsolete if you do not want to use it anymore and you can also block an active transport lane, in which case you tell the system not to use it to ship your products. You can also undo both of these actions.
- You can activate the individual products or product categories you specified, block active product or product categories, set active products and product categories to obsolete, and undo the block and obsolete actions.
- You can also change the status in the *Transport Lane* editor.

**Delete a Transport Lane**

1. Select the transport lane ID that you want to delete.
2. Click **Delete**.

The transport lane is deleted.

**You can only delete a transport lane that has status In Preparation.**

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**2.9 Product Groups View**

**2.9.1 Product Groups Quick Guide**

In the Product Groups view, you can create a hierarchy of groups that you can use to structure products in forecasting, planning, production, and storage. This enables you to assign the responsibility for executing tasks for a group of products to a user. In their day-to-day work, users can easily select the products for which they are responsible. This gives users simplified procedures, and enables an efficient process.

You can only create one cross-process product category hierarchy per system. It is not possible to create a company or business-based product category hierarchy. However, you can create one product category hierarchy for storage, one for planning, one for forecasting, and one for production. The storage and production groups are assigned to a
site, whereas the planning group is assigned to a planning area. The assignment of the site is done when the products are assigned to their categories.

You can access the Products Group view from the following locations:

- **Planning and Production Master Data** work center
- **Supply Chain Design Master Data** work center
- **Warehousing and Logistics Master Data** work center

This view contains the following subviews:

**Forecasting Groups Subview**

You can use the **Forecasting Groups** view to create a hierarchy of products and use the hierarchy to create demand forecasts. You can assign products to the scope of a demand plan and distinguish between products in the selection criteria for the interactive planning board. You can also perform a statistical forecast at the aggregated level of a forecasting group rather than the detailed level of a product. For more information, see Forecasting.

**Planning Groups Subview**

The **Planning Groups** view enables you to create a hierarchy of product groups that you can use to structure products for supply planning. You can review products on all the levels of the hierarchy. When you select at an upper level, you also review all the products in the corresponding lower levels. You can delete and rename subgroups. You can also display and allow material assignments.

In Supply Planning, you can use planning groups as a selection criterion to select production proposals and purchase proposals for your day-to-day tasks. In your business you can simplify the execution of planning tasks by assigning a group of products to a supply planner.

**Production Groups Subview**

The **Production Groups** view enables you to create a hierarchy of product groups that you can use to structure products for production. You can select products on all the levels of the hierarchy. When you select at an upper level, you also select all the products in the corresponding lower levels. You can delete and rename subgroups. You can also display and allow material assignments.

**Storage Groups Subview**

The **Storage Groups** view enables you to create a hierarchy of product groups that you can use to structure the products you store in your warehouse.

**Tasks**

**Create a Hierarchy of Product Groups**

1. Choose the **Production Groups** subview.
   
   You can also use this procedure to create a hierarchy of product groups for the planning, storage, and forecasting groups views. You can create a hierarchy of product groups in the **Planning and Production Master Data**, **Supply Chain Design Master Data**, and **Warehousing and Logistics Master Data** work centers.

2. To create the parent production group, click [New Hierarchy] to open the quick activity.
   
   You can only create one cross-process product category hierarchy per system. Once this has been done, the [New Hierarchy] button will be greyed out.
3. In the production groups table, enter the parent production group ID and description. Select the *Allow Product Assignments* check box if you want to assign this group to a product in the *Product Data > Material* editor. Click [Save] to save the new parent production group.

4. To add a subgroup to the newly created parent group, select the parent group in the production group table and click [Add Subgroup]. The system adds a new row to the production group table. The row is a child of the parent group.

5. Enter the production subgroup ID and description. Select the *Allow Product Assignments* check box if you need to assign this subgroup to a product in the *Product Data > Material* editor. Click [Save] to save the new production subgroup.

6. Repeat the steps above to add other subgroups as appropriate. Click [Save and Close] to save the new production subgroups and return to the *Production Groups* view.
3 Planning and Production Master Data

3.1 Business Background

3.1.1 Production Models

Overview

Production models gather all of the key information you need to manufacture a product in one place. Production models combine product (bill of material) and process (bill of operations) information that is used as a blueprint for manufacturing. Key inputs to production models are:

- Production BoM variants that contain input products and valid from dates.
- Bills of operations (BoOs) that contain a detailed description of how you manufacture a product and to which you can assign input products from variants.

Key outputs of a production model are:

- Released planning models (RPMs) that the system uses to determine the source of supply and to create production proposals in planning.
- Released execution models (REMs) that the system uses to create production requests and orders in manufacturing.

Production Models in Detail

Two basic principles underpin how the system handles production models. These are decoupling and reuse.

Decoupling

There is a clear split between master data and process information. This helps to ensure error free master data information is handed over to planning and manufacturing.
Decoupling in production models

**Reuse**

You need to specify key master data elements just once. You can then use the single master data element again and again as you specify your master data requirements. This simplifies the process of master data definition, and cuts down on labor and overhead.

The elements you can reuse include:

- **Input products from production BoM variants**
  
  You can assign the same input product to more than one production BoM variant. This means that you just enter the input product once to the system.

- **Production BoM variants**
  
  You can use the same production BoM variant in more than one segment.

- **Bills of operations**
  
  You can use the same bill of operations in more than one segment.

- **Production segments**
  
  You can use the same production segment in more than one production model.
An example of reusing input products from production BoM variants

Preparation: Specifying Foundation BoM Elements

Below are brief descriptions on the main master data elements.

Production BoM Variants

The production BoM acts as a holder, enabling you to collect associated production BoM variants in one common entity. A BoM variant is a complete structured list of the input products that are needed to manufacture a product, organized according to your needs.

When you specify input products in a production BoM variant, you also must specify an ECO for that input product. In this way you can control when individual input products become valid for use in planning and manufacturing. This means you have a timeline for change in input products.

You can assign input products from a BoM variant to an activity in a bill of operations. However, you must do this by assigning the line item group to which the input product belongs.

Engineering Change Orders

An engineering change order (ECO) is an identifier that allows you to bundle changes to the content of input products in a variant. ECOs also allow you to specify a date on which changes become valid.

There are two types of engineering change orders:

- **Single date orders**
  When an engineering change order of type "Single-date" is created, a validity is automatically created with it. Only this validity is allowed. A *Single-date* engineering change order may be created and saved only when the valid-from date is set.

- **Single date validity orders**
  You can create *Single date validity orders* if you have a requirement for changing validity parameters of a change order. This type of order can only be created with reference to an existing released or completed change order.
  You might need such a change for an isolated object or for some objects of one change order, especially for manufacturing purposes.
  The validity order inherits the validities from the referenced order. They can be changed, but cannot be deleted. You can change their status to *Block*.
  The validity order may be created only, if the referenced order has:
at least one released validity
- at least one change group object reference with changed objects
- the status Completed, if it is a normal engineering change order.

You can use an ECO in one or more production BoM variant, as long as the input products associated with the ECO become valid at the same time. However, when you complete an ECO you prevent any further changes taking place in the variants associated with the ECO.

For example, you have two variants with input products that are valid on the same date. However, you need to change input products in variant one while you need to start production on variant two. You should then use two separate ECOs even though both ECOs will have the same validity date.

**Bills of Operations**

A bill of operations is a detailed specification for how you manufacture a product. You can specify simple or complex manufacturing processes. Complex processes can include branches and connections (supply lines). You can specify sequences in both branches and connections. You can also specify two or more branches. However, you can only use one branch in your production process, so that a product exclusively follows only one path through production.

The basic units in a bill of operations are operations and activities. You can specify the resources that perform an activity in an operation. You can also specify additional resources for an activity. You can define what to do and how long it takes to do it, in fixed or variable durations in an activity.

The fixed duration is constant, regardless of how many items you need to manufacture. The variable duration is always related to the quantity of the bill of operations, as specified in the BoO Details tab of the Production Model editor. You can also specify both the fixed and variable duration together if the duration is a linear function of the operation quantity.

For example, you can specify a bill of operations quantity of 100 with a variable duration in an activity of 10 minutes. This means that the total time needed to carry out the activity for a production order quantity of 200 is 20 minutes.

You can specify a bill of operations quantity of 100 with a fixed duration in an activity of 10 minutes. The total time needed to carry out the activity is 10 minutes, even if you have to manufacture a quantity of 1,000.

You can also specify a bill of operations quantity of 100 with a fixed duration in an activity of one minute and a variable duration of 20 seconds. For a bill of operations quantity of 100, you get a duration of one minute 20 seconds, for a quantity of 200, you get a duration of one minute 40 seconds, and for a quantity of 300, you get a duration of two minutes.

The system uses the bill of operations quantity as the operation quantity for an activity if you do not specify an operations quantity. You should specify an operation quantity only if the quantity or UoM changes between operations. For example, if you have plastic granulate measured in kilograms in an operation that changes to plastic parts measured in pieces in the next operation, you should use the operation quantity to specify the changes in UoM.

The system automatically enters services from the Services tab in the Resources master data editor when the Activity Type settings in the Services tab in the Resources editor match those in the Activity Details tab in the BoO. The system also automatically selects these services as Default and Active. You can manually exclude or change these services, and add additional services. However, you can only specify one service for each resource.

You can specify the steps that accompany an activity. Steps are the lowest level of detail in a bill of operations, and give you an opportunity to add additional on-the-job information to an activity for a worker.

You can also specify planning marks. This enables you to group bill of operations elements for planning purposes. You can review the bill of operations elements that are relevant to planning in the Planning View of BoO screen in the Production Model editor.

You specify bills of operations independently of input- and output products. You can use the same bill of operations to manufacture more than one intermediate part or finished product. The only constraint is the availability of resources, such as equipment, labor, vehicles, and resource groups.

You can specify the BoO element at which the system creates tasks in production, including activity, operation, or reporting point level. You can specify the point in time that the system prints tasks. For example, you can specify
that the system prints tasks when you create a production order or when you start a task. Alternatively, you can let the user decide when it is appropriate to manually print tasks.

You can also specify that the system automatically prints production orders when they are released. Alternatively, you can allow the user decide when it is appropriate to manually print production orders.

**Production Models**

A production model contains the combined variant and bill of operations information.

You can create three production models; one for each intermediate part and one for the final output product. You can use MRP to provision for these requirements in planning. The production orders are released separately in manufacturing. You also assign the supply planning area that handles the requirements planning in the production model.

**Released Planning Models (RPMs) and Released Execution Models (REMs)**

The RPM contains all the master data information you need to plan your manufacturing needs. It is the basis for creating production proposals and is a prerequisite for creating an REM.

The REM contains all the information from a production model that you need to manufacture products. It is the basis for creating production requests and production orders.

**Managing Changes**

If you change an element, for example, a variant, or a bill of operations, it can affect all the entities that use the element you changed. For example, if you change an input product in a variant, this can have a knock-on effect on the associated production models.

**Saving and Releasing the Production Model: The Decoupling Border**

Decoupling ensures that there is a clear split between master data and process information. When you save and release the production model, you hand over error-free production model master data information to planning or manufacturing.

In order to save and release a production model, you first need to enable it for planning, or for both planning and execution. Enabling the production model for planning, and then saving and releasing it enables you to create a requirement in planning for a product without having to manufacture that product. This allows you to perform simulations to see if you have the resources available to manufacture a product at a particular time.

If you do not need to simulate the requirement in planning and you know you want to manufacture the product, you enable the production model for planning and execution. If you enable the production model for planning, you cannot revert back and disable the model for planning. Likewise, if you enable the production model for planning and execution, you cannot subsequently revert back and disable the model for planning and execution.

The system allows you to manually check the consistency of an individual variant, and an individual production model. You can make sure that these elements are free from errors before you move on.

However, the system also performs a consistency check after you save and release. This is to ensure that all changes made to the constituent parts of the production model are error free before the model is handed over to planning and manufacturing.

When you save and release a production model without performing a consistency check, the system displays:

- A success message if you specified all the information correctly.
  - The system creates the released version.
- Warnings if it makes default assignments in the released production model version.
These warnings tell you what the default assignments are. If you need to change the default assignments the system made, you need to make the changes in the production model according to the warning messages, and save and release the production model again.

- Error messages if there is incorrect or incomplete information.
  With error messages, the system does not create the released production model version.

Some of the key default assignments the system makes are as follows:

- If no ECO is at status Completed, then the system does not create the RPM and REM.
- If there is more than one ECO, and one or more of the ECOs is not at status Completed, then the system creates the released version but does not include the input products that are associated with the ECOs that are not at the status of Completed.

For all the following, after the system makes the default assignment it does not update the relevant fields in the production model. It adds these defaults to the released version only.

- If you do not assign all line item groups for a variant to an activity that is outside a production branch, the system assigns the input products from the unassigned line item groups to the first produce activity in the bill of operations in the newly created released version.
- If you assign a line item group to more than one activity when the activities are not in production branches, the system assigns the input products contained in the line item group to the first produce activity in the bill of operations in the newly created released version.
- If you do not assign line item groups to all activities when the activities are in production branches, the system assigns input products contained in the line item groups to the first activity in each sequence of the production branches.
- If you do not assign a line item group to more than one activity when the activities are outside production branches, the system ignores these assignments and assigns the input products contained in the line item group to the first produce activity of the bill of operations in the newly created released version.
- If you do not assign a line item group to all activities when the activities are in production branches, the system assigns the input products contained in the line item group to the first produce activity in each sequence of the production branches.

A released version is a snapshot of the production model that is now available for use in planning and manufacturing. You can create an RPM without creating an REM by enabling the production model for planning, and then saving and releasing the production model. However, when you create an REM the system creates an RPM automatically. This is because you must enable a production model for both planning and execution together before you can create an REM. This is to ensure that you allow the relevant planning activities to take place before manufacturing. When you create an RPM, the system also automatically creates a source of supply.

If the system cannot create the REM and the production model is enabled for both planning and execution, then the system does not create the RPM or source of supply.

You can go ahead and change the elements in a production model without affecting the released version. This means that you can go ahead and change your master data without affecting orders in planning and manufacturing.

The released version contains all the ECO information for all the input products assigned to the production model at the time of the release. This includes the validity information for the input products along a timeline into the future, and applies only to ECOs that are in the status of Completed.

For example, a new input product becomes valid a week from the date on which the released version is created. If you plan for the finished product today, the system does not include the input product; if you plan for 10 days into the future, the system includes the new input product.

A new released version blocks all previous released versions from use in new orders in planning and manufacturing. Existing runs and orders in planning and manufacturing can still use older released versions; however if you create a new planning run or production order, the system always uses the latest released version.

You cannot delete RPM and REM versions.
Production Proposals

The system always creates a source of supply when it creates an RPM. Therefore, for each RPM, there is always a corresponding source of supply. However, you can manually create a source of supply independently from the RPM. This allows you to have a source of supply for products that are not manufactured in-house.

The source of supply specifies the different procurement options that are available for satisfying demands for products. You can specify internal or external procurement. For internal, you can source from your own manufacturing process, for external, you can source from your suppliers.

You can define priorities for sources of supply. The system uses these priorities when more than one source of supply is valid to fulfill a demand.

When the demand is satisfied from your own manufacturing process, the source of supply refers to the RPM.

An Example of Source of Supply Settings

<table>
<thead>
<tr>
<th>Source of Supply</th>
<th>Minimum Lot Size</th>
<th>Maximum Lot Size</th>
<th>Priority</th>
<th>Validity</th>
</tr>
</thead>
<tbody>
<tr>
<td>SoS 1 (Internal)</td>
<td>1</td>
<td>1000</td>
<td>2</td>
<td>12/31/9999</td>
</tr>
<tr>
<td>SoS 2 (External)</td>
<td>1001</td>
<td>2000</td>
<td>1</td>
<td>12/31/9999</td>
</tr>
</tbody>
</table>

For the product covered by these settings, if the demand is for a quantity of 500 products, the system informs manufacturing. This is because the system places the lot size criteria before the priority when choosing the source of supply, as long as the validity dates for both sources of supply are not reached. If the demand is for 1,700 products, the system informs purchasing.

When you release a production proposal, the system looks first at the source of supply. When the criteria for internal procurement are met, the system creates a production request.

You can change the source of supply manually after you create, and before you release, a production request. However, you cannot change the source of supply once the request is released.

Production

When you set up your system for the first time, you can choose how you would like to create production orders. You can create all your production orders manually, you can run the order creation process according to a schedule with the option to manually create certain orders, or you can immediately create production orders as soon as a production request is received.

You can create more than one production order from a single production request.

The production request contains the information on which REM version the system should use when it is creating the production order. This version should always be the same as the version that was used in planning to create the production proposal.

See Also

Bills of Operations  [page 110]
Planning View of Bill of Operations  [page 116]
Production Orders
Material Cost Estimates
3.2 Production Bills of Material View

3.2.1 Production Bills of Material Quick Guide

A production bill of material (BoM) contains a complete, structured list of all the input products that are available to manufacture an output product. A production BoM variant contains a subset of the specific input products that are used to manufacture a specific output product. You must create at least one variant when you create a production BoM. This is because you can only use production BoM variants, and not production BoMs, in production models. You can define variants for different output products, but usually the output products are similar. For example, you can define a production BoM for all engines for a particular type of car. You can then define variants for each engine type, for example, you can define a variant for a 1.6 liter engine, and another variant for a 2.0 liter engine. By using variants in this way, you just need to enter the input product once to the system. This simplifies the process of BoM definition by reducing the maintenance of input products for similar output products.

You can access this view from the Planning and Production Master Data work center under Production Bills of Material.

Business Background

Production Models

Production models gather all of the key information you need to manufacture a product in one place. Production models combine product (bill of material) and process (bill of operations) information that is used as a blueprint for manufacturing. Key inputs to production models are:

- Production BoM variants that contain input products and valid from dates.
- Bills of operations (BoOs) that contain a detailed description of how you manufacture a product and to which you can assign input products from variants.

Key outputs of a production model are:

- Released planning models (RPMs) that the system uses to determine the source of supply and to create production proposals in planning.
- Released execution models (REMs) that the system uses to create production requests and orders in manufacturing.

For more information, see Production Models [page 87].

Tasks

Create a Production Bill of Material and Variants

1. Open the New Production Bill of Material quick activity, click New and choose BoM.
   You can also open the New Production Bill of Material quick activity by clicking New Production Bill of Material under Common Tasks.
2. Enter the product ID. The system automatically adds the product description, the quantity, and the UoM. Enter further information as required.
The system proposes a BoM ID based on the product ID that is entered and proposes a sequential ID for a new BoM variant. The BoM ID, the BoM Variant ID, and their descriptions can be manually overwritten.

For more information about product specifications, see the Product Specifications Quick Guide [page 137].

3. Enter an Engineering Change Order (ECO) ID to create an ECO with today’s date or click New to open the new ECO dialog box to create one with a future date. Enter the ECO ID and the valid from date. The ECO ID is saved automatically after the BoM is saved. Click OK to return to the New Production Bill of Material quick activity. You can also select an existing ECO that has an In Process status. However, you usually create a new ECO when you create a new production BoM variant.

4. Click Save and Close to save the new production BoM and variant, and to return to the Production Bills of Material view.

You must have an ECO in place before you can create and change a variant. An ECO gives you authorization to change the input product content of your production BoM variants.

Create a Copy of a Production Bill of Material

1. Select the BoM you want to copy, and click Copy.
   - The copy of the BoM will be created for today’s date.

2. Enter the product ID. The system automatically adds the product description, the quantity, and the UoM. Enter further information as required.
   - Click New to open the new ECO dialog box to create one with a future date. Enter the ECO ID and the valid from date. The ECO ID is saved automatically after the BoM is saved. Click OK to return to the New Production Bill of Material quick activity.

3. Click Save and Close to save the copy of the production BoM, and to return to the Production Bills of Material view.

Add a Variant to an Existing Production Bill of Material

1. Select the production BoM to which you need to add the variant from the list in the Production Bills of Material view. Click New, then choose Variant to open the New Production BoM Variant quick activity.

2. Enter the product ID. The system automatically adds the product description, quantity, and UoM. Enter further information as required.
   - For more information about product specification, see the Product Specifications Quick Guide [page 137].

3. Enter a unique BoM variant ID. You can enter the BoM variant description if required.

4. Enter an Engineering Change Order (ECO) ID to create an ECO with today’s date or click New to open the new ECO dialog box to create one with a future date. Enter the ECO ID and the valid from date. The ECO ID is saved automatically after the BoM is saved. Click OK to return to the New Production Bill of Material quick activity.
You can also select an existing ECO that has an in Process status. However, you usually create a new ECO when you create a new production BoM variant.

5. Click [Save and Close] to save your additional variant and return to the Production Bills of Material view.

Working with Production Bill of Material Variants

For details about this task, see here [page 96].

3.2.2 Tasks

3.2.2.1 Production Bill of Material Variants

Working with Production Bill of Material Variants

You must have a production Bill of Material (BoM) variant that you need to edit to perform the following tasks. When you are ready to start a task, select the relevant production BoM and click [Edit] to open the Production BoM editor.

Create a Line Item

1. In the [Input Products] tab, enter the Engineering Change Order (ECO) ID. You usually create a new ECO when you create a line item. You can also select the ID of the last ECO that you created for a variant. The system enters this ECO as the default. Alternatively, you can select an existing ECO that has an in process status. To create a new ECO, click [New] to open the new ECO dialog box. Enter the ECO ID and the valid from date. Click [OK] to return to the Production BoM editor.

2. Click [Add Row] to begin creating the new line item. The system adds a new row to the input products table. If you need to insert a line item in an existing line item group, select a line item that contains the ID of the line item group to which you want to add the line item, click [Insert], and choose Line Item.

- Only the product planning UoM and standard measurement quantity conversions can be used for the input products for the BoM.

Insert a Line Item Change

A line item change enables you to enter a future change to the input product content of a variant. The change is valid when the ECO is completed and the valid from date is reached. Make sure that you are in the [Input Products] tab and that the line item you need to change is completed.

1. Enter the ECO ID. You usually create a new ECO when you create a line item change. Click [New] to open the new ECO dialog box. Enter the ECO ID and the valid from date. Click [OK] to return to the Production BoM editor.

2. Select the line item to which you need to add the line item change. Click [Insert]. The system copies the details of the original line item and uses them to create a new line item. It also adds the new ECO ID, the valid from date, and the status to the new line item.

3. Enter the product ID, the quantity, and the UoM in the new line item.
Only the product planning UoM and standard measurement quantity conversions can be used for the input products for the BoM.

4. Click **Save** to save the new line item change.

**Delete a Line Item**

You can delete line items in the Production Bill of Material.

1. Enter the ECO ID.
   You usually create a new ECO when you delete a line item. Alternatively, you can select an existing ECO that has an in process status. To create a new ECO, click **New** to open the new ECO dialog box. Enter the ECO ID and the valid from date. Click **OK** to return to the **Production BoM** editor.

2. Select the line item you want to delete, and click **Change**.
   The system copies the details of the original line item and uses them to create a new line item. It also adds the new ECO ID you entered, the valid from date, and the status to the new line item.

3. Select the **Deleted** checkbox in the newly created line item, click **ECO**, and choose **Complete**.
   If you want to delete a line item that is still in process, then select the relevant line item and click **Delete**.

4. Click **Save** to save your changes. The deletion is not valid until the valid from date is reached.

**Move a Line Item between Line Item Groups**

You must have a source and a target line item group. The source line item group must contain the line item that you need to move. Ensure that you are in the **Input Products** tab.

1. In the source line item group in the input products table, select the line item you need to move.

2. Click **Restructure** and choose **Reassign Line Item**.

3. In the dialog box, enter the ID of the target line item group.
   Ensure the line item ID of the line item you are moving is not shared with a line item ID in your target line item group.
   To rename a line item ID, click **Rename** , choose **Line Item**, enter a new line item ID in the dialog box, and click **OK**.

4. Click **OK**.
   The system moves the line item from the source line item group to the target line item group. The line item keeps all the settings it had in the source line item group after it is moved, including the variant assignments.

5. Click **Save** to save the move.

**Merge Line Item Groups**

You must have a source line item group and a target line item group that you need to merge. Ensure that you are in the **Input Products** tab.

1. In the input products table, select a line item in the source line item group.

2. Click **Restructure** and choose **Merge Line Item Groups**.

3. In the dialog box, enter the ID of the target line item group.
   Ensure the line item IDs of the line items in the source line item group are not shared with line item IDs in the target line item group.
To rename a line item ID, click [Rename], choose Line Item, enter a new line item ID in the dialog box, and click [OK].

4. Click [OK].

The system moves the contents of the source line item group to the target line item group, and deletes the source line item group. The line items from the source line item group keep all their settings after they are merged, including the variant assignments.

5. Click [Save] to save the merge.

**Assign a Line Item to a Variant**

1. Select the check box where the row containing the appropriate line item and the column containing the appropriate variant meet.
   Repeat this step to assign the same line item to other variants.
   An input product is assigned to a line item. You can change the input product and keep the settings of the line item, including the variant assignments.

2. Click [Save] to save the new assignment.

**Display Variants for Comparison**

You must have a production BoM with two or more variants. Comparing variants allows you to quickly create variants with similar line item contents.

1. Choose the General & Variants tab.

2. Select a variant by clicking the row containing the appropriate variant.

3. Select a second and subsequent variants by holding down the CTRL (Control) key on your keyboard and clicking the row containing the appropriate variant. You can select up to five variants for your comparison.
   Click [Compare].

4. Choose the Input Products tab.

   The system displays the production BoM variants that you selected for comparison.

   ![You can also click Change Variant Comparison, enter the variants you want to compare, and click OK. The system displays your variants for comparison in the Input Products tab.]

**Complete Engineering Change Order and Check Consistency**

You must complete the ECO and perform a consistency check before you can use a line item in a production model. When you complete an ECO, you complete it for all line items that use the ECO. In a consistency check, you can verify that a new or changed variant is free of errors. You can perform a consistency check at individual variant level only.

The system displays variants as:

- **Check Pending** if you have not yet performed a consistency check
- **Consistent** if you have performed a consistency check and the variants are error free
- **Inconsistent** if you have performed a consistency check and the variants have errors

1. To complete an ECO, in the Input Products tab, select the line item that contains the ECO that you want to complete. Click [ECO], and choose Complete.

   The system changes the status of the ECO from In Preparation to Completed in the Input Products table. The system uses the new or changed input products contained in all the line items that use the ECO when the valid from date is reached.

2. To check the consistency, in the General & Variants tab, click Check Consistency. If you are successful, the system changes the consistency status from Check Pending to Consistent. If you are unsuccessful, the system changes the status from Check Pending to Inconsistent and displays the appropriate error messages. You can check the consistency again when you resolve the errors.
3.3 Production Bills of Operation View

3.3.1 Production Bills of Operation Quick Guide

The Production Bills of Operation view allows you to create and modify bills of operation. The bill of operations (BoO) gives a detailed description of how to manufacture an output product. You can assign input products from a bill of material (BoM) variant to an activity in a BoO. This allows a production model to bring together the key elements that you need to plan and manufacture a product.

You can reuse the same BoO in more than one production model and assign the same BoM input products to more than one BoO. A production segment, which contains a BoO and BoM assignment, can be reused by more than one production model. This principle of reuse means you only need to specify core elements once. This helps you to cut down on effort and overhead.

You can access this view from the Planning and Production Master Data work center under Production Bills of Operation.

Business Background

Production Models

Production models gather all of the key information you need to manufacture a product in one place. Production models combine product (bill of material) and process (bill of operations) information that is used as a blueprint for manufacturing. Key inputs to production models are:

- Production BoM variants that contain input products and valid from dates.
- Bills of operations (BoOs) that contain a detailed description of how you manufacture a product and to which you can assign input products from variants.

Key outputs of a production model are:

- Released planning models (RPMs) that the system uses to determine the source of supply and to create production proposals in planning.
- Released execution models (REMs) that the system uses to create production requests and orders in manufacturing.

For more information, see Production Models [page 87]

Bills of Operations

The bill of operations (BoO) provides you with a multifunctional and reusable concept for defining and planning manufacturing processes. It enables you to define how to manufacture an intermediate part or finished product. It is integrated with the production model and contains all the operations, actions, steps, and resources you need to define manufacturing processes. The bill of operations also provides a planning view that contains only planning-relevant information.

For more information, see Bills of Operations [page 110].
Planning View of Bill of Operations

The bill of operations planning view provides you with all the planning-relevant data of the bill of operations you need to fulfill a production proposal. It contains planning operations with planning alternatives representing the aggregated durations and capacity requirements.

For more information, see Planning View of Bill of Operations [page 116].

Tasks

Create a Production Bill of Operations

1. Click New to open the New Production Bill of Operation screen.
   You can also create a BoO for a production model in the Production Models work center view. For more information, see Step 7 in Create a Production Model, in the Tasks section of the Production Models Quick Guide [page 101].
2. In the General tab, enter the BoO ID and, if required, a description for the BoO. The system automatically proposes a BoO ID. You can manually overwrite the proposed ID.
3. Enter the site ID for the site in which production will take place. The system automatically enters the site name.
4. To define a language for short text, click Add Row, and add a language and a description.
5. Click Save and Close to save the BoO.

Add an Operation to the Bill of Operations

For more information, see Add an Operation to the Bill of Operations in the Tasks section of the Production Models Quick Guide [page 101].

Add an Alternative Path (Branching) and Additional Alternative Paths to the Bill of Operations

For more information, see Add an Alternative Path (Branching) and Additional Alternative Paths to the Bill of Operations in the Tasks section of the Production Models Quick Guide [page 101].

Add a Connection to the Bill of Operations

For more information, see Add a Connection to the Bill of Operations in the Tasks section of the Production Models Quick Guide [page 101].

Add an Activity to an Operation in the Bill of Operations

For more information, see Add an Activity to an Operation in the Bill of Operations in the Tasks section of the Production Models Quick Guide [page 101].

Add a Mark to the Bill of Operations

For more information, see Add a Mark to the Bill of Operations in the Tasks section of the Production Models Quick Guide [page 101].

Check the Consistency and Release the Bill of Operations

To check the consistency, in the header section, click Check Consistency.
If the check is successful, the system changes the consistency status from **Check Pending** to **Consistent** and displays a success message. If the check is not successful, the system changes the status from **Check Pending** to **Inconsistent** and displays the appropriate error messages. You can check the consistency again once you have resolved the errors.

The system displays production bills of operation using the following statuses which appear in the header section of the **Production BoO** editor:

- **Check Pending** — no consistency check has yet been performed
- **Consistent** — a consistency check has been performed and there are no errors
- **Inconsistent** — a consistency check has been performed and there are errors

### Release Production Models

In the **Where-Used** tab, you can view and release the production models where the bill of operations is used.

- If you want to release one production model, select the production model and click **Check and Release Production Model**.
- If you want to release all the production models, click **Check and Release All Production Models**.

You can release a maximum of 100 production models in this screen. If you want to release more than 100 production models, you can create and schedule a **Production Model Release Run** in the **Automated Actions** view of the **Planning and Production Master Data** work center, by selecting the production model mass release option **By Bills of Operation** in the first step.

### See Also

Production Models Quick Guide  [page 101]

### 3.4 Production Models View

#### 3.4.1 Production Models Quick Guide

The **Production Models** view allows you to create and change all the background information you need to plan and manufacture products. A production model contains one production segment which contains a bill of operation (BoO). The bill of operation gives a detailed description of how to manufacture an output product. You can assign input products from a bill of material (BoM) variant to an activity in a BoO. In this way, a production model brings together the key elements that you need to plan and manufacture a product.

You can reuse the same BoO in more than one production model and assign the same BoM input products to more than one BoO. A production segment, which contains a BoO and BoM assignment, can be reused by more than one production model. This principle of reuse means you only need to specify core elements once. This helps you to cut down on effort and overhead. When you finish adding the production model details, you can check the consistency of the production model. This ensures that you hand over error free master data information to the planning and manufacturing departments.
You can access this view from the *Planning and Production Master Data* work center under *Production Models*.

**Business Background**

**Production Models**

Production models gather all of the key information you need to manufacture a product in one place. Production models combine product (bill of material) and process (bill of operations) information that is used as a blueprint for manufacturing. Key inputs to production models are:

- Production BoM variants that contain input products and valid from dates.
- Bills of operations (BoOs) that contain a detailed description of how you manufacture a product and to which you can assign input products from variants.

Key outputs of a production model are:

- Released planning models (RPMs) that the system uses to determine the source of supply and to create production proposals in planning.
- Released execution models (REMs) that the system uses to create production requests and orders in manufacturing.

For more information, see *Production Models*  [page 87].

