PUBLIC

How to Configure and Use MRP

Applicable Release:

SAP Business One 8.8

All Countries

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Purpose

Material Requirements Planning (MRP) enables you to plan material requirements for a manufacturing or procurement process.

MRP calculates gross requirements for the highest Bill of Materials (BOM) level based on sales orders, production orders, forecasts, and so on. It calculates gross requirements at the lowest BOM levels by carrying down net parent demands through the BOM structure. Dependent levels may have their own requirements based on sales orders and forecasts.

The results of the MRP run are recommendations that fulfill gross requirements by taking into consideration the existing inventory levels, existing purchase orders, and production orders. The MRP run also takes into account defined planning rules for *Order Multiple*, *Order Interval*, and *Minimum Order Quantity*.

Recommendations are back-scheduled by the defined lead time to arrive at the requirement dates for their own components.

The MRP Process in SAP Business One
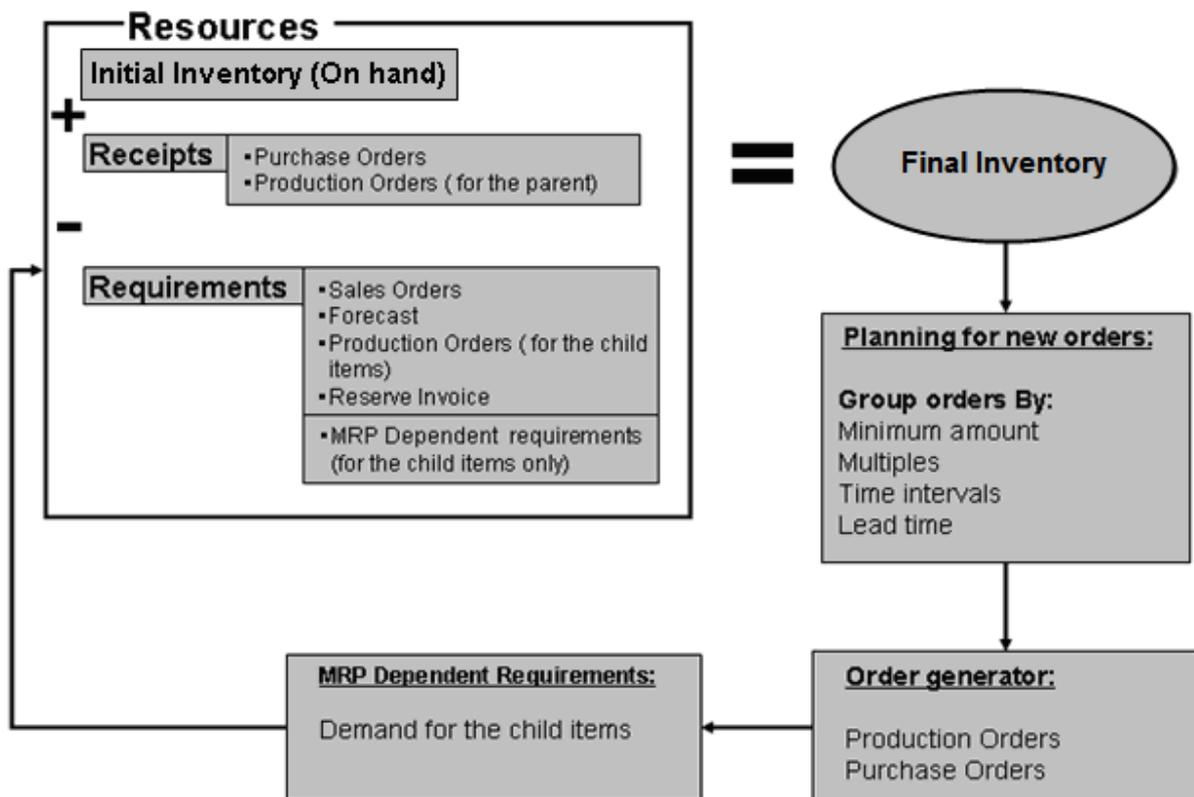
SAP Business One lets you divide the MRP run into equal periods of time (for example, weeks or days). The process always starts with the parent item in the highest level and ends with the last child item.

Procedure

For every given time period, MRP performs the planning process in the order described below:

Calculations for the Parent Item

1. MRP calculates the quantity required to continue the sales of the final product without any delays, considering all the resources:
   - o   Initial inventory (quantity on hand)
   - o   Receipts: purchase orders, production orders (for the parent item)

   SAP Business One then subtracts the following requirements:
   - o   Sales order
   - o   Forecast
   - o   Production order (for the child items)
   - o   A/R reserve invoice

2. SAP Business One uses the planning policy to make the production or purchase order recommendations. The planning policy is based on:

   o Lead time

   o Minimum amount

   o Multiples

   o Time intervals

   Note

   All the above parameters are defined in the *Item Master Data* window. For more information, see Defining Initial Settings.

3. After the calculation is completed, SAP Business One issues recommendations to create production orders for the parent item.

4. To complete the production orders for the parent item, quantities of the child items that comprise the BOM are needed. SAP Business One calculates the quantity of the child items, considering the MRP-dependent requirements. SAP Business One then recommends the creation of purchase orders or production orders for the child items required to produce the parent item.

Calculations for the Child Item

1. SAP Business One calculates the quantity required to continue the sales of the final product without any delays, considering the following resources:

   o Initial inventory (on hand quantity)

   o Receipts (similar to the calculation for the parent item)

   SAP Business One then subtracts the following requirements:

   o All the requirements specified above (similar to the calculation for the parent item)

   o MRP Dependent Requirement – The quantities of child items required to complete the production orders recommended by MRP for the parent item (requirements for the child items calculated during the MRP run)

2. SAP Business One uses the planning policy to make the production or purchase order recommendations, similar to the calculation for the parent item.

   After the calculation is completed, SAP Business One issues recommendations for production orders or purchase orders for the child items.

   Note

   ▪ The process continues in the same manner if the child item has child items of its own and ends at the lowest level of the BOM.

   ▪ A *Disassembly Production Order* appears in the requirements for the parent item and in the receipts for the child item.

   Example

   ▪ 1 piece of the parent item BOM is assembled from 2 pieces of a child item.

   ▪ 1 piece of the child item is assembled from 2 pieces of a grandchild item.

   After the MRP run, SAP Business One issues a production order recommendation for 2 pieces of the parent item. In addition, SAP Business One adds the dependent requirement of 4 pieces for the child item and 8 pieces of the grandchild item.

Defining Initial Settings

To start using the MRP module, you need to make several initial definitions.