**Production Order Based Replenishment**

With production order based replenishment, you can move input products from your warehouse area to your production area based on the quantities required for each production order. Usually, you replenish your production areas based on the settings you specify in the *Locations* view of the *Supply Chain Design Master Data* work center. Production order based replenishment allows you to link the replenishment of your production areas directly to the demand for input products from a production order.

For more information see, *Production Order Based Replenishment*  [page 123].

**Bills of Operations**

The bill of operations (BoO) provides you with a multifunctional and reusable concept for defining and planning manufacturing processes. It enables you to define how to manufacture an intermediate part or finished product. It is integrated with the production model and contains all the operations, actions, steps, and resources you need to define manufacturing processes. The bill of operations also provides a planning view that contains only planning-relevant information.

For more information, see *Bills of Operations*  [page 110].

**Planning View of Bill of Operations**

The bill of operations planning view provides you with all the planning-relevant data of the bill of operations you need to fulfill a production proposal. It contains planning operations with planning alternatives representing the aggregated durations and capacity requirements.

For more information, see *Planning View of Bill of Operations*  [page 116].
Tasks

Create a Production Model

1. Click New to open the New Production Model guided activity.
   You can also open the New Production Model guided activity by clicking New Production Model under Common Tasks.

2. Enter the product ID.

3. Enter the production model ID. The system automatically proposes a production model ID and description as soon as the product ID is entered. You can manually overwrite the proposed ID and description.
   Do not include a space when you enter an ID manually.

4. Enter the planning area ID.
   If the product is located in a unique planning area, the system proposes the planning area ID and description when the product ID is entered.

5. Enter the unit of measure for the minimum and maximum lot size. The system automatically proposes the unit of measure based on the product ID that you entered. You can manually overwrite the proposed unit of measure.
   Enter the other header details as required, and click Next to continue to step 3, Bill of Material and Bill of Operations.

6. To select a variant click on the value help on the BoM Variant ID field. Select the row that contains the appropriate variant.
   The system returns to the Bill of Material and Bill of Operations screen and automatically enters the BoM variant ID and the associated BoM ID.

7. You can select an existing bill of operations or create a new one containing one operation proposed by the system. You can also create a new bill of operations by copying an existing one.
   - To select an existing bill of operations, click on the value help on the BoO ID field. Select the row that contains the appropriate bill of operations. The system returns to the Bill of Material and Bill of Operations screen and automatically enters the BoO ID. Click Next to continue.
     The system displays all the bill of operations that are in the system. This is because a product is not assigned to a bill of operations as is the case for bill of material variants.
     If you use an existing bill of operation and you intend to subsequently change the details of the bill of operation, the changes also impact the other production models that use that bill of operation.
     - To create a new bill of operations, click Actions and select Create New BoO. In the new BoO dialog box, enter the BoO ID and click OK to return to the Bill of
Material and Bill of Operations screen the guided activity. You can also enter the main resource ID and the variable duration for the first make operation. You can also create a new bill of operations in the Production Bills of Operation view of the Planning and Production Master Data work center. For more information, see Create a Production Bill of Operation in the Tasks section of the Production Bills of Operation Quick Guide [page 99].

If the BoM output quantity is larger than the BoM input quantity, for example 190 kilograms of output requires 1 each of input, then the BoO output quantity must be closer in value.

- To create a new bill of operations by copy an existing one, click Actions and select Copy from BoO. In the new BoO from template dialog box, enter the new BoO ID and select the bill of operations you would like to copy in the Copy-from BoO ID field. Click OK to return to the Bill of Material and Bill of Operations screen of the guided activity. The new bill of operations contains all the structure settings from the one you copied.

8. To check the production model before releasing it:
- Click Check Consistency to check for errors. The system displays any errors and warnings. To fix the errors, click Finish, click the link to the newly created production model in step 5, Confirmation, to open the Production Model editor. Fix the errors using the features in the editor.
- If the new production model is consistent, click Finish for Planning to make the new model available immediately for planning or click Finish for Planning and Execution to make the new model available immediately for planning and execution.

When you click Finish, Finish for Planning, or Finish for Planning and Execution and the production model is consistent, the system automatically moves on to step 5, Confirmation.

9. To confirm the production model, you can:
- Click the appropriate link to navigate directly to the production model editor, the released planning model (RPM), or the released execution model (REM) of the newly created production model.
- Click the Create New Production Model link to create another new production model.
- Click Close to go back to the Production Models view.

Add an Operation to the Bill of Operations

1. Do the following:
- If you navigate to the BoO from the Production Bills of Operation view, select the appropriate BoO and click Edit.
- If you navigate to the BoO from the Production Models view, select the appropriate production model and click Edit.

If you are working with a new production model, the system has already created a start and end mark as well as the first operation. This operation contains an activity as well as the resource and variable duration if you entered these when creating the production model.
2. To add an operation to the BoO, do the following:
   - If you navigate to the BoO from the *Production Bills of Operation* view, add an operation to the BoO in the **Structure** tab.
   - If you navigate to the BoO from the *Production Models* view, add an operation to the BoO in the **BoO Structure** tab under the **Bill of Operations** tab.

   In the table of the tab, select the element below which you want to insert the new operation, choose **Insert**, and select **Insert Operation**.

   The system displays a dialog box and automatically proposes the **Operation ID**, **Operation Type**, **Activity ID**, and **Activity Type**. In this dialog box, you can also define the resource and the variable and fixed durations. If you do not enter this information here you can also enter it later in the **Operation Details** tab in the bottom section of the screen.

   - If you have a supply operation, it is always positioned directly after the start mark. You cannot, therefore, add a new operation directly after the start mark in this case. Here, you place the cursor on the supply operation to add a new operation directly below it.

3. Click **OK** to return to the elements table in the **BoO Structure** tab in the *Production Models* view, or the **Structure** tab in the *Production Bills of Operation* view.

   The system displays the new operation in the elements table. This table also includes information on the resource and durations. Further information on the resource and durations is also available in the **Details** section of the screen where it can be changed, if necessary. You can view and change the resource in the **Operation Details** tab, which is visible when you select an operation in the elements table and you can view and change durations in the **Activity Details** tab which is visible when you select an activity in the elements table.

Add an Alternative Path (Branching) and Additional Alternative Paths to the Bill of Operations

1. Do the following:
   - If you navigate to the BoO from the *Production Bills of Operation* view, select the appropriate BoO and click **Edit**.
   - If you navigate to the BoO from the *Production Models* view, select the appropriate production model and click **Edit**.

2. To add an alternative path to the BoO, do the following:
   - If you navigate to the BoO from the *Production Bills of Operation* view, add an alternative path to the BoO in the **Structure** tab.
   - If you navigate to the BoO from the *Production Models* view, add an alternative path to the BoO in the **BoO Structure** tab under the **Bill of Operations** tab.

   In the table of the tab, select the element below which you want to insert the branching and choose **Insert Branching** from the **Insert** list. The system displays a dialog box and automatically proposes the parameter details. Click **OK** to accept the system proposals and to return to the **BoO Structure** tab in the *Production Models* view, or the **Structure** tab in the *Production Bills of Operation* view. Note that you can also overwrite the system proposals, if necessary.

   The system displays the new branching element in the elements table with the two alternative sequences. Per default, each alternative has one operation and one activity.
The elements are indented to represent their position in the BoO hierarchy. You can add operations and activities, as necessary.

3. In the elements table, select the first sequence. In the **Sequence Details** tab in the lower section of the screen, the system automatically selects the **Default** check box to indicate it will use this sequence as the default when creating production orders. It also selects the **Relevant for Planning** check box to ensure that this sequence is included in planning operations in the released planning model (RPM).

4. To add an additional alternative sequence, select the appropriate branching and choose **Insert Sequence** from the **Insert** list. Again, the system displays a dialog box and automatically proposes the sequence, operation, operation type, activity, and activity type details. Click **OK** to return to the elements table.

The system displays the new sequence, indented to the level of the existing sequences, in the relevant branching.

**Add a Connection to the Bill of Operations**

1. In the elements table, select the element below which you want to insert a connection.

2. In the **Insert** list, choose **Insert Connection**.
   The system displays a dialog box and automatically proposes the parameter details.

3. Click **OK** to accept the system proposals and to return to the **BoO Structure** tab in the **Production Models** view, or the **Structure** tab in the **Production Bills of Operation** view.
   The system displays the new connection in the elements table. The elements are indented to represent their position in the BoO hierarchy.

**Add an Activity to an Operation in the Bill of Operations**

1. In the elements table in the **BoO Structure** tab in the **Production Models** view, or the **Structure** tab in the **Production Bills of Operation** view, select the operation in which you want to insert the activity. If necessary, click the **Expand Node** icon beside the operation ID. Select the activity below which you want to insert the activity.

2. In the **Insert** list, choose **Insert Activity**. In the dialog box, the system automatically proposes the activity ID. Enter the activity type and durations, if necessary, and click **OK** to return to the elements table.
   The system displays the new activity in the elements table. The activity is indented to represent its position in the BoO hierarchy.

3. To enter a work instruction for production, choose the **Activity Description** tab. Click **Add Row** and choose the appropriate language from the list. Then, enter the instruction in the **Work Instruction** field.
   The system displays your work instruction later on, in the associated production task.

4. To enter an attachment for production, choose the **Activity Attachments** tab. Click **Add** and choose **File or Link** as appropriate. In the dialog box, enter the selection details as required and click **Add** to add the attachment.
   The system displays your attachment later on, in the associated production task.

5. To add steps for production, choose the **Steps** tab. Click **Add Row** and enter the step ID and description.

   Steps are optional, lower level elements of an activity and allow you to give a worker in production the highest level of detail on an activity.
6. To add additional resources, choose the Additional Resources tab. Click Add Row and enter the additional resource ID and description. In addition to the main resource, you can also assign secondary resources to an activity. This can include tools, machines, or labor resources.

7. To exclude a service, clear the Active check box. For the Calculation Method, if you select:
   - Equal to Resource Utilization, the system uses the resource capacity consumption as the consumption quantity of the service.
   - Proportional to Operation Quantity, the system calculates the consumption of the service in proportion to the reporting point. The system uses the variable and fixed quantities in the Services tab for the calculation. The contents of the quantity fields are directly related to the associated units of measure (UoM). The system uses the settings for the associated service product in the Product Data work center to provide the UoM options. For example, a service machine can be measured in time, a gas can be measured in volume, and power can be measured in energy used.

The system automatically enters services from the Services tab in the Resources master data editor and automatically selects these services as Default and Active. The system uses the default check box to display the services it added automatically from the Resources editor. You cannot clear this check box or delete a row that contains such a service.

Add a Mark to the Bill of Operations

1. In the element table, select the element below which you want to create the mark. Click Insert, and select Insert Mark. The system displays a dialog box where it automatically proposes the mark ID. You can overwrite this name, if necessary.

2. If you want this mark to be visible in planning, select the Planning Mark checkbox in the dialog box.

   The system uses the planning mark to define the end of the previous planning operation and the start of the following planning operation. Planning marks enable planning to view summarized information from the BoO.

3. In the dialog box, select the Reporting Point checkbox if necessary.

   In this case, you are specifying a milestone in production at which the system confirms, and if appropriate backflushes, the consumption of input products. You can only confirm scrap at reporting points in production.

4. Click OK to return to the elements table. The system adds the mark to the BoO structure. In the Mark Details tab in the lower section of the screen, you can see which check boxes have been selected. You can change these selections in this tab as necessary.
The system aggregates all the information that is relevant to planning between the planning marks into planning operations. Planners can then use these planning operations to schedule production proposals. You can view the planning operations for a particular BoO in the Planning View of BoO tab in the Production Models view, or the Planning View tab in the Production Bills of Operation view. The system uses the released planning model (RPM) to make the planning operations available for use in the Supply Planning work center.

Assign a Product or a By-Product to an Activity

1. In the Bill of Operations tab, choose the Product Assignment tab. In the elements table, select the produce activity to which you want to assign a product.

2. In the Bill of Material tab in the lower section of the screen, select the product you want to assign.

The system displays line item groups in the Bill of Material tab when you select a produce activity in the elements table. When you assign one product that is contained in a line item group to the bill of operations, the system automatically assigns all the products of the line item group. If at a later date, another product is added to the line item group, it is then also automatically included in the bill of operations.

3. Click Assign Line Item Group to Activity and enter the appropriate confirmation method in the dialog box:
   - If you select Backflush, the system automatically reduces the inventory level of input products after completion of an activity on the input product’s parent item. The system uses the input product quantity in the BoM variant to determine the backflush quantity.
   - If you select Explicit, the user has to enter the number of input products used at the point of use. The consumption of input products is carried out at reporting points in the production process.

4. Click OK.
   The system includes a new indented line for each product in the line item group below the produce activity in the elements table. Click the Expand Node icon to display the input product details.

5. If you want to view more detailed information on the bill of material, click Open Bill of Material.

6. To assign a by-product to an activity, choose the By-Products tab. In the elements table, select the produce activity to which you want to assign the by-product. Click Assign By-Product to Activity.
   The system displays a dialog box.

7. Enter the Output Product ID and quantity. You must enter By-Product as the output product type. Click OK to return to the Product Assignment screen.
   The system includes a new indented line for the by-product under the produce activity in the elements table. The system also displays the by-product details in the By-Products tab. The system reports this by-product to the appropriate storage location during confirmation.
When assigning a line item group, the system automatically provides you with a list of the available products from which you can choose. However, you have to specify the relevant by-product when assigning a by-product to an activity.

Check the Consistency and Release the Bill of Operations

1. To check the consistency, in the header section, click `Check Consistency`. If the check is successful, the system changes the consistency status from `Check Pending` to `Consistent` and displays a success message. If the check is not successful, the system changes the status from `Check Pending` to `Inconsistent` and displays the appropriate error messages. You can check the consistency again once you have resolved the errors.

   The system displays production models using the following statuses which appear in the header section of the `Production Model` editor:
   - `Check Pending` — no consistency check has yet been performed
   - `Consistent` — a consistency check has been performed and there are no errors
   - `Inconsistent` — a consistency check has been performed and there are errors

2. To release the production model, click `Release Production Model`. You have two options:
   - Select `For Planning` if you want to release the model for use in planning only. This enables supply planners to model planning for the product without affecting execution.
   - Select `For Planning and Execution` if you want to plan and manufacture the product.

   If there are no consistency errors or warnings, the system issues a success message. If you released the production model for planning, the system only creates a released planning model (RPM) version. You can view the RPM version by clicking `Open Released Planning Model`.

   If you released for planning and execution, the system creates both an RPM version and a released execution model (REM) version. You can view the REM version by clicking the `Open Released Execution Model` and selecting the appropriate option.

   If you choose to release the production model without checking consistency first, the system automatically performs a consistency check to ensure that the model is free from errors.

See Also

Production Bills of Operation Quick Guide [page 99]
3.4.2 Business Background

3.4.2.1 Bills of Operations

Overview

The bill of operations (BoO) provides you with a multifunctional and reusable concept for defining and planning manufacturing processes. It enables you to define how to manufacture an intermediate part or finished product. It is integrated with the production model and contains all the operations, actions, steps, and resources you need to define manufacturing processes. The bill of operations also provides a planning view that contains only planning-relevant information.

Bills of Operations in Detail

You use the bill of operations to define the process steps you need to manufacture an intermediate part or finished product and to determine all the required resources. It is a fundamental part of the production model and integrated with the production model editor in the Planning and Production Master Data work center. If you want to create a consistent production model, you always need a bill of operations.

You can specify the bill of operations independently of input products. This means, you can use the same bill of operations to manufacture more than one intermediate part or finished product. The only constraint is the availability of resources, such as machines and tools.

The bill of operations is divided into the bill of operations structure and the planning view of the bill of operations. The bill of operations structure specifies the process path to be used in production execution, whilst the planning view provides an abridged model of the bill of operations that only contains the planning-relevant information.

For more information about the planning view, see Planning View of Bill of Operations  [page 116].

The bill of operations provides the following element types that you can use to define both simple and complex manufacturing processes:

- Operation
- Activity
- Mark
- Sequence
- Branching
- Connection
A simple process path with operations, activities including steps, and mark elements

The following sections provide detailed information about the different element types and corresponding attributes that you can use to define a bill of operations.

**Operation**

The basic element type is the operation. An operation groups all the activities to be carried out consecutively on the same main resource and without interruption by another operation. An operation is classified by an operation category and operation type. The following operation categories are available in the system:

- **Supply**
  This operation category allows for the movement of input products from storage to production areas to fulfill the input product requirements of a production order. If you want to insert a supply operation, you must enable the bill of operations for supply to production in the production model or in the bill of operations details. The system automatically includes an integrated supply operation at the beginning of the main path and at the beginning of all connections. When you assign an input product to the bill of operations, you can specify whether the input product is to be supplied in the preceding supply operation.

- **Make**
  This operation category allows for the change of the shape or structure of an input product. For each make operation, you can specify a transition time. The transition time enables you to specify a time buffer between two operations. You can define how long it takes until the next operation can start.

  During operation 1, a metal pipe is heated. Before the material moves onto the next operation (operation 2), it needs to be left to cool down for 30 minutes. If you want to consider this in your planning, you must specify a transition time period of 30 minutes.

- **Quality Check**
  This operation category allows for a final inspection of the quality of an output product. You can only use a check operation at the end of a bill of operations after the last make operation.

Each operation category has an operation type of the same name. Based on the operation category, you can create additional operation types in the Business Configuration work center, Activity List view. In the Fine-Tuning phase, choose activity group Supply Chain Setup Management > Operation Types.

**Activity**

Using an activity, you define what to do and how long it takes to do it in fixed or variable durations. The fixed duration is constant, regardless of how many items you need to manufacture. The variable duration is always related to the quantity that is defined in the bill of operations.
Activities are classified in predefined activity categories to control which functions are available for a specific activity. For each operation category, the system provides you with one or more predefined activity categories and activity types.

### Predefined Operation Categories and Operation Types with their Predefined Activity Categories and Activity Types

<table>
<thead>
<tr>
<th>Operation Category</th>
<th>Operation Type</th>
<th>Activity Category</th>
<th>Activity Type</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply</td>
<td>Supply</td>
<td>Move all</td>
<td>Supply</td>
<td>You use this activity category to move all input products that are assigned to the succeeding produce activities from storage to the corresponding production area. A supply operation must always have one activity with a category of <strong>Move All</strong>.</td>
</tr>
<tr>
<td>Make</td>
<td>Make</td>
<td>Setup</td>
<td>Setup</td>
<td>You use this activity category to prepare a resource for the production process.</td>
</tr>
<tr>
<td>Produce</td>
<td>Produce</td>
<td>Produce</td>
<td></td>
<td>You use this activity category to process an item. A make operation must have at least one activity with a category of <strong>Produce</strong>.</td>
</tr>
<tr>
<td>Tear down</td>
<td>Tear down</td>
<td>Tear down</td>
<td></td>
<td>You use this activity category to restore a resource to its normal state after using it.</td>
</tr>
<tr>
<td>Check</td>
<td>Check</td>
<td>Quality Check</td>
<td>Final inspection</td>
<td>You use this activity category to check the shape or structure of a product. A check operation must always have one activity with a category of <strong>Final Inspection</strong>.</td>
</tr>
</tbody>
</table>

On the basis of the activity categories you can define additional activity types in Business Configuration. This enables you, for example, to define activity types for the different services you use. You define the activity types in the **Business Configuration** work center, **Activity List** view. In the **Fine-Tuning** phase, choose activity group **Supply Chain Setup Management > Activity Types for Bills of Operations**.

For each activity within a make or check operation, you can determine which method is to be used to confirm the actual duration of the activity in the production lot. The confirmation method can be explicit, where the worker enters the actual duration of the activity, or backflushed, where the duration is inferred from the duration defined for the activity.

In a make operation, you can also specify steps that accompany an activity. Steps are the lowest level of detail in a bill of operations, and give you an opportunity to add additional on-the-job information to an activity for a worker.

### Mark

The mark is a structuring element that supports the following functions:

- **Start and end mark**
  This mark defines the start or end point in the manufacturing process. If you create a new production bill of operations, the system creates the start and end mark. An end mark also always functions as a planning mark and reporting point.

- **Reporting point**
  The reporting point defines a point at which production progress is recorded. In this way, yield and scrap quantities can be calculated. You can also use reporting points to define the granularity according to which the system should create production tasks.

- **Planning mark**
  A planning mark enables you to group bill of operations elements for planning purposes. Every mark that is indicated as a planning mark defines a planning section. All the operations within this section are grouped to a planning operation. You can review the bill of operations elements that are relevant for planning in the planning view of the bill of operations in the production model editor.
Sequence
You use sequences for defining complex manufacturing processes to specify branched or parallel process paths. You can only use this element type together with a branching or connection element.

Branching
You can use the branching element type to create several alternative process paths for a manufacturing process. The branched process paths are defined by sequences that, in turn, contain the operations to be carried out. You can define each sequence of a branched process path as relevant for planning. However, you cannot define planning markers within a branched process path. Planning-relevant sequences are considered in the calculation of durations in the planning view of the bill of operations.

A branched process path with two sequences

Connection
Using a connection, you can link one or several parallel process paths to an existing process path. The process paths to be linked are defined by sequences that contain the operations to be carried out. All the process paths defined at a connection have one common end point and must end with a reporting point. The starting points of the individual process paths are always independent of each other.
Each sequence at a connection is defined as planning-relevant and is considered in the planning view of the bill of operations.

A connection with two sequences
Resources and Services

Main Resources

For each make and check operation, you must maintain a main resource. Main resources are important for scheduling operations in production execution. When creating a production order in production execution the operations are scheduled by the system according to the availability of the main resources. You can also dispatch production tasks in Logistics Task Management according to the main resources assigned to the operations. You can use the following resource types as a main resource:

- Equipment resource
- Labor resource
- Vehicle resource
- Resource group (only permitted for make operations)

A main resource must always have a logistics area that specifies where the input and output products are stored. If you choose an equipment resource as main resource, the system copies the logistics area from the resource master data to the bill of operations. However, for vehicle and labor resources, you must specify the logistics area in the corresponding operation, since these resource types are not always bound to one logistics area.

If you choose a multiple resource as a main resource, you can specify in the operation details the number of resources that are used in parallel by the corresponding operation. During task confirmation, you can specify the actual number of resources.

Additional Resources

In addition to the main resource at operation level, you can specify additional equipment, vehicle, and labor resources for setup, produce, and tear down activities. In this way, you can determine the capacity requirements for each activity. If you assign a planning-relevant resource to an activity, the resource will be considered in the calculation of the capacity requirements in the planning view of the bill of operations.

Services

For the activities of a make operation, you can also maintain services for cost calculation and reporting purposes. You can select whether the assigned service is related to the main resource or to an additional resource. If you assign a resource to the bill of operations that has a service maintained, the system automatically copies the service to the bill of operations if the activity type of the service is the same as the activity type in the bill of operations. The system also automatically selects these services as default and active. If the activity type is not the same, the system checks whether the resource has another service that has no activity type and copies this service as the default service. However, you can manually deactivate or change these services, and add additional services.

The consumption of a service can be calculated either based on the resource utilization or based on the operation quantity. Setting the calculation method on the Service tab page of the bill of operations editor, you can define the way the service product consumption is calculated. If the service consumption is measured as duration, its value can be equal to the duration of the resource utilization. If the service product consumption is measured in an arbitrary unit of measure, its value can be proportional to the operation quantity.

Task Creation Method

The system creates production tasks in logistics task management based on the structure of the bill of operations. The bill of operations provides several methods for how you can create your production tasks. Depending on the granularity you need for dispatching production tasks to workers, you can instruct the system to create tasks at
reporting point level, operation level, or activity level. You can specify the task creation method in the BoO Details tab of the production model editor.

Quantity Types in the Bill of Operations

You can specify the following types of quantities in the bill of operations. The system includes all the quantities when it calculates the durations for the planning view of the bill of operations.

- **Base Quantity**
  The main quantity is the base quantity you specify on the BoO Details tab page of the production model editor. This quantity defines the number of products or intermediate parts for which the bill of operations is defined.

- **Operation Quantity**
  For each make operation, you can also define an operation quantity that defines the number of items to be produced in an operation. If you have defined an operation quantity, the main quantity defined on the BoO Details tab page is not valid for this particular operation. However, you cannot define an operation quantity for the last make operation of a process path. Only the main quantity of the bill of operations is valid for the last make operation.

- **Send-Ahead Quantity**
  Another quantity type you can define for each operation is the send-ahead quantity. You use this quantity to specify the number of items that must be produced in an operation before a successor operation can begin. This allows you to make your manufacturing process more efficient because the worker does not need to wait until an operation is completely finished.

Printing Rules

On the bill of operations header, you can define whether a task is automatically printed upon its creation or start. Furthermore, you can define whether the production order is automatically printed upon its release.

Site and Organizational Unit in the Bill of Operations

When creating a bill of operations, you must determine the site at which the bill of operations can be used. This ensures that you can only assign resources to the bill of operations that are located at the corresponding site. You also have the option of specifying an organizational unit to limit the number of users that are authorized to process the bill of operations. However, you can also choose to work without an organizational unit leaving this information blank in the bill of operations details. In this case, when you access the bill of operations, the system only checks that you have authorization for processing the planning and production master data.

See Also

- Production Models  [page 87]
- Resources  [page 37]
- Production Orders
- Logistics Task Management  [page 129]
3.4.2.2 Planning View of Bill of Operations

Overview

The bill of operations planning view provides you with all the planning-relevant data of the bill of operations you need to fulfill a production proposal. It contains planning operations with planning alternatives representing the aggregated durations and capacity requirements.

Generating the Planning View

The planning view is created automatically when you create a bill of operations and updated automatically when you change a bill of operations. The system aggregates the data maintained in the bill of operations structure and generates planning operations. A planning operation serves as a planning unit in supply planning. Using planning marks in the bill of operations, you can define which operations are grouped in a planning operation in the planning view. The end mark is always predefined as a planning mark.

Bill of Operations Structure

Bill of operations structure and planning view structure

A planning operation has an ID and one or more planning alternatives containing the aggregated durations and capacity requirements. The ID of the planning operation is automatically taken from the related planning mark. If required, you can change the planning operation ID. While generating the planning view, the system calculates the fixed and variable durations for the planning alternatives and determines the capacity requirements for all planning-relevant resources.

Rules and Restrictions for Branchings

If you want a sequence within a branching to be considered in the planning view, you must set it as relevant for planning. The system usually creates a planning alternative for each planning-relevant sequence. However, if you have created a branching with multiple sequences that contain the same planning-relevant resources, the system only creates one planning alternative with one capacity requirement for each resource. You must create a planning mark between two successive branchings. If not, the system creates a virtual planning mark to ensure that the planning view is generated correctly. If you create a branching, you must define one sequence as the default sequence for production execution. In the planning view all planning alternatives have the same length as the planning alternative that is derived from this default sequence.
Planning view structure of a bill of operations with branching

Rules and Restrictions for Connections

The system creates no separate planning operations for connections. However, if there is a planning mark in any sequence of the connection or in the main path before the connection, the system creates a planning operation for each sequence and for the main path using virtual planning marks.
Planning view structure of a bill of operations with a connection. Since there is a planning mark in the main path before the connection, the planning view structure has a planning operation for each sequence and for the main path.

Capacity Requirements

The capacity requirement in the planning view represents the capacity needed by a planning-relevant resource to fulfill a certain planning operation. A capacity requirement also has a fixed and a variable part according to the fixed and variable activity durations.
When generating the planning view, the system determines the capacity requirement for each planning-relevant resource in the bill of operations according to the following rules:

- The capacity requirements are calculated by adding the fixed and variable activity durations that belong to a planning-relevant resource.
- If a resource is used more than once within a planning operation, the system only creates one capacity requirement for this resource that contains the cumulated capacity requirement for this resource.
- The resource buffer time is not considered.
- If you have created a branching with multiple sequences that contain the same set of planning-relevant resources, the system only creates one planning alternative and uses the average capacity requirement for these resources.
- In case of multiple resources, the system multiplies the fixed activity duration with the number of resources you have maintained for the corresponding operation.
- If a planning-relevant resource is assigned to a resource group, the system only shows the capacity requirement for the corresponding resource group in the planning view.
Calculating Durations

The system calculates the durations by adding the activity durations, transition time, and buffer times of the planning-relevant resources taking account of the send-ahead quantity and number of resources for an operation (multiple resources). When calculating the durations for a planning operation, the system only considers activities that are part of the material flow as well as the first setup and the last tear down activity. All other setup and tear down activities are not considered, since they can be carried out in parallel with the material flow activities. In case of multiple resources, the system divides the variable duration by the number of resources you have maintained for the corresponding operation. The fixed duration is not influenced by the number of resources.
The aggregation of fixed and variable durations

The transition time is added to the fixed duration of the planning operation.

The aggregation of fixed and variable durations and the impact of transition time and buffer time

The variable duration of an activity is related to the quantity of the bill of operations. This also includes the send-ahead quantity. If you have maintained a send-ahead quantity, the system only adds the maximum variable duration
to the variable duration and all further durations to the fixed duration of the planning operation. This is because only the maximum variable duration influences the total duration when changing the planned quantity of the production proposal (see picture below).

The aggregation of fixed and variable durations and the impact of the send-ahead quantity

The picture above shows the impact of the send-ahead quantity on the fixed and variable duration of a planning operation. Operation 3 has the longest variable duration. When increasing the planned quantity of the related production proposal, only the variable duration of Operation 3 influences the total duration. Therefore, only the longest variable duration goes into the variable duration of the planning operation. Note that the picture only shows variable durations in Operation 1 – 5. Any additional fixed durations in Operation 1 – 5 are also added to the fixed duration of the same planning operation.

Relationships between Planning Operations

The planning operation relationship describes the minimum fixed and variable duration between two succeeding planning operations and the order in which planning operations are specified. This is very useful in planning. Using the relationships, you can schedule the earliest start time of a planning operation with respect to its predecessor planning operation. If you have two overlapping planning operations, in the case of a send-ahead quantity, the minimum variable relationship duration is negative.
Example of how the system calculates the minimum variable relationship duration. Since the bill of operations has a send-ahead quantity maintained, the minimum variable duration is negative.

To describe the dependency between the start and finish of two succeeding planning operations, the system provides you with the relationship type. The relationship type Finish-to-Start, for example, describes that the start of the successor planning operation is dependent on the end of its predecessor.

**See Also**

- Bills of Operations [page 110]
- Production Models [page 87]
- Resources [page 37]
- Supply Planning

### 3.4.2.3 Production Order Based Replenishment

#### Overview

With production order based replenishment, you can move input products from your warehouse area to your production area based on the quantities required for each production order. Usually, you replenish your production areas based on the settings you specify in the Locations view of the Supply Chain Design Master Data work center.

Production order based replenishment allows you to link the replenishment of your production areas directly to the demand for input products from a production order.

The system provides two production order based replenishment options.

- An integrated supply operation, where a supply operation is integrated in the production order. This means the system takes a supply operation into account in the following:
  - Scheduling
    The system automatically reschedules a supply operation when you reschedule a production order.
  - Quantity changes
    The system automatically changes the quantity of the supply operation when you change the production order quantity.
  - Releasing
    The system creates a supply task when you release a production order.
○ Task sequencing and feasibility control

The Start Feasibility indicator in the Task Control view of the Production Control work center displays when it is feasible to start a task. This depends on the status of preceding tasks. Because a supply task is a production task, the system takes its status into account for succeeding production tasks.

When you release the production order, the system allocates the input products to be replenished to the production order if there is stock on hand. The system creates a production lot and a supply task. When you confirm the supply task, the system reduces the available stock in the source location and increases the available stock in the target location.

You should use this option if you need close integration between your supply tasks and your production orders. For more information on integrated supply operations, see Bills of Operations [page 110].

● Replenishment with reference

The system uses the input products from a production order as a proposal for creating a site logistics request for a replenishment. There is no further integration between the production order and the replenishment. For example, if you reschedule or change the quantity in a production order, the system does not automatically update the site logistics request for a replenishment.

You can create more than one replenishment with reference, as long as you have not closed the production order. You can also change a replenishment with reference before you release it. You can release a replenishment with reference by clicking Replenish. The system creates a site logistics task when you release a replenishment with reference.

When you replenish with reference, the system allocates the input products when it creates the site logistics task. No other site logistics request can use these input products. When you confirm the site logistics task, you confirm the move of the input products from the warehouse to production, and the allocation is closed.

For more information on how the system allocates input products, see Integrated Supply to Production.

You should use this option if you need unplanned replenishments that are not closely integrated to a production order.