Setting the Item Master Data Window

Procedure

1. From the SAP Business One *Main Menu*, choose *Inventory → Item Master Data → Planning Data* tab.
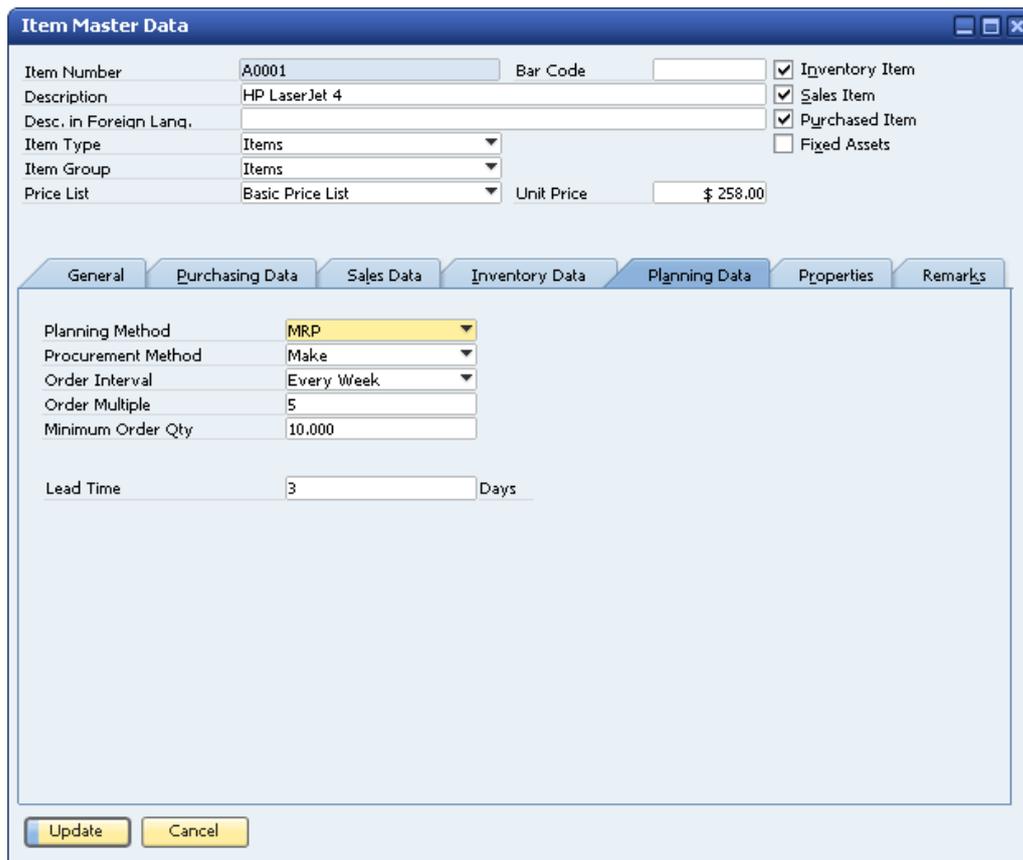
2. Specify the following information related to MRP and production:

Field	Activity/Description	Comments
Planning Method	Determine which items to include in the MRP process: • *MRP* Select this option to include the item in the MRP process. • *None* (default option) Select this option for items that should not be a part of the MRP process. These items do not appear in any relevant reports.	

Field	Activity/Description	Comments
Procurement Method	Select the acquisition method for the MRP recommendations. • *Make* Select this option if you want MRP to generate recommendations for production orders. • *Buy* Select this option to generate MRP recommendations for purchase orders. This option is suitable mainly for the child items in the lowest level of the BOM or for items that are not part of a BOM.	💡 **Note** You need to define all parent items, regardless of their type, with the *Make* procurement method to calculate the requirements for their child items for the MRP run. For sales or assembly BOMs, SAP Business One does not issue an actual production order for the parent item. It issues only the requirements for its child items (either production or purchase orders, according to the procurement method of the child items). 🔲 **Example** See Appendix: Example: Procurement Method.
Order Interval	Select one of the existing values to define time intervals between different orders. To create a new order interval, select *Define New*. For more details, see Inventory Cycles – Setup Window.	The *Order Interval* field represents the time interval between one order and another for the MRP requirements calculations. 🔲 **Example** If a weekly interval is chosen, MRP issues the necessary orders no more than once a week, grouping all of the recommendations for a current week into one order.
Order Multiple	Set a multiplication factor for ordering the item.	🔲 **Example** If you enter *5* in this field and 14 items are required, MRP recommends ordering 15 items (3X5=15). If 18 items are required, the recommendation is to order 20 items (4X5).
Minimum Order Qty	Specify a minimum quantity for ordering items by MRP.	
Lead Time	Specify the number of days it takes to produce or obtain an item.	🔲 **Example** If 3 days are required to produce a certain parent item, MRP issues a purchase or production order for the child items with a due date that is 3 days earlier than the due date of producing the parent item.

> ### 💡 **Note**
>
> You can also define *Planning Data* per *Item Group* in the *Item Groups – Setup* window
> (*Administration → Setup → Inventory → Item Groups → General* tab).

3. Open the *General* tab in the *Item Master Data* window.

4. If you want to define the item as a bill of materials, which is not a production type, select the
   Phantom Item checkbox.

   A phantom item is similar to an assembly bill of materials; therefore, it cannot be defined as an
   inventory item and it is not included in the *Order Recommendation* (see Creating Order
   Recommendations).

5. To save your changes, choose the *Update* button.

Inventory Cycles – Setup Window

You use the *Inventory Cycles – Setup* window to define time intervals between different orders.

Procedure

1. From the SAP Business One *Main Menu*, choose *Inventory → Item Master Data → Planning
   Data* tab.

2. In the *Order Interval* dropdown list, to open the *Inventory Cycles – Setup* window, choose *Define
   New*.
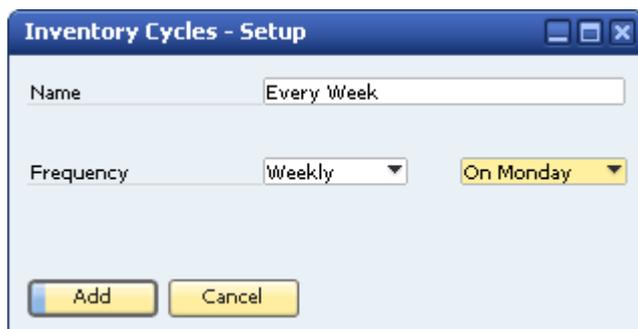
3. Specify the following information:

Field	Activity/Description
Name	Enter a name for the interval.

Field	Activity/Description
Frequency	Set the frequency of issuing orders:
	• *Weekly*
	Select this option to define a weekly interval. This changes the field on the right to a dropdown list containing the days of the week. Select the required day on which you would like to issue orders.
	• *Monthly*
	Select this option to define a monthly interval. This changes the field on the right to a dropdown list containing the days in the month. Select the required day in the month on which you would like to issue orders.
	• *Every X days*
	Select this option to define an interval according to a certain number of days. In this case, define the number of days in the field on the right.

4. To add the *Order Interval* to the system, choose the *Add* button.

Defining Warehouses

Procedure

1. From the SAP Business One *Main Menu*, choose *Administration → Setup → Inventory → Warehouses*.

    The *Warehouses – Setup* window opens.

2. To define a warehouse as the default in the MRP wizard, select the *Nettable* checkbox.

   If the checkbox is deselected, the warehouse appears in the list of warehouses in the MRP wizard but MRP does not select it automatically.

3. To save your changes, choose the *Add* button.

   ### 💡 Note

   Drop-ship warehouses cannot be defined as *Nettable* and, thus, cannot be part of the MRP run.

Defining Forecasts

In many cases, production companies receive sales orders at short notice. However, the production process might take a great deal of time. As a result, it is common for these companies to plan their purchasing and production in advance, even before they receive actual sales orders. This is the goal of a forecast. A forecast is designed to serve as an additional requirement. Therefore, the goods are produced based on the forecast, and when the actual sales orders are received, the company is able to supply the order at short notice.

💡 Note

Although there is no restriction on the number of forecasts you can define, you can select only one forecast for a single MRP scenario. For more information, see Using the MRP Wizard.

Procedure

1. From the SAP Business One *Main Menu*, choose *MRP → Forecasts*.

   The *Forecasts* window opens.

Forecasts								
Forecast Code	Summer/Fall 2009							
Forecast Name	Summer/Fall 2009							
Start Date	06/01/09	End Date	11/30/09		View	Monthly		
#	Item No.	Item Description	Jun.	Jul.	Aug.	Sep.	Oct.	
1	A0001	HP LaserJet 4	20	25	40	30	20	
2								

Add   Cancel

2. Specify the following information related to the forecast:

Field	Activity/Description	Comments
Forecast Code	Specify a unique code for the forecast.	
Forecast Name	Specify a relevant description for your forecast.	
Start Date	Specify a start date for the forecast horizon.	Note that the date you specify depends on the value selected in the *View* field. **Example** • If you enter July 15, 2009 as the start date and the selected view is *Monthly*, SAP Business One changes the date automatically to the beginning of the month, July 1, 2009. • If you enter August 15, 2009 as the *End Date* and the selected view is *Monthly*, SAP Business One automatically moves the end date to the end of the month.
End Date	Specify an end date for the forecast horizon.	
View	Select the time period for managing the forecast. Click the dropdown list and select *Daily, Weekly,* or *Monthly*. The columns in the table change respectively according to the selected option. • *Daily* Select this option to divide the forecast into days. When you select this option, SAP Business One displays a column for each day in the selected date range. • *Weekly* Select this option to divide the forecast into weeks. If you select this option, SAP Business One displays the week number as the column's name (52 weeks in a year). • *Monthly* Select this option to divide the forecast into months. When you select this option, SAP Business One displays the name of the month as the column's name.	To select a *Weekly* view, you should define holidays under *Administration → System Initialization → Company Details → Accounting Data → Holidays.* **Note** You cannot update the view after adding the forecast.

Note

Regardless of the selected view, MRP considers the requirements to the first day of the period. For example, if you select a *Weekly* view, week number 23 starts on June 1, 2009 and ends on June 7, 2009, according to the *Holidays* definition of the company. Therefore, the forecast relates to June 1, 2009, which is the beginning of the given week.

3. To change the format for displaying the date in the forecast table, click (*Form Settings*) → *Document* tab → *General* tab. Use the *Columns Titles Style* field to choose between two formats:

   o *Long* – select this option to include the year in the column title.

   o *Abbreviated* – select this option to display only the day, week number, or month.

4. In the *Item No.* column, select the item numbers for which you would like to define forecasts. The description for an item is automatically displayed in the *Item Description* column, according to the definitions in the *Item Master Data* window.

5. Specify the quantities for every period in the items' sales units. You can define *Sales Units* under *Inventory* → *Item Master Data* → *Sales Data* tab → *Sales UoM*.

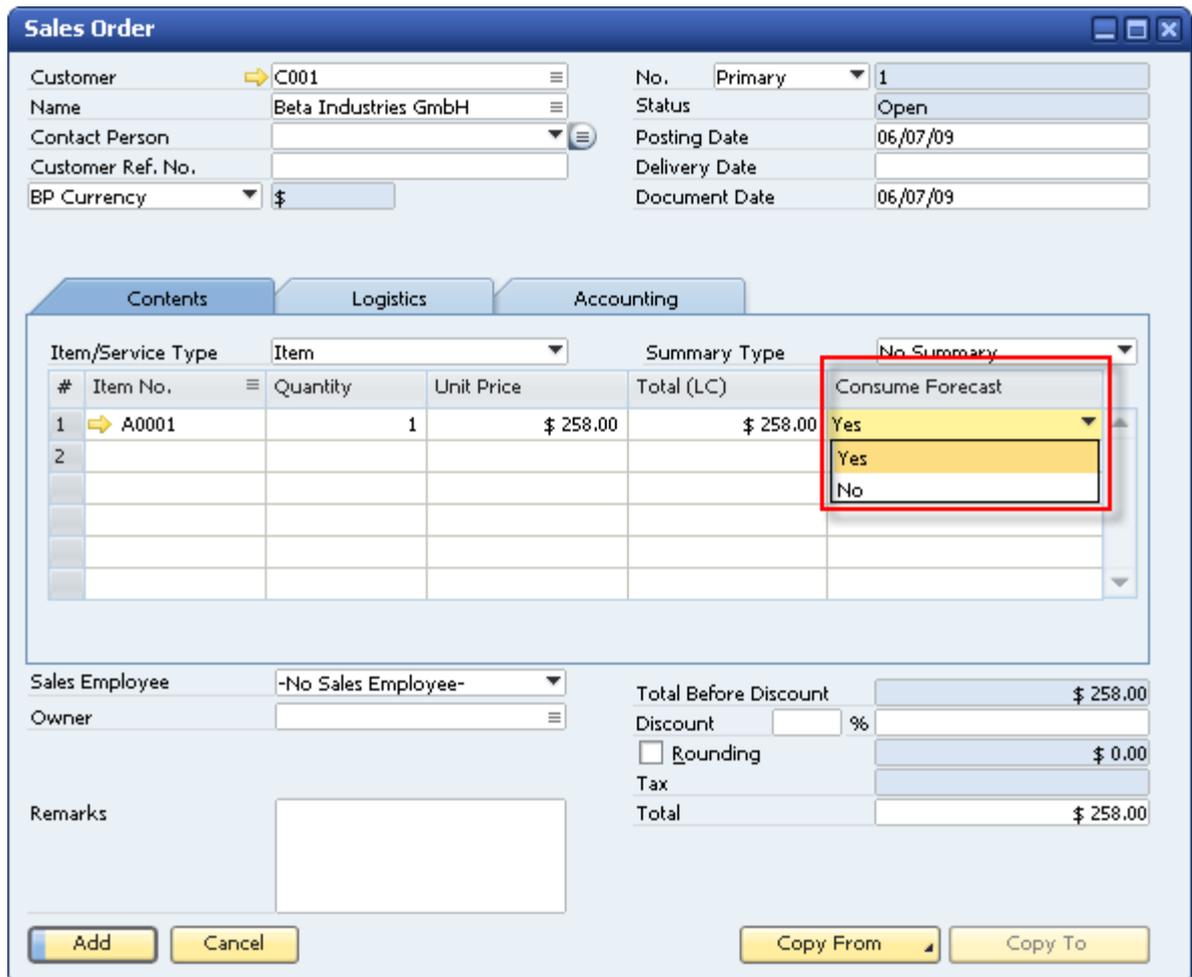6. To save the forecast changes, choose the *Add* button.

Note

You can display additional fields by clicking (*Form Settings*) in the toolbar.

Setting Sales Orders

MRP considers the forecast within the MRP horizon, checking whether sales orders already exist in the forecast according to the method specified on the *General Settings Inventory* tab. For information, see Configuring General Settings – Inventory Tab. MRP presents forecast requirements only for quantities that have not yet been ordered; only the net forecast quantity is added to the requirements.

Procedure

1. To determine whether existing sales orders are reduced from the forecast, you need to open the *Sales Order* window. From the SAP Business One *Main Menu*, choose *Sales - A/R → Sales Order.*

2. To display the *Consume Forecast* field, click (*Form Settings*).

3. Determine whether the forecast is 'consumed' by the *Sales Order* according to your selection In the *Consume Forecast* field:

   o *Yes* – reduces the quantity specified in the sales order from the forecast.

   o *No* – prompts MRP to consider the sales order as an additional requirement.

4. To add the document to the system, choose the *Add* button.

    ### 💡 Note

    - You can also update this field after adding the document, but <u>only</u> if the row was not copied to another document.

    - You can determine a default value for the *Consume Forecast* field using the procedure in <u>Configuring General Settings – Inventory Tab</u>.