Process Flow

For an integrated supply operation, you must

1. Go to Planning and Production Master Data ➤ Production Models.
2. In the Details tab of the General tab in the Production Model editor, you can enable the bill of operations for supply to production. The system automatically inserts a supply operation in the bill of operations. If the bill of operations contains feeder lines (sequences), the system creates a supply operation for each feeder line. If you remove a supply operation, you can insert it again in the BoO Structure tab of the Bill of Operations tab.
3. Specify which input products you want to replenish in the Bill of Material tab in the Product Assignment tab under the Bill of Operations tab in the Production Model view of the Planning and Production Master Data work center. For more information, see Assign a Product or a By-Product to an Activity in Production Models [page 87].
4. Create a released execution model (REM) by saving and releasing the production model. The system references the REM when creating a production order, and includes the supply operation in the production order. For more information on production models, see Production Models [page 87]. For more information on executing production orders, see Production Order Execution.
5. Display the input products which will be replenished to production in the Supply to Production tab in the Order Structure view of the Production Order editor in the Production Control work center. Here, you can also view the source and target logistics areas. The system determines the source logistics area when the production order is released, based on the Material Flow settings of the logistics area to be replenished. These settings are specified in the Locations view of the Supply Chain Design Master Data work center.
The system links each input product specified in a supply operation to the input products required for a make operation in a bill of operations. Each make operation has a main resource. Each main resource has an input logistics area and an output logistics area.

When it determines the target logistics area for a supply operation, the system

- Determines the make operation that uses the input products specified in the supply operation
- Specifies the input logistics area of the main resource of the make operation as the target logistics area

You can manually change the target logistics area when you confirm the supply task.

6. Release the production order. The system creates a supply task.

7. Confirm the actual quantity replenished when you confirm the task in the Confirmation quick activity in the Execution work center.

When you confirm the supply task, the system updates the production lot and inventory.

For replenishment with reference, you must

1. Launch the New Replenishment with Reference quick activity manually from the Production Order editor in the Production Control work center, or from the common tasks in the Production Control or Internal Logistics work centers.

2. Specify the production order ID. The system proposes the input product and the replenishment quantity according to the production order.

   The system does not propose an input product if it is already specified for use in a supply operation in the production order.

   In replenishment with reference, the system displays the production order number in the Planning Details tab of the Internal Requests view in the Internal Logistics work center. Also, the system displays a link to the replenishment in the Document Flow view of the Production Order editor in the Production Control work center.

3. Select the appropriate line and click Replenish to create a site logistics request. You can create site logistics requests for all replenishments by clicking Replenish All. Depending on your system settings, the system creates a site logistics task for the replenishment.

4. Confirm the replenishment when the task is finished in the Confirmation quick activity in the Execution or Internal Logistics work centers.

When you confirm the task, the system updates the warehouse lot. When you confirm the full quantity, the system changes the status of the task to Finished.

3.5 Logistics Task Folders View

3.5.1 Logistics Task Folders Quick Guide

You can use the Logistics Task Folders view to create, change, and delete a logistics task folder. You can only specify one site and one task type for a task folder. Task types include production, warehouse, and physical inventory. This means, for example, that the system can only place production tasks in a task folder with a production task type.

You use these logistics task folders to provide your employees in the production areas or warehouses with a specific inbox of execution tasks. As tasks are generated (for example, when you release a production order, create tasks in the logistics process, or create a physical inventory count), the system groups them in the logistics task folders according to the task assignment criteria that you define when creating the folder. That is, the system defines
individual workloads according to the list of tasks assigned to a logistics task folder. Users that are registered to a task folder can view and execute all the tasks in that task folder. They can review detailed information for each task, reassign tasks to different folders, and confirm tasks when they are completed. Tasks can have embedded information, such as work and safety instructions and product drawings that guide workers through their daily tasks.

You can access the Logistics Task Folders view from the following locations:

- Planning and Production Master Data work center
- Warehousing and Logistics Master Data work center

**Business Background**

**Logistics Task Management**

Logistics task management provides you with the tools you need to plan and process all types of logistics tasks effectively and efficiently. It provides you with a single point of entry for organizing and executing your tasks in production, in the warehouse as well as in physical inventory and quality assurance. It offers a scalable, task-oriented concept that enables you to tightly integrate your manufacturing (make, supply to production, check) and warehousing (move and count) processes.

Logistics task management helps you to organize your day-to-day work in a standardized user interface; you can define suitable work packages in the form of logistics task folders, and structure the processing of all logistics tasks according to your needs. You can create tasks at various levels of detail, for example, one task to cover one single activity or one task to cover a complete logistics order. These tasks are pushed to your responsible operators guiding them through their daily work whether in production, in the warehouse, or in quality assurance.

For more information, see Logistics Task Management [page 129].

**Tasks**

**Create a Logistics Task Folder**

1. Choose the Logistics Task Folder view and click New to open the New Logistics Task Folder quick activity.
2. Enter the task folder ID and task folder description, and specify the task type. You must specify whether the task folder you are creating is for production, warehouse, or count tasks. One task folder can only collect tasks of one type.
3. Enter the site ID and description.
4. Enter further information as required.
5. Click Save to save the new logistics task folder, and click Close to return to the Logistics Task Folders view.

The system saves the new logistics task folder and adds it to the list in the Logistics Task Folders view. To open the logistics task folder from this list, click the appropriate task folder ID link.

**Register an Employee or End-User Device to a Logistics Task Folder**

1. Choose the Logistics Task Folder view and select the appropriate task folder.
2. Click Edit to open the Logistics Task Folder editor.
3. In the Registration tab, click Add Row. The system displays a new row in which you can enter your registration data.

4. In the Registration Type field, select User or End-User Device as appropriate.

5. In the Device ID field, enter the device ID if you need to register a user device. In the Employee ID field, enter the employee ID if you need to register an employee. If necessary, click the Value Selection icon to search for the employee ID.

6. In the Role column, select a role for the employee or user device. Select Responsible if you need your employee or user device to execute tasks and select Interested if you need your employee or user device to monitor the execution status of tasks. The information you define here is for information purposes only. Both interested and responsible employees/user devices have the same authorizations.

7. The Active checkbox is automatically marked to enable the employee or user device to process the tasks in this task folder.

8. Click Save to save the registration, then click Close to return to the Logistics Task Folders view.

- In order to view the Role, Registration Type, and Device ID fields in the Registration tab, you must first personalize the screen. Click Personalize, choose This Screen and check the fields that you want to be visible.
- If an employee or user device is not going to work with tasks for a period of time you do not need to delete a registration. Instead, you can clear the Active check box. You can select it again when the employee or user device is ready to resume working with tasks.

Create a Task Folder to Collect all the Tasks of a Task Type

1. Choose the Logistics Task Folders view.

2. Select the row of the appropriate task folder and click Edit to open the Logistics Task Folder editor.

3. In the General tab, make sure that you have selected the appropriate task type:
   - Production Task – if you want this folder to collect all production tasks
   - Warehouse Task – if you want this folder to collect all warehouse tasks
   - Count task – if you want this folder to collect all count tasks

4. Choose the Task Assignment Criteria tab. The system displays the information that you have not yet specified any assignment criteria. In this state, no tasks are assigned to this folder.

5. Click Create Assignment Criteria. Depending on the task type you defined for the task folder, the system now displays one of the following screens:
   - Production Task Assignment Criteria
   - Warehouse Task Assignment Criteria
   - Count task Assignment Criteria

6. If you have already created assignment criteria for the task folder, you can delete these assignment criteria by clicking Delete All Assignments. The system automatically defaults to the assignment criteria of All and returns to the initial Task Assignment Criteria screen.
7. Click [Save] to save the task assignment criteria, then click [Close] to return to the Logistics Task Folders view. The system saves the new task assignment criteria. In future, all the tasks of the appropriate task type are collected in your task folder.

Create Task Assignment Criteria for a Task Folder

1. Choose the Logistics Task Folders view, select the row of the appropriate task folder, and click [Edit] to open the Logistics Task Folder editor.

2. In the General tab, make sure that you have selected the appropriate task type: Production task if this folder is to collect certain production tasks, warehouse task if this folder is to collect certain warehouse tasks, or count task if this folder is to collect certain count tasks.

3. Choose the Task Assignment Criteria tab. The system displays the information that you have not yet specified any assignment criteria. In this state, no tasks are assigned to this folder.

4. Click [Create Assignment Criteria] and proceed according to the task type:
   - For Production Tasks:
     1. In the Resource tab, click [Add Item] in the Included Items part of the screen to include a resource in your assignment criteria. If necessary, click the Open Selection Dialog icon to search for the resource. Repeat this step to specify the other resources you need to include in your assignment criteria.
     2. Click [Add Item] in the Excluded Items part of the screen to exclude a resource from your assignment criteria. If necessary, click the Open Selection Dialog icon to search for the resource. Repeat this step to specify the other resources you need to exclude from your assignment criteria.
     3. In the Activity Type tab, you can define that tasks are to be created at activity level, if necessary. The default value here is set to All.
   - For Warehouse Tasks:
     1. In the Storage Location tab, click [Add Item] in the Included Items part of the screen to include a storage location in your assignment criteria. If necessary, click the Open Selection Dialog icon to search for the storage location. Repeat this step to specify the other storage locations you need to include in your assignment criteria.
     2. Click [Add Item] in the Excluded Items part of the screen to exclude a storage location from your assignment criteria. If necessary, click the Open Selection Dialog icon to search for the storage location. Repeat this step to specify the other storage locations you need to exclude from your assignment criteria.
     3. In the Operation Type tab, you can define that tasks are to be created for a particular operation type, if necessary. The default value here is set to All.
   - For count tasks:
     1. In the Storage Location tab, click [Add Item] in the Included Items part of the screen to include a storage location in your assignment criteria. If necessary, click the Open Selection Dialog icon to search for the storage location.
Repeat this step to specify the other storage locations you need to include in your assignment criteria.

2. Click **Add Item** in the **Excluded Items** part of the screen to exclude a storage location from your assignment criteria. If necessary, click the **Open Selection Dialog** icon to search for the storage location. Repeat this step to specify the other storage locations you need to exclude from your assignment criteria.

3. Choose the **Logistics Area** tab and repeat the steps outlined above to specify the logistics areas you need to include in your assignment criteria.

5. Click **Save** to save the task assignment criteria, then click **Close** to return to the **Logistics Task Folders** view.

### 3.5.2 Business Background

#### 3.5.2.1 Logistics Task Management

**Overview**

Logistics task management provides you with the tools you need to plan and process all types of logistics tasks effectively and efficiently. It provides you with a single point of entry for organizing and executing your tasks in production, in the warehouse as well as in physical inventory and quality assurance. It offers a scalable, task-oriented concept that enables you to tightly integrate your manufacturing (make, supply to production, check) and warehousing (move and count) processes.

Logistics task management helps you to organize your day-to-day work in a standardized user interface; you can define suitable work packages in the form of logistics task folders, and structure the processing of all logistics tasks according to your needs. You can create tasks at various levels of detail, for example, one task to cover one single activity or one task to cover a complete logistics order. These tasks are pushed to your responsible operators guiding them through their daily work whether in production, in the warehouse, or in quality assurance.

**Benefits**

Logistics task management provides you with one common, symmetric concept for all supply, make, check, and count processes. You can significantly increase productivity when all your processes are integrated into one seamless operations model. The flexibility in designing and structuring processes, plant layouts, or warehouses ensure that you can realize process improvements rapidly and you can easily adapt your production sites and warehouses to business change or growth.

The main benefits are summarized in the following list:

- Unified task control and processing in all execution processes
- One common user interface for execution areas
- Automatic routing of tasks to the correct departments
- Reduced training effort as workers access tasks from a single interface
- Inventory, financial accounting, and planning are updated with the data gathered when confirming the operations on the shop floor
Logistics Task Management in Detail

You can use logistics task management to plan, control, and execute your shop floor activities. The concept of logistics task management can be subdivided into the following main steps:

1. Creating logistics task folders: The logistics task folders you create store the tasks and represent work lists.
2. Creating logistics tasks: In a second step, the logistics tasks are created and dispatched to your logistics task folders.
3. Executing and controlling logistics tasks: In a third step, you can execute and confirm your tasks and you can monitor this process.

1) Creating Logistics Task Folders

You can use logistics task folders to structure the organization of work for employees responsible for executing production processes, warehouse processes, physical inventory counts, or quality assurance. The task folder is a work list containing all the logistics tasks to be completed by one or more employees on the shop floor. You define the folders in a way that best reflects your company. There are two different types of logistic task folders: Standard folders and default folders.

STANDARD FOLDERS

You must create separate standard folders for production tasks, warehouse tasks, and count tasks. One folder always contains tasks of the same type meaning that your employees in production and in warehousing each have their own separate set of task folders. When creating the task folders, there are three main sections of information to be filled in. Below is a brief description of each of these sections and the implications of your entries.

General Data

Here, you define whether the folder is for production tasks, warehouse tasks, or count tasks. You must also determine the site for which the folder is responsible. One folder collects the tasks for one particular site only; it cannot collect tasks from multiple sites.

You can enter a Site. This means that the users who are assigned to this Site are also authorized to maintain the master data of the logistics task folder.

This information is used for checking user access rights regarding task processing. The site assignment may grant you access to several logistics task folders. However, when accessing the task list from the My Task Folders view, you can only process the tasks in folders to which you are registered. If, on the other hand, you use the specific task views for finding tasks, you can also process tasks that lie in folders to which you are not registered but for which you have access rights.

The following graphic illustrates the difference between being registered at a folder and having access rights (authorization) for a folder:
Note the following behavior when defining the Site: This attribute controls who is authorized to access and process the tasks in a folder. However, there are some important issues to bear in mind when entering the site to make sure that the system behaves as expected.

- If you define a site for a logistics task folder, the system copies this information into the respective task at task creation. This means that only employees who have access rights for the Execution work center and who have access rights for this site are authorized to see and process the tasks in this folder.

Finally, in the general data section, you can define how you want the system to sort the logistics tasks in the folders. The status of the task is always the first sorting priority (the tasks that have already been started are always listed first) but then you can choose between latest start date, latest start time, priority, receipt date, or receipt time.

**Registration Data**

Here you can define the employees that are allowed to process the tasks in the task folder. You can also determine the type of interest a particular employee has in the folder in the column entitled Role. For example, an employee may be just an “interested” party or they may be defined as “responsible”. Note, however, that this is only defined for information purposes. Both “interested” and “responsible” users have the same access rights.

**Task Assignment Criteria**

If you do not maintain any task assignment criteria, no tasks can be assigned to the task folder. To enable the assignment of tasks to the folder, you must click on the Create Assignment Criteria button and then save. This saves the standard system setting which is All meaning that all tasks in the defined site will automatically be assigned to this folder. If you want to narrow down the assignment of tasks further, you have to make the appropriate settings. For example, if you want all the tasks that refer to a particular storage location to be collected in one folder, you have to select this storage location here.

The task assignment criteria depend on the task type you defined for the logistics task folder:

- Task folder for production tasks
You define the task assignment criteria using resources and activity types.

- Task folder for warehouse tasks
  You define the task assignment criteria using storage locations and operation types.

- Task folder for physical inventory tasks
  You define the task assignment criteria using storage locations and logistics areas.

Note the following when defining task assignment criteria for production tasks:

- If you want to assign production tasks at activity level, you have to select the appropriate activities in this selection screen (for example, you may want to assign all production tasks for setup and tear down activities to a particular folder). However, it is important to realize that by doing this, you are excluding any production tasks created at operation or reporting point level from being assigned to this folder. If you want to assign production tasks at reporting point or operation level to a particular folder, you must leave the default value of the activity type at \textit{All}.

- Another important point to remember here is that the granularity you choose for assigning production tasks to folders must also correspond to the task-generation method you define for the creation of tasks in the production model. There is no point in defining a task-generation method at operation or reporting point level if you have defined assignment at activity level in your folder, for example.

\section*{DEFAULT FOLDERS}

When dispatching production tasks, warehouse tasks, and count tasks to a folder, the system always searches for an appropriate standard folder first. The system behaves as follows:

- If it finds a standard folder where all the task assignment criteria match, the task is dispatched to that folder.
- If the information contained in the task matches the task assignment criteria of more than one folder, the task may be dispatched to more than one folder.

Note this example for production tasks created at activity type level. A production task is created for a setup activity which finds three suitable logistics task folders during the dispatching process. In the task assignment criteria for the activity type of two of the folders, the default value \textit{All} has been left. This means that production tasks with all the different activity types can be assigned to these two folders – including the setup activity. However, the activity type of the third folder has been limited to setup. In this case, the production task in question is only assigned to the third folder. Therefore, the rule is that production tasks at activity level are always dispatched to the most specific folder only.

- If no appropriate standard folder is found for certain tasks during dispatching, they are automatically assigned to a default folder relevant to the task and the site.

If no default folder exists at the time of dispatching, the system creates one automatically. If necessary, you can then adjust your assignment criteria and dispatch these tasks again manually so that they can find an appropriate standard folder. Or, you may choose to process these tasks in the default folders. The options available here for processing tasks are the same as the options available in the standard folders. If you want to process your tasks according to a predefined sequence, however, the default folder is not appropriate as the tasks are not sorted according to any given sequence.

\section*{2) Creating Logistics Tasks}

\subsection*{CREATING PRODUCTION TASKS}

Production is driven by production requests, usually originating in the planning department. To process a production request, you must create one or more production orders. Production orders authorize the manufacture of the required products and contain data such as quantities of products and required dates. When you release the production order, the system automatically creates the production lot and all the production tasks required to
complete this order. (Whether or not these steps are carried out automatically depend on your system configuration. You can also choose to release the production lot manually before the production tasks are created, for example.)

The creation of the production lot in production triggers the creation of the production tasks. The system creates one production lot per production order and one or more production tasks per production lot according to the task-generation method defined in the bill of operations of the production model. As mentioned in the task assignment criteria section of the logistics task folder, you can instruct the system to create production tasks at reporting point level, operation level, or at activity level. Again, it is important that you make sure that the granularity defined here corresponds to the task assignment criteria you defined in the task folder.

The following diagram is of a very simplified structure of a production order that shows the concept behind the task-generation method.

If, in the bill of operations, you define the task-generation method at reporting point level. This means that the system only creates production tasks for reporting points and collects all the operations and activities that lie between two reporting points into one task. Therefore, in this example, the system would create two tasks for this production order: The first task containing one operation and two activities and the second containing two operations and five activities.

If, in the bill of operations, you define the task-generation method at operation level, the system only creates tasks for operations. Therefore, in this example, the system would create three tasks: The first one containing two activities, the second containing three activities, and the third containing two activities. Note that the tasks for the two operations in this example that directly precede a reporting point also automatically contain the reporting point. This is required for backflushing purposes.

If, in the bill of operations, you define the task-generation method at activity level, the system only creates tasks for activities. Therefore, in this example, the system would create a total of seven tasks each containing exactly one activity. Note that the tasks for the two activities in this example that directly precede a reporting point also automatically contain the reporting point. This is required for backflushing purposes.

The production tasks generated by the system are automatically dispatched to your logistics task folders. The information contained in the task (for example, resource or operation) is compared to the task assignment criteria you defined in the logistics task folders. The task has to match all the task assignment criteria in a folder to be assigned to that folder. Note that if the information contained in the task matches the task assignment criteria of more than one folder, the task can be dispatched to all relevant folders.

CREATING PHYSICAL INVENTORY TASKS

Physical inventory (PI) uses count tasks to organize the counting of stock in the warehouse. The creation of these tasks is triggered automatically when you create a PI count document. Depending on your system configuration, the system creates one count task for the count document or, if necessary, several count tasks per count document. The count tasks generated by the system are automatically dispatched to your logistics task folders. The information contained in the task (such as storage location and logistics area) is compared to the task assignment criteria you defined in the logistics task folders. The task has to match all the task assignment criteria in a folder to be assigned.
CREATING WAREHOUSE TASKS

Creating Outbound Warehouse Tasks

Outbound logistics is driven by the warehouse request. The warehouse request contains information on the process to be executed and the operations to be carried out in logistics processing.

If you defined the two-step shipping business option in scoping and if you selected the **Automatic Generation of Tasks** button in the logistics model, the system automatically creates the warehouse request (for a sales order, for example) and releases it to the execution phase by creating the first of the two tasks; the pick task. If you did not select the automatic creation of the first task of the two-step shipping process in scoping, you have to create the pick task manually in the **Warehouse Requests** view of the **Outbound Logistics** work center.

These pick tasks are then automatically dispatched to your logistics task folders. The information contained in the task (such as the storage location and operation type) is compared to the task assignment criteria you defined in the logistics task folders. The task has to match all the task assignment criteria in a folder to be assigned to that folder. Note that if the information contained in the task matches the task assignment criteria of more than one folder, the task is dispatched to all relevant folders.

You then go to either the **My Task Folders** view or the **Outbound Warehouse Tasks** view in the **Execution** work center to process the pick tasks. As soon as you confirm partial quantities for this task, the system automatically creates the second task of the two-step process; the load task. These tasks are always created automatically and contain the partially confirmed quantity of the pick task as the open quantity. One load task is created every time you confirm a partial quantity for the pick task. This means that several load tasks may be created for one pick task.

For more information about processing outbound warehouse tasks, see Working with Warehouse Tasks.

Creating Inbound Warehouse Tasks

Inbound logistics is also driven by the warehouse request. The warehouse request contains information on the process to be executed and the operations to be carried out in logistics processing. If you defined the two-step receiving business option in scoping and if you selected the **Automatic Generation of Tasks** button in the logistics model, the system automatically creates the warehouse request (for a purchase order, for example) and releases it to the execution phase by creating the first of the two tasks; the unload task. If you did not select the automatic creation of the first task of the two-step process in scoping, you have to create the unload task manually in the **Warehouse Requests** view of the **Inbound Logistics** work center.

These unload tasks are then automatically dispatched to your logistics task folders. The information contained in the task (such as the storage location and operation type) is compared to the task assignment criteria you defined in the logistics task folders. The task has to match all the task assignment criteria in a folder to be assigned to that folder. Note that if the information contained in the task matches the task assignment criteria of more than one folder, the task is dispatched to all relevant folders.

You then go wither to the **My Task Folders** view or the **Inbound Warehouse Tasks** view in the **Execution** work center to process the unload tasks. As soon as you confirm partial quantities for this task, the system automatically creates the second task of the two-step process; the put away task. These tasks are always created automatically and contain the partially confirmed quantity of the unload task as the open quantity. One put away task is created every time you confirm a partial quantity for the unload task. This means that several put away tasks may be created for one unload task.

For more information about processing inbound warehouse tasks, see Working with Warehouse Tasks.

Creating Internal Warehouse Tasks
The warehouse request also drives the internal logistics process. It contains information on the process to be executed and the operations to be carried out. When you release the warehouse request, the system creates the necessary tasks automatically if you selected the Automatic Generation of Tasks button in the logistics model. The procedure for creating internal warehouse tasks is generally a one-step process and the system creates remove or replenish tasks depending on the operation defined in the logistics model. If you have not instructed the system to create the tasks automatically, you can create them manually in the Warehouse Requests view of the Internal Logistics work center.

The tasks generated by the system are automatically dispatched to your logistics task folders. The information contained in the task (such as the storage location and operation type) is compared to the task assignment criteria you defined in the logistics task folders. The task has to match all the task assignment criteria in a folder to be assigned to that folder. Note that if the information contained in the task matches the task assignment criteria of more than one folder, the task is dispatched to all relevant folders.

For more information about processing internal warehouse tasks, see Working with Warehouse Tasks.

3) Executing and Controlling Logistics Tasks

Executing Tasks

Once the tasks have been dispatched to the appropriate logistics task folders, you can select a folder and view the list of tasks for which you are responsible. Irrespective of whether you work with warehouse tasks, production tasks, or count tasks you access your tasks in the Execution work center. You have two options for accessing your tasks:

- Via the My Task Folders view: You use this task folder-based list when you want to process tasks according to the folders they are assigned to.
- Via the specific task view: You use this option when you want to search for a particular task. In this case, you do not process the tasks in any predefined sequence.

You can access and print out detailed information on your tasks and commence processing. If you want to change the responsibility for a task that has already been started, you can delete the assignment to the current processor and assign a new user.

During processing, you can confirm partial quantities for production and warehouse tasks. All data entered here is passed back up to the Task Control views including such information as the quantity produced, components consumed, products picked or unloaded, the person responsible, and the date and time, for example. When you have completed processing, you can finish the task.

Controlling Tasks

The concept behind task control is that you can keep track of a range of tasks with different priorities, resources, and due dates. Separate Task Control work center views exist for internal, inbound, and outbound warehouse tasks, count tasks, and production tasks. All the tasks created by the system are listed in these views where you can monitor their progress. The processing options you have here are the same as the processing options available in the views of the Execution work center. However, your main tasks in the Task Control work center views generally include the following:

- Assigning workers responsible for a task
- Creating confirmations
- Monitoring task progress
- Redispatching tasks and moving tasks (automatically or manually)

For more detailed information on controlling tasks, see Production Tasks.

See Also

Physical Inventory Counting
Production Orders
Bills of Operations  [page 110]

3.6 Engineering Change Orders View

3.6.1 Engineering Change Orders Quick Guide

In the Engineering Change Orders view, you can control changes to the input products that are contained in production bill of material (BoM) variants. You can create single date and single date validity ECOs. You can also change the status of an ECO. An engineering change order (ECO) gives you authorization to change the input product content of your production BoM variants. It gives you a controlled quality-based approach and full traceability on the changes you make.

You can access this view from the Planning and Production Master Data work center under Engineering Change Orders.

Business Background

Production Models

Production models gather all of the key information you need to manufacture a product in one place. Production models combine product (bill of material) and process (bill of operations) information that is used as a blueprint for manufacturing. Key inputs to production models are:

- Production BoM variants that contain input products and valid from dates.
- Bills of operations (BoOs) that contain a detailed description of how you manufacture a product and to which you can assign input products from variants.

Key outputs of a production model are:

- Released planning models (RPMs) that the system uses to determine the source of supply and to create production proposals in planning.
- Released execution models (REMs) that the system uses to create production requests and orders in manufacturing.

For more information, see Production Models  [page 87]

Tasks

Create a Single Date Order

2. In the ECO Type list, choose Single-date Order.
3. Enter the ECO ID, Description, and Valid From date.
4. Click Save and Close to save the new single date order and return to the Engineering Change Orders view.

Create a Single Date Validity Order

2. In the ECO Type list, choose Single-date Validity Order.
3. Enter the ECO ID and Description.
4. In the Preceding ECO ID field, enter the ID of the ECO whose validity date you need to extend.
   The preceding ECO must have a Completed status. The system automatically enters the validity date of the preceding ECO in the Valid From field.
5. In the Valid From field, enter the new valid from date by overwriting the date of the preceding ECO.
6. Click Save and Close to save the new single date validity order and return to the Engineering Change Orders view.

Change the Status of a Single-Date Order
1. Select the single date order you want to change and click Edit to open the Engineering Change Order editor.

   A single date order must have a status of In Process to create or edit a production BoM. If you use the New ECO feature in the New Production BoM or New Production BoM Variant quick activities, or Production BoM editor, the system automatically assigns the status of In Process to the new ECO. For single date validity orders, you can only select the Complete status. For all orders, when you select Complete and save the change, you cannot make any other changes to orders or to the relevant line items in the associated production BoM variants.

2. Click Change Status and choose one of the following statuses:
   • Start Processing
   • Block
   • Resume Processing
   • Complete Changes
   • Complete
3. Click Save to save the changes and click Close to return to the Engineering Change Orders view.

3.7 Product Specifications View

3.7.1 Product Specifications Quick Guide

In the Product Specifications view of the Product Development work center, you can create new product specifications that record customer requirements for your products.

For a business that manufactures or sells products based on customer requirements, it is vital to have accurate records of each product variant that was configured, produced, or sold based on these customer requirements. Product specifications enable you to define and store the configuration information that characterizes such a product variant. The content of a product specification can consist of notes, attachments, and a selection of product property values that represent the customer requirements.

You can define product specifications in the following ways:
Before you create a product specification for your product, you create a product model that then serves as a template to create your product specification. The product model already contains properties and values that represent a possible range of product variants.

You create a product specification ad hoc without using a product model.

The Product Specifications view is available in the following work centers:

- Product Development
- Product and Service Portfolio
- Planning and Production Master Data

Product specifications enable your sales team to record customer requirements quickly and accurately. They also provide the sales team with rules for possible product configurations. Your design team can use the view to define possible features and combinations of features for each product. You can define your most commonly requested product variants and create notes for production. Product specifications can be used in planning and execution for your production and purchasing. It is also possible to open a print form of a product specification to print, send by e-mail, or save the product specification in PDF format.

Business Background

Product Definition

The Product Definition business scenario allows you to specify the product that you have sold to your customer and ensures that you build the product exactly as it was specified. This is particularly relevant when your company offers products that come in many variants or when it offers custom-built products described by detailed customer requirements. You can define possible product variants by product properties, product models, product specifications, and reuse the product variants.

- Product properties describe the features a product can have.
- Product models describe the possible variations of a product.
- Product specifications describe individual customer requirements or products variants. You can create product specifications within SAP Business ByDesign or import them from an external system.

Product Definition supports streamlining product portfolio and production, meeting customer requirements in delivered product, and, reducing Product Master management effort.

For more information see Product Definition.

Product Development

The Product Development business scenario provides you with comprehensive functionality to develop new products or to significantly improve the quality of products and processes. Inspired by the Advanced Product Quality Planning (APQP) framework, it covers all important stages from the definition of a product development project to the approval of mass production (and project closure). It covers the planning of a product development project, the engineering and prototyping of a product, the definition of the production process and sample master data, as well as the production of samples and the validation of the production process by continuous improvement. It is a project-structured scenario that includes tools and techniques of Total Quality Management to achieve strategic business results, such as reducing field failure risks, product returns and warranty costs, and ensuring higher customer satisfaction.
Tasks

Create a Product Specification

You can create and edit product specifications for your product variants. You can create a product specification for a material that has already been created in the Materials view. It is also possible to create a product specification without a material. To use product properties and product models with your product specification, you must define them in their respective views and associate a product model with the product.

1. Go to the Product Development work center and then choose the Product Specifications view.

You can also create product specifications using the Product Specifications view in the Product and Service Portfolio work center and the Planning and Production Master Data work center. You can also access the New Product Specification quick activity from the Sales Order editor in the Sales Orders work center.

2. Click New to open the New Product Specification quick activity.

3. Enter the general information:
   - In the Product Specification ID field, enter a product specification ID. If you do not enter a product specification ID, the system automatically assigns one.
   - In the Product Specification Description field, enter a product specification description.
   - In the Product ID field, enter a product ID or select one using the Open Selection Dialog icon to bring up a list. If the product you select has a product model associated with it properties, notes and attachments may appear.

4. Enter the values you require in the correct fields. Mandatory fields are marked accordingly.

5. In the Notes field, enter any notes you require. To add an attachment to this product specification, in the Attachments section, click Add and choose to add either a file or a link.

6. To save and release your work do the following:
   - If you are finished with your product specification and want to protect it against unwanted changes, you have to release it. Click Change Status and select Released.
   - Click Save.

The new product specification is saved and released. It is now protected against unwanted changes.

Search for a Product Specification

You can search for existing product specifications by attributes, for example, descriptions, IDs and the properties that have been used in product specifications. This is useful for you if you want to reuse existing product specifications for common product variants or if you want to find out if a special product variant has already been specified in the past.
1. To search for a product specification type in any of the following attributes or a combination of them into the and Find field:
   - ID of the product specification
   - Product specification description
   - Status
   - Name of the responsible employee
   - Product ID
   - Product description
   - Property description
   - Property ID
   - Property value
2. Click Go.

This search for product specifications using the above mentioned attributes is possible in all applications where product specifications are used.

Example
Erin Eycken is helping a sales colleague to find out if a black, 50 gallon, oil-fueled boiler has been requested by a customer before.

To find the product specification, she types the following values into the and Find field: Black oil 50. Then she clicks Go.

As a result all relevant product specifications are displayed as a search result and can be reused.

Generate a PDF of a Product Specification
It is also possible to open a print form of a product specification to print, send by e-mail, or save the product specification in PDF format. This print form includes the notes and the names of the attachments of a product specification but does not include the where-used list.

1. To generate a PDF of a product specification, select the product specification for which you want to generate a PDF and click Preview.
2. To display the PDF, select the PDF in the list and click Open.
   You can now print, save, or e-mail the PDF if necessary.