Configuring General Settings – Inventory Tab

1. From the SAP Business One *Main Menu*, choose *Administration → System Initialization → General Settings → Inventory* tab → *Planning* tab.
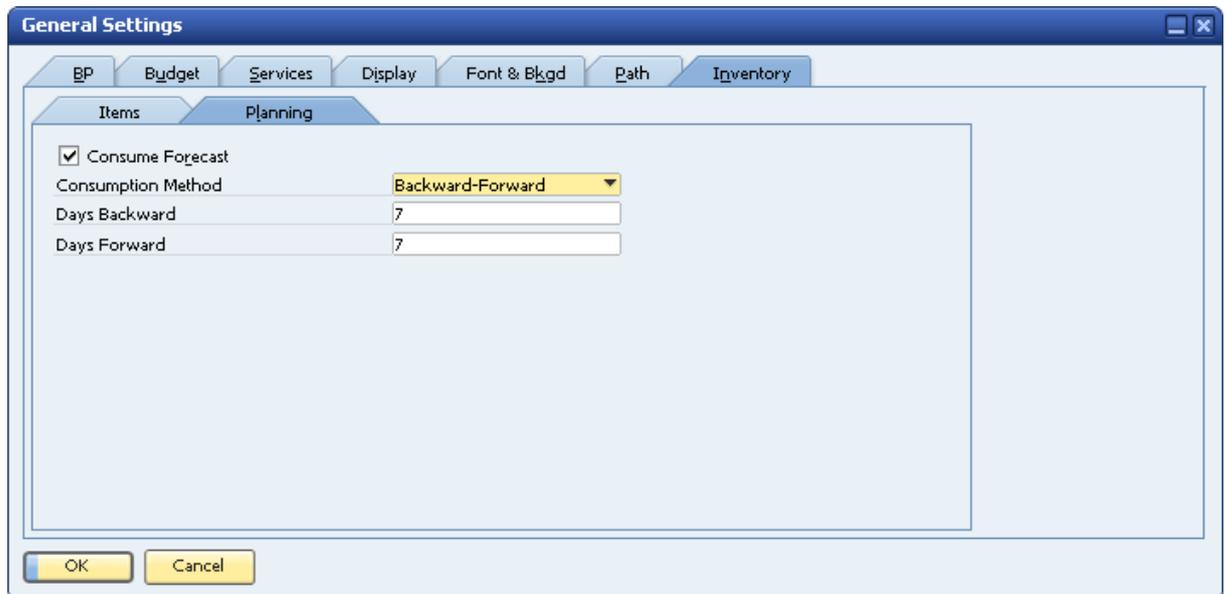
2. Specify the following data:

Field	Activity/Description	Comments
Consume Forecast	Select this checkbox to set the value *Yes* as the default value in the *Consume Forecast* field in all your *Sales Orders*.	

Field	Activity/Description	Comments
Consumption Method	To take quantities of items sold in sales orders into account and to ensure that they are not included in planned requirements, SAP Business One searches for existing forecasts that are closest to the sales order due date. Choose between two available methods of forecast consumption: • *Backward- Forward* First, SAP Business One searches previous periods of time up to the first day of the required range (as defined in the *Days Backward* field). If no forecast is found (or the forecast that is found is insufficient), SAP Business One searches ahead starting from the sales order due date. • *Forward- Backward* First, SAP Business One searches ahead starting from the sales order due date up to the last day of the required range (as defined in the *Days Forward* field). If no forecast is found (or the forecast that is found is insufficient), SAP Business One searches backward starting from the sales order due date.	**Example** See Appendix: Example: Consumption Method.
Days Backward	Specify the maximum number of days for SAP Business One to search backward for a forecast, to take into account quantities of items sold in sales orders, so as to ensure they are not included in planned requirements.	
Days Forward	Specify the maximum number of days for SAP Business One to search forward for a forecast, to take into account quantities of items sold in sales orders, so as to ensure that they are not included in planned requirements.	

3. To save your changes, choose the *Update* button.

Using the MRP Wizard

The MRP wizard guides you through the process of defining new MRP scenarios and analyzing the MRP results. Afterwards, SAP Business One generates and displays the MRP recommendations.

MRP Wizard Introduction Window

Procedure

1. From the SAP Business One *Main Menu*, choose *MRP → MRP Wizard.*

   The *MRP Wizard* window opens.

2. Choose the *Next* button.

Step 1 – Select a New or Existing Scenario Window

The *MRP Scenario* is a set of parameters defined by the user which are applied during the MRP run. You can define several MRP scenarios for each company, but only one scenario can be used for each MRP run (MRP calculation of the production or purchase orders).

In the *Select New or Existing Scenario* window, select an existing MRP scenario or add a new scenario.

Procedure

1. To add a new scenario, select *Create New Scenario*. When you choose this option, two new fields appear:

   o *Scenario Name* – Specify a name for the new scenario. The name must be unique.

   o *Description* – Specify a description for the scenario.

   Note

   If no scenarios have been previously defined, the window opens in the *Create New Scenario* mode by default.

2. To include an existing scenario from the list, choose *Select Existing Scenario*. When you choose this option, a table appears that contains all the existing scenarios.

3. The last scenario used is highlighted by default. To choose a different scenario, click the relevant row. The following information appears:

Field	Activity/Description
MRP Scenario Name	Displays the name of the MRP Scenario.
Description	Displays the description of the MRP scenario.
Start Date	Displays the first day of the first period of the scenario.
End Date	Displays the last day of the last period of the scenario.

4. To execute the MRP run skipping the next steps, choose the *Run* button. This option is active only when you choose an existing scenario.
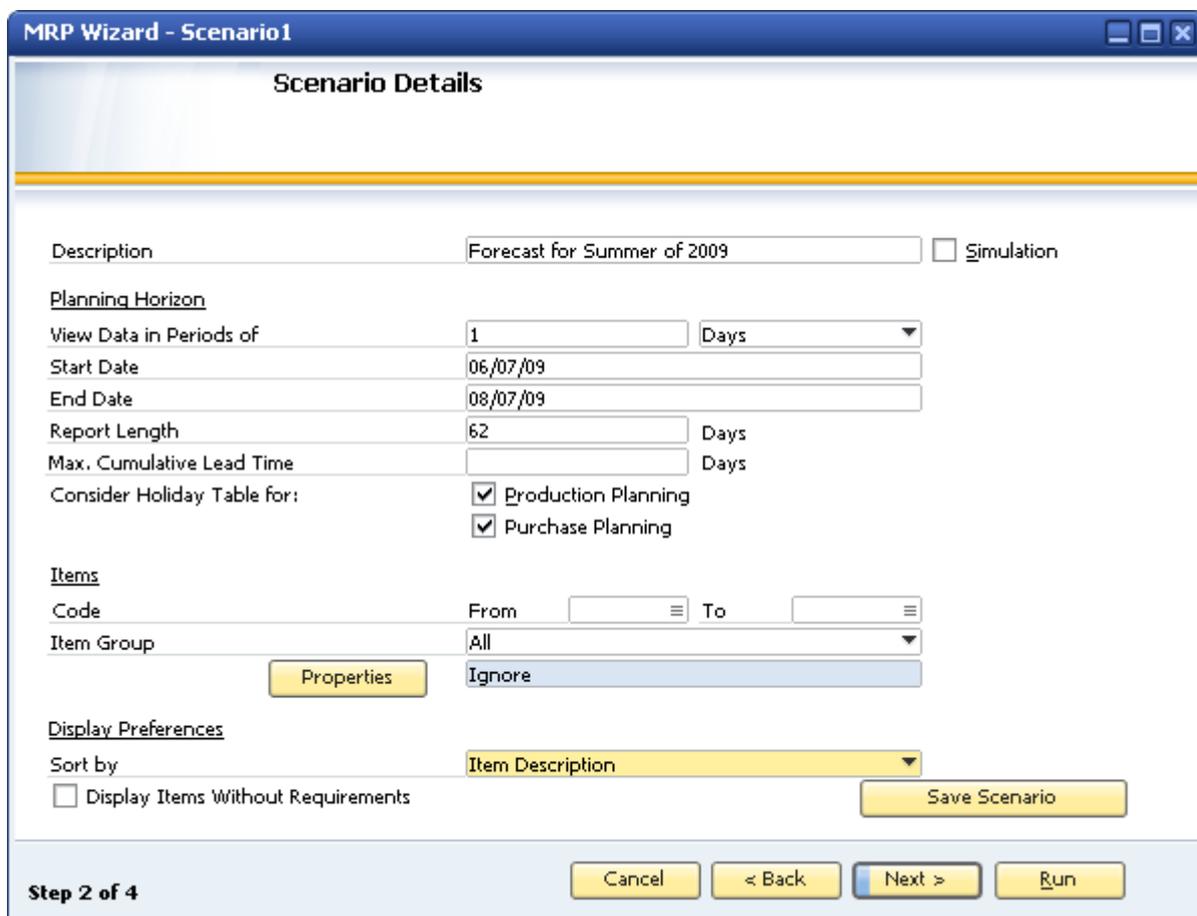
    > 💡 **Note**
    >
    > You cannot change the name of an existing scenario, but you can change its description in the next window. You can reuse the name if you delete the MRP scenario.
    >
    > To delete an existing scenario, select the scenario and from the menu bar and choose *Data → Remove.*

5. To move on to the next step, choose the *Next* button; To go back to the previous step, choose the *Back* button.

Step 2 – Scenario Details Window

In the *Scenario Details* window, you specify all the necessary parameters for the MRP run.