Work with Tasks, Notifications, Alerts, and Clarification Requests
For more information about working with tasks, notifications and alerts, see here [page 205].
For more information about working with clarification requests, see here [page 207].

Export Business Data Using Microsoft Excel*
You can export different types of data from the SAP Business ByDesign system to Microsoft Excel.

For more information about this task, see Export Business Data Using Microsoft Excel [page 204]
See Also
Product Models Quick Guide
Create a Product Model
Product Properties Quick Guide
Synchronization of Notes and Attachments between Product Models and Product Specifications

3.8 Source Determination View

3.8.1 Source Determination Quick Guide

The system displays all the available sources of supply in the Source Determination view. The source of supply specifies the different procurement options that are available for satisfying a demand for a product. Demand can be satisfied from in-house production or external procurement sources. For in-house, you can use a released planning model (RPM) to source from your own manufacturing process. For internal, you can use a transport lane. For external, you can use a purchasing contract or a list price to source from your suppliers.

An RPM is a released version of a production model for use in planning. It contains all the relevant planning information that a supply planner needs to create a production proposal. The system creates a production proposal only if it finds a valid source of supply. You can create an RPM in the Production Models view. For more information, see Production Models Quick Guide [page 101].

A purchasing contract is an agreement with a supplier to supply input products on particular conditions. A list price is simply a single price for a particular product that is procured from a particular supplier, and that is valid for a given period of time. When a purchasing contract or a list price is in place, the system creates a purchase proposal with either the purchasing contract or list price as the source of supply. If a contract or list price is not in place, the system creates a purchase proposal without a source of supply. You can only create and change purchasing contracts in the Contracts view. You can only create and change list prices in the Pricing view. This enables a separation of concerns between planning and production master data, and purchasing. For more information, see Pricing Quick Guide and Contracts Quick Guide.

Business Background

Production Models

Production models gather all of the key information you need to manufacture a product in one place. Production models combine product (bill of material) and process (bill of operations) information that is used as a blueprint for manufacturing. Key inputs to production models are:

- Production BoM variants that contain input products and valid from dates.
- Bills of operations (BoOs) that contain a detailed description of how you manufacture a product and to which you can assign input products from variants.

Key outputs of a production model are:

- Released planning models (RPMs) that the system uses to determine the source of supply and to create production proposals in planning.
• Released execution models (REMs) that the system uses to create production requests and orders in manufacturing.

For more information, see Production Models [page 87]

**Tasks**

**Change the Priority of a Source of Supply**

The priorities are only applicable among similar sources of supply, for example, transport lanes.

1. Select a product and planning area combination from the worklist. Click [Change Priority] to open the Change Source of Supply Priority quick activity.
2. For the row that contains the source of supply that you want to edit in the Maintain Source Priority table, select the Source of Supply Priority field. Enter the source of supply priority and press enter.
3. Click [Save and Close]. The system displays a success message. Click [OK] to return to the Source Determination view.

The system displays the priority in the Priority column for the product and planning area combination in the worklist.

3.9 Product Groups View

3.9.1 Product Groups Quick Guide

In the Product Groups view, you can create a hierarchy of groups that you can use to structure products in forecasting, planning, production, and storage. This enables you to assign the responsibility for executing tasks for a group of products to a user. In their day-to-day work, users can easily select the products for which they are responsible. This gives users simplified procedures, and enables an efficient process.

You can only create one cross-process product category hierarchy per system. It is not possible to create a company or business-based product category hierarchy. However, you can create one product category hierarchy for storage, one for planning, one for forecasting, and one for production. The storage and production groups are assigned to a site, whereas the planning group is assigned to a planning area. The assignment of the site is done when the products are assigned to their categories.

You can access the Products Group view from the following locations:

- **Planning and Production Master Data** work center
- **Supply Chain Design Master Data** work center
- **Warehousing and Logistics Master Data** work center

This view contains the following subviews:

**Forecasting Groups Subview**

You can use the Forecasting Groups view to create a hierarchy of products and use the hierarchy to create demand forecasts. You can assign products to the scope of a demand plan and distinguish between products in the selection...
criteria for the interactive planning board. You can also perform a statistical forecast at the aggregated level of a forecasting group rather than the detailed level of a product. For more information, see Forecasting.

**Planning Groups Subview**

The *Planning Groups* view enables you to create a hierarchy of product groups that you can use to structure products for supply planning. You can review products on all the levels of the hierarchy. When you select at an upper level, you also review all the products in the corresponding lower levels. You can delete and rename subgroups. You can also display and allow material assignments.

In Supply Planning, you can use planning groups as a selection criterion to select production proposals and purchase proposals for your day-to-day tasks. In your business you can simplify the execution of planning tasks by assigning a group of products to a supply planner.

**Production Groups Subview**

The *Production Groups* view enables you to create a hierarchy of product groups that you can use to structure products for production. You can select products on all the levels of the hierarchy. When you select at an upper level, you also select all the products in the corresponding lower levels. You can delete and rename subgroups. You can also display and allow material assignments.

**Storage Groups Subview**

The *Storage Groups* view enables you to create a hierarchy of product groups that you can use to structure the products you store in your warehouse.

**Tasks**

**Create a Hierarchy of Product Groups**

1. Choose the *Production Groups* subview. You can also use this procedure to create a hierarchy of product groups for the planning, storage, and forecasting groups views. You can create a hierarchy of product groups in the *Planning and Production Master Data*, *Supply Chain Design Master Data*, and *Warehousing and Logistics Master Data* work centers.

2. To create the parent production group, click *New Hierarchy* to open the quick activity. You can only create one cross-process product category hierarchy per system. Once this has been done, the *New Hierarchy* button will be greyed out.

3. In the production groups table, enter the parent production group ID and description. Select the *Allow Product Assignments* check box if you want to assign this group to a product in the *Product Data > Material* editor. Click *Save* to save the new parent production group.

4. To add a subgroup to the newly created parent group, select the parent group in the production group table and click *Add Subgroup*. The system adds a new row to the production group table. The row is a child of the parent group.

5. Enter the production subgroup ID and description. Select the *Allow Product Assignments* check box if you need to assign this subgroup to a product in the *Product Data > Material* editor. Click *Save* to save the new production subgroup.
6. Repeat the steps above to add other subgroups as appropriate. Click **Save and Close** to save the new production subgroups and return to the *Production Groups* view.
4 Warehousing and Logistics Master Data

4.1 Business Background

4.1.1 Identified Stock Management

Overview

Identified stock refers to goods that are a sub-quantity of exactly one product and which are uniquely identified in the context of a product. For example, batches and lots. The identified stock contains identifying information, including a description, the external identified stock ID, the expiration date, the production date, and the related product and product specification. In addition, the identified stock may also include an attachment, such as a PDF file, or a JPG file illustrating the product. Notes can be included as well.

Identified stock management enables you to create new identified stock entries, maintain the attributes of existing identified stock entries, confirm logistics tasks with identified stock IDs, and also delete identified stock master data entries (only possible as long as the identified stock being deleted is in status In Preparation). You can use identified stock to track the execution of a specific identified stock throughout an inbound process, an outbound process, an internal process, a production process, or a physical inventory count. In addition, you can block goods belonging to a specific identified stock, as well as execute reports to see identified stock details (quantities and locations).

Identified Stock Creation

Identified stock can be created in the following situations:

- During a migration process, resulting in the initial loading of legacy identified stock information into the system (the activation status is derived from the migrated data).
- During manual master data creation, through the Warehousing and Logistics Master Data work center or the Planning and Production Master Data work center. In this manner, the identified stock can be fully created in advance of its use in the system.
- During a goods receipt confirmation process (using the Create Identified Stock button), for example, when receiving goods from production or when receiving goods in a site logistics process. When creating identified stock in this manner, it is not possible to add any attachments or notes to the identified stock, and the identified stock is automatically activated at the end of the creation process.

Identified stock must be activated before it becomes available for use in the system.

Identified stock can only be used in the context of a product. Therefore, the identified stock must be assigned to an existing product before it can be used and this product must have an identified stock assignment in the Product Master.

Identified Stock Types

Identified stock types determine the way that the identified stock will be handled in the system with regards to inventory management and product specification processing. The following table shows how each identified stock type is used:
Identified Stock IDs and Usage

<table>
<thead>
<tr>
<th>Identified Stock Type</th>
<th>Posting in Inventory</th>
<th>Assignment to a Product Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Batch</td>
<td>Mandatory</td>
<td>Not allowed</td>
</tr>
<tr>
<td>Lot</td>
<td>Mandatory</td>
<td>Not allowed</td>
</tr>
<tr>
<td>Optional Specified Stock</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td>Mandatory Specified Stock</td>
<td>Mandatory</td>
<td>Optional</td>
</tr>
</tbody>
</table>

In other words, the identified stock IDs of batches and lots must be recorded in inventory (products are managed at the identified stock level) and these identified stock types cannot be used in the processing of a product specification. For product specification processing, you must use one of the other identified stock types, Optional Specified Stock or Mandatory Specified Stock. You may use either type, depending on whether or not you would like to manage your identified stock in inventory.

In the case of Optional Identified Stock, you only have to post the product with Identified Stock if a product specification is processed. If the same product is processed without a product specification, then the usage of identified stock is optional. For Mandatory Identified Stock, you have to maintain identified stock when posting a product with or without product specification.

For additional information, see Changing Identified Stock Types [page 173].

Identified Stock ID

Based on the settings during system configuration, an identified stock ID can be unique across the system. The ID format is defined through business configuration.

To configure the solution for a unique identified stock ID, navigate to the Business Configuration work center, Implementation Projects view. Select your implementation project and click Edit Project Scope. In the Scoping step of the project, ensure that Tracking, Tracing, and Identification is selected within Manufacturing, Warehousing, and Logistics. In the Questions step, expand the Tracking, Tracing, and Identification scoping element and select Identified Stock. Under Group: Unique Identified Stock Numbers, select and answer the question. Under Group: Number Ranges for Unique Identified Stock Numbers, select and answer one of the questions to choose whether you want to create the identified stock IDs manually, or whether you want the system to generate the IDs for you. Note that the feature for a unique identified stock ID across the system is not enabled in the default configuration.

If you do not configure the system for a unique identified stock ID across the system, each ID is unique only for a product. In this case, a product can have several identified stock IDs associated with it, and it is possible for two identified stocks to exist with the same ID, as long as they are not assigned to the same product. The ID format is defined through business configuration for each identified stock type.

The identified stock ID format can be comprised of a fixed value and a number range. If the ID is unique for a product, the number range sequence is restarted for each product. To define the rules for number ranges, navigate to the Business Configuration work center, Implementation Projects view. Select your implementation project and click OpenActivityList. Select the Fine-Tune phase, then select Number Ranges for Identified Stock. For more information, see Configuration: Number Ranges.

Configuration settings are normally performed by an administrator. If you do not have the required authorization, contact your administrator.

Lifecycle Status

The identified stock status affects the usage of identified stock in various processes, as follows:
• Status **In Preparation**: The identified stock cannot be used within any process, including goods movement.

• Status **Active**: The identified stock can be used without restrictions.

• Status **Blocked or Obsolete**: The identified stock can only be used with restrictions. Blocked – If quality is insufficient; Obsolete – not to be used anymore. The posting of a goods receipt for production and the posting of goods as part of logistics processing (for example, during an inbound process or during the handling of a customer return) is not allowed for an existing blocked identified stock.

• Expired identified stock is handled by the system the same as identified stock in status **Blocked**. However, the status is not set to **Blocked**.

• If the identified stock status is **Obsolete**, the system defaults the stock associated with it to restricted. For example, if the status of the identified stock created during a goods receipt confirmation process changes to **Obsolete** after the confirmation, the system defaults the stock associated with the identified stock to restricted when you reverse the confirmation.

  Note that the defaulting of stock to restricted is not available for third party logistics, as the system cannot modify the stock category in an externally-managed warehouse.

It is possible to count identified stock as part of a physical inventory count as long as the stock is not in status **In Preparation** (since stock cannot be posted during the count).

**Blocked, Obsolete**, and expired identified stock can be used during the following operations:

• Initial loading (data migration)

• Goods movements, such as internal moves

• Scrapping

• Stock change

An identified stock cannot be used for goods issue to a cost center or a project, if it is in status **Blocked or Obsolete**, or else it has expired.

If the identified stock status changes while posting a goods receipt, the system behaves as follows:

• If no inspection plan is configured in the system and the identified stock status changes from **Active** to **Obsolete**, the system allows the posting of goods into restricted stock only. This is because identified stock in **Obsolete** status can be associated with restricted stock only.

• If no inspection plan is configured in the system and the identified stock status changes from **Active** to **Blocked**, the system allows the posting of goods into both restricted and unrestricted stock. This is because identified stock in **Blocked** status can be associated with both restricted and unrestricted stock.

• If an inspection plan is configured in the system and the inspection document is created while posting the goods receipt, and if the identified stock status changes from **Active to Obsolete**, the system does not allow the posting of goods. This is because identified stock in **Obsolete** status cannot be associated with inspection stock.

• If an inspection plan is configured in the system and the inspection document is created while posting the goods receipt, and if the identified stock status changes from **Active to Blocked**, the system allows the posting of goods. This is because identified stock in **Blocked** status can be associated with inspection stock.

**Identified Stock in Inventory**

Identified stock is a stock separator in inventory. This allows you to distinguish between goods of the same product that belong to different identified stocks. An identified stock can be recorded during any inventory posting as part of the confirmation of inventory changes, including the confirmation of a logistics task, a production task, and a physical inventory task, or as part of a goods movement.
In a make-to-order process, when confirming an identified stock ID that is associated with a product specification, the product specification associated with this identified stock ID must be the same as the one associated with the process involving the confirmation.

Identified stock data is reflected in the Stock Overview and the Confirmation Journal. See Stock Overview and Overview of Reports in Supply Chain Management for further information.

Tracking and Tracing with Identified Stock

By using identified stock to manage your inventory, you can better monitor the usage of identified stock in various logistics processes, as well as trace back the input products of finished goods to the identified stock or identified stocks of which they are comprised.

The Identified Stock Overview screen provides detailed information about the identified stock ID you are viewing, such as quantities, locations, and inbound or outbound deliveries containing identified stock. In this screen you can open the link to the detailed view of an identified stock in order to see all confirmation items involving this identified stock, which enables you to trace back some of the history of this specific identified stock. For example, you can navigate back to the details of the physical inventory count or production lot in which the identified stock was used. By navigating back to the production lot in which the identified stock was used, you can trace the input products that were used in the creation of the identified stock under investigation.

To complete the picture, you can use the Open Stock Overview button to look up detailed information about your identified stock inventory for the same product, or use the Confirmation Journal button to view all confirmations including other identified stock inventory existing for the same product. Note that the stock overview only provides data for items currently in status In Process (that is, which are in an inbound or outbound process). Use the Confirmation Journal for a more detailed investigation.

Identified Stock Valuation Level Type

Valuation levels define the granularity at which inventory valuation is calculated. Material valuation is defined in the material master data. If the identified stock has no product specification, it has the Business Residence valuation level type by default.

You can change the valuation level in the master data of your materials with the Valuation Level Type field.

If you change the valuation level, the change will only affect an identified stock if both of the following conditions apply:

- The identified stock is activated after you change the valuation level.
- No other active identified stock exists that belongs to the same product and product specification that was activated with different settings.

All identified stocks belonging to a given product and product specification always have the same settings, and these settings are determined when the first of these identified stocks is activated.

Identified stocks that existed before the change continue to be valued at the previously defined level.

For more information, see Valuation Levels.

See Also

Inventory Postings
Physical Inventory
4.2 Logistics Units View

4.2.1 Logistics Units Quick Guide

Large amounts of products are moved to and from storage locations within warehouses everyday. It is essential for logistics departments to efficiently handle logistics processing. The Logistics Units view facilitates this by helping you to create logistics units (LUs) for storage and transportation purposes within your supply chain. LUs help you to simplify and accelerate warehouse processes, such as defining search criteria for the material flow. The Logistics Units view provides you with an overview of the LUs in your logistics processes. Within this view you can: Create LUs with the option of assigning products, edit or delete LUs, and set their status (activate, block, and unblock). By creating LUs in the Logistics Units view, you help to ensure reliable and stable inbound, outbound, and internal logistics processes.

**Business Background**

**Logistics Unit Management**

A logistics unit is an item established for logistics operations, such as storage, movement, and packing. It represents all physical units handled in the same manner during logistic operations, whether they are packed or unpacked goods. Logistics units are typically used when performing putaway, pick, load, and unload tasks. Note that a logistics unit (LU) does not require identification and can refer to even one piece of unpacked product. The logistics unit contains:

- Information regarding physical limitations and packaging.
- Information regarding the products that can be packed into the logistics unit, as well as their units of measure, for standard packing.

For more information, see Logistics Unit Management [page 150].

**Tasks**

**Create a Logistics Unit**

1. Go to the Warehousing and Logistics Master Data work center and choose the Logistics Units view.
2. Click [New] to launch the New Logistics Unit quick activity.
3. Choose the General tab and enter the general information associated with the new LU.
   - In the Logistics Unit ID field, enter the ID of the new LU.
   - In the Product ID field under Default Packaging Product, enter the product ID of the default packaging product. If necessary, click the Open Selection Dialog icon to search for the product ID. The system automatically displays the corresponding product description.
   - Enter further information as required.
4. Choose the Standard Product tab and click [Add Row].
In the Product ID field, enter the product ID. If necessary, click the Open Selection Dialog icon to search for the product ID. The system automatically displays the corresponding product description.

In the Unit of Measure list, choose the unit of measure for the product. The system automatically displays the corresponding product quantity information.

Add other products, if so desired.

5. Click Save to save the new LU, then click Close to return to the Logistics Units view. The new LU is saved in the system and added to the list in the Logistics Units view. To open the LU from this list, click the appropriate LU ID link.

Change a Logistics Unit's Status

1. Go to the Warehousing and Logistics Master Data work center and choose the Logistics Units view.
2. Select a row from the list and click Change Status.
3. Select the new status for the logistics unit.
   - A logistics unit is initially created in status In preparation.
   - Once a logistics unit has been activated, it cannot be deleted. It can be set to status Blocked or Obsolete.

4.2.2 Business Background

4.2.2.1 Logistics Unit Management

Overview

A logistics unit is an item established for logistics operations, such as storage, movement, and packing. It represents all physical units handled in the same manner during logistic operations, whether they are packed or unpacked goods. Logistics units are typically used when performing putaway, pick, load, and unload tasks. Note that a logistics unit (LU) does not require identification and can refer to even one piece of unpacked product.

The logistics unit contains:

- Information regarding physical limitations and packaging.
- Information regarding the products that can be packed into the logistics unit, as well as their units of measure, for standard packing.

A logistics unit can exist with various levels of detail:

- LU with only physical measurements and general attributes, with no relation to a product unit of measure (UOM).
- LU that is associated to different product units of measure, which are all handled in the same manner. (Only one UOM per product can be associated to a logistics unit.)

This yields three product and quantity combinations:

- LU with a single product and a fixed quantity for that product. For example, a full pallet of milk cartons.
- LU with a single product and a variable quantity for that product. For example, a partial pallet, containing fewer than the number of milk cartons that would constitute a full pallet.
• LU with a number of products and a variable quantity of each product. For example, a mixed pallet, containing some milk cartons and some soft drink cartons.

Typically, the LU holds physical measurements and certain general attributes. For example, a small crate and a large crate are both logistics units. This does not restrict the products in a packing activity and is generally used for ‘free packing’, namely, for packing products or mixing different products into an LU. An LU will usually be associated to different product UOMs, which are handled in the same manner. For example, all milk carton variants (1%, 3%, 5%, and so on) describe the same milk carton LU. The same Soft Drinks Case LU, for example, can be used for all cases of similar soft drink bottles (such as 1.5L “regular” and “light” sodas). The one restriction applicable to the above is that only one UOM per product can be associated to an LU. There is no restriction regarding the UOM for a variety of products. For example, two different UOMs – CASE_A of Product 1 and CASE_B of Product 2 – can be associated to the same LU.

Working with Logistics Units

Working with LUs can facilitate logistics processes in a number of ways. For example:

• You can confirm 4 LUs instead of confirming 4096 EA of a product.
• You can use different rules in Source Determination for storing small boxes and big pallets.
• You can create labels with a reference to an LU, and then the measures will be taken from that LU by default.
• When working with LUs, the LU’s weight is used in the weight calculation for a delivery or freight list (so you do not need to maintain the weight per product/UOM).

In the Warehousing and Logistics Master Data work center, you can create and edit a logistics unit for storage, transportation, and tracking purposes within your supply chain. By using LUs, a logistics department can efficiently store and move products within warehouses and production areas.

Using the logistics unit editor to create logistics units (LUs), you can specify:

• The default packaging product (the selectable package types are predefined in the system).
• The storage group ID.
• Whether you can only have one product in the LU (LU may not contain a mixture of products if the Single Product indicator is selected).
• Whether the LU is used for inventory management (If the Non Inventory Managed indicator is marked, the LU is a ‘documentary’ LU, meaning this LU cannot be managed in inventory since its contained products do not have a fixed, known quantity. Therefore, these LUs can exist only in documents, such as outbound delivery.)

Luther, a warehouse manager, creates a logistics unit. He decides to only allow one product in this LU and specifies which product this will be. He then specifies the unit of measure to be used and activates the LU, so that it can be used in the warehouse and production areas.

• A logistics unit is initially created in status In preparation.
• Once a logistics unit has been activated, it cannot be deleted. It can be set to status Blocked or Obsolete.

Logistics Unit Types

There are a number of typical logistics units. The ‘type’ of the LU is determined by the values of the Non Inventory Managed and Single Product Only indicators, as explained below:
Logistics Unit Types

<table>
<thead>
<tr>
<th>Non Inventory Managed</th>
<th>Single Product Only</th>
<th>Resulting Logistics Unit 'Type'</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Yes</td>
<td>The contained (single) product quantity is fixed.</td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>The contained (single) product quantity is variable.</td>
</tr>
<tr>
<td>Yes</td>
<td>No</td>
<td>The number of products contained in the LU and their quantities are unspecified (mixed).</td>
</tr>
</tbody>
</table>

- A 'fixed' LU always contains a single product with a standard quantity. This is the default setting when a new LU is created. So-called fixed LUs can be used in outbound, inbound, and internal logistics processes. When using a fixed LU in these processes, it is only possible to report the LU quantity. The product quantity can be accurately derived from the LU and the product master data. Fixed LUs can be managed in inventory.

- A ‘variable’ LU contains always one product but the product quantity is not necessarily standard. So-called variable LUs are not managed in inventory. Therefore, they are mainly used in outbound processes when the LU information is required for outbound delivery or the freight list. When a Variable LU is used in the process, the product quantity and the LU quantity should be entered manually (the product quantity cannot be derived from the product master data since the product assignment to the LU is not mandatory. Even when the assignment exists, the actual contained quantity may vary from the master data defined quantity).

- An ‘unspecified’ LU may physically contain several products (mixed content), but from the system’s perspective, the content is undefined. So-called unspecified LUs are not managed in inventory and they are not part of the logistics processes. A user can use unspecified LUs in labels, which can then be assigned to the outbound delivery.

A combination in which the value for both indicators is No is not allowed, since unspecified LUs cannot be managed in inventory.

The following restrictions exist with regards to the LU types explained above:
- A specific product and UOM combination can only be assigned to one fixed and active LU in the system.
- A standard product cannot be assigned to an unspecified LU.
- A product cannot be assigned to the same LU with different UOMs.

Using Logistics Units in Logistics Processes

When working with LUs, it is possible to confirm inbound, outbound, and internal warehouse tasks using LUs. Working with LUs will affect how the system behaves in certain logistics processes, as detailed below.

Using Logistics Units in Inventory
You can display the Stock Overview view for a static display of logistics units in inventory.

'Fixed’ LUs are used as stock separators in inventory. It is also possible to use non-inventory-managed (documentary) LUs, which are LUs that are used only in documents (for example, for packing purposes). For additional information on inventory management, see: Inventory Postings.

Using Logistics Units in a Change of Stock Process
When applying a change of stock to packed stock in a bin that can only hold unpacked stock, the LU information is retained and the change of stock is applied without the LU information.

Using Logistics Units in Physical Inventory
Physical inventory can be counted with LUs. For additional information about counting physical inventory, see: Physical Inventory.
The management of logistics units defined in a logistics area’s master data (in the Location Layout view, which is accessible from the Locations view in the Supply Chain Design Master Data work center) affects the use of an LU in a physical inventory count, as follows:

- When trying to count packed stock in a bin that can store only unpacked stock, the stock is saved without the LU as a stock separator.
- It is possible to count unpacked stock that is found in a bin that can store only packed stock.

Using Logistics Units in a Replenishment Process

The management of logistics units defined in a logistics area’s master data (in the Location Layout view, which is accessible from the Locations view in the Supply Chain Design Master Data work center) affects the use of an LU in the replenishment process, as follows:

- When using packed stock to replenish a bin that can store only unpacked stock, the stock is saved without the LU as a stock separator.
- It is not possible to use unpacked stock to replenish a bin that can only store packed stock.

Using Logistics Units in an Inbound Delivery Process

The management of logistics units defined in a logistics area’s master data (in the Location Layout view, which is accessible from the Locations view in the Supply Chain Design Master Data work center) affects the use of an LU in an inbound delivery process, as follows:

- When receiving or putting away packed stock into a bin that can store only unpacked stock, the stock is saved without the LU as a stock separator.
- It is not possible to put or receive unpacked stock into a bin that can only store packed stock.

Using Logistics Units in an Outbound Delivery Process

The management of logistics units defined in a logistics area’s master data (in the Location Layout view, which is accessible from the Locations view in the Supply Chain Design Master Data work center) affects the use of an LU in an outbound delivery process. In this context, it is important to note that the LU management definition does not prevent consumption of stock (packed or unpacked) from a bin in the following cases:

- The use of negative stock is allowed for this bin.
- The stock to be consumed exists in the bin even though it is not allowed to be there (for example, because of the findings of a physical inventory count).

In addition, when the bin contains packed and unpacked stock, the material flow proposal when searching a source logistics area using the Minimum Movements strategy will first offer to fulfill the open quantity with LUs and then with unpacked stock.

Using Logistics Units in a Goods Movement Process

The management of logistics units defined in a logistics area’s master data (in the Location Layout view, which is accessible from the Locations view in the Supply Chain Design Master Data work center) affects the use of an LU in a goods movement process, as follows: When moving packed stock into a bin that can store only unpacked stock, the stock is saved without the LU as a stock separator.

4.3 Logistics Models View

4.3.1 Logistics Models Quick Guide

Logistics models are used to describe the complete logistics process that should be executed in order to fulfill inbound, outbound, and internal requests. In the Logistics Models view you can create logistics models that help...
automate the execution of these processes in a consistent, reliable, and stable manner. Logistics models offer a single view in which you have full control over how the logistics processes are executed. You can access this view from the Warehousing and Logistics Master Data work center under Logistics Models.

Business Background

Logistics Models

Logistics models are used to describe the complete logistics process that should be executed in order to fulfill inbound, outbound, and internal requests. The system allows you to create logistics models that help automate the execution of these processes in a consistent, reliable, and stable manner. Logistics models offer a single view in which you have full control over how the logistics processes are executed. It also provides pre-configured models that provide a good foundation for creating an entire range of new models to execute all the logistics processes in your warehouse. Logistics models maintain a clear separation between the logistics model master data maintenance and the use of this data for execution in logistics processing through decoupling.

For more information, see Logistics Models [page 155].

Locations and Location Layouts

The location and location layout concept enables you to design a detailed model of your company’s supply chain. The location represents an external view of your company that helps you to communicate with your business partner. The location layout on the other hand represents an internal view of your company’s structure. It allows for an integrated material flow for warehousing and production through a common layout. This layout is represented by a hierarchical structure of logistics areas. You can centrally maintain the layouts of the different sites and locations within your company. Together with the logistics model, you can control and optimize the storage and movements of products within your company.

For more information, see Locations and Location Layouts [page 7].

Working With Logistics Models

In the Logistics Models view you can use the Maintain Logistics Model editor to specify and change the operations and conditions of use of a logistics model. At logistics model level, you can specify that the system generates tasks automatically for the first step, or operation, of the model. You can specify the site and your own estimate for how long it will take to complete the tasks associated with the model. The system also uses the Without Tasks check box to display whether or not it will create tasks in logistics execution.

For more information, see Working with Logistics Models [page 159].

Tasks

Create and Edit a Logistics Model

1. Click New to open the New Logistics Model from Template dialog box.
2. In the Logistics Model Template ID field, choose the template on which you want to base the logistics model.
3. In the Logistics Model ID field, enter an ID for the logistics model.
4. To close the New Logistics Model from Template dialog box and to return to the Logistics Models view, click OK.
5. To edit the new — or any existing — logistics model, select the row that contains the new logistics model and click Edit. Edit the logistics model as required in the Maintain Logistics Model editor.
You can add and remove elements from a logistics model, such as operations, to represent the logistics process you want to use. You can also specify what type of activity is involved in each element, for example, if the activity is a move per source, move per destination, move per source and destination, or move per request activity.

6. When you have finished editing, save your entry.

**Release a Logistics Model**

1. Choose the logistics model you want to release for use and click **Edit**.
2. Check that the logistics model has the status **Consistent**.

   To see the status of the new logistics model click **Check**. After you perform a consistency check, the status changes to either **Consistent** or **Inconsistent**. If the result is inconsistent, the system displays the error messages that describe the actions you must take to make the logistics model consistent. Whenever you subsequently change the logistics model, the status returns to **Check Pending**.

3. Click **Save and Release** to release the logistics model.
4. Click **Close** to return to the **Logistics Models** view. The logistics model is now available for use in your logistics process.

**4.3.2 Business Background**

**4.3.2.1 Logistics Models**

**Overview**

Logistics models are used to describe the complete logistics process that should be executed in order to fulfill inbound, outbound, and internal requests. The system allows you to create logistics models that help automate the execution of these processes in a consistent, reliable, and stable manner. Logistics models offer a single view in which you have full control over how the logistics processes are executed. It also provides pre-configured models that provide a good foundation for creating an entire range of new models to execute all the logistics processes in your warehouse. Logistics models maintain a clear separation between the logistics model master data maintenance and the use of this data for execution in logistics processing through decoupling.

**Logistics Models in Detail**

The sections that follow provide a description of logistics models and explain how to work with logistics models in your system. The **Logistics Models** view allows you to create and release logistics models for use by the system. The models are maintained in the **Warehousing and Logistics Master Data** work center. From the **Logistics Models** view, you are able to create, update, and release a logistics model for execution. You can also check that the model is consistent, meaning that the information is correct and complete and that there is no conflict with other logistics
models, since the system allows one logistics model for each type in a site. A logistics model is distinguished by the type (for example, standard receiving, standard shipping) and by the *Without Task* checkbox.

**Logistics Models**

Logistics models are mandatory and are used to model the movements of materials in a warehouse. A logistics model provides a detailed process description including the steps to be followed for a specific type of process. The logistics models help to ensure that the warehouse operates in an organized and efficient manner.

Materials are moved into the warehouse, out of the warehouse, and internally within a warehouse. The solution allows these three types of movement to be modeled as inbound, outbound, and internal warehouse processes. Each warehouse process is made up of operations that are carried out in the form of tasks executed by a worker. For example, an inbound process (goods receiving) can be modeled as a two step process consisting of two operations: unloading the vehicle and putting the goods away into storage bins. The operations are maintained in the logistics models along with the task steps to complete them.

**Creating Logistics Models**

The *Logistics Models* view gathers together into one place all the key information you need to execute a warehouse process. The information in a model includes the model ID, site, without task indicator, type of process flow to be followed, operations, and the order in which they should be performed. The model also enables you to select whether or not to automatically create the tasks to be executed in the warehouse. Each logistics model type can be either generic, which can be used in all sites or site specific. The system however, can support only one of each logistics model type per site and without task indicator (for example, Pickup Shipping, Goods Return Receiving, and Removal). From each logistics model type, you can create more than one logistics model with different parameters and release it. However, each released logistics model must be unique.

In addition, a site can have two active logistics models for each warehouse process, one with task and one without task, for example, one active logistics model for receiving goods with tasks and one logistics model for receiving goods without task. For internal removal there is only one logistics model with task.

In the *Warehousing and Logistics Master Data* work center, from the *Logistics Models* view, pre-configured logistics model templates provided by the solution simplify the process of creating new logistics models. These templates support the standard behavior of inbound, outbound, and internal warehouse processes in your warehouse and they are configured during the fine-tuning phase of scoping.

It is also possible to create models for warehouse processes that do not require tasks and therefore reduces the number of actions to complete the process. For example, you can create an outbound delivery in one step without needing a warehouse task. You can also communicate inventory changes to invoicing and accounting without creating tasks or manually confirming a task.

Once you have created your new logistics model, you can change the behavior of the process flows and warehouse tasks by adding, changing, or removing operations and other attributes of the logistics model. Before releasing the model, you can manually check the consistency of a specific logistics model or a variant of it, to ensure that there are no errors. For more information see: *Logistics Models Quick Guide* [page 153].

**Preconfigured Logistics Models**

The following pre-configured logistics models are available in the system:

- To support the process of receiving of goods:
  - *Template for one-step receiving*
  - *Template for two-step receiving*

- To support the process of internal movement of goods:
To support the process of shipping of goods:

- Template for one-step shipping with pick lists
- Template for one-step goods return shipping
- Template for two-step shipping with pick and load
- Template for two-step goods return shipping
- Template for shipping without tasks
- Template for goods return shipping without tasks

To support the process of direct pick-up by field service engineer as part of service management process:

- Template for pick-up by service engineers
- Template for pick-up by service engineers without tasks

To support the process of customer returns:

- Template for one-step customer returns
- Template for two-step customer returns
- Template for customer returns without tasks

**Interaction with Location Layouts**

Logistics models are closely integrated with location layouts. The interaction between the logistics model and location layout enables you to automate your warehouse processes in an efficient manner. The logistics model describes the complete warehouse process that should be executed to fulfill inbound, outbound, and internal warehouse requests. The location layout together with the logistics model enables you to create warehouse tasks with detailed logistics area information for the warehouse worker.

For each active logistics model, you can define material flow rules to determine the search path through the location layout. For inbound and outbound processes, you have to maintain generic material flow rules at the site. However, if you have a separate ship-to or ship-from location, you can also maintain detailed material flow rules here. The system always uses the rule of the location that is specified in the corresponding sales or purchase order. For internal replenishment and removal processes you can also maintain material flow rules on a lower level in the hierarchy.

The key element for an interaction with a logistics model is the logistics use. The logistics use is used to distinguish between logistics usages of a location when searching for a location to use. You have to define the same logistics use in the logistics model, material flow, and the corresponding logistics area.

In the logistics model, you maintain the logistics use in the operations. Here, you can define a source and destination logistics use, depending on the warehouse process. When processing an inbound, outbound, or internal warehouse request, the system determines the location layout that has the same logistics use as defined in the logistics model. It then goes to the logistics area that is specified in the material flow rules and searches for all subordinate inventory-managed logistics areas that have the appropriate logistics use. The first logistics area that fulfills the picking and putaway rules appears as a proposal in the warehouse task.

The picture below shows an example of the bin determination for a one-step inbound process. The destination logistics use in the logistics model is Storage. The material flow rules in the site represent the search instructions for the system. The system reads the material flow rules as follows: If the logistics use in the logistics model is Storage, search in the Storage Area for the next empty logistics area that is inventory-managed and has logistics use Storage. Since Bin Area 1 is empty, the proposal in the generated warehouse task would be Bin Area 1.

The following logistics usages are available in the system:
- Inspection — for example an inspection area
- Intermediate Storage — used as temporary places in a logistics movement operation
- Movable Storage — for example van fleet
- Over-the-Counter Stock
- Packing — for example pack station
- Production Output
- Production Supply
- Project Stock — used for project stock orders in the Consumption at Site while sourcing material from stock for projects. Only one logistics area under a site can have this usage, and goods stored under this logistics area are not available for planning or execution.
- Receiving Staging
- Restricted Stock — for example, stock to be returned to a supplier
- Shipping Staging
- Storage — for example bin, aisle

For more information see: Locations and Location Layouts  [page 7].

Releasing Logistics Models

Before you can use a logistics model in SAP Business ByDesign, you have to release it. This maintains a clear separation between master data and process information and helps to ensure that the master data handed over to logistics processing is correct. On the Save and Release action of a logistics model, the system performs a check to ensure that all the changes made to the constituent parts of the logistics model are free of errors and that the model is unique in the system before it is handed over to logistics processing. If there are errors, the system does not create the released logistics model version but displays the errors for you to view. This prevents redundant models being stored in the system and ensures that all the same processes are used for the same logistics model type. If you want to change a released version of your logistics model, you have to go back to the original logistics model. You make any necessary changes here and then save and release it again.

Consistency Checks

You can check the consistency of an individual logistics model manually. By running a check, you can make sure that the logistics model is free from errors before you release it to execution. In the main Logistics Models view, the Consistency Status field indicates whether the model is error free and available for use by the Inbound Logistics, Outbound Logistics, or Internal Logistics work centers.

The system also performs a consistency check after save and release of the model. This is to ensure that all changes made to the logistics model are correct. The system may display warnings after having performed a consistency check. If there are errors, the system does not set the model to consistent or create a released model and displays the errors. If there are no errors, you have successfully maintained the logistics model data and created a released version of the logistics model.

Released Logistics Models

The released logistics model is used in the Inbound Logistics, Outbound Logistics, or Internal Logistics work centers for creating warehouse requests. It provides information about the process to be executed for the request, and the operations to be carried out in logistics processing. The logistics tasks are also generated automatically for the worker for each operation if you selected the automatic generation of tasks option.
4.3.2.2 Working With Logistics Models

Overview

In the Logistics Models view you can use the Maintain Logistics Model editor to specify and change the operations and conditions of use of a logistics model. At logistics model level, you can specify that the system generates tasks automatically for the first step, or operation, of the model. You can specify the site and your own estimate for how long it will take to complete the tasks associated with the model. The system also uses the Without Tasks check box to display whether or not it will create tasks in logistics execution.

Operations

In the logistics model, you can add and delete an operation. However, you can only have a maximum of two operations and a minimum of one operation. Note that if you create a one-step receiving model from a template, it is automatically created with one operation, but you can add a second operation. It may be helpful to then rename the model to “two-step receiving” model to avoid confusion. You can change the operation type and the activity type. There is a one to one relationship between an operation and an activity type; for each operation, you can only have one activity type.

Activity Types

Activity types allow you to group tasks to best fit what you need to do in your process. You can create tasks according to a key characteristic of a product. For example, for the Move Per Item activity type the system creates a task for each line item; for the Move Per Source activity type, the system creates a task for each different source.

You can also split tasks by storage group for an operation. If a task includes products that are associated with different storage groups, you can create tasks associated with the product for each storage group. This means that you can group tasks by logistics area characteristics as specified in the activity type, or by product characteristics as specified in storage groups.

Logistics Use

You can specify where the product is sourced and where it is moved to by using the source and destination logistics use fields. These fields can be blank if the source or destination is external to your company. For example, the unload operation in the two-step receiving process can have a blank Source Logistics Use field, indicating that the product is coming from a supplier external to your process.

If you use Inspection logistics use for the stock separation in an inbound process with quality assurance, then you cannot use the same logistics use as the source for products in the outbound process. For more information, see Integration of Quality Assurance and Logistics [page 192].

Print Tasks

You can choose the step at which the system creates and prints tasks. You can also specify that the system automatically proposes the confirmed quantity when you open confirmation screens. For a shipping logistics model, you can specify when you want the system to automatically print the delivery note.
4.4 Logistics Task Folders View

4.4.1 Logistics Task Folders Quick Guide

You can use the Logistics Task Folders view to create, change, and delete a logistics task folder. You can only specify one site and one task type for a task folder. Task types include production, warehouse, and physical inventory. This means, for example, that the system can only place production tasks in a task folder with a production task type.

You use these logistics task folders to provide your employees in the production areas or warehouses with a specific inbox of execution tasks. As tasks are generated (for example, when you release a production order, create tasks in the logistics process, or create a physical inventory count), the system groups them in the logistics task folders according to the task assignment criteria that you define when creating the folder. That is, the system defines individual workloads according to the list of tasks assigned to a logistics task folder. Users that are registered to a task folder can view and execute all the tasks in that task folder. They can review detailed information for each task, reassign tasks to different folders, and confirm tasks when they are completed. Tasks can have embedded information, such as work and safety instructions and product drawings that guide workers through their daily tasks.

You can access the Logistics Task Folders view from the following locations:

- Planning and Production Master Data work center
- Warehousing and Logistics Master Data work center

Business Background

Logistics Task Management

Logistics task management provides you with the tools you need to plan and process all types of logistics tasks effectively and efficiently. It provides you with a single point of entry for organizing and executing your tasks in production, in the warehouse as well as in physical inventory and quality assurance. It offers a scalable, task-oriented concept that enables you to tightly integrate your manufacturing (make, supply to production, check) and warehousing (move and count) processes.

Logistics task management helps you to organize your day-to-day work in a standardized user interface; you can define suitable work packages in the form of logistics task folders, and structure the processing of all logistics tasks according to your needs. You can create tasks at various levels of detail, for example, one task to cover one single activity or one task to cover a complete logistics order. These tasks are pushed to your responsible operators guiding them through their daily work whether in production, in the warehouse, or in quality assurance.

For more information, see Logistics Task Management [page 129].

Tasks

Create a Logistics Task Folder

1. Choose the Logistics Task Folder view and click [New] to open the New Logistics Task Folder quick activity.
2. Enter the task folder ID and task folder description, and specify the task type. You must specify whether the task folder you are creating is for production, warehouse, or count tasks. One task folder can only collect tasks of one type.
3. Enter the site ID and description.

   The site restricts who has access rights to view and process the tasks dispatched to this folder.

4. Enter further information as required.

5. Click [Save] to save the new logistics task folder, and click [Close] to return to the Logistics Task Folders view.

The system saves the new logistics task folder and adds it to the list in the Logistics Task Folders view. To open the logistics task folder from this list, click the appropriate task folder ID link.

Register an Employee or End-User Device to a Logistics Task Folder

1. Choose the Logistics Task Folder view and select the appropriate task folder.

2. Click [Edit] to open the Logistics Task Folder editor.

3. In the Registration tab, click [Add Row]. The system displays a new row in which you can enter your registration data.

4. In the Registration Type field, select User or End-User Device as appropriate.

5. In the Device ID field, enter the device ID if you need to register a user device. In the Employee ID field, enter the employee ID if you need to register an employee. If necessary, click the Value Selection icon to search for the employee ID.

6. In the Role column, select a role for the employee or user device. Select Responsible if you need your employee or user device to execute tasks and select Interested if you need your employee or user device to monitor the execution status of tasks. The information you define here is for information purposes only. Both interested and responsible employees/user devices have the same authorizations.

7. The Active checkbox is automatically marked to enable the employee or user device to process the tasks in this task folder.

8. Click [Save] to save the registration, then click [Close] to return to the Logistics Task Folders view.

   • In order to view the Role, Registration Type, and Device ID fields in the Registration tab, you must first personalize the screen. Click Personalize, choose This Screen and check the fields that you want to be visible.

   • If an employee or user device is not going to work with tasks for a period of time you do not need to delete a registration. Instead, you can clear the Active check box. You can select it again when the employee or user device is ready to resume working with tasks.

Create a Task Folder to Collect all the Tasks of a Task Type

1. Choose the Logistics Task Folders view.

2. Select the row of the appropriate task folder and click [Edit] to open the Logistics Task Folder editor.

3. In the General tab, make sure that you have selected the appropriate task type:

   • Production Task – if you want this folder to collect all production tasks
4. Choose the **Task Assignment Criteria** tab. The system displays the information that you have not yet specified any assignment criteria. In this state, no tasks are assigned to this folder.

5. Click **Create Assignment Criteria**. Depending on the task type you defined for the task folder, the system now displays one of the following screens:
   - Production Task Assignment Criteria
   - Warehouse Task Assignment Criteria
   - Count task Assignment Criteria

6. If you have already created assignment criteria for the task folder, you can delete these assignment criteria by clicking **Delete All Assignments**. The system automatically defaults to the assignment criteria of *All* and returns to the initial **Task Assignment Criteria** screen.

7. Click **Save** to save the task assignment criteria, then click **Close** to return to the **Logistics Task Folders** view. The system saves the new task assignment criteria. In future, all the tasks of the appropriate task type are collected in your task folder.

### Create Task Assignment Criteria for a Task Folder

1. Choose the **Logistics Task Folders** view, select the row of the appropriate task folder, and click **Edit** to open the **Logistics Task Folder** editor.

2. In the **General** tab, make sure that you have selected the appropriate task type: Production task if this folder is to collect certain production tasks, warehouse task if this folder is to collect certain warehouse tasks, or count task if this folder is to collect certain count tasks.

3. Choose the **Task Assignment Criteria** tab. The system displays the information that you have not yet specified any assignment criteria. In this state, no tasks are assigned to this folder.

4. Click **Create Assignment Criteria** and proceed according to the task type:
   - **For Production Tasks:**
     1. In the **Resource** tab, click **Add Item** in the **Included Items** part of the screen to include a resource in your assignment criteria. If necessary, click the **Open Selection Dialog** icon to search for the resource. Repeat this step to specify the other resources you need to include in your assignment criteria.
     2. Click **Add Item** in the **Excluded Items** part of the screen to exclude a resource from your assignment criteria. If necessary, click the **Open Selection Dialog** icon to search for the resource. Repeat this step to specify the other resources you need to exclude from your assignment criteria.
     3. In the **Activity Type** tab, you can define that tasks are to be created at activity level, if necessary. The default value here is set to *All*.
   - **For Warehouse Tasks:**
1. In the Storage Location tab, click Add Item in the Included Items part of the screen to include a storage location in your assignment criteria. If necessary, click the Open Selection Dialog icon to search for the storage location. Repeat this step to specify the other storage locations you need to include in your assignment criteria.

2. Click Add Item in the Excluded Items part of the screen to exclude a storage location from your assignment criteria. If necessary, click the Open Selection Dialog icon to search for the storage location. Repeat this step to specify the other storage locations you need to exclude from your assignment criteria.

3. In the Operation Type tab, you can define that tasks are to be created for a particular operation type, if necessary. The default value here is set to All.

- For count tasks:
  1. In the Storage Location tab, click Add Item in the Included Items part of the screen to include a storage location in your assignment criteria. If necessary, click the Open Selection Dialog icon to search for the storage location. Repeat this step to specify the other storage locations you need to include in your assignment criteria.
  2. Click Add Item in the Excluded Items part of the screen to exclude a storage location from your assignment criteria. If necessary, click the Open Selection Dialog icon to search for the storage location. Repeat this step to specify the other storage locations you need to exclude from your assignment criteria.
  3. Choose the Logistics Area tab and repeat the steps outlined above to specify the logistics areas you need to include in your assignment criteria.

5. Click Save to save the task assignment criteria, then click Close to return to the Logistics Task Folders view.

4.4.2 Business Background

4.4.2.1 Logistics Task Management

Overview

Logistics task management provides you with the tools you need to plan and process all types of logistics tasks effectively and efficiently. It provides you with a single point of entry for organizing and executing your tasks in production, in the warehouse as well as in physical inventory and quality assurance. It offers a scalable, task-oriented concept that enables you to tightly integrate your manufacturing (make, supply to production, check) and warehousing (move and count) processes.

Logistics task management helps you to organize your day-to-day work in a standardized user interface; you can define suitable work packages in the form of logistics task folders, and structure the processing of all logistics tasks according to your needs. You can create tasks at various levels of detail, for example, one task to cover one single activity or one task to cover a complete logistics order. These tasks are pushed to your responsible operators guiding them through their daily work whether in production, in the warehouse, or in quality assurance.
Benefits

Logistics task management provides you with one common, symmetric concept for all supply, make, check, and count processes. You can significantly increase productivity when all your processes are integrated into one seamless operations model. The flexibility in designing and structuring processes, plant layouts, or warehouses ensure that you can realize process improvements rapidly and you can easily adapt your production sites and warehouses to business change or growth.

The main benefits are summarized in the following list:

- Unified task control and processing in all execution processes
- One common user interface for execution areas
- Automatic routing of tasks to the correct departments
- Reduced training effort as workers access tasks from a single interface
- Inventory, financial accounting, and planning are updated with the data gathered when confirming the operations on the shop floor

Logistics Task Management in Detail

You can use logistics task management to plan, control, and execute your shop floor activities. The concept of logistics task management can be subdivided into the following main steps:

1. Creating logistics task folders: The logistics task folders you create store the tasks and represent work lists.
2. Creating logistics tasks: In a second step, the logistics tasks are created and dispatched to your logistics task folders.
3. Executing and controlling logistics tasks: In a third step, you can execute and confirm your tasks and you can monitor this process.

1) Creating Logistics Task Folders

You can use logistics task folders to structure the organization of work for employees responsible for executing production processes, warehouse processes, physical inventory counts, or quality assurance. The task folder is a work list containing all the logistics tasks to be completed by one or more employees on the shop floor. You define the folders in a way that best reflects your company. There are two different types of logistic task folders: Standard folders and default folders.

STANDARD FOLDERS

You must create separate standard folders for production tasks, warehouse tasks, and count tasks. One folder always contains tasks of the same type meaning that your employees in production and in warehousing each have their own separate set of task folders. When creating the task folders, there are three main sections of information to be filled in. Below is a brief description of each of these sections and the implications of your entries.

General Data

Here, you define whether the folder is for production tasks, warehouse tasks, or count tasks. You must also determine the site for which the folder is responsible. One folder collects the tasks for one particular site only; it cannot collect tasks from multiple sites.

You can enter a Site. This means that the users who are assigned to this Site are also authorized to maintain the master data of the logistics task folder.

This information is used for checking user access rights regarding task processing. The site assignment may grant you access to several logistics task folders. However, when accessing the task list from the My Task Folders view,
you can only process the tasks in folders to which you are registered. If, on the other hand, you use the specific task views for finding tasks, you can also process tasks that lie in folders to which you are not registered but for which you have access rights.

The following graphic illustrates the difference between being registered at a folder and having access rights (authorization) for a folder:

Note the following behavior when defining the Site: This attribute controls who is authorized to access and process the tasks in a folder. However, there are some important issues to bear in mind when entering the site to make sure that the system behaves as expected.

- If you define a site for a logistics task folder, the system copies this information into the respective task at task creation. This means that only employees who have access rights for the Execution work center and who have access rights for this site are authorized to see and process the tasks in this folder.

Finally, in the general data section, you can define how you want the system to sort the logistics tasks in the folders. The status of the task is always the first sorting priority (the tasks that have already been started are always listed first) but then you can choose between latest start date, latest start time, priority, receipt date, or receipt time.

Registration Data
Here you can define the employees that are allowed to process the tasks in the task folder. You can also determine the type of interest a particular employee has in the folder in the column entitled Role. For example, an employee may be just an “interested” party or they may be defined as “responsible”. Note, however, that this is only defined for information purposes. Both “interested” and “responsible” users have the same access rights.

Task Assignment Criteria
If you do not maintain any task assignment criteria, no tasks can be assigned to the task folder. To enable the assignment of tasks to the folder, you must click on the Create Assignment Criteria button and then save. This saves the standard system setting which is All meaning that all tasks in the defined site will automatically be assigned to this folder. If you want to narrow down the assignment of tasks further, you have to make the appropriate settings.
For example, if you want all the tasks that refer to a particular storage location to be collected in one folder, you have to select this storage location here.

The task assignment criteria depend on the task type you defined for the logistics task folder:

- **Task folder for production tasks**
  You define the task assignment criteria using resources and activity types.

- **Task folder for warehouse tasks**
  You define the task assignment criteria using storage locations and operation types.

- **Task folder for physical inventory tasks**
  You define the task assignment criteria using storage locations and logistics areas.

Note the following when defining task assignment criteria for production tasks:

- If you want to assign production tasks at activity level, you have to select the appropriate activities in this selection screen (for example, you may want to assign all production tasks for setup and tear down activities to a particular folder). However, it is important to realize that by doing this, you are excluding any production tasks created at operation or reporting point level from being assigned to this folder.
  - If you want to assign production tasks at reporting point or operation level to a particular folder, you must leave the default value of the activity type at *All*.

- Another important point to remember here is that the granularity you choose for assigning production tasks to folders must also correspond to the task-generation method you define for the creation of tasks in the production model. There is no point in defining a task-generation method at operation or reporting point level if you have defined assignment at activity level in your folder, for example.

**DEFAULT FOLDERS**

When dispatching production tasks, warehouse tasks, and count tasks to a folder, the system always searches for an appropriate standard folder first. The system behaves as follows:

- If it finds a standard folder where all the task assignment criteria match, the task is dispatched to that folder.
- If the information contained in the task matches the task assignment criteria of more than one folder, the task may be dispatched to more than one folder.

Note this example for production tasks created at activity type level. A production task is created for a setup activity which finds three suitable logistics task folders during the dispatching process. In the task assignment criteria for the activity type of two of the folders, the default value *All* has been left. This means that production tasks with all the different activity types can be assigned to these two folders – including the setup activity.
  - However, the activity type of the third folder has been limited to setup. In this case, the production task in question is only assigned to the third folder. Therefore, the rule is that production tasks at activity level are always dispatched to the most specific folder only.

- If no appropriate standard folder is found for certain tasks during dispatching, they are automatically assigned to a default folder relevant to the task and the site.

If no default folder exists at the time of dispatching, the system creates one automatically. If necessary, you can then adjust your assignment criteria and dispatch these tasks again manually so that they can find an appropriate standard folder. Or, you may choose to process these tasks in the default folders. The options available here for processing tasks are the same as the options available in the standard folders. If you want to process your tasks according to a predefined sequence, however, the default folder is not appropriate as the tasks are not sorted according to any given sequence.

2) Creating Logistics Tasks

**CREATING PRODUCTION TASKS**
Production is driven by production requests, usually originating in the planning department. To process a production request, you must create one or more production orders. Production orders authorize the manufacture of the required products and contain data such as quantities of products and required dates. When you release the production order, the system automatically creates the production lot and all the production tasks required to complete this order. (Whether or not these steps are carried out automatically depend on your system configuration. You can also choose to release the production lot manually before the production tasks are created, for example.)

The creation of the production lot in production triggers the creation of the production tasks. The system creates one production lot per production order and one or more production tasks per production lot according to the task-generation method defined in the bill of operations of the production model. As mentioned in the task assignment criteria section of the logistics task folder, you can instruct the system to create production tasks at reporting point level, operation level, or at activity level. Again, it is important that you make sure that the granularity defined here corresponds to the task assignment criteria you defined in the task folder.

The following diagram is of a very simplified structure of a production order that shows the concept behind the task-generation method.

If, in the bill of operations, you define the task-generation method at reporting point level. This means that the system only creates production tasks for reporting points and collects all the operations and activities that lie between two reporting points into one task. Therefore, in this example, the system would create two tasks for this production order: The first task containing one operation and two activities and the second containing two operations and five activities.

If, in the bill of operations, you define the task-generation method at operation level, the system only creates tasks for operations. Therefore, in this example, the system would create three tasks: The first one containing two activities, the second containing three activities, and the third containing two activities. Note that the tasks for the two operations in this example that directly precede a reporting point also automatically contain the reporting point. This is required for backflushing purposes.

If, in the bill of operations, you define the task-generation method at activity level, the system only creates tasks for activities. Therefore, in this example, the system would create a total of seven tasks each containing exactly one activity. Note that the tasks for the two activities in this example that directly precede a reporting point also automatically contain the reporting point. This is required for backflushing purposes.

The production tasks generated by the system are automatically dispatched to your logistics task folders. The information contained in the task (for example, resource or operation) is compared to the task assignment criteria you defined in the logistics task folders. The task has to match all the task assignment criteria in a folder to be assigned to that folder. Note that if the information contained in the task matches the task assignment criteria of more than one folder, the task can be dispatched to all relevant folders.

CREATING PHYSICAL INVENTORY TASKS

Physical inventory (PI) uses count tasks to organize the counting of stock in the warehouse. The creation of these tasks is triggered automatically when you create a PI count document. Depending on your system configuration, the system creates one count task for the count document or, if necessary, several count tasks per count document.
The count tasks generated by the system are automatically dispatched to your logistics task folders. The information contained in the task (such as storage location and logistics area) is compared to the task assignment criteria you defined in the logistics task folders. The task has to match all the task assignment criteria in a folder to be assigned to that folder. Note that if the information contained in the task matches the task assignment criteria of more than one folder, the task is dispatched to all relevant folders.

For more information about processing physical inventory tasks, see Working with Count Tasks.

Creating Warehouse Tasks

Creating Outbound Warehouse Tasks

Outbound logistics is driven by the warehouse request. The warehouse request contains information on the process to be executed and the operations to be carried out in logistics processing.

If you defined the two-step shipping business option in scoping and if you selected the Automatic Generation of Tasks button in the logistics model, the system automatically creates the warehouse request (for a sales order, for example) and releases it to the execution phase by creating the first of the two tasks; the pick task. If you did not select the automatic creation of the first task of the two-step shipping process in scoping, you have to create the pick task manually in the Warehouse Requests view of the Outbound Logistics work center.

These pick tasks are then automatically dispatched to your logistics task folders. The information contained in the task (such as the storage location and operation type) is compared to the task assignment criteria you defined in the logistics task folders. The task has to match all the task assignment criteria in a folder to be assigned to that folder. Note that if the information contained in the task matches the task assignment criteria of more than one folder, the task is dispatched to all relevant folders.

You then go to either the My Task Folders view or the Outbound Warehouse Tasks view in the Execution work center to process the pick tasks. As soon as you confirm partial quantities for this task, the system automatically creates the second task of the two-step process; the load task. These tasks are always created automatically and contain the partially confirmed quantity of the pick task as the open quantity. One load task is created every time you confirm a partial quantity for the pick task. This means that several load tasks may be created for one pick task.

For more information about processing outbound warehouse tasks, see Working with Warehouse Tasks.

Creating Inbound Warehouse Tasks

Inbound logistics is also driven by the warehouse request. The warehouse request contains information on the process to be executed and the operations to be carried out in logistics processing. If you defined the two-step receiving business option in scoping and if you selected the Automatic Generation of Tasks button in the logistics model, the system automatically creates the warehouse request (for a purchase order, for example) and releases it to the execution phase by creating the first of the two tasks; the unload task. If you did not select the automatic creation of the first task of the two-step process in scoping, you have to create the unload task manually in the Warehouse Requests view of the Inbound Logistics work center.

These unload tasks are then automatically dispatched to your logistics task folders. The information contained in the task (such as the storage location and operation type) is compared to the task assignment criteria you defined in the logistics task folders. The task has to match all the task assignment criteria in a folder to be assigned to that folder. Note that if the information contained in the task matches the task assignment criteria of more than one folder, the task is dispatched to all relevant folders.

You then go to either the My Task Folders view or the Inbound Warehouse Tasks view in the Execution work center to process the unload tasks. As soon as you confirm partial quantities for this task, the system automatically creates the second task of the two-step process; the put away task. These tasks are always created automatically and contain the partially confirmed quantity of the unload task as the open quantity. One put away task is created every time you confirm a partial quantity for the unload task. This means that several put away tasks may be created for one unload task.

For more information about processing inbound warehouse tasks, see Working with Warehouse Tasks.
Creating Internal Warehouse Tasks
The warehouse request also drives the internal logistics process. It contains information on the process to be executed and the operations to be carried out. When you release the warehouse request, the system creates the necessary tasks automatically if you selected the *Automatic Generation of Tasks* button in the logistics model. The procedure for creating internal warehouse tasks is generally a one-step process and the system creates remove or replenish tasks depending on the operation defined in the logistics model. If you have not instructed the system to create the tasks automatically, you can create them manually in the *Warehouse Requests* view of the *Internal Logistics* work center.

The tasks generated by the system are automatically dispatched to your logistics task folders. The information contained in the task (such as the storage location and operation type) is compared to the task assignment criteria you defined in the logistics task folders. The task has to match all the task assignment criteria in a folder to be assigned to that folder. Note that if the information contained in the task matches the task assignment criteria of more than one folder, the task is dispatched to all relevant folders.

For more information about processing internal warehouse tasks, see Working with Warehouse Tasks.

3) Executing and Controlling Logistics Tasks

Executing Tasks
Once the tasks have been dispatched to the appropriate logistics task folders, you can select a folder and view the list of tasks for which you are responsible. Irrespective of whether you work with warehouse tasks, production tasks, or count tasks you access your tasks in the *Execution* work center. You have two options for accessing your tasks:

- Via the *My Task Folders* view: You use this task folder-based list when you want to process tasks according to the folders they are assigned to.
- Via the specific task view: You use this option when you want to search for a particular task. In this case, you do not process the tasks in any predefined sequence.

You can access and print out detailed information on your tasks and commence processing. If you want to change the responsibility for a task that has already been started, you can delete the assignment to the current processor and assign a new user.

During processing, you can confirm partial quantities for production and warehouse tasks. All data entered here is passed back up to the *Task Control* views including such information as the quantity produced, components consumed, products picked or unloaded, the person responsible, and the date and time, for example. When you have completed processing, you can finish the task.

Controlling Tasks
The concept behind task control is that you can keep track of a range of tasks with different priorities, resources, and due dates. Separate *Task Control* work center views exist for internal, inbound, and outbound warehouse tasks, count tasks, and production tasks. All the tasks created by the system are listed in these views where you can monitor their progress. The processing options you have here are the same as the processing options available in the views of the *Execution* work center. However, your main tasks in the *Task Control* work center views generally include the following:

- Assigning workers responsible for a task
- Creating confirmations
- Monitoring task progress
- Redispatching tasks and moving tasks (automatically or manually)

For more detailed information on controlling tasks, see Production Tasks.
4.5 Identified Stock View

4.5.1 Identified Stock Quick Guide

You can use identified stock to distinguish between quantities of the same product in your production and logistics processes, for example, batches and lots. Identified stock uses a unique identifier to separate quantities of a product that are produced at the same time, with the same production parameters, and with the same characteristics. This enables you to group sets of the same products so you can store and move them separately in your logistics processes. You can also trace the history of an identified stock back through your logistics processes to the time and date of production.

When you create an identified stock ID, you must enter a product ID. You can also specify an external identified stock ID, a production date, and an expiration date. You can add notes and attachments that are available to users who work with identified stock in the production and logistics processes.

There are four identified stock types: batch, lot, optional specified stock, and mandatory specified stock. The system treats batches and lots in the exact same way. You should use the term that best suits your business. However, when you work with product specifications in a make-to-order process, you must use either the optional specified stock or mandatory specified stock type. You should use optional specified stock if you want the choice of using a product both with and without a product specification in your process. For example, you have a standard window, window_1. You should use optional specified stock if you want to manufacture standard windows (standard window_1), and also manufacture make-to-order windows (window_1 with a product specification). You should use the mandatory specified stock type if you want to exclusively make a product to order using a product specification. For example, you never make standard windows; you always make windows to order.

Business Background

Identified Stock Management

Identified stock refers to goods that are a sub-quantity of exactly one product and which are uniquely identified in the context of a product. For example, batches and lots. The identified stock contains identifying information, including a description, the external identified stock ID, the expiration date, the production date, and the related product and product specification. In addition, the identified stock may also include an attachment, such as a PDF file, or a JPG file illustrating the product. Notes can be included as well.

Identified stock management enables you to create new identified stock entries, maintain the attributes of existing identified stock entries, confirm logistics tasks with identified stock IDs, and also delete identified stock master data entries (only possible as long as the identified stock being deleted is in status In Preparation). You can use identified stock to track the execution of a specific identified stock throughout an inbound process, an outbound process, an internal process, a production process, or a physical inventory count. In addition, you can block goods belonging to a specific identified stock, as well as execute reports to see identified stock details (quantities and locations).

For more information, see Identified Stock Management [page 145].
Changing Identified Stock

You can change the identified stock type of a product regardless of the process in which you use the product. You can specify a new identified stock type where previously there was none, you can remove the type completely, or you can change the type from one type to another. You can change the identified stock type for a product even after the product is activated for logistics.

The system allows you this flexibility in case that you need to change an identified stock type after you begin using a product in your process. However, changing the identified stock type can have consequences and follow-up actions, depending on the status of the process in which you use the effected product. You should be aware of these consequences before you perform the identified stock type change. We recommend that you finish specifying your product with the correct identified stock type before you start any process for a product.

You can change the identified stock type in the General tab of the Material editor in the Product Data work center. You must access the General tab by clicking View All. You can also check if the product is activated in the Logistics tab.

For more information, see Changing Identified Stock [page 173].

Tasks

Create an Identified Stock

This task is available for both the Identified Stock view and the Identified Stock Limited Maintenance view. You should be assigned either of the views, and not both.