Procedure

1. Describe the MRP scenario.

    You can use the current description or change it.

2. To define the scenario as a simulation scenario, select the *Simulation* checkbox.

    You cannot save simulation scenario recommendations and release them.

3. Set the *Planning Horizon* – the time period for the MRP run – from the first day of the MRP start period until the last day of the MRP end period. Specify the following information:

Field	Activity/Description	Comments
View Data in Periods of	Define the length of each period, displayed in the *MRP Results* window, in weeks or in days, depending on the selected option. **Example** If the value of the field is 4 weeks, then each period in the MRP run represents 4 calendar weeks.	If you choose to group into period lengths other than 1 day, SAP Business One performs the MRP calculation on the first day of each period. MRP groups all the existing data for that period (receipts, requirements) in the first day. For weekly periods, the first day of the week is defined according to the holiday definition of the company. **Example** Period of 1 week is defined. A certain week (week number 23) starts on June 1, 2009 and ends on June 7, 2009, according to the holiday definition of the company. MRP performs the calculation for the entire week as if all of the business activity happened on June 1, 2009, which is the beginning of the given week.
Start Date	Specify the first day of the first period. When you use week periods, if the selected date is in the middle of the week, SAP Business One shifts it back to the first day of the week. MRP considers all the receipts and requirements that have a *Due Date* from the *Start Date* and later.	The *Start Date* must be the current date or a date in the past. You <u>cannot</u> specify future dates.
End Date	Specify the last day of the last period. When using week periods MRP shifts the date forward to the last day of the week. MRP considers all the receipts and requirements that have a *Due Date* no later than the *End Date* of the MRP run.	
Report Length	The field is calculated automatically when the start date and the end date are specified. It represents the number of periods – days or weeks respectively.	When the value of the field is changed manually, MRP recalculates the entry in the *End Date* field.

Field	Activity/Description	Comments
Max. Cumulative Lead Time	An additional time interval used to extend the time horizon after the MRP run end date for the MRP calculation. The *Max. Cumulative Lead Time* period includes the MRP-dependent requirements for the child items in the MRP run date range. The parent item's due date must fall in the range of the maximum cumulative lead time, and the MRP requirement for its child items falls in the range of the MRP horizon.	If you do not specify the *Max. Cumulative Lead Time*, MRP does not consider these requirements for the MRP run. **Example** See Appendix: Example: Maximum Cumulative Lead Time.
Consider Holiday Table for Production Planning	Select this checkbox to let MRP consider the holidays and weekends as defined in the holiday table. MRP increases the lead time accordingly for the production process. **Example** The *Due Date* of the production order for the parent item is July 20, 2009. In the *Item Master Data*, a 2-day lead time is defined. According to the holidays definition, the weekend falls on (July 18-19, 2009). • The checkbox is deselected – the MRP requirements for the child item are issued with a due date of July 18, 2009. • The checkbox is selected – the MRP requirements for the child item are issued with a due date of July 16, 2009.	SAP Business One selects this checkbox by default.
Consider Holiday Table for Purchasing Planning	Select this checkbox to consider the holidays and weekends as defined in the holidays table. MRP increases the lead time for the purchasing process accordingly. **Example** If the lead time of a certain purchasing item is 4 days and there are two weekend days in this period, MRP extends the lead time by 2 additional days.	This checkbox is deselected by default.

To choose items for the MRP run, specify the following information:

Field/Button	Activity/Description
Code From, To	Select a range of items for the MRP report. Only the items marked as MRP items in the *Item Master Data* are available for selection. When you select a parent item, MRP automatically includes all its child items in the report.
Item Group	Select the item group to be included in the MRP run.
Properties	Choose this button to open the *Properties* window. Select the properties to be included in the MRP run.

4. Set the *Display Preferences* for the MRP run. Specify the following information:

Field	Activity/Description
Sort by	This field defines the sorting criteria for the MRP Report. From the dropdown list, choose one of four available sorting methods: • *Assembly Sequence* – Sorts the report from the highest level of the BOM to the lowest level. **Example** See Example of Sort by Assembly Sequence. • *Item Number* – Sorts the report by the item number. • *Item Description* – Sorts the report by the item description. • *Item Group* – Sorts the report by the item group.
Display Items Without Requirements	Select this checkbox to display items without actual requirements after the MRP run. Items without requirements are items that, during the entire MRP horizon, have a sufficient quantity and there is no need to create purchase or production orders for them.

5. After you define all the necessary parameters or change existing ones, to save your selection, choose the *Save Scenario* button.

   You can use a saved scenario in other MRP runs.

6. To execute the report, choose the *Run* button, skipping the *Data Source* step.

7. To move on to the next step, choose the *Next* button; to go to the previous step, choose the *Back* button.

## Example of Sort by Assembly Sequence

In this example, three product trees are included. The low-level code 0 represents the finished goods, and the low-level codes 1, 2 and 3 represent subassemblies or raw materials.

Low Level Code	BOM 1	BOM 2	BOM 3
0	A	F	X
1	B	E	
2	C		
3	D		

When you select the *Sort by Assembly Sequence* option, the sort is carried out according to the low-level code, with the result as follows: A, F, X, B, E, C, and D.

Step 3 – Data Source Window

In the *Data Source* window, you specify the data sources for the MRP run to determine which parameters to consider in the MRP quantity calculation (as shown in The MRP Process in SAP Business One).
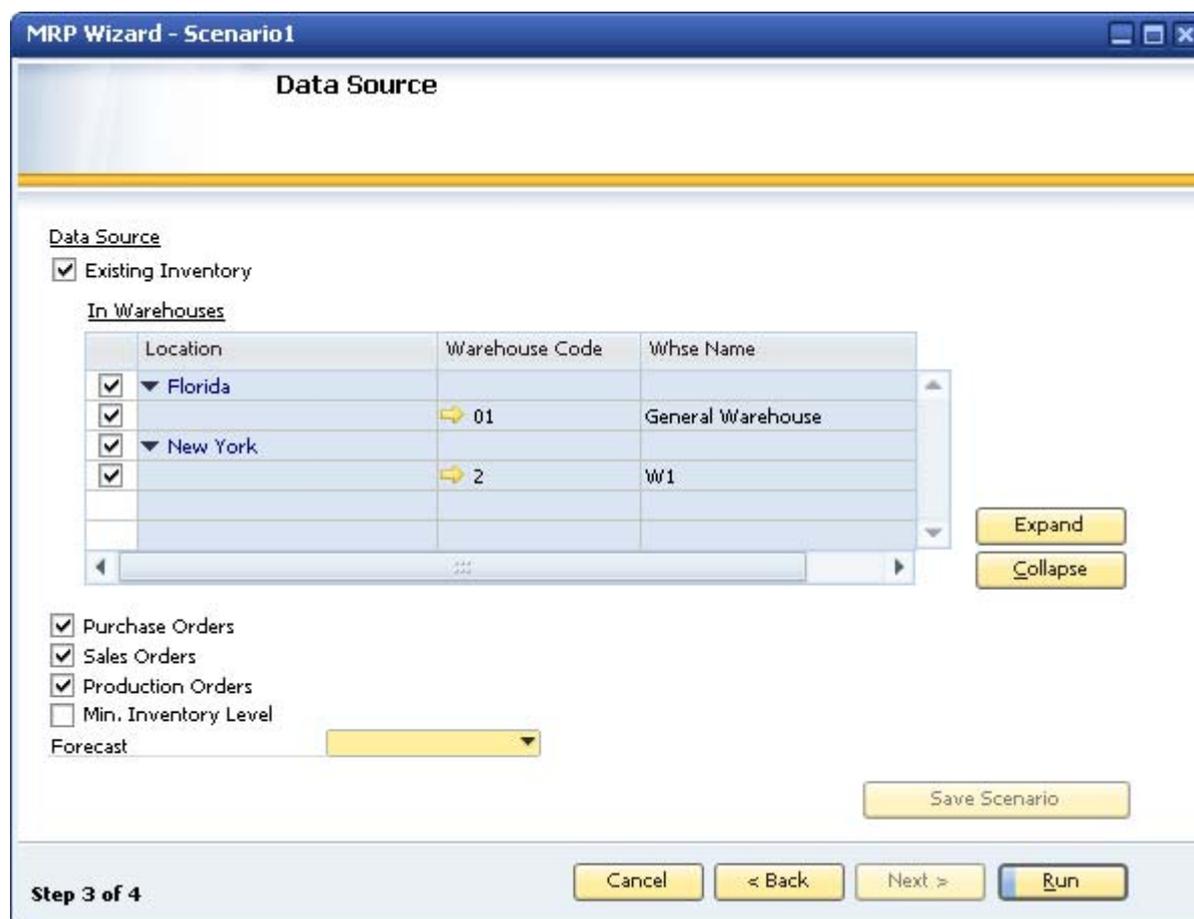
Procedure