For more information about assigning work center views, see Assign Access Rights in the Tasks section of the Business Users Quick Guide.

1. Choose the Identified Stock view or the Identified Stock Limited Maintenance view from the Warehousing and Logistics Master Data work center or from the Planning and Production Master Data work center and then click New to open the New Identified Stock quick activity.

2. In the Product field, enter the product ID and description. The system automatically enters the identified stock type when you enter the product details.

3. In the Identified Stock ID field, enter the identified stock ID. Depending on the settings during system configuration, the system can automatically generate an identified stock ID or you must manually enter one. If you manually enter the ID, you may have to use a format that was defined during system configuration. If this is not the case, you can enter the ID as free text. While configuring the system, you can also decide if the identified stock ID should be unique across the system, or only for a product. Note that the feature for a unique identified stock ID across the system is not enabled in the default configuration. For more information, see the Identified Stock ID section in Identified Stock Management [page 146].

4. Enter the identified stock description and the supplier ID.

5. Enter the external identified stock ID, production date, and expiration date as appropriate.
6. Click [Change Status] and select [Activate] to make the new identified stock available for use in production and logistics processes. The system automatically assigns an [In Preparation] status to a new identified stock. You can only change the product and identified stock details in the [In Preparation] status. Once you set the status to [Activate], you cannot return to the [In Preparation] status.

7. Optional: Once the identified stock has been set to status [Active], you can click [Change Status] and choose [Block], [Unblock], [Set to Obsolete] or [Undo Obsolete] as necessary in the [Identified Stock] view to make your identified stock available or unavailable for use. These functions are not available in the [Identified Stock Limited Maintenance] view.

The system displays the [Valuation Level Type] of the identified stock after the identified stock is set to status [Active]. If you change the valuation level in the product master data, the change only affects identified stocks of the material that were activated after the change. Identified stocks that existed before the change continue to be valued at the previously defined level. The valuation level defines how the stock is valued, that is, whether it is valued based on the standard product valuation or on the product specification valuation. It is defined either in the product master or according to existing identified stocks with the same product and product specification.

- If the identified stock has no product specification, it has the [Business Residence] valuation level type.
- If the identified stock has a product specification, the valuation level type will be based on the product specification if the following conditions are true:
  - The valuation level was set in the product master as [Product Specification] before the identified stock was activated.
  - No other active identified stock exists that belongs to the same product and product specification. All identified stocks belonging to a given product and product specification always have the same settings, and these settings are determined when the first of these identified stocks is activated.

8. Click [Save] to save the new identified stock, then click [Close] to return to the [Identified Stock] or [Identified Stock Limited Maintenance] view.

### Update an Identified Stock

This task is not available for the [Identified Stock Limited Maintenance] view.

1. Go to the [Identified Stock] view in the [Warehousing and Logistics Master Data] work center or the [Planning and Production Master Data], select the identified stock you would like to update and click [Edit].
2. In the [External Identified Stock ID] field, enter the appropriate external identified stock ID. If necessary, click the [Open Selection Dialog] icon to search for the ID.
3. In the [Production Date] field, enter the appropriate production date. In the [Expiry Date] field, enter the appropriate expiry date. If necessary, click the [Open Selection Dialog] icon to search for the dates.
4. Enter any additional details, if relevant.
5. Click [Save and Close] to return to the [Identified Stock] view.
In the identified stock editor, you can also block the identified stock or set it to obsolete by clicking Change Status and selecting the appropriate status from the list.

4.5.2 Business Background

4.5.2.1 Changing Identified Stock Types

You can change the identified stock type of a product regardless of the process in which you use the product. You can specify a new identified stock type where previously there was none, you can remove the type completely, or you can change the type from one type to another. You can change the identified stock type for a product even after the product is activated for logistics.

The system allows you this flexibility in case that you need to change an identified stock type after you begin using a product in your process. However, changing the identified stock type can have consequences and follow-up actions, depending on the status of the process in which you use the effected product. You should be aware of these consequences before you perform the identified stock type change. We recommend that you finish specifying your product with the correct identified stock type before you start any process for a product.

You can change the identified stock type in the General tab of the Material editor in the Product Data work center. You must access the General tab by clicking View All. You can also check if the product is activated in the Logistics tab.

Considerations when Changing the Identified Stock Type

If you have a new product that you do not use in any process and for which you have not posted inventory, then changing the identified stock type has no consequences.

When you change the identified stock type, the system allows you the maximum level of flexibility in finishing all the processes in which the relevant product is involved. As a general rule, inventory for the relevant product must be adjusted using the new identified stock type. Details and exceptions are explained in the following sections.

Using Existing Master Data Identified Stock IDs

You can change from one identified stock type to another, even if you have existing identified stock IDs for a particular product.

You can use new identified stock IDs that contain the new identified stock type for the product. You can still use the IDs from the old type, even though they contain the old identified stock type. You cannot change the identified stock type of the old IDs. If you want to prevent the old IDs from being used, you must post inventory from the old identified stock ID to the new ID using the Change of Stock common task in the Internal Logistics work center. You can also change the status of the old IDs to Blocked or Obsolete.

For example, you have a product PRO_1 that is specified with an identified stock type of batch. You create an identified stock ID B001 for the product in the Identified Stock view of the Planning and Production Master Data or Warehousing and Logistics Master Data work centers. You then change the identified stock type to lot. The next identified stock ID you create for the product is L001. However, you can still use the ID B001 in the system, even though the product is now a lot. The ID B001 still shows the original identified stock type.

Existing Inventory Not Used in a Process
If you change the identified stock type of a product for which you have inventory stored in a logistics area, you cannot use the inventory until you post it using the new type. You can do this in the Change of Stock common task in the Internal Logistics work center. When you change the identified stock type, the following conditions apply:

- If you remove the identified stock type completely from a product in the Material editor, you must post a change of stock where you leave the Change Identified Stock ID field empty.
- If you specify an identified stock type for the first time for a product (where previously no identified stock was specified), you must first create the appropriate identified stock ID in the Identified Stock view in the Planning and Production Master Data or Warehousing and Logistics Master Data work centers. Then you change the stock details using the Change of Stock common task in the Internal Logistics work center. You must enter the identified stock ID in the Change Identified Stock ID field for the new identified stock type. This is optional if the new identified stock type is optional specified stock and mandatory for all other identified stock types.
- If you have already specified an identified stock type, but now want to change to another identified stock type, you only need to post a change of stock if you don’t want to use the old identified stock IDs with the product.

Changes to Identified Stock Type in a Make-to-Order Process

Introduction
You can use a product specification ID to record the special requirements your customer needs when they order a product in a make-to-order process. The system uses these properties and descriptions in addition to the standard product ID to supply your customer with the exact specification that they need.

For example, a window is a standard product in your system. However, your customer may need a window made from wood, that has dimensions of 100cm by 50cm, and that is made from special glass. When you enter this in the system, you can enter the standard product in the sales order (window) and create a product specification that provides the detailed properties of the window that your customer needs.

The product specification ID and properties follow the product through the process of external procurement or internal production. This enables you to order, manufacture, pick, and ship products with specific requirements to your customer.

For example, when you post goods receipts from production or a supplier (inbound process), the system uses a product specification ID in combination with an identified stock ID to separate products in line with customer specific requirements. You must use this approach in order to separate products.

Mandatory and Optional Specified Stock
You must use either the optional specified stock or mandatory specified stock type when you work with product specifications. You should use optional specified stock if you want the choice of using a product in your process both with and without a product specification. For example, you have a standard window, window_1. You should use optional specified stock if you want to manufacture standard windows (standard window_1), and also manufacture make-to-order windows (window_1 with a product specification).

You should use the mandatory specified stock type if you always want to make a product to order. For example, you never make standard windows; you always make windows to order.

Changing the identified stock type from optional or mandatory specified stock to batch or lot, or removing the optional or mandatory specified stock type completely has consequences if you have a running make-to-order process. You need to take different courses of action, depending on where the product is in your process. These different courses of action are outlined here.

Change Before You Start Production and Place Orders on Suppliers
If you change the identified stock type from optional or mandatory specified stock to batch or lot, or completely remove the optional or mandatory specified stock type, after you assign a product specification ID to a product in the sales order but before you start production or place orders on suppliers:
• You cannot complete the make-to-order process for the product because the product must have either an optional or mandatory specified stock type ID in order to be used with a product specification.

• You cannot start production and you cannot place an order on your suppliers with a product specification.

• You must cancel the line item in the sales order that contains the product.

Change Before You Finish Production
You have two possible courses of action if you change the identified stock type after you start but before you finish production:

1. If you have an existing identified stock ID for the optional or mandatory specified stock with the correct product specification:
   a. You can post the goods receipt from production with an existing identified stock ID that contains the correct product specification.
   b. You can pick and ship the product with an existing identified stock ID that contains the correct production specification.

   If you decide not to finish manufacturing, you must process any open quantities. To do this, you must confirm the production lot and production request. You must confirm the pick operation with a quantity of zero to force the completion of the picking operation. Then you must cancel the sales order line item that contains the make-to-order product.

2. If you do not have an existing identified stock ID with the correct product specification:
   a. You cannot perform a goods receipt with a product specification at the end of production.
   b. If you go ahead and manufacture the product, you must post the goods receipt without a product specification as an unplanned item.
   c. You cannot pick and ship the goods using a product specification because you do not have the appropriate inventory. You must reject the outbound request if it is not released. You must confirm the pick operation with a quantity of zero to force the completion of the picking operation. Then you must cancel the sales order line item that contains the make-to-order product.

Change After Production Completed
If you change the identified stock type after you finish production and after you start outbound processing, you can still perform goods movements in your outbound process. If you use a product specification ID, the system allows the transactions to take place, even though the identified stock type has changed for the make-to-order product.

Change Before Return to Supplier
If you change the identified stock type of a product that was ordered using a product specification ID, you cannot return the product to the supplier. You can use the following work around:

• Change back the identified stock type of the relevant product temporarily to the old setting.

• Create a return to supplier request, using the New Return to Supplier Request common task in the Outbound Logistics work center.

• Change the identified stock type of the relevant product back to the new setting.

Change Before Return From Customer
If you change the identified stock type of a product that was manufactured and shipped using a product specification ID, you cannot create a new customer return notification with reference to the delivery items. You must use the New Customer Return Notification common task in the Inbound Logistics work center to create a new customer return notification, and enter the delivery line items manually.
Execution Processes for Standard Inbound, Internal, Outbound, and Production

Change Before You Confirm Tasks in Production, and in One-Step Inbound, Internal, and Outbound Execution Processes

If you change the identified stock type before you confirm a production task for input products, or a pick or replenish task, inventory for the relevant product must be adjusted using the new identified stock type. Refer to the section on Existing Inventory Not Used in a Process above for further details. For production tasks for output products and put-away tasks, you take no action because the incoming goods are not yet reported in inventory. When you finish production or receive the goods, you can post them using the new type.

Change Between the First and Second Step in Two-Step Inbound, Internal, and Outbound Processes

If you change the identified stock type before you confirm the execution task of the first step (for example, pick), inventory for the relevant product must be adjusted using the new identified stock type. Refer to the section on Existing Inventory Not Used in a Process above for further details.

For unload tasks, you take no action because the incoming goods are not yet reported in inventory. When the goods arrive, you can post them using the new type.

If you change the identified stock type after you confirm the execution task of the first step (for example, pick or unload) and before you confirm the execution task of the second step (for example, unload or put-away), you can confirm the second step using the old identified stock type.

For example, the first step is pick and move the goods to a staging area. The second step is move the goods from the staging area to a truck. The system allows you to load the products onto the truck even if you change the identified stock type before the second step begins.

Change After You Begin Confirming but Before You Finish a Task in Execution Processes for Inbound, Internal, Outbound, and Production

If you change the identified stock type for a product after you begin a confirmation but before you finish a task, you have the following options:

- You can finish a task for the remaining quantity using the old identified stock type. You must have sufficient inventory of product with the old identified stock type available for the confirmation. This is possible if you have not yet updated the inventory using the new identified stock type in the Change of Stock common task in the Internal Logistics work center.
- You can use the Split Quantities feature to begin confirming using the new identified stock type.

Remove the Identified Stock Type After You Release a Production Order While Using Replenishment

There are considerations you must take into account if a production order requests a particular identified stock ID and you use manual or integrated replenishment.

If, after you release a production order for a product, you remove the identified stock type completely from the product, the system tries to satisfy the replenishment demand by using an identified stock ID. It creates a replenishment task that requires an identified stock ID. In this case you must:

- Confirm the replenishment task without the identified stock ID
  As a consequence, you now have inventory of the product without an identified stock ID. Production demand stays open as long as you do not confirm the production task, because the demand for the product is not fulfilled by inventory with an identified stock ID. For example, your production order requests 10 pieces of
product PRO_1 with identified stock IS99. However, in your inventory, you have 10 pieces of PRO_1 but without IS99.

- Reject any new manual or integrated replenishment tasks with an identified stock ID. This is only necessary if another replenishment task is created between the confirmation of the replenishment task and the confirmation of the production task. The replenishment task could be created as a consequence of the first replenishment not fulfilling the production demand.
- Confirm the production task for the relevant product without the identified stock ID.

**Stock Transfer**

The stock transfer scenario combines an outbound logistics process on the sending side and an inbound logistics process on the receiving side. See the sections above on the steps you should take for inbound and outbound processes.

For stock transfers within your company (intra-company stock transfers), you have the additional consideration of an identified stock type change after posting goods issue on the sending side and before posting the goods receipt on the receiving side. After the goods receipt posting, you need to adjust the in-transit stock by using the Adjust In Transit Stock common task in the Physical Inventory work center.

For example, you ship 3 pieces of product PRO_1 without an identified stock ID from Site 1 to Site 2. You now have in-transit stock of 3 pieces of PRO_1 without an identified stock ID. You then specify an identified stock type of batch where previously no type was specified for PRO_1. You must post goods receipt for 3 pieces of PRO_1 with an identified stock ID (for example IS99). You then have the following in transit stock:

<table>
<thead>
<tr>
<th>Product</th>
<th>Identified Stock ID</th>
<th>Inventory</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRO_1</td>
<td>None</td>
<td>3 pieces</td>
</tr>
<tr>
<td>PRO_1</td>
<td>IS99</td>
<td>-3 pieces</td>
</tr>
</tbody>
</table>

With the adjust in-transit stock transaction, the system posts both inventory lines to zero.

**Pre-Delivery of Spare Parts on Service Order Confirmations**

The pre-delivery of spare parts is an outbound delivery process with the added feature that you deliver the inventory to the customer while it is still reported in the system (pre-delivered stock).

If you change the identified stock type after you ship but before you submit a service confirmation, you need to adjust the pre-delivered stock using the Change of Pre-Delivered Stock common task in the Physical Inventory work center.

For example, you ship 3 pieces of spare part PRO_1 with no identified stock ID to the customer. You now have pre-delivered stock of 3 pieces of PRO_1 without an identified stock ID. You then specify an identified stock type of batch where previously no type was specified for the product PRO_1. Now you must adjust the pre-delivered stock of 3 pieces of PRO_1 with an identified stock ID (for example IS99). You now have the following in transit stock:

<table>
<thead>
<tr>
<th>Product</th>
<th>Identified Stock</th>
<th>Inventory Before Adjustment Posting</th>
<th>Inventory After Adjustment Posting</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRO_1</td>
<td>None</td>
<td>3 Pieces</td>
<td>Zero</td>
</tr>
<tr>
<td>PRO_1</td>
<td>IS99</td>
<td>Zero</td>
<td>3 Pieces</td>
</tr>
</tbody>
</table>

**Physical Inventory**

If you have inventory which does not fit to the new identified stock type, you can count as follows.
• Inventory reported in the system (expected inventory) can be counted as reported in the system using the old identified stock type. For example, you completely remove the identified stock type and you have inventory for identified stock IS99, you can count the actual quantity for identified stock ID IS99.

• Inventory not reported in the system can only be counted using the new identified stock type. For example, you completely remove the identified stock type and you have inventory for identified stock ID IS99, you cannot count the actual quantity for identified stock ID IS99. You can only count the actual quantity for the product.

If you want to ensure that inventory is counted using the new or changed identified stock type, you must adjust inventory for the relevant product using the new identified stock type before your physical inventory count. Refer to the section on Existing Inventory Not Used in a Process above for further details.

Change Before Cancellations in Production and Warehousing

If you cancel a confirmation in production or warehouse processes, you roll the original posting back completely. This means the posting is done with the identified stock related information from the original confirmation, regardless of the identified stock type.

For example, you confirm a pick task for a product with identified stock ID IS99 (batch), from logistics area Bin_1 for 2 pieces. When you cancel this confirmation, the system increases the inventory in Bin_1 by 2 pieces of IS99 (batch) even if the identified stock type has changed to a new identified stock type, or has been removed completely. After the cancellation, you must adjust the inventory by posting a change of stock using the new identified stock type. For more information, see the section on Existing Inventory Not Used in a Process above.

Change Before Adjustment Postings in Production and Warehousing

You can use an adjustment posting to correct an error in an original posting in the Production Control, Inbound Logistics, Internal Logistics, and Outbound Logistics work centers. In the original line item in the adjustment screen, you can only enter an adjusted quantity. This means you post the correction with the identified stock related information from the original line item, regardless of the identified stock type.

If you need to change the logistics area or identified stock ID, you need to use the split quantity feature and add a new line. Here the system checks against the actual identified stock type.

For example, you confirm a put-away task (one step inbound) for a product with no identified stock ID for logistics area Bin_1 with 2 pieces. You then specify an identified stock type of batch where previously no type was specified for the product. You now need to adjust the put-away quantity to 3 pieces. You have the following options:

• You can change the original line item by entering one piece in the adjusted quantity. This means you have now put-away 3 pieces without an identified stock ID (two put-away originally, plus one on the adjustment).

To adjust the inventory using the new identified stock type, you must post a change of stock. For more information, see the section on Existing Inventory Not Used in a Process above.

• You can change the original line item by entering minus 2 pieces in the adjusted quantity. The system now shows that you did not put-away any products. Now you can add a new line item (using the Split Quantities feature) for three pieces. For this, you must enter an identified stock ID, for example IS99, using the new identified stock type. Now the system shows you put-away three pieces of the relevant product with identified stock ID IS99.

See Also

Identified Stock Management  [page 145]
4.6 Product Groups View

4.6.1 Product Groups Quick Guide

In the Product Groups view, you can create a hierarchy of groups that you can use to structure products in forecasting, planning, production, and storage. This enables you to assign the responsibility for executing tasks for a group of products to a user. In their day-to-day work, users can easily select the products for which they are responsible. This gives users simplified procedures, and enables an efficient process.

You can only create one cross-process product category hierarchy per system. It is not possible to create a company or business-based product category hierarchy. However, you can create one product category hierarchy for storage, one for planning, one for forecasting, and one for production. The storage and production groups are assigned to a site, whereas the planning group is assigned to a planning area. The assignment of the site is done when the products are assigned to their categories.

You can access the Products Group view from the following locations:

- **Planning and Production Master Data** work center
- **Supply Chain Design Master Data** work center
- **Warehousing and Logistics Master Data** work center

This view contains the following subviews:

**Forecasting Groups Subview**
You can use the **Forecasting Groups** view to create a hierarchy of products and use the hierarchy to create demand forecasts. You can assign products to the scope of a demand plan and distinguish between products in the selection criteria for the interactive planning board. You can also perform a statistical forecast at the aggregated level of a forecasting group rather than the detailed level of a product. For more information, see Forecasting.

**Planning Groups Subview**
The **Planning Groups** view enables you to create a hierarchy of product groups that you can use to structure products for supply planning. You can review products on all the levels of the hierarchy. When you select at an upper level, you also review all the products in the corresponding lower levels. You can delete and rename subgroups. You can also display and allow material assignments.

In Supply Planning, you can use planning groups as a selection criterion to select production proposals and purchase proposals for your day-to-day tasks. In your business you can simplify the execution of planning tasks by assigning a group of products to a supply planner.

**Production Groups Subview**
The **Production Groups** view enables you to create a hierarchy of product groups that you can use to structure products for production. You can select products on all the levels of the hierarchy. When you select at an upper level, you also select all the products in the corresponding lower levels. You can delete and rename subgroups. You can also display and allow material assignments.

**Storage Groups Subview**
The **Storage Groups** view enables you to create a hierarchy of product groups that you can use to structure the products you store in your warehouse.
Tasks

Create a Hierarchy of Product Groups

1. Choose the Production Groups subview. You can also use this procedure to create a hierarchy of product groups for the planning, storage, and forecasting groups views. You can create a hierarchy of product groups in the Planning and Production Master Data, Supply Chain Design Master Data, and Warehousing and Logistics Master Data work centers.

2. To create the parent production group, click New Hierarchy to open the quick activity. You can only create one cross-process product category hierarchy per system. Once this has been done, the New Hierarchy button will be greyed out.

3. In the production groups table, enter the parent production group ID and description. Select the Allow Product Assignments check box if you want to assign this group to a product in the Product Data > Material editor. Click Save to save the new parent production group.

4. To add a subgroup to the newly created parent group, select the parent group in the production group table and click Add Subgroup. The system adds a new row to the production group table. The row is a child of the parent group.

5. Enter the production subgroup ID and description. Select the Allow Product Assignments check box if you need to assign this subgroup to a product in the Product Data > Material editor. Click Save to save the new production subgroup.

6. Repeat the steps above to add other subgroups as appropriate. Click Save and Close to save the new production subgroups and return to the Production Groups view.

4.7 Identified Stock Maintenance Run View

4.7.1 Quick Guide for Identified Stock Maintenance Run

The Identified Stock Maintenance Run view of the Warehousing and Logistics Master Data work center allows you to create, maintain, and schedule automated runs to change the status of identified stock and the stock associated with it, based on the expiry date of the identified stock and the minimum shelf life maintained in the product for the supply planning area.

Business Background

Mass Data Runs (MDR)

A Mass Data Run (MDR) is the automatic mass processing of a task or a business transaction. MDRs enable mass processing of business data and are used in business processes, for example, invoice runs, payment authorization
runs, or balance confirmation runs. When a user schedules an MDR the system represents it as a background job. During scoping, it is possible to provide default variants of the MDRs.

MDRs are created and maintained in the work centers. Using the Job Scheduler, users schedule the run to execute once or regularly at specified times.

In the Background Jobs view of the Application and User Management work center, you can monitor and reschedule MDR jobs that are created by users in other work centers.

For more information, see Mass Data Runs (MDR).

**Identified Stock Management**

Identified stock refers to goods that are a sub-quantity of exactly one product and which are uniquely identified in the context of a product. For example, batches and lots. The identified stock contains identifying information, including a description, the external identified stock ID, the expiration date, the production date, and the related product and product specification. In addition, the identified stock may also include an attachment, such as a PDF file, or a JPG file illustrating the product. Notes can be included as well.

Identified stock management enables you to create new identified stock entries, maintain the attributes of existing identified stock entries, confirm logistics tasks with identified stock IDs, and also delete identified stock master data entries (only possible as long as the identified stock being deleted is in status In Preparation). You can use identified stock to track the execution of a specific identified stock throughout an inbound process, an outbound process, an internal process, a production process, or a physical inventory count. In addition, you can block goods belonging to a specific identified stock, as well as execute reports to see identified stock details (quantities and locations).

For more information, see Identified Stock Management [page 145].

### Tasks

**Create an Identified Stock Maintenance Run**

1. Click New to open the New Identified Stock Maintenance Run screen.
2. In the General Data section, enter an ID and, if required, a description for the run.
3. In the Control Parameters section, do the following:
   - Select the product for which you want to maintain the identified stock.
   - If you want to set the status of the identified stock with an expiration date before the current date to obsolete, select the Expire Identified Stock checkbox.
   - If you want to set the status of the stock to restricted based on the minimum shelf life of the product, select the Consider Minimum Shelf Life checkbox.

   The restricted stock will not be available for planning, but will be available for execution.

   For example, you select the Consider Minimum Shelf Life checkbox for a product P1 for which the minimum shelf life is maintained as 5 days in site 1 and 3 days in site 2. For P1, there is an identified stock that has quantities in site 1 and site 2, and the identified stock will expire in a period of 4 days from the current date, which means that the current shelf life of the identified stock is 4 days. When you execute this run, the stock associated with the identified stock in site 1 is set to restricted, as the current shelf life (4 days) is less than the minimum shelf life (5 days) of the product at that site. The stock associated with the identified stock in the other site, that is, site 2, remains as it is.

4. Do one of the following:
   - To save the run and stay on the same screen, click Save.
   - To save the run and return to the Identified Stock Maintenance Run screen, click Save and Close.
5. To activate the run, click **Set to Active**.
6. To schedule a run, click **Schedule**.

### Schedule an Identified Stock Maintenance Run

To ensure the proper handling of expired products or products for which the current shelf life is less than the minimum shelf life at a site, this run should be scheduled with a frequency that suits your requirements and business process. In the period between two runs, it is possible that expired products or products that have a current shelf life less than the minimum shelf life are selected for execution, as the status of the identified stock has not changed.

1. Click **Schedule** to open the **Schedule Job** screen.
   You can click the **Schedule Directly** button to define a date and time for the run. You can also schedule the run on the **New Identified Stock Maintenance Run** screen.

2. Choose one of the following options as required:
   - Choose **Start Immediately** to execute the run immediately.
   - Choose **Run After Job** and select a job. The run will then be executed immediately after the specified job.
   - Choose **Single Run** to define a date and time for the run.
     If you want to execute the run at regular time intervals, choose **Recurrence** and choose a recurrence for the run, for example, daily, weekly, or monthly.

3. To save the run and return to the **Identified Stock Maintenance Run** subview, click **Save and Close**.
   The run has been scheduled and will be executed as specified.
5Quality Planning

5.1 Business Background

5.1.1 Inspection Process

Overview

Quality inspections are used to check whether or not a material meets predefined quality requirements. With quality inspections, your company can achieve the following:

- **Increase competitiveness**
  With an integrated and comprehensive approach to recording inspection results and analyzing defects, companies can continuously improve product and service quality.

- **Ensure compliance**
  Companies must meet customer demands (for example, they have to produce and deliver products according to agreed specifications) and must comply with legal requirements, such as GMP (Good Manufacturing Practice), and industry standards, such as ISO norms.

- **Reduce costs**
  An integrated quality assurance program helps companies avoid costs associated with transparency, rework, scrap, warranty, and product liability. Tools such as acceptance or adaptive sampling reduce costs for sample drawings and inspections.

- **Increase efficiency**
  Integration in other processes, such as production, enables the visualization and acceleration of processes and allows companies to react quickly to internal problems, legal requirements, and market demands.

You can access all functions related to inspections in the **Quality Planning** and **Quality Control** work centers and their views.

The Inspection Process
Prerequisites

You have selected the Quality Assurance business package in scoping. You have defined which inspection types are relevant for your processes during scoping.

To do this, in the Questions step, go to Manufacturing, Warehousing and Logistics in the navigation area; choose the Quality Assurance business package and then the Quality Control business topic.

Here, you can select from the following inspection types:

- Inspections at goods receipt
  Receiving inspections for supplier deliveries, first articles, customer returns, and stock transfers
- Inspections in production
  In-process control and final inspections for production
- Inspections in shipping
  Final inspections for customer shipments

Inspection Process:

1. Inspection Initiation

Inspections can be triggered manually or automatically. In an integrated scenario, they can be initiated by the overlying business process, for example, when production orders are created, but they can also be created manually for various events that occur throughout the entire supply chain process, such as goods movements.

To automatically create a planned inspection, a valid inspection plan must be prepared. This is master data that is maintained in the Quality Planning work center. As part of the inspection plan, you define key parameters and sampling procedures. You can also assign quality codes and inspection instructions in the form of notes or attachments to the inspection plan.

To manually create an unplanned inspection, you can use the New Inspection common task in the Quality Control, Inbound Logistics, Outbound Logistics, Internal Logistics, or Production Control work centers. In this case, only the product master data for the product to be inspected must be available.

For more information, see Inspection Plans [page 198] and Quality Code Catalogs [page 212].

For inspections created as part of the production process, additional master data, such as a product or production model is required. For more information, see Integration of Quality Assurance and Production [page 190].

2. Sample Drawing and Preparation

Once an inspection has been triggered, the system tries to select an appropriate inspection plan and inspection execution can begin.

The number of samples, that is, the sample size, to be taken for an inspection is determined by the inspection plan based on the sampling procedure that has been maintained.

If an inspection is unplanned and no inspection plan is used, the system determines the sample size based on the lot size.

A sample drawing instruction and, if necessary, bar-coded labels can be printed at this point to assist the quality inspector.

After the samples have been taken and distributed to the relevant areas, you can report that the inspection is ready for results recording by setting the Inspection Prepared status in the Quality Control work center.
For more information, see Sample Management [page 186].

3. Inspection Execution

At this point, the quality inspector inspects the samples that have been taken from the product. To support the inspector, inspection instructions can be displayed as graphics or printed out as forms.

4. Results Recording

When the samples have been inspected, that is, the inspection has been executed, you can access a personalized work list in the Quality Control work center where you can select the inspection for which you want to record results based on selection criteria, such as material, date, or inspection type.

You can record inspection results using:

- Notes (to describe deviations in text form)
- Documents (for example, to attach pictures showing defective parts)
- Quantitative inspection characteristics (for example, to record measured values)
- Qualitative inspection characteristics (for example, to describe defects using quality codes)
- Summarized inspection results (for example, the number of nonconforming units and/or defects)

If there is no integration with production, you record results in the Quality Control work center. If there is integration with production, you can use check tasks to record results and to confirm quantities. This is done in the Execution work center.

For more information about check tasks, see Working with Check Tasks in Production.

5. Quality Decision

After all inspection results have been recorded, you can complete the inspection in the Quality Control work center by making a decision about the quality of the inspected product. The quality decision represents a final evaluation of the inspected product from a quality perspective and determines whether the product is accepted or rejected for further use. It is also used to update the quality level in the quality history, which can affect sampling for the next inspection of the same type.

For more information about adaptive sampling, see Sample Management [page 186].

6. Follow-Up Actions

Follow-up actions can be executed manually or automatically based on the quality decision. You can, for example, print out the inspection results or ask involved parties to block stock. However, stock adjustments do not happen automatically, and must be executed manually after inspection.

See Also

Inspection Plans Quick Guide [page 195]
Quality Code Catalogs Quick Guide [page 209]
Quick Guide for Monitoring (in Quality Control)
5.1.2 Sample Management

Overview

Sample management describes the process of taking one or several discrete items (the sample) from a larger group or lot to gain information about the quality of the group or lot based on this sample. Sample management allows you to find the balance between making well-informed quality decisions about inspected materials and minimizing inspection effort. Certain industries must comply with legal requirements and industry standards to control the risk of making incorrect quality decisions. This is especially important for compliance-driven industries, such as the food, chemical, pharmaceutical, and automotive industries.

The main advantages of sample management are that there are different sampling procedures that you can use to calculate the sample size and that it allows you to comply with ISO standards. To reduce appraisal costs, you can also modify the sample size and inspection frequency based on the quality level, which takes previous inspection results into account.

Sampling Fundamentals

You should be aware of the following fundamentals when planning a sampling inspection:

- **Lot Quantity**: Quantity in a continuous or a discrete unit of measure of a product considered to be uniform for sampling
  
  Example: 200,000 liters

- **Lot size**: Number of units in a lot expressed in a discrete unit of measure
  
  Example: 1000 barrels

- **Sample size**: Number of units in the discrete unit of measure taken from the lot to be inspected
  
  Example: 100 barrels

- **Sample quantity**: Quantity of one single sample taken from the sample size and expressed in a continuous or discrete unit of measure
  
  Example: 1 liter (this means that one liter is drawn from each of the 100 barrels and inspected.)

- **Acceptance number**: Highest number of nonconforming units or defects found in the sample that leads to the acceptance of the lot
  
  Example: 2 barrels

- **Rejection number**: Lowest number of nonconforming units or defects that leads to a rejection of the lot. This is the acceptance number plus 1. It is only defined when working with a sampling plan, which contains information about sample sizes and the criteria used to valuate the inspection.
  
  Example: 3 barrels

- **Sampling scheme**: Collection of sampling plans. A sampling plan defines the sample size and the numerical criteria for acceptance and rejection. In doing so, it considers the total quantity to be inspected, the inspection severity, the inspection level, and the acceptable quality level (AQL).
The inspection level and AQL are only taken into consideration if the ISO standard flag is set when you are defining your sampling schemes in the Sampling Schemes activity in the Fine-Tune phase of business configuration. They are taken into consideration for sampling inspections with sampling schemes according to ISO 2859, ISO 3951 or other equivalent international standards.

It is also possible to define company-specific sampling schemes in the Sampling Schemes business configuration view. For more information, see Configuration: Acceptance Sampling.

- **Inspection scope**: Definition of rules for calculating the sample size for an inspection. Possible sample sizes are:
  - Sample size fixed: You inspect a fixed subgroup of the lot. Example: 10 barrels
  - Sample size 100%: You inspect the entire lot. Example: 1000 barrels
  - Sample size by percentage. You inspect a percentage of the lot, for example, 10%. Example, 100 barrels
  - Sample size by sampling scheme. You inspect a subgroup according to an ISO standard or a company-specific sampling scheme.

**Inspection Scope and Different Sampling Procedures**

- **Evaluation mode**: Method by which samples respectively lots are accepted or rejected. In the inspection plan, you can define whether the evaluation of inspections should be done automatically based on the number of defects or nonconforming units, or manually. The inspection evaluation is used to update the quality level, which is relevant for adaptive sampling.
  - The lot is accepted if the number of nonconforming units or number of defects is less than or equal to the acceptance number. Example: less than or equal to 2 barrels
  - The lot is rejected if the number of nonconforming units or number of defects exceeds or is equal to the rejection number. Example: greater than 2 barrels

- **Sample category**: A description of whether a sample is a primary, pooled, or reserve sample. A primary sample is taken directly from the material or product to be inspected. A pooled sample consists of primary samples that were mixed together. A reserve sample is taken directly from the material or product, is used for documentation purposes in the context of quality assurance, and is retained for a specific period of time.
Acceptance Sampling

Acceptance sampling involves the inspection of a sample taken from a lot and the decision about whether or not to accept that lot based on the sample information. It uses sampling plans to calculate sample sizes depending on lot sizes and to decide whether to accept or reject lots.

The system automatically determines whether a lot will be accepted or rejected by comparing the inspection result with the sampling procedure, which consists of the inspection scope and evaluation mode assigned in the inspection plan. The inspection result is compared with the predefined acceptance number and the rejection number for the lot in question. The lot is accepted if the number of defects or the number of nonconforming units does not exceed the acceptance number. The lot is rejected when the rejection number is reached or exceeded. It is also possible to accept or reject the lot manually before results recording is finished. If automatic acceptance or rejection is required, this must be determined in the inspection plan before the inspection begins. If you inspect with a sampling plan, you can specify an acceptance number and a rejection number, where the latter can be any number larger than the former. If there is no sampling plan, then you can only specify an acceptance number and the system will set a default rejection number, which is the acceptance number plus one.

For more information, see Inspection Plans [page 198].

To activate sampling with sampling schemes, the Quality Assurance business package and the Sample Management business topic must be selected in Scoping in the Implementation Projects view of the Business Configuration work center. In the Questions step, go to Manufacturing, Warehousing and Logistics in the navigation area and pick the Quality Assurance business package. Then choose the Sample Management business topic, and choose Yes as the answer for the question on sampling schemes.

Adaptive Sampling

Adaptive sampling allows you to reduce inspection costs systematically. If inspection results are consistently good, for example, for a supplier, then you need to execute fewer or less severe inspections for that supplier. Based on previous inspection results (the quality level that is based on the quality history) it is possible to reduce sample size and inspection frequency, or even to skip lots. It is also possible to vary inspection frequency independently of the quality level using inspection probabilities.

The quality level is used to calculate the inspection severity required for the current inspection. The quality level can be updated at inspection creation or at inspection completion. If update at inspection creation is enabled, an inspection will be considered accepted immediately after creation and the quality level will be updated accordingly. If this inspection is completed afterwards with a different evaluation, the quality level will be updated a second time. If update at inspection completion is enabled, the quality level will only be updated once for each inspection based on the current evaluation.

You may want to use adaptive sampling in the following situations, for example:

- Supplier A has delivered a certain product for a long time and the quality of the delivered product has always been good. Therefore, the sample size of future incoming inspections should be reduced.
- Supplier B is a new supplier of a product. Incoming inspections should be more rigorous than those for regular suppliers.

Adaptive sampling allows you to define steps known as inspection stages, which define whether an inspection is to be performed or skipped based on the inspection severity and the inspection probability. It also allows you to define the conditions for inspection stage changes, such as the number of accepted inspections, the number of rejected inspections, or the time to update the quality level – either at inspection creation or at inspection completion.

Inspection stage changes occur on the basis of the quality history. A stage change can cause a reduction or increase (tightening) in the inspection severity. As illustrated in the graphic, when an inspection is rejected, the next inspection is more severe, whereas after a certain number of accepted inspections, the inspection severity is reduced. If the
inspections continue to be accepted, this can eventually lead to a skip (a certain number of deliveries or lots are not inspected).

The conditions for a stage change are defined for each inspection stage in the adaptive sampling rule, which is defined in business configuration in the Adaptive Sampling activity in the Fine-Tune phase. You can use the inspection stages to vary the sample size between predefined inspection severities, for example, between 100% and a skip. The inspection severity can change between a normal, reduced, and tightened inspection. The system determines the sample size on the basis of the current inspection stage in the quality history.

In adaptive sampling, you can also use inspection probabilities, expressed as a percentage, to decide if an inspection is executed. Based on the probability you have defined, the system determines at random whether or not an inspection is executed.

The system determines a random number between one and one hundred and compares it with the probability; if it is less than or equal to the probability, then an inspection is executed. If it is greater than the probability, then the inspection is skipped. Inspection probabilities are not based on the quality history.

You may want to use inspection probabilities if, for example, your supplier is a subsidiary and you only want 5% of the deliveries of incoming products to be inspected at random. For each delivery, there is a 5% chance that an inspection will be triggered.

Adaptive Sampling Based on the Quality History or on Inspection Probabilities

To activate adaptive sampling, the Quality Assurance business package and the Sample Management business topic must be selected in Scoping in the Implementation Projects view of the Business Configuration work center. In the Questions step, go to Manufacturing, Warehousing and Logistics in the navigation area and pick the Quality Assurance business package. Then choose the Sample Management business topic and choose Yes as the answer for the question on adaptive sampling.

For more information, see Configuration: Adaptive Sampling.
Physical Sampling

If physical sampling is enabled, you can choose to have samples represented by unique data records in your system. To do this, you select the Sample Records flag in the inspection plan or, if your inspection is unplanned, you can select the flag in the inspection. The sample records in the system allow the following:

- The identification and labelling of samples
- Searching for and describing samples
- Results recording for individual samples
- The management of sample categories, that is, pooled samples, reserve samples, and primary samples

To activate physical sampling, the Quality Assurance business package and the Sample Management business topic must be selected in Scoping in the Implementation Projects view of the Business Configuration work center. In the Questions step, go to Manufacturing, Warehousing and Logistics in the navigation area and pick the Quality Assurance business package. Then choose the Sample Management business topic, and choose Yes as the answer for the question on physical sampling.

5.1.3 Integration of Quality Assurance and Production

Overview

The quality inspection process is integrated with the production process for final inspections in production. These inspections are triggered automatically when production orders are created. This is a quick, easy, and efficient means of executing inspections in production and ensures high quality products. These inspections are planned inspections.

Example:

When a production order to produce 1000 heaters is released, the system automatically creates an inspection. In addition, a production task of the type Check for the finished products is created by the system and immediately pushed to the quality inspector’s task folder.

With this task, the quality inspector receives all relevant information, such as the product, lot size, sample size, inspection instruction, and sample drawing instruction.

The quality inspector executes the check task as required and enters the numbers and types of defects in results recording.

The system evaluates the quality inspector’s results based on the inspection plan and proposes that this inspection lot should be accepted as there are only a few minor defects. The yield quantity of heaters is 1000 and this is automatically proposed for confirmation. The quality inspector can manually update this quantity, if required.

Prerequisites

The inspection type Final Inspections – Production is selected during scoping. In the Questions step, go to the Quality Assurance business area and choose Quality Control -> Questions for Quality Control. Here, answer Yes to the question Do you want to inspect finished products at the end of production?

You can also define decision codes for the inspection type Final Inspections – Production in the fine-tuning phase, but this is optional.

A suitable inspection plan for this inspection type exists in the system. The inspection type of this inspection plan must be Final Inspection – Production and the inspection plan must have the status Active. If these requirements
are not met, the production order cannot be released and no inspection will be created. For more information about inspection plans and the key parameters used by the system to access these, see Inspection Plans [page 198].

A production model is defined in the Planning and Production Master Data work center. This production model contains one operation of the category Quality Check with one activity of the category Final Inspection. This check operation is the final operation in the production model.

For more information about production models, see Production Models [page 87].

Process Flow

1. The user creates a production order in the Production Control work center based on the production model. The check operation ensures that the system creates an inspection for this production order. One new inspection is created for each check operation. The inspection always has the same priority as the production order it is based on.

   For more information about production orders, see Production Order Execution and Production Orders.

2. While creating the production order, the system transfers parameters, such as the inspection type, product, site, resource, and lot size, to quality assurance, where the system selects the most suitable inspection plan inspection plan for the inspection. The inspection can only be executed if there is a suitable inspection plan available.

3. When the production order is released, the system creates a production lot and releases the corresponding inspection. The system also creates a production task of the type Check and links this to the inspection.

   For more information about check tasks, see Working with Check Tasks in Production.

4. The user works on and confirms the check task in the Execution work center. To do this, they do the following:
   - Perform results recording (this is optional) for the task on the Inspection tab and choose Finish Results Recording. The proposed quantities that are based on the results are then transferred to the production lot.
   - Confirm the production quantities on the Confirmation tab. Depending on the results recorded for the task and the inspection evaluation, the system automatically updates the production quantities in production. The production quantities, that is, the yield and scrap quantities can also be manually adjusted afterwards.

   The user can also record results and/or confirm the task in the Quality Control work center. They can access the relevant inspection by choosing Inspections in the Monitoring view. They can record results by choosing Edit and/or confirm the task by choosing Confirm Task. This button is only enabled for planned inspections. Recorded results are synchronized between the inspection and the check task.

5. The user can complete the production lot at this point, if required.

6. The quality manager makes the decision for the inspection in the Quality Control work center, thereby completing the inspection. The inspection is completed independently of the production lot, that is, it can be completed before or after production lot completion. There is no interaction between the two after the results recording is finished.

   If the order that triggered the inspection is deleted or updated, the system sends this information from production to quality assurance, where the inspection and its related objects are cancelled or updated accordingly. The inspection cannot have the status Cancelled if the related production order has not been deleted.
Additional Information

To make it easier to process check tasks, it is possible to define a logistics task folder of the type Production Task in the Planning and Production Master Data work center based on the selection criteria Activity Type (Final Inspection) and Resource. This task folder can then be called up by the relevant user in the Execution work center and will contain all check tasks related to final inspections in production and the resource specified.

For more information about logistics task folders, see Logistics Task Management [page 129].

An important feature of the integration between quality assurance and production is that it is possible to view the entire document flow in graphic form, starting with the production proposal and ending with the inspection. You can, for example, see which production proposal triggered the creation of the production order that triggered the creation of the inspection. You can view this document flow in all relevant objects (production proposal, production request, production order, production lot, production task, and the inspection). To view it from an inspection, go to the Monitoring view of the Quality Control work center and choose to edit this inspection.

5.1.4 Integration of Quality Assurance and Logistics

Overview

The quality assurance process is integrated with logistics processes to allow inspections to be triggered automatically from inbound and outbound logistics processes.

This integration can be used for the following types of inspections:

- Receiving Inspection –
  - Supplier Delivery
  - Stock Transfer
  - Customer Return
- Final Inspection –
  - Customer Shipment

Inspections that are integrated in the logistics processes are planned inspections and are automatically created by the system if the prerequisites listed below have been fulfilled. After an inspection has been created, the two processes (quality assurance and logistics) are largely independent of one another, but logistics can update quantities and statuses in the inspection.

For more information about inspections, see Inspection Process [page 183].

Prerequisites

- Scoping: One or all of the inspection types listed in the overview have been selected during scoping in business configuration. In the Questions step, go to the Quality Assurance business area and choose Quality Control > Questions for Quality Control. Here, answer Yes to the relevant questions:
  - Do you want to inspect material or products delivered by suppliers, or send quality assurance documents to your suppliers in the purchasing process?
  - Do you want to inspect customer returns?
  - Do you want to inspect products received from subsidiaries?
  - Do you want to inspect finished products at customer shipment?
Logistics model: *Autonomic Inspection* has been selected in the *Inspection Process* field of the logistics model in the *Warehousing and Logistics Master Data* work center. The logistics model is released and consistent. For more information, see *Logistics Models*  [page 155].

Inspection plan: A valid inspection plan exists. For more information about inspection plans, see *Inspection Plans*  [page 198].

*Inspection Stock* is a field in the inspection plan. This field allows you to specify whether or not to separate stock for inspections in inbound logistics processes for products affected by this inspection plan. Inspection stock is considered for planning, and not for execution. Stock separation is only possible for planned inspections. If you want the system to propose an inspection area, that is, a warehouse location for products to be inspected, then a logistics area with the logistics use *Inspection* must be available. You can specify the logistics use in the *Supply Chain Design Master Data* work center, in the *Location Layout*. Stock located in a logistics area with the use *Inspection* is not available for picking. Inspection stock can be used for the *Goods Movement* common task in the *Inbound Logistics* work center. For more information about logistics areas and location layouts, see *Locations and Location Layouts*  [page 7].

**Process Flow**

1. A user creates a *Purchase Order* (this represents the inbound logistics process) or a *Sales Order* (this represents the outbound logistics process).
2. After the order has been created and released, the processing continues in the *Inbound Logistics* work center or in the *Outbound Logistics* work center.
3. While processing the purchase order or sales order in the logistics work centers, the user triggers the creation of the inspection in one of the following ways:
   a. When the user posts a goods receipt or issue
      This is done by choosing *Post Goods Receipt* in the *Purchase Orders* or *Inbound Delivery Notifications* view of the *Inbound Logistics* work center, or by choosing *Post Goods Issue* in the *Delivery Proposals* subview of the *Delivery Control* view in the *Outbound Logistics* work center. Both of these actions immediately release the associated inspection.
If an inspection is integrated in an inbound process, the system defaults the stock category to inspection stock during the inbound process. If you want to override this default system behavior, that is, if you do not want to categorize inbound stock as inspection stock, you must select Do not Categorize Stock as Inspection Stock while creating an inspection plan. This indicator is not selected by default. The indicator then reflects in the inspection document that is created later, based on the inspection plan. If you select the indicator and if the inspection is integrated in an inbound process, the system does not default the stock category to inspection stock, but instead, captures it as unrestricted stock during the inbound process.

You can change your selection of Do not Categorize Stock as Inspection Stock while editing an inspection plan. Your selection will reflect in the corresponding inspection documents that are created after changing the indicator. Note that you can only change the indicator while editing an inspection plan, and not while editing the corresponding inspection document. The indicator in the inspection document is the final check for the logistics processes to capture the stock as inspection stock or unrestricted stock.

You can categorize the stock as restricted stock while performing the goods receipt. This action overrides the behavior (that is, inbound stock being categorized as inspection or unrestricted stock) induced by the indicator.

Note that inspection stock is considered for planning, and not for execution.

For more information, see:
- Create an Inspection Plan [page 201]
- Edit an Inspection Plan [page 203]

Once the inspection document related to the inbound process is completed by recording the results and if the inbound stock is categorized as inspection stock, you must perform the required logistics operations on the stock manually, for example, moving the stock from inspection to unrestricted or restricted.

b. When the user creates a warehouse task

This is done either by choosing Create Warehouse Task in the Warehouse Requests view of the Inbound Logistics or Outbound Logistics work centers, or by automatic task creation - if this option was chosen in the logistics model. These actions do not release the inspection.

When the user confirms the warehouse task, the identified stock and the lot quantity of the related inspection is automatically updated based on the confirmed quantity in the warehouse task. For example, in the two-step receiving process, the inspection will not be released after the unload is finished, but when the entire quantity of an inspection-relevant material or product is moved to storage.

In the inbound process, the inspection is released when the last task for an inspection-relevant material or product is confirmed.

In the outbound process, the inspection is released when the associated pick task or pick tasks are confirmed. There may be several pick tasks if the material or product quantity is split into different identified stocks or logistics areas.

For each combination of product or material and identified stock, the system creates a separate inspection. If your product or material has three identified stocks, there will be three inspections.

4. If inspection stock separation has been specified in the inspection plan, the system proposes a logistics area of the use Inspection for the material to be inspected in the inbound process. If the two-step process is used, the logistics area of use Inspection is proposed for the second step.

If there are several logistics areas of type Inspection available, a user can manually select one of them and overwrite the system proposal.
5. The inspection is now processed independently of the logistics processes and results are recorded for the inspection. For more information about inspection processing, see Process an Inspection.

6. The quality manager makes the decision for the inspection in the Quality Control work center, thereby completing the inspection.

7. Once the quality (inspection) document is completed by recording the results, you can carry out manual follow-up logistic movements if required. For example, you can:
   - Create a return to supplier request using the corresponding common task in the Inbound Logistics work center.
   - Block an identified stock in the Identified Stock view in the Warehouse and Logistics Master Data work center.
   - Create a change of stock using the corresponding common task in the Internal Logistics work center.
   - Scrap a material or product using the corresponding common task in the Internal Logistics work center.
   - Set a material or product to restricted using the Change of Stock common task in the Internal Logistics work center.

   If you want to move inspection stock to restricted or unrestricted stock, you must be assigned the following:
   - Inbound Logistics work center (Change of Stock common task)
   - Quality Planning work center, Inspection Plans view

See Also

Working with Warehouse Tasks

5.2 Inspection Plans View

5.2.1 Inspection Plans Quick Guide

The Inspection Plans view of the Quality Planning work center provides a central location for working with inspection plans in the system.

Inspection plans serve as the basis for quality inspections. They contain inspection instructions, sampling procedures, assigned quality codes, and other important basic data for your inspections. You create an inspection plan for a specific inspection type, such as for receiving inspections for supplier deliveries. You can also create an inspection plan for specific products, product categories, sites, or business partners and any combination of these criteria.
Where there are multiple inspection plans available, the system will select the most specific plan, that is, the plan for which the most corresponding criteria have been maintained, for an inspection. The ability to create a very specific plan or a more general one, and the ability to edit plans at any time gives you great flexibility. These features can contribute to an overall improvement in your quality processes.

In this view you can:
- Search for and view all inspection plans in the system
- Create new inspection plans from scratch or by copying an existing plan
- Edit inspection plans
- Assign quality codes, sampling procedures, and relevant documents to inspection plans
- Change the status of inspection plans
- Track the change history

**Business Background**

**Inspections Plans**

Inspection plans are the basis for quality inspections. An inspection plan contains basic data for your inspections including:
- Inspection instructions
- Sampling procedures
- Evaluation mode
- Assigned quality codes
- Assigned quality documents

For more information, see Inspection Plans  [page 198].

**Inspection Process**

Quality inspections are used to check whether or not a material meets predefined quality requirements. With quality inspections, your company can achieve the following:
- Increase competitiveness
  With an integrated and comprehensive approach to recording inspection results and analyzing defects, companies can continuously improve product and service quality.
- Ensure compliance
  Companies must meet customer demands (for example, they have to produce and deliver products according to agreed specifications) and must comply with legal requirements, such as GMP (Good Manufacturing Practice), and industry standards, such as ISO norms.
- Reduce costs
  An integrated quality assurance program helps companies avoid costs associated with transparency, rework, scrap, warranty, and product liability. Tools such as acceptance or adaptive sampling reduce costs for sample drawings and inspections.
- Increase efficiency
  Integration in other processes, such as production, enables the visualization and acceleration of processes and allows companies to react quickly to internal problems, legal requirements, and market demands.

You can access all functions related to inspections in the Quality Planning and Quality Control work centers and their views.

For more information, see Inspection Process  [page 183].
Sample Management

Sample management describes the process of taking one or several discrete items (the sample) from a larger group or lot to gain information about the quality of the group or lot based on this sample.

Sample management allows you to find the balance between making well-informed quality decisions about inspected materials and minimizing inspection effort. Certain industries must comply with legal requirements and industry standards to control the risk of making incorrect quality decisions. This is especially important for compliance-driven industries, such as the food, chemical, pharmaceutical, and automotive industries.

For more information, see Sample Management [page 186].

Integration of Quality Assurance and Production

The quality inspection process is integrated with the production process for final inspections in production. These inspections are triggered automatically when production orders are created. This is a quick, easy, and efficient means of executing inspections in production and ensures high quality products. These inspections are planned inspections.

For more information, see Integration of Quality Assurance and Production [page 190].

Integration of Quality Assurance and Logistics

The quality assurance process is integrated with logistics processes to allow inspections to be triggered automatically from inbound and outbound logistics processes.

For more information, see Integration of Quality Assurance and Logistics [page 192].

Quality Assurance (Unplanned Inspections)

The Quality Assurance (Unplanned Inspections) business scenario enables you to check the quality of products on demand. It allows you to create inspections manually to complement, for example, goods receipts, production activities, or goods issues.

With this scenario, you can create, monitor, and analyze these inspections, record results, make quality decisions, and initiate corrective or preventive actions as necessary.

For more information, see Quality Assurance (Unplanned Inspections).

Tasks

Create an Inspection Plan
For more information about this task, see here [page 201].

Edit an Inspection Plan
For more information about this task, see here [page 203].

Export Business Data Using Microsoft Excel®
For more information about this task, see here [page 204].

Work with Tasks, Notifications, Alerts, and Clarification Requests
For more information about working with tasks, notifications, and alerts, see here [page 205].
For more information about working with clarification requests, see here [page 207].
5.2.2 Business Background

5.2.2.1 Inspection Plans

Overview

Inspection plans are the basis for quality inspections. An inspection plan contains basic data for your inspections including:

- Inspection instructions
- Sampling procedures
- Evaluation mode
- Assigned quality codes
- Assigned quality documents

You define inspection plans in the Inspection Plans view of the Quality Planning work center.

Key Parameters

You create an inspection plan for a specific inspection type. The system provides the following inspection types:

- Receiving Inspection - Supplier Delivery
  To inspect incoming products from supplier deliveries
- Receiving Inspection - Customer Return
  To inspect products returned by customers
- Receiving Inspection - First Article
  To inspect and validate first articles received from suppliers
- Receiving Inspection - Stock Transfer
  To inspect products delivered from company subsidiaries
- In-Process Inspection – Production
  To carry out inspections while production is ongoing
- Final Inspection – Production
  To inspect the final product before sending it from production to the warehouse
- Final Inspection - Customer Shipment
  To carry out exit-plant inspections before product delivery to customers

You can also create an inspection plan according to the following criteria:

- Product
  An inspection plan specific to a particular product
- Product Category
  An inspection plan specific to all products in a particular product category
- Site
  An inspection plan specific to a particular site
- Supplier, or Customer, or Resource
  An inspection plan specific to all goods received from a particular supplier, or all goods sent to a particular customer, or all produced parts assigned to a particular equipment or human resource.
You can create inspection plans for any combination of these criteria. For example, you could create a plan to inspect a particular product procured from a particular supplier. Where there are multiple inspection plans available for the criteria, the system selects the most specific plan that is suitable for the inspection.

**Inspection Plan Determination Sequence**

Where there are multiple inspection plans available for the key parameters, the system selects the most specific plan that is suitable for the inspection. If, for example, the inspection type is Customer Return and this is the only key parameter that has been maintained, then all customer returns can be processed with this inspection plan (inspection plan A). However, if you have a more specific inspection plan (inspection plan B) that specifies the inspection type Customer Return and the product Heater, then the system will automatically select inspection plan B whenever there is a customer return for a heater and the inspection plan A whenever there is a customer return that is not a heater. It always selects the inspection plan in which the most parameters relevant to the inspection have been maintained.

In addition, the key parameters have priorities that allow the system to select the most suitable inspection plan. The inspection types all have the same priority, but the other key parameters have different priorities:

- Product — priority 1
- Product Group — priority 2
- Site — priority 3
- Supplier, Customer, or Resource — priority 4

This means that if you have two inspection plans for receiving inspections:

- Inspection plan 1: Product = PA
- Inspection plan 2: Site = SA

and you receive the product PA in the site SA, your system will select inspection plan 1, because product takes priority over site.

The following table shows the access sequence to inspection plans with priorities from 1 to 16. The Xs mark the key parameters that have been selected:

<table>
<thead>
<tr>
<th>Priority</th>
<th>Product</th>
<th>Product Category</th>
<th>Site</th>
<th>Supplier/Customer/Resource</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>2</td>
<td>X</td>
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<td>10</td>
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<tr>
<td>11</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
**Inspection Scope**

An inspection plan specifies an inspection scope. You can select from the following inspection scopes:

- No Inspection Required
- Sample Size Fixed
- Sample Size 100%
- Sample Size Percentage
- Sample Size By Sampling Scheme

**Specification Adjustment**

You can change the status of an inspection plan. Available statuses are *In Preparation*, *Active*, *Blocked*, or *Obsolete*.

You can vary the following sampling data for your inspection plan.

- **Sample Size**
  The amount or percentage of units taken from a lot
- **Sample Quantity**
  The quantity of one sample unit to be tested and the unit of measure, for example five grams.
- **Evaluation Mode**
  The method by which the corresponding lots are accepted or rejected.
- **Acceptance Number**
  The maximum number of defects or nonconforming units allowed in a sample. If this number is exceeded, the lot is rejected. The acceptance number has the same unit of measure as the sample size.
- **Sample Records**
  If you enabled physical sampling during business configuration, you can specify that you want system records to be created for the samples. You can then later record results for the individual samples.
- **Adaptive Sampling**
  If you enabled adaptive sampling during business configuration, you can specify adaptive sampling criteria and rules.

For more information about sampling, see Sample Management [page 186].

You can add quality codes, such as defect types, to an inspection plan. Once a quality code is added, it is available for reporting defects for all inspections executed with this inspection plan. For more information, see Quality Code Catalogs [page 212].

**Notes and Attachments**

You can also add notes and attachments to an inspection plan. They will be carried over to the relevant inspections, check tasks, purchase orders, or purchase contracts once the plan is selected.
When you add a note, you can specify a **Note Type** to be used in the relevant print forms. A **Sample Drawing Instruction** note is printed on the sample-drawing instruction form; **Inspection Instruction** and **Internal Comment** notes are printed on the inspection instruction form; an **Additional External Comment** note is printed on the inspection results form.

When you add an attachment, you can specify a **Document Type** that determines the display of information on specific screens. **Image**, **Graphical Instructions**, and **Specification & Results** attachments are visible in the check task or in the inspection. **Technical Delivery Terms** and **Quality Assurance Agreement** documents can be automatically attached to purchase orders or purchase contracts.

### Automatic Printing

You can select the automatic printing options for the sample-drawing instruction and for the inspection instruction. When these options are selected, sampling-drawing instructions and inspection instructions will be printed out automatically when an inspection is created using this inspection plan.

### Authorization Concept

Authorizations for access to inspections plans can be restricted using sites. Users either have unrestricted access to all sites, or they have restricted access to only the sites that have been specifically assigned to them. Users with restricted access to only specific sites can only find, view, create, and edit inspection plans for sites to which they are assigned. If the inspection plan is not linked to a site, there is no authorization control.

The users and their access rights are maintained in the **Application and User Management** work center in **User and Access Management**.

### 5.2.3 Tasks

#### 5.2.3.1 Create an Inspection Plan

**Overview**

This document describes how to create rules or guidelines for your quality inspections. These rules or guidelines are maintained in the form of inspection plans. With inspection plans, you can specify details for inspections, such as the inspection duration, inspection scope, sampling procedures, and assigned quality codes.

**Procedure**

1. Select the **Inspection Plans** view of the **Quality Planning** work center.
2. Click **New Inspection Plan** to open the **New Inspection Plan** guided activity.

   ![Guided activity](image)

   You can also open the **New inspection Plan** guided activity by clicking **New Inspection Plan** under **Common Tasks**.

   In addition, you can select an inspection plan and click **Copy** to create a new inspection plan similar to the selected one.

3. Enter the key parameters and the general data.
a. Select an *Inspection Type* for this plan under **Key Parameters**.

b. Enter the site, product, and product category in the corresponding fields, as required. Depending on the inspection type you selected, you can also specify supplier, customer, or resource information.

c. Choose the inspection scope and decide whether or not you want to trigger stock separation for inspection purposes under **Sampling Procedure**.

d. Choose *Do not Categorize Stock as Inspection Stock* if you do not want to categorize inbound stock as inspection stock.

- Inspection stock is considered for planning, and not for execution.

e. Choose *Print Sample-Drawing Instruction Automatically* or *Print Inspection Instruction Automatically* if you want the system to automatically print instructions.

f. Click **Next**.

4. Enter the sample data and provide the inspection specifications.

   a. The entry fields on this screen depend on the selected inspection scope and inspection type. You can enter, for example, the sample size, the sample quantity, the sampling scheme, the inspection severity, the adaptive sampling criterion and rule, and the evaluation mode, depending on what you have selected on the previous screen. See the mouseovers on the fields for more information.

   b. Click **Next**.

5. Optional: Assign quality codes to the new inspection plan.

   a. On the **Quality Codes** tab, click **Add Row** to enter a quality code.

   b. Select a valid code ID in the corresponding column of the table. The system automatically enters the code category details.

   - When you record results for an inspection that was performed using this inspection plan, all the codes you specify here will be proposed.


   a. On the **Attachments** tab, click **Add** and choose **File** or **Link**.

   b. In the popup, enter details for the attachment, and click **Add**. Different document types are available for selection. The system automatically copies *Quality Assurance Agreements* and *Technical Delivery Terms* documents to a relevant purchase order or contract. *Inspection Instruction* documents are not attached to a purchase order. The system makes the *Specification and Results* document available for any inspection that uses this plan, embedding it in the view. The system also embeds *Graphical Instructions* in the **Inspections** view for review only.

   c. On the **Notes** tab, click **Add Row** and select a **Note Type** in the corresponding column. The system makes all notes available to any inspection that uses this plan.

7. Optional: To activate the inspection plan immediately, you can choose **Active** from the **Change Status** dropdown list.

   - You can also activate the new inspection plan later in the **Inspection Plans** view.

8. Click **Finish**

9. The new inspection plan is saved to the system and can now be used for inspections.
5.2.3.2 Edit an Inspection Plan

Overview

This document describes how to edit inspection plans in case you want to change the rules or guidelines for your quality inspections. In inspection plans, you can specify details for inspections, such as the inspection duration, inspection scope, sampling procedures, and assigned quality codes.

Procedure

1. Select the Inspection Plans view of the Quality Planning work center.

2. Select the inspection plan you wish to edit, and click Edit to open the Inspection Plan screen.

   You can also open the Inspection Plan screen by clicking the link of the inspection plan you want to edit in the Inspection Plan ID column of the initial screen of the Inspection Plans view. Then click Edit on the screen that appears.

3. Check the Key Parameters of the inspection plan. You cannot change these key parameters. If they are not suitable for your requirements, you must create a new inspection plan and specify different parameters.

4. Check the Control Parameters. You can change the Inspection Scope and the type of Inspection Stock. If you want the system to automatically print instructions, choose Print Sample-Drawing Instruction Automatically or Print Inspection Instruction Automatically, as required. You can change the indicator for Do not Categorize Stock as Inspection Stock depending on whether you want to categorize the inbound stock as inspection stock.

   Inspection stock is considered for planning, and not for execution.

5. Check the data on the Sample Data tab. The sample data available for modification depends on the inspection scope selected for this inspection plan. You can also select a new inspection scope under Control Parameters. You can make changes to the sample data as required.

   If you want to display additional information on the fields that appear, activate mouseover texts, by choosing the following: Personalize > My Settings > Onscreen Help > Display Additional Onscreen Explanatory Texts.

   If you check the Sample Records field, records are created in the system for the samples that you take and you can later record results for each of these samples. The Sample Drawing Procedure table also appears, where you specify the Sample Category — that is, whether you want to create pooled samples, primary samples, or reserve samples, the Number of Samples, the Factor of Samples, and the Sample Quantity.

   The Sample Records field is only available if Physical Sampling has been enabled in business configuration. To activate physical sampling, the Quality Assurance business package and the Sample Management business topic must be selected in Scoping. In the Questions step, go to Manufacturing, Warehousing and Logistics in the navigation area and pick the Quality Assurance business package. Then choose the Sample Management business topic, and choose Yes as the answer for the question on physical samples.
6. On the Quality Codes tab, you can add or delete quality codes. For more information, see Quality Code Catalogs [page 212].