1. To consider existing inventory quantities of the warehouses in the MRP report, select the *Existing Inventory* checkbox. If the checkbox is deselected, existing inventory quantities are not considered and are not displayed in the *In Warehouses* table.

    ### 💡 Note

    When you select the *Existing Inventory* checkbox, the warehouse selection table applies only to the existing inventory data source. Only warehouses defined as *Nettable* on the *General* tab of the *Warehouses - Setup* window appear. Warehouses defined as *Drop Ship* are not displayed. You can expect to see recommendations for drop-ship warehouses only if you deselect the checkbox.

    The warehouse table is relevant only for the existing inventory data source. Due to the functionality of SAP Business One, MRP does not consider warehouses of other data sources (purchase orders, production orders, and sales orders). For instance, if warehouse 01 is defined in a certain sales order or purchase order, and this warehouse

is not chosen for the MRP run, the order is still going to be a part of the MRP quantity calculation. The MRP run considers the total company requirements.

2. In the *In Warehouses* table, select the checkboxes of the relevant warehouses to consider their existing inventory quantities in the MRP report.

    o   By default, MRP selects only warehouses defined as *Nettable* in the *Warehouses – Setup* window (*Administration* → *Setup* → *Inventory* → *Warehouses*).

    o   Warehouses defined as drop-ship warehouses are not displayed in the table.

    Specify or view the following information referring the table:

Field/Button	Activity/Description
Location	The location of the warehouse.
Warehouse Code	The code of the warehouse.
Whse Name	The name of the warehouse.
Expand	Expands the details of the warehouses.
Collapse	Collapses the details of the warehouses.

3. Specify the following information:

Field	Activity/Description	Comments
Purchase Orders	Select this checkbox to consider open purchase orders in the report as expected receipts.	
Sales Orders	Select this checkbox to consider open sales orders as requirements in the MRP run.	
Production Orders	Select this checkbox to consider production orders in the report as expected receipts.	
Min. Inventory Level	Select this checkbox to consider the *On Hand* quantity according to the minimum inventory level. MRP subtracts the minimum level quantity from the existing inventory.	Minimum inventory level is considered in the *Gross Requirements* row in the MRP Results Window – Expanded View.
Forecast	In the dropdown list, choose a relevant forecast for the MRP run.	

4. To save the changes or to save a new scenario, choose the *Save Scenario* button. This button is active only if you make changes in the window.

5. To execute the report, choose the *Run* button.

Step 4 – The MRP Results Window

The *MRP Results* window appears after you run the MRP wizard and displays the results of the MRP run. This window displays the schedule for the MRP requirements, letting you view the outcome – the recommendations, as well as the actual documents that assemble the requirements.

💡 **Note**

The outcome of the wizard is a list of the recommendations for production or purchase orders only. To issue actual orders, from the saved recommendations for a given scenario, you must use the order recommendation function (see Creating Order Recommendations).

Procedure

1. View the following information:

Field	Activity/Description
Planning Horizon	Displays the dates of the MRP period as defined in the *Scenario Details* window.
Calculated at	Displays the date and the time of the current MRP run.
Display after MRP	Displays data after the MRP run, including the effect of implementing the newly recommended quantities. If this checkbox is deselected, the results show the pre-MRP run situation, without calculating the newly planned quantities.

To locate a certain item row in the window, Enter a value in the *Find Item No.* field.

2. To switch between collapsed and expanded views, click ▶ (*Expand*).

MRP Results Window – Collapsed View

The collapsed view is the default view of the *MRP Results* window.

Procedure

1. View the information in the table of the *MRP Results* window – *Collapsed* view:

Field	Activity/Description	Comments
Item No.	Displays the number of the parent and child items.	
Item Description	Displays the description of the item.	
Historic Data	The total quantity of Initial Inventory, receipts, gross requirements, and final inventory before the start date of the planning horizon.	There are no order recommendations issued for requirements that occurred in the past (before the present day).
Past Due	Displays one of the following: • Data sources for the MRP run (for example, existing sales orders, production orders, or forecasts) with open quantities and a due date between the start date (if earlier than current date) and the current date (not including the current date) • Requirements with past due dates generated during the MRP run • The forecast from the current date onwards. If a forecast is defined for the period between the planning horizon start date and the current date, it is not included in the requirements in the *Past Due* column.	If the MRP run results in negative ending inventory for a specific item in the past due period, MRP does not recommend making or buying items for that period. The negative inventory is passed on to the current period (next after past due).

 Note

> To display the *Item Group* field, click (*Form Settings)* in the toolbar. You can also define whether to display the column headers for the MRP results in an abbreviated or long format.

2. The right side of the table represents the MRP horizon periods as defined in the scenario.

    o If the data is grouped into periods of several days, the title of each column displays the first day of the period in the chosen format.

    o If the data is grouped into periods of weeks (for example, a period of 4 weeks), the title of each column displays the first week of the period in the chosen format.

3. To move the columns in this side of the table, use the scroll bar at the bottom of the table.

4. The fields display the quantity to be ordered as recommended by the MRP run. The cells in the table are different colors to provide an indication of their status:

Color	Description	Example
White	White indicates there are more receipts than requirements; therefore, the item's quantity is sufficient and there is no need to issue the production or purchase recommendations.	
Light Grey	There are two options for this indication: • The item has no data for the given period. • The item has a recommendation for a purchase order or a production order and, according to the item's lead time (defined in the *Item Master Data* window), there is sufficient time to produce or to purchase the item. In this case, the quantity appears in black. MRP always calculates sufficient lead time taking the present date into consideration.	• Today is July 1, 2009. • A production order for a certain parent item is due on July 20, 2009. • The lead time of the item is 5 days. The order for the child items should be issued on July 15, 2009 (as shown in the MRP process diagram). This is a future date, so there is sufficient time to complete the production.
Dark Grey	Represents the periods where there is not sufficient time to complete the production or purchase order. The cells are dark grey regardless of the requirements for production or purchase orders in these periods. If there are requirements for the production or purchase orders in these periods, the quantity is in red. The recommendation for the item is issued anyway with the remark '*Past Due'.* The '*MRP Dependent Requirements*' are also issued for the child item.	• Today is July 14, 2009. • The lead time of the item is 3 days; hence, the cells for July 14, 15 and 16 are dark grey. To complete the order by the due date of July 16, 2009, the production or purchase orders for the children should have been issued on July 13. This date is in the past; therefore, the process cannot be completed on time and the cell is dark grey.

Example of a Production Bill of Materials
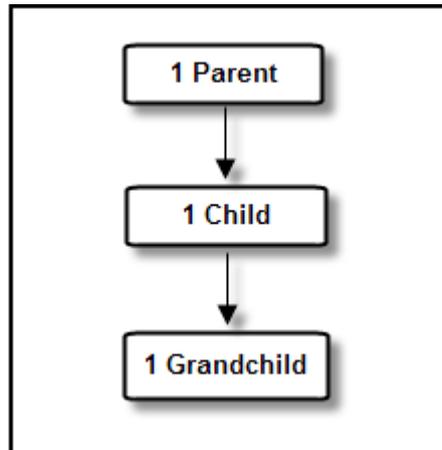
General Data

- Lead time for the parent item: 2 days
- Lead time for the child item: 2 days
- There is no lead time for the grandchild.
- There is a requirement for a sales order for 5 pieces of the parent item on 17 July 2009.
- There are no other requirements or receipts for any of the items in the bill of materials.
- Start Date: July 14, 2009
- End Date: July 17, 2009
- Present Date: July 14, 2009

The MRP Wizard Results

Present Date: July 14, 2009

Item No.	Historic Data	Past Due	07/14/2009 (today)	07/15/2009	07/16/2009	07/17/2009
Parent						5 pieces (black)
Child				5 pieces (red)		
Grandchild			5 pieces (black)			

To meet the sales order demand, a recommendation for a production order for 5 pieces is issued for the parent item on July 17.

To produce 5 pieces of the parent item you require 5 pieces of the child item. Therefore, the MRP run issues an MRP requirement for 5 pieces of the child item. Since the lead time of the parent item is 2

days, the child item should be available on July 15 to complete the production order on time. The recommendation for 5 pieces of the child item is issued on that date.

The lead time of the child item is also 2 days, so an MRP requirement for the grandchild should have been issued on July 13. Even though this date is in the past, and there is no time to complete the order for the child item, MRP issues a requirement for the grandchild.

Example of Planning Policy

This example explores how the planning policy (as shown in the MRP process diagram) would affect the MRP run described above.

- *Order Multiple* of 3 is defined in the *Item Master Data* of the parent item.

- Start Date: July 14, 2009

- End Date: July 17, 2009

Present Date: July 14, 2009

Child items lead time · Parent item lead time

Item No.	Historic Data	Past Due	07/14/2009 (today)	07/15/2009	07/16/2009	07/17/2009
Parent						6 pieces (black)
Child				6 pieces (red)		
Grandchild			6 pieces (black)			

Five pieces are required to meet the demand of the sales order. The planning policy is for *'Multiples of 3'* for the parent item. A recommendation for a production order of 6 pieces is issued.

Therefore, an MRP requirement for the child item is also for 6 pieces.

The lead time of the child item is also 2 days, so an MRP requirement for the grandchild should have been issued on July 13. Even though this date is in the past, and there is no time to complete the order for the child item, MRP issues a requirement for the grandchild.

Additional information for the example above:

- An *Order Interval* of every 2 days was defined in the *Item Master Data* of the parent item.

- An *Order Multiple* of 4 was defined in the *Item Master Data* of the child item.

			Child items lead time		Parent item lead time	

Present Date: July 14, 2009

Item No.	Historic Data	Past Due	07/14/2009 (today)	07/15/2009	07/16/2009	07/17/2009
Parent					6 pieces (black)	
Child			6 pieces (red)			
Grandchild			6 pieces (black)			

Order intervals are designed to set particular days to execute the purchase or production orders, according to the selected interval (2 days in this example). Order intervals are always counted from the *Start Date* forward. In this example, the 'order days' are every 2 days: July 14 (Start Date) and July 16.

A sales order should be supplied on July 17, but this is not one of the 'order days'. Therefore, MRP groups this recommendation to the closest 'order day' (before July 17) – in this case, it is July 16. The recommendation for 6 pieces is shifted to this date and MRP recommendation for the child item is issued two days earlier, on July 14.

Note that multiples of 4 were defined in the *Item Master Data* of the child item, so the child item should have had the quantity of 8 accordingly. In spite of that, the quantity is still 6 since the production of the child item cannot be completed on time according to its lead time (the quantity appears in red).

💡 Note

> No planning policy is performed on items whose quantity appears in red (production of the item cannot be completed on time, according to its lead time).

The lead time of the child item is also 2 days, so an MRP requirement for the grandchild should have been issued on July 12, 2008. Even though this date is in the past, and there is no time to complete the order for the child item, an MRP requirement for the grandchild is issued.

SAP

MRP Results Window – Expanded View

Each row in the table can be expanded into 4 additional rows by choosing ▶ (*Expand*). The expanded table displays a detailed list of what assembles the final MRP quantity (displayed in the MRP Results Window – Collapsed View).

Each row represents one of the following data sources (as shown in The MRP Process in SAP Business One):

Field	Activity/Description	Comments
Initial Inventory	Displays the initial quantity in stock of the item, for every given period. This quantity is based on the existing inventory of the current date. For every other period, the initial inventory derives from the final inventory of the previous period.	
Receipts	Displays the expected positive entries of the item to the stock: purchase orders, production orders (for the parent item) and A/P reserve invoices.	If there is a quantity in one of the cells in the *Receipts* row, it is possible to see the detailed list of data sources. For more information, see Pegging Information for Receipts.
Gross Requirements	Displays the expected inventory releases of the item for the column's time period: sales orders, forecast, production orders (for child items), A/R reserve invoices and minimum inventory level.	If there is a quantity in one of the cells in the *Gross Requirements* row it is possible to see the detailed list of data sources. For more information, see Pegging Information for Gross Requirements.

Field	Activity/Description	Comments
Final Inventory	If the *Display After MRP* checkbox is selected, this field displays the remaining quantity after the MRP recommendations are issued. If the *Display After MRP* checkbox is deselected, this field represents the final quantity calculated according to the initial inventory, receipts, and gross requirements, without considering the MRP recommendations.	

Example of MRP Results Window – Expanded View

General Data

- There is a requirement for a sales order for 5 pieces of item B001 on 15 July 2009.

- *Order Multiple* of 3 is defined in the *Item Master Data* of this item.

- There is no lead time for the item.

MRP Results – Expanded View

Item No.	Historic Data	Past Due	07/14/2009 (today)	07/15/2009	07/16/2009	07/17/2009
B001				6 pieces		
Initial Inventory					1 piece	
Receipts						
Gross Requirements				5 pieces		
Final Inventory				1 piece		

5 pieces are required to meet the demand of the sales order, but since there is a planning policy of 'Multiples of 3' for the item, MRP issues a recommendation for the production order of 6 pieces.

There is one piece remaining after the MRP calculation: 6 pieces from the production order in MRP minus 5 pieces from the sales order equals 1 piece. This figure appears in the *Final Inventory* field and is then transferred as an initial inventory to the next period – July 16, 2009.

Note

1 piece appears in the *Initial Inventory* field for July 16, 2009 only if there are requirements for this period. Otherwise, this figure appears only in the closest period that has requirements.

Pegging Information for Receipts

Procedure

1. To open the receipts *Pegging Information – XXX* (MRP scenario name) window, click a cell displaying an amount in the *Receipts* row in the *MRP Results* window.