7. To view a history of the changes that have been made to this inspection plan, click the Changes tab and specify the user and/or the dates in the fields provided.

8. On the Notes and Attachments tabs, you can add or remove attachments, and add, remove, or edit notes, as required. If you add an attachment, different document types are available for selection. The system automatically copies Quality Assurance Agreements and Technical Delivery Terms documents to a relevant purchase order or contract. Inspection Instruction documents are not attached to a purchase order.

9. To activate the inspection plan immediately, choose Change Status and then Activate.

   You can also activate the new inspection plan later in the Inspection Plans view.

10. Click Save to save and update the inspection plan.

11. Click Close to return to the Inspection Plans view.

5.2.3.3 Export Business Data Using Microsoft Excel®

Overview

You can export reports and worklists to Microsoft Excel® documents. You can use these documents for further analysis, and in some cases, edit and upload them to the solution.

You can export data from a report or from a worklist.

Prerequisites

- You have installed the latest Add-In for Microsoft Excel®. Depending on your solution set-up, you can do this from the:
  - Self Services Overview in the Home work center
  - Download Center in the Application and User Management work center
  - Download link that is available directly on the user interface
- The settings for your browser must be set correctly. You can review the information about computer settings by clicking Check My Computer Settings on the logon screen.
- You must be authorized to perform an export to Microsoft Excel®.

Procedure

1. Go to the screen with the data you want to export.

2. Depending on the type of data, choose one of these options:
   - For a report, you can either export a chart or a table. To do so, select the report, and click Switch to Chart or Switch to Table.
   - For a worklist, select the worklist and click Go.

3. Click Export, then choose To Microsoft Excel.

4. Optional: Personalizing your excel export
   1. To select the columns in your exported excel, do the following:
a. In the title bar, click Personalize [This screen].
b. In the side panel, select Display Settings.
c. In the Display Settings dialog box, you can export all the columns in the view by selecting All in the Export Columns field.

The default value for this field is Visible, which exports only the currently displayed columns.

2. To select the language for your excel export, do the following
   a. In the Display Settings dialog box, set the Language Selection field to Show and click OK.
   b. Click Save.
   c. Click Export, then choose To Microsoft Excel.
   d. Select a language in the dialog box that opens.

The column selection preference in this dialog box allows you to override the personalized setting. This selection is valid for the current export only.

5. Select the template in the dialog box that is displayed.

- If there is only one template that has the logged in language variant, then the export will be performed in the logged in language, and no user interaction is required.
- If there is only one template in the system for this export scenario, but the logged in language variant is not available, then export will be performed in the English language.
- If there is more than one template in the system for this export scenario, the Template List dialog box is displayed. In this dialog, you can select the Microsoft Excel template that you want to use for the export. The template will dictate how your exported data will be formatted. The Microsoft Excel version that is relevant for each template is displayed.

6. Click Download.

7. A message shows that you can open or save the file which contains the data that you have just exported from the solution. Click Open or Save depending on what you want to do with the exported data.

Depending on whether you click Open or Save, there are two possible results:

- If you click Open, a worksheet opens with the data in Microsoft Excel. The file has a temporary name, but it is not saved. You can use all the functions of Microsoft Excel to organize the data and to save that worksheet.
- If you click Save, a Save As dialog box opens. You can specify an appropriate file name and a location to save the exported Microsoft Excel file to. A message will inform you when the download has completed successfully.

You can later navigate to the location where you have saved the template and open it.

5.2.3.4 Working with Tasks, Notifications, and Alerts

Overview

Tasks, notifications, and alerts enable you to inform another user about a business document that may require checking, changes, or that may need to be completed. You can create tasks, notifications, alerts with reference to business task management items and business documents.
Tasks Created by the System

When the system creates a task, it displays as \textit{New} in the relevant user's worklist. You see business task management items that are associated with the work center views and access rights to which you are assigned. You can execute the task by opening the task, clicking the link, or can access the related document by clicking \textit{Edit}. You are then assigned as the processor of the task. If a task is assigned to multiple persons responsible, it stays in the worklists of all persons responsible until it has been completed. The multiple persons responsible can see who has taken over the task for processing.

Statuses of Business Task Management (BTM) Items

Tasks can have the following statuses: \textit{New, In Progress, Completed}, and \textit{Canceled}. Notifications can have the following statuses: \textit{New, In Progress, Acknowledged, Completed}, and \textit{Canceled}. Alerts can have the following statuses: \textit{New, In Progress, Completed}, and \textit{Canceled}.

Manually Creating Tasks, Notifications, and Alerts

1. Select the relevant business task management item or business document, click \textit{New} and choose the corresponding option: \textit{Task, Notification, or Alert}.
2. Fill in the mandatory fields.
   - In the \textit{To} field, enter the employee ID or search for the employee using the value help. Note that you can only enter or select employees who have access rights to the related business document for which you create the task, notification, or alert. For tasks, enter a date by when you expect a response in the \textit{Due Date} field. For notifications, enter a date by when the notification is to expire in the \textit{Expiry Date} field. For alerts, you cannot enter a due date since alerts require immediate action.
   - In the \textit{Subject} field, enter the subject for the task, notification, or alert. The subject is displayed in the recipient's work inbox.
   - In the \textit{Priority} field, set the priority to \textit{Low, Medium, High} or \textit{Very High}. For alerts, the priority is set by default to highest available priority, for example, \textit{Very High}. The default cannot be changed.

You can enter the request details on the \textit{Notes} tab page and add relevant attachments on the \textit{Attachments} tab page.

3. Send or cancel the task, notification, or alert.
   - To send the task, notification, or alert, click \textit{Save and Close}.
   - To close the screen without saving your changes, click \textit{Close}.

You can track your tasks, notifications, and alerts from the \textit{Work} work center view of the \textit{Home} work center. In the \textit{Delegated Tasks} work center view, from the \textit{Show} dropdown list, choose \textit{Created by Me}.

Receiving Tasks, Notifications, and Alerts

You receive manually created tasks, notifications, and alerts in the \textit{Work} work center view of the \textit{Home} work center. In the \textit{Inbox} work center subview, from the \textit{Show} dropdown list, choose \textit{Open Items}. You can also choose \textit{Open Tasks, Open Notifications, or Open Alerts} accordingly.

Processing Tasks, Notifications, and Alerts

To view the related business document and to make any relevant changes after you have read the detailed instructions in the \textit{Description} field, click the subject link of the business task management item, or click \textit{Edit}. 
Once you start processing a task, notification, or alert, the status of the task, notification, or alert is set to *In Progress*.

**Tracking Manually Created Tasks, Notifications, and Alerts**

You can track the progress of business task management items that you have created from the *Work* work center view of the *Home* work center. In the *Delegated Tasks* work center view, from the *Show* dropdown list, choose *Created by Me*.

You can also view all completed tasks from the *Work* work center view of the *Home* work center. From the *Show* dropdown list, choose *Closed Items*.

**Generic Task Details**

To view the details of the task, choose the *Open Details* option from the context menu or from *Actions*.

The details of the task include information, such as the person responsible, process, status, and so on. The *Related Document* link launches the screen of the related business document.

The *Notes* tab page shows the details of the item, and comments entered by the employee who from whom the item is sent and any previous processors. The *Attachments* tab page shows any attached documents.

Depending on the task, the following actions are available.

- *Change Priority*
- *Forward*
  
  Assigns the item to another person for processing
  
  Note that you can only forward tasks to employees who have access rights to the related business document of the task, notification, or alert.
- *Complete*
- *Acknowledge*
  
  Notifications are acknowledged rather than completed.
- *Cancel*

If you require further information before you can process the item, you can create a clarification request by clicking *New*, and then choosing *Clarification Request*.

**See Also**

Business Task Management

*Working with Clarification Requests*  
[page 207]

5.2.3.5 Working with Clarification Requests

**Overview**

Clarification requests enable you to request information about business task management items or business documents from another user. You can create clarification requests with reference to business task management items and business documents.

Note that creating a clarification request does not affect the flow of the business process. For example, if you create a clarification request about a purchase order, the clarification request does not prevent the purchase order from being processed.
Recipients can open clarification requests regardless of whether they have access to the related business document or task.

When you create a clarification request, it displays as **New** in the relevant user’s worklist. When the recipient processes the clarification request, the status of clarification request changes to **In Clarification**.

Clarification requests can have the following statuses: **New**, **In Clarification**, **Clarified**, and **Completed**.

### Creating Clarification Requests

1. Select the relevant business task management item or business document, click **New** and choose **Clarification Request**.
2. Fill in the mandatory fields.
   - In the **To** field, enter the employee ID or search for the employee using the value help.
   - In the **Due Date** field, enter a date by when you expect a response. The default is three days from the current date.
   - In the **Subject** field, enter the subject for the clarification request. The subject is displayed in the recipient’s work inbox. By default, the **Subject** field is either filled with the name of the business task management item for which you require clarification, or is blank if the clarification request is for a business document. However, you can change the default.
   - In the **Priority**, field set the priority to **Low**, **Medium**, **High**, or **Very High**. By default, the priority is set to **Medium**.

   ![You can enter the request details on the Notes tab page and add relevant attachments on the Attachments tab page.](image)

3. Send or cancel the clarification request.
   - To send the clarification request, click **Save and Close**.
   - To close the screen without saving your changes, click **Close**.

You can track your clarification requests from the **Work** work center view of the **Home** work center. In the **Delegated Tasks** work center subview, from the **Show** dropdown list, choose **Created by Me**.

### Responding to Clarification Requests

You receive clarification requests in the **Work** work center view of the **Home** work center. In the **Inbox** work center subview, from the **Show** dropdown list, choose either **Open Items** or **Open Clarifications**.

Once you start processing a clarification request, the status of the clarification is set to **In Clarification**.

1. To begin processing the clarification request, open the details of the clarification or click **Edit**. The **Related Document** link launches the screen of the related business document. The **Related Task** link, which is only displayed if the requestor is referring to a specific task, launches the details of this task. The **Notes** tab page shows the details of the request, and comments entered by the employee who from whom the clarification request is sent and any previous processors. The **Attachments** tab page shows any attached documents.

2. **Answer, forward, or close the clarification request.**
   - To answer the clarification request, click **Reply**. On the **Notes** tab page under **Internal Comment**, you can enter any relevant information or comments. You can also add attachments on the **Attachments** tab page.
   - To assign the request to another person for processing, click **Forward**. In the **To** field, enter the employee ID or search for the employee using the value help.
   - You can track your clarification requests from the **Work** work center view of the **Home** work center. In the **Delegated Tasks** work center subview, from the **Show** dropdown list, choose **Forwarded by Me**.
Receiving Responses to Clarification Requests

The clarification request has the status **Clarified**.

1. To view the reply to your clarification request, open the details of the clarification or click **Edit**.
   - If you have further questions, you can use **Reply** to reply to the employee who provided the response.
   - To forward the clarification request to another user, under **Actions**, choose **Forward**.

   You can track your clarification requests from the **Work** work center view of the **Home** work center. In the **Delegated Tasks** work center subview, from the **Show** dropdown list, choose **Forwarded by Me**.

2. Complete or close the clarification request.
   - Under **Actions**, choose **Complete**. The system then closes the clarification request.
   - You can track closed clarification requests from the **Work** work center view of the **Home** work center. From the **Show** dropdown list, choose **Closed Items**.

   To close the screen without saving your changes, click **Close**.

See Also

Business Task Management

Working with Tasks, Notifications, and Alerts  [page 205]

5.3 Quality Code Catalogs View

5.3.1 Quality Code Catalogs Quick Guide

You can access the **Quality Code Catalogs** view in the **Quality Planning** work center.

A quality code is a unique, language-independent identifier of a particular quality issue. A quality code catalog is a structured hierarchy of quality codes, grouped according to common criteria, such as defect types, defect locations, defect causes, and corrective and preventive actions.

Quality codes can be assigned to inspection plans, which serve as the basis for quality inspections.

The **Quality Code Catalogs** view provides a central location for working with quality codes in the system. Organizing quality codes into catalogs allows you to uniformly define and manage quality-related issues. In this view you can:

- Search for and view all quality code catalogs in the system
- View and structure the quality code hierarchy within the catalogs
- Create, edit, translate, and delete quality code catalogs
- Change the status of quality code catalogs
- Create a new version of and set a validity period for a quality code catalog

You can edit a quality code catalog at any time. This view allows total control of all catalogs in the system, to ensure that your inspection processes are up-to-date at all times.
Business Background

Quality Code Catalogs

A quality code catalog is a structured hierarchy of quality codes. The quality codes within the catalogs are used to uniquely describe and group together quality issues and represent, for example, the various defects a product can have. You use these codes when recording results for an inspection. This helps you to manage and standardize results recording. Analyses and evaluations using quality codes allow you to identify and solve the main quality issues with a product and to make improvements.

For more information, see Quality Code Catalogs [page 212].

Inspection Process

Quality inspections are used to check whether or not a material meets predefined quality requirements. With quality inspections, your company can achieve the following:

- Increase competitiveness
  With an integrated and comprehensive approach to recording inspection results and analyzing defects, companies can continuously improve product and service quality.

- Ensure compliance
  Companies must meet customer demands (for example, they have to produce and deliver products according to agreed specifications) and must comply with legal requirements, such as GMP (Good Manufacturing Practice), and industry standards, such as ISO norms.

- Reduce costs
  An integrated quality assurance program helps companies avoid costs associated with transparency, rework, scrap, warranty, and product liability. Tools such as acceptance or adaptive sampling reduce costs for sample drawings and inspections.

- Increase efficiency
  Integration in other processes, such as production, enables the visualization and acceleration of processes and allows companies to react quickly to internal problems, legal requirements, and market demands.

You can access all functions related to inspections in the Quality Planning and Quality Control work centers and their views.

For more information, see Inspection Process [page 183].

Quality Assurance (Unplanned Inspections)

The Quality Assurance (Unplanned Inspections) business scenario enables you to check the quality of products on demand. It allows you to create inspections manually to complement, for example, goods receipts, production activities, or goods issues.

With this scenario, you can create, monitor, and analyze these inspections, record results, make quality decisions, and initiate corrective or preventive actions as necessary.

For more information, see Quality Assurance (Unplanned Inspections).

Tasks

Create a Quality Code Catalog

1. Select the Quality Code Catalogs view.
2. Click New, then choose Catalog to open the New Quality Code Catalog screen.
You can also open the **New Quality Code Catalog** screen by clicking **New Quality Code Catalog** under **Common Tasks**. It is also possible to create a version of an existing catalog by clicking **New** and then choosing **Catalog Version**. This allows you to create a new catalog based on an existing catalog, while keeping that existing catalog unchanged.

3. Enter the general data for the catalog under **General Data**. This includes the catalog ID, catalog name, and catalog description.

4. Specify the validity dates for the catalog in the **Valid From** and **Valid To** fields.

5. Assign quality codes and structure the new catalog.
   - To add a new code, click **Add Row** under **Catalog Structure**. To add a subordinate row to structure the catalog, select the parent code and click **Add Child Row**. There is no limit to the number of children you can add at each hierarchy level. Nor is there is a limit to the number of levels you can add to your hierarchy.
   - Select each code in the list and enter an ID, name, and category for each code in the **Details** section of the screen and, if required, you can also enter a description.

6. Optional: Once completed, click **Translate** to translate the new catalog into other languages.

7. To activate the catalog you have created, click **Change Status** and choose **Active**. Once the catalog has the status **Active**, you can no longer change back to the status **In Preparation**.

8. Click **Save** to save the new catalog to the system.

**Edit a Quality Code Catalog**

1. Select the **Quality Code Catalogs** view.
2. Select the row that represents the quality code catalog you want to edit on the initial screen of the view and click **Edit**.
3. If required, modify the general data, such as the catalog name and catalog description, under **General Data**.
4. In the **Valid From** and **Valid To** fields, you can change the validity dates for the catalog.
   - This is only possible if the status of the catalog is **In Preparation**. You cannot change the validity information once the catalog has been activated.
5. Assign quality codes and structure the catalog, as required.
   - To add a new code, click **Add Row** under **Catalog Structure**. To add a subordinate row to structure the catalog, select the parent code and click **Add Child Row**. There is no limit to the number of children you can add at each hierarchy level. Nor is there is a limit to the number of levels you can add to your hierarchy.
   - For each new code in the list, enter an ID, name, and category in the **Details** section of the screen and, if required, you can also enter a description.
6. Click **Change Status** and choose **Active** or **In Preparation** as required. Once the catalog has the status **Active**, you can no longer change back to the status **In Preparation**.
7. Click **Save** to save the updated catalog to the system.

**Export Business Data Using Microsoft Excel**

For more information about this task, see here [page 204].
Work with Tasks, Notifications, Alerts, and Clarification Requests

For more information about working with tasks, notifications, and alerts, see here [page 205].

For more information about working with clarification requests, see here [page 207].

5.3.2 Business Background

5.3.2.1 Quality Code Catalogs

Overview

A quality code catalog is a structured hierarchy of quality codes. The quality codes within the catalogs are used to uniquely describe and group together quality issues and represent, for example, the various defects a product can have. You use these codes when recording results for an inspection. This helps you to manage and standardize results recording. Analyses and evaluations using quality codes allow you to identify and solve the main quality issues with a product and to make improvements.

The main advantages of quality code catalogs are:

- Flexibility (several hierarchy levels and code categories possible)
- Multilingual capability (several translations possible)
- Versioning (can have several versions and validity periods)
- Authorization (access can be restricted to authorized users)
- Reusability (quality codes can be assigned to one or more inspection plans)

Quality code catalogs are created in the quality planning stage. You can assign quality codes to one or several inspection plans, as required and use them later on in the inspection process when recording results and analyzing defects. This assignment to inspection plans is not mandatory.

You define quality code catalogs in the Quality Code Catalogs view of the Quality Planning work center. To create or edit a quality code catalog, users must have this view assigned to them.

Catalog Structure and Use

Quality code catalogs can be structured hierarchically. Depending on the level of detail that is necessary to describe a quality-related issue, additional, more specific codes can be defined below the main codes. The number of code levels in the structure is unlimited. This means that the catalog hierarchy can be created to suit your company’s individual requirements.

In the simplest case, a quality code catalog can contain a flat list of codes. The following is a slightly more complex hierarchy, starting with the 'Defect Location' code category, and ending with a third level of codes of the 'Defect Types' code category:

Catalog Structure
Quality code catalogs can have the statuses *In Preparation* or *Active*. They can also have several versions and validity periods. Only active catalogs with the current version that are within the validity period can be used. Valid catalogs can be used to assign quality codes to an inspection plan. Quality codes in one catalog do not necessarily have to be specific to one inspection plan. One catalog can be valid for several inspection plans or you may choose to only have one catalog in use in your entire company. In the inspection plan, you can specify which of the codes in the catalog should be proposed for results recording – in results recording, you can use the proposed codes or call up additional codes, if required. It is not mandatory to assign the codes to an inspection plan – in this case, all codes are available, but none will be proposed.

**Two Inspection Plans Using Codes of the Same Catalog**
5.3.3 Tasks

5.3.3.1 Export Business Data Using Microsoft Excel®

Overview
You can export reports and worklists to Microsoft Excel® documents. You can use these documents for further analysis, and in some cases, edit and upload them to the solution.
You can export data from a report or from a worklist.

Prerequisites
- You have installed the latest Add-In for Microsoft Excel®. Depending on your solution set-up, you can do this from the:
  - Self Services Overview in the Home work center
  - Download Center in the Application and User Management work center
  - Download link that is available directly on the user interface
- The settings for your browser must be set correctly. You can review the information about computer settings by clicking Check My Computer Settings on the logon screen.
- You must be authorized to perform an export to Microsoft Excel®.

Procedure
1. Go to the screen with the data you want to export.
2. Depending on the type of data, choose one of these options:
   - For a report, you can either export a chart or a table. To do so, select the report, and click Switch to Chart or Switch to Table.
   - For a worklist, select the worklist and click Go.
3. Click Export, then choose To Microsoft Excel.
4. Optional: Personalizing your excel export
   1. To select the columns in your exported excel, do the following:
      a. In the title bar, click Personalize This screen
      b. In the side panel, select Display Settings.
      c. In the Display Settings dialog box, you can export all the columns in the view by selecting All in the Export Columns field
         - The default value for this field is Visible, which exports only the currently displayed columns.
   2. To select the language for your excel export, do the following
      a. In the Display Settings dialog box, set the Language Selection field to Show and click OK
      b. Click Save.
c. Click Export, then choose To Microsoft Excel®
d. Select a language in the dialog box that opens.

The column selection preference in this dialog box allows you to override the personalized setting. This selection is valid for the current export only.

5. Select the template in the dialog box that is displayed.

- If there is only one template that has the logged in language variant, then the export will be performed in the logged in language, and no user interaction is required.
- If there is only one template in the system for this export scenario, but the logged in language variant is not available, then export will be performed in the English language.
- If there is more than one template in the system for this export scenario, the Template List dialog box is displayed. In this dialog, you can select the Microsoft Excel template that you want to use for the export. The template will dictate how your exported data will be formatted. The Microsoft Excel version that is relevant for each template is displayed.

6. Click Download.

7. A message shows that you can open or save the file which contains the data that you have just exported from the solution. Click Open or Save depending on what you want to do with the exported data.

Depending on whether you click Open or Save, there are two possible results:
- If you click Open, a worksheet opens with the data in Microsoft Excel. The file has a temporary name, but it is not saved. You can use all the functions of Microsoft Excel to organize the data and to save that worksheet.
- If you click Save, a Save As dialog box opens. You can specify an appropriate file name and a location to save the exported Microsoft Excel file to. A message will inform you when the download has completed successfully.

You can later navigate to the location where you have saved the template and open it.

5.3.3.2 Working with Tasks, Notifications, and Alerts

Overview

Tasks, notifications, and alerts enable you to inform another user about a business document that may require checking, changes, or that may need to be completed. You can create tasks, notifications, alerts with reference to business task management items and business documents.

Tasks Created by the System

When the system creates a task, it displays as New in the relevant user’s worklist.

You see business task management items that are associated with the work center views and access rights to which you are assigned. You can execute the task by opening the task, clicking the link, or can access the related document by clicking Edit. You are then assigned as the processor of the task.

If a task is assigned to multiple persons responsible, it stays in the worklists of all persons responsible until it has been completed. The multiple persons responsible can see who has taken over the task for processing.

Statuses of Business Task Management (BTM) Items

Tasks can have the following statuses: New, In Progress, Completed, and Canceled.
Notifications can have the following statuses: New, In Progress, Acknowledged, Completed, and Canceled. Alerts can have the following statuses: New, In Progress, Completed, and Canceled.

**Manually Creating Tasks, Notifications, and Alerts**

1. Select the relevant business task management item or business document, click [New](#) and choose the corresponding option: Task, Notification, or Alert.
2. Fill in the mandatory fields.
   - In the To field, enter the employee ID or search for the employee using the value help. Note that you can only enter or select employees who have access rights to the related business document for which you create the task, notification, or alert.
   - For tasks, enter a date by when you expect a response in the Due Date field.
   - For notifications, enter a date by when the notification is to expire in the Expiry Date field.
   - For alerts, you cannot enter a due date since alerts require immediate action.
   - In the Subject field, enter the subject for the task, notification, or alert. The subject is displayed in the recipient’s work inbox.
   - In the Priority field, set the priority to Low, Medium, High or Very High. For alerts, the priority is set by default to the highest available priority, for example, Very High. The default cannot be changed.

   You can enter the request details on the **Notes** tab page and add relevant attachments on the **Attachments** tab page.

3. Send or cancel the task, notification, or alert.
   - To send the task, notification, or alert, click [Save and Close](#).
   - To close the screen without saving your changes, click [Close](#).

   You can track your tasks, notifications, and alerts from the **Work** work center view of the **Home** work center. In the **Delegated Tasks** work center view, from the **Show** dropdown list, choose **Created by Me**.

**Receiving Tasks, Notifications, and Alerts**

You receive manually created tasks, notifications, and alerts in the **Work** work center view of the **Home** work center. In the **Inbox** work center subview, from the **Show** dropdown list, choose **Open Items**. You can also choose **Open Tasks**, **Open Notifications**, or **Open Alerts** accordingly.

**Processing Tasks, Notifications, and Alerts**

To view the related business document and to make any relevant changes after you have read the detailed instructions in the **Description** field, click the subject link of the business task management item, or click [Edit](#). Once you start processing a task, notification, or alert, the status of the task, notification, or alert is set to In Progress.

**Tracking Manually Created Tasks, Notifications, and Alerts**

You can track the progress of business task management items that you have created from the **Work** work center view of the **Home** work center. In the **Delegated Tasks** work center view, from the **Show** dropdown list, choose **Created by Me**.

You can also view all completed tasks from the **Work** work center view of the **Home** work center. From the **Show** dropdown list, choose **Closed Items**.
Generic Task Details

To view the details of the task, choose the Open Details option from the context menu or from Actions. The details of the task include information, such as the person responsible, process, status, and so on.

The Related Document link launches the screen of the related business document.

The Notes tab page shows the details of the item, and comments entered by the employee who from whom the item is sent and any previous processors. The Attachments tab page shows any attached documents.

You can also add notes and attachments.

Depending on the task, the following actions are available.

- Change Priority
- Forward
  - Assigns the item to another person for processing
  - Note that you can only forward tasks to employees who have access rights to the related business document of the task, notification, or alert.
- Complete
- Acknowledge
  - Notifications are acknowledged rather than completed.
- Cancel

If you require further information before you can process the item, you can create a clarification request by clicking New, and then choosing Clarification Request.

See Also

Business Task Management
Working with Clarification Requests  [page 207]

5.3.3.3 Working with Clarification Requests

Overview

Clarification requests enable you to request information about business task management items or business documents from another user. You can create clarification requests with reference to business task management items and business documents.

Note that creating a clarification request does not affect the flow of the business process. For example, if you create a clarification request about a purchase order, the clarification request does not prevent the purchase order from being processed.

Recipients can open clarification requests regardless of whether they have access to the related business document or task.

When you create a clarification request, it displays as New in the relevant user’s worklist. When the recipient processes the clarification request, the status of clarification request changes to In Clarification.

Clarification requests can have the following statuses: New, In Clarification, Clarified, and Completed.
Creating Clarification Requests

1. Select the relevant business task management item or business document, click [New] and choose Clarification Request.
2. Fill in the mandatory fields.
   - In the To field, enter the employee ID or search for the employee using the value help.
   - In the Due Date field, enter a date by when you expect a response. The default is three days from the current date.
   - In the Subject field, enter the subject for the clarification request. The subject is displayed in the recipient’s work inbox. By default, the Subject field is either filled with the name of the business task management item for which you require clarification, or is blank if the clarification request is for a business document. However, you can change the default.
   - In the Priority field, set the priority to Low, Medium, High or Very High. By default, the priority is set to Medium.

You can enter the request details on the Notes tab page and add relevant attachments on the Attachments tab page.

3. Send or cancel the clarification request.
   - To send the clarification request, click Save and Close.
   - To close the screen without saving your changes, click Close.

You can track your clarification requests from the Work work center view of the Home work center. In the Delegated Tasks work center subview, from the Show dropdown list, choose Created by Me.

Responding to Clarification Requests

You receive clarification requests in the Work work center view of the Home work center. In the Inbox work center subview, from the Show dropdown list, choose either Open Items or Open Clarifications.

Once you start processing a clarification request, the status of the clarification is set to In Clarification.

1. To begin processing the clarification request, open the details of the clarification or click Edit.
   - The Related Document link launches the screen of the related business document. The Related Task link, which is only displayed if the requestor is referring to a specific task, launches the details of this task.
   - The Notes tab page shows the details of the request, and comments entered by the employee who from whom the clarification request is sent and any previous processors. The Attachments tab page shows any attached documents.

2. Answer, forward, or close the clarification request.
   - To answer the clarification request, click Reply.
     - On the Notes tab page under Internal Comment, you can enter any relevant information or comments.
     - You can also add attachments on the Attachments tab page.
   - To assign the request to another person for processing, click Forward.
     - In the To field, enter the employee ID or search for the employee using the value help.
     - You can track your clarification requests from the Work work center view of the Home work center. In the Delegated Tasks work center subview, from the Show dropdown list, choose Forwarded by Me.
   - To close the screen without saving your changes, click Close.

Receiving Responses to Clarification Requests

The clarification request has the status Clarified.

1. To view the reply to your clarification request, open the details of the clarification or click Edit.
If you have further questions, you can use Reply to reply to the employee who provided the response. To forward the clarification request to another user, under Actions, choose Forward.

You can track your clarification requests from the Work work center view of the Home work center. In the Delegated Tasks work center subview, from the Show dropdown list, choose Forwarded by Me.

2. Complete or close the clarification request.
   - Under Actions, choose Complete. The system then closes the clarification request.
     You can track closed clarification requests from the Work work center view of the Home work center. From the Show dropdown list, choose Closed Items.
   - To close the screen without saving your changes, click Close.

See Also

Business Task Management
Working with Tasks, Notifications, and Alerts  [page 205]

5.4 Quality Documents Quick Guide

The Quality Documents view in the Quality Planning work center allows you to store and process documents. You can upload specific quality documents, such as quality assurance agreements, technical delivery terms, inspection instructions, drawings or pictures stored in different file types, to share them with interested parties. Version tracking and a check in/check out policy ensure that the files are always up to date, and searching and linking functions allow you to easily find and collaborate with colleagues.

The typical use of the Quality Documents view is described in the steps below:

1. A new document is uploaded to the Quality Documents view. To enable collaboration with colleagues and to track the version history of the document, the person uploading the document selects Versioning Enabled from the document properties.
2. The document is shared with colleagues using link to the document from.
3. To edit the document, a colleague first checks out the document by clicking Check Out.
4. After editing and saving the document, the colleague checks in the new version of the document by clicking Check In and uploading the new version of the document.

Business Background

Quality Documents

You use Quality Documents to upload and store and process documents, pictures, or other file types directly in your work center. Uploaded files can be viewed, edited, and deleted by anyone allowed to access the work center.

For more, see Quality Documents  [page 221].
Tasks

Upload a Document

1. Click [New].
2. Click [Browse] and locate the document you wish to upload.
3. Enter the Document Name. To enable versioning of the file, select the Versioning Enabled checkbox.
4. Enter a Detailed Description or any additional information that is required, such as the Author, the Document Language, or any relevant Keywords.
5. Click [Save and Close].

Edit a Document

1. If versioning is enabled for the document you wish to edit, select the document and click [Check Out]. If versioning is not enabled, select the document and click [Download].

   To edit only the document properties, such as the Detailed Description, Author, Document Language, or Keywords, click [Edit Properties].

2. The system prompts you to download the document for editing on your local computer. Click [Save] to save the document to your computer for editing.

   To edit the document, you must have the necessary editing software installed on your local computer.

3. When you have finished editing the document, save your changes, select the document you have checked out, and click [Check In].
4. Click [Browse] and locate the document on your local computer. If versioning is enabled for this document, select the Version Type based on the scope of your revisions. If your changes are major and significant, select Major Revision. This revision will then be represented as an increase in the first number of the version number, for example, Version 2.0. For minor changes, select Minor Revision. Minor changes are represented in the second number of the version number, for example, version 2.1.
5. Click [OK] to save your changes and upload the new version of the document.

Search for a Document

1. Enter a search term in the Find field and click [Go].

   You can find documents using the Group By criteria. This option allows you to quickly display a list of documents sorted by various basic criteria, such as the file type, as well as by keywords that you can define. You can create keywords for documents by editing the document properties.

   When you enter a search term, the system searches both the document titles and document content for the entered term and displays the results in the list.
2. To use the advanced search option, choose Advanced. You can enter search criteria such as the Author, Changed On (date), Document Language, or specific Keywords.

5.5 Business Background

5.5.1 Quality Documents

Overview

You use Quality Documents to upload and store and process documents, pictures, or other file types directly in your work center. Uploaded files can be viewed, edited, and deleted by anyone allowed to access the work center. If you want to collaborate with your colleagues on the document, or if you wish to store the history of the changes to a file, select Versioning Enabled in the document properties. When versioning is enabled, a major revision is represented by an increase of the first digit in the version number of the document. Within a major version of a document, there can be several minor versions, which are represented by the second digit in the version number. For example, the first draft of a product specification would be version 1.0. Minor changes to this document made by colleagues while the product is still in the planning stages would be marked as versions 1.1, 1.2, and so on. Major changes, such as corrections after production has started, justify a new version number; for example, 2.0.