    The *Pegging Information* window opens. The title of the window shows the scenario name.
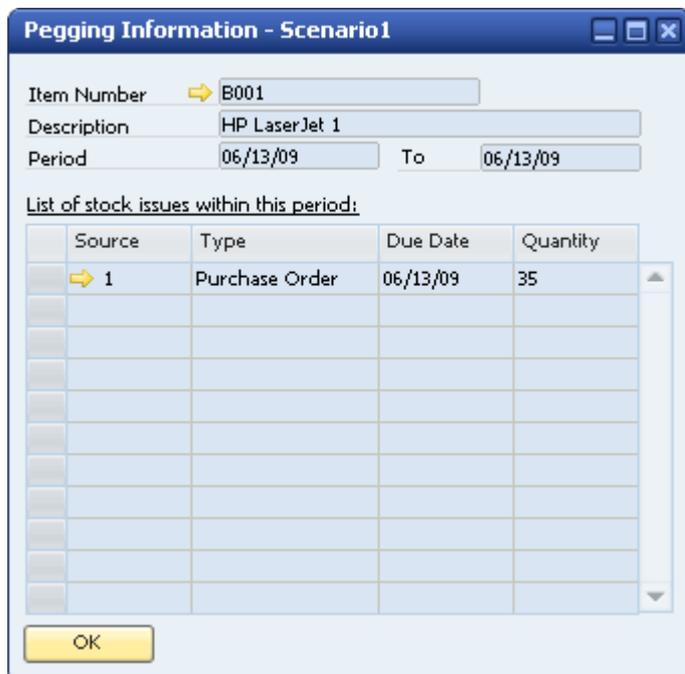
2. View the following information:

Field	Activity/Description
Item Number	Displays the number of the parent and child items.
Description	Displays the item description.
Period, To	Displays the first and the last date of the period the pegging information relates to.
List of stock issues within this period	
Source	Displays the number of the document.
Type	Displays the document type: production order, purchase order, or A/P reserve invoice.
Due Date	Displays the due date of the production order, the purchase order, or the AP reserve invoice.
Quantity	Displays the open quantity of the item from the production order or the purchase order.

3. To close the window, choose the *OK* button.

Pegging Information for Gross Requirements

Procedure

1. To open the receipts in the *Pegging Information – XXX* (MRP scenario name) window, click a cell displaying an amount in the *Gross Requirements* row in the *MRP Results* window.

   The *Pegging Information* window opens. The title of the window shows the scenario name.

2. The header of the window is similar to that of the *Pegging Information for Receipts* window; it displays the *Item Number*, *Description*, and the first and last date of the period this pegging information relates to.

3. View the following information:

Field	Activity/Description	Comments
Source	Displays the following: • The number of production orders (relevant for child items) • The number of sales order • Name of the forecast • Parent item number for an MRP-dependent requirement for production of the parent • Item number for the minimum inventory level	

| Field	Activity/Description	Comments
Type	Displays the type of the requirement: • Sales order • Production order • A/R reserve invoice • Minimum inventory level • Forecast demand • MRP requirement	
Due Date	Displays the due date of the sales order, production order, or A/R reserve invoice. The *Due Date* field in the forecast displays the demand date for the current period. If the source is an MRP requirement, the calculated due date of the parent item is displayed.	**Example** There is an MRP recommendation for a production order on 15 July 2009. The due date of the MRP requirement for the child item will be on 15 July 2009 regardless of the period related to this requirement.
Quantity	Displays the open quantity of the item from sales orders and planned quantity from production orders. For a forecast, the field displays the quantity that was not considered by the quantities of items sold in sales orders.	

Note

When there are gross requirements for an item that is an assembly or a sales bill of materials, MRP issues no actual recommendations for production for the parent item. MRP generates a compensation entry in the item's *Receipts* row to clear the final quantity.

MRP dependent requirements for the child items are issued regularly, similar to a production bill of materials.

4. To close the window, choose the *OK* button.

MRP Results Window – View Recommendations
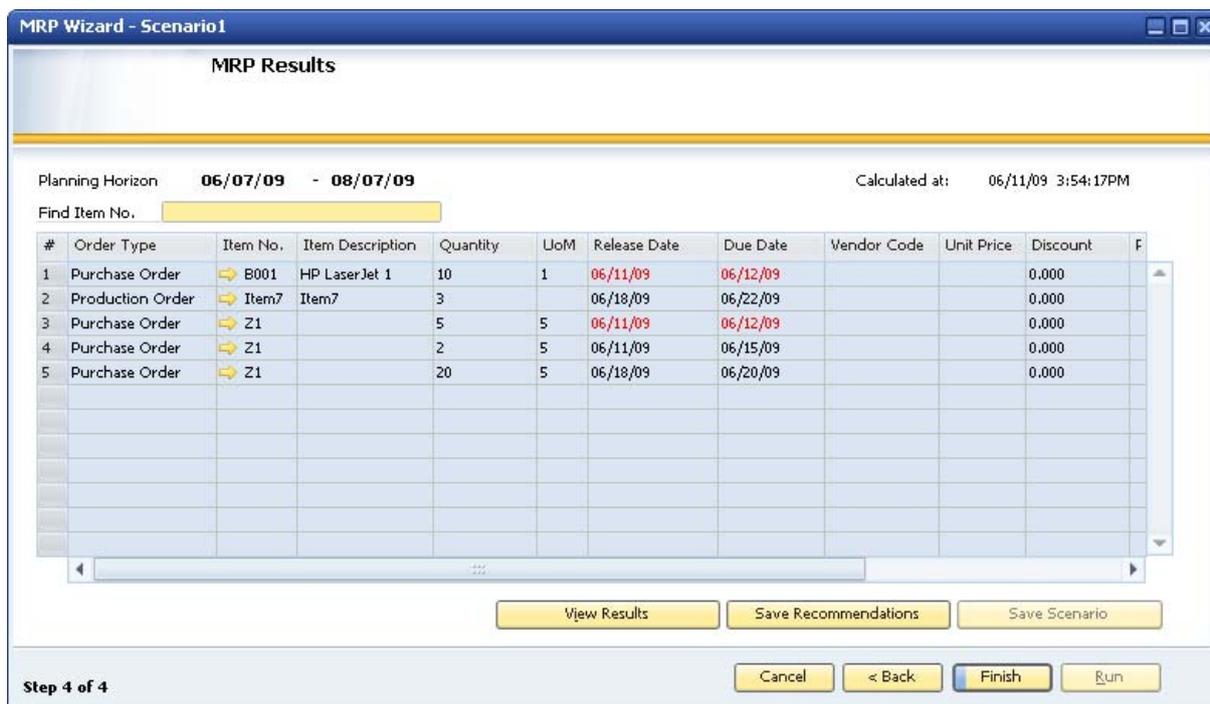
Procedure

1. After viewing the MRP results, you can generate a list of the MRP recommendations. To do this, choose the *View Recommendations* button.

   This window displays a list of the recommended production or purchase orders you should issue according to the MRP calculation. The values in the window are informative only, thus, you cannot make any changes to the contents of the fields, nor can you issue any actual production or purchase orders from the list.

   To issue actual orders, according to the saved recommendations for the given scenario, you use the *Order Recommendation* window. For information, see Creating Order Recommendations.

2. View the following information:

Field	Activity/Description	Comments
Order type	Displays the type of the MRP recommendation: production or purchase order	
Item No.	Displays the number of the item	
Item Description	Displays the description of the item	
Quantity	Displays the quantity recommended by MRP. For purchase orders, the quantity is displayed in the purchasing UoM.	
UoM	Displays the purchasing unit of measure for production or purchase orders (as defined in the *Item Master Data → Purchasing Data* tab)	

| Field	Activity/Description	Comments
Release Date	The date on which the production or purchase order should be released to meet its due date, depending on the lead time of the item.	The date in this field cannot be earlier than today.
Due Date	Displays the suggested due date for the production or purchase orders. If the recommended order is past due, according to the items' lead time, the due date appears in red.	**Example** • Today is July 15, 2009. • The child item's procurement method is '*Buy*' and it has a lead time of 3 days. The due date of the purchase order is July 16, 2009. Although this date is in the future, it is still red. There is not enough time to receive the order according to the child item's lead time (July 13, 2009, which is 3 days before the due date and is in the past).
Vendor Code	Displays the preferred vendor code of the item (as defined in *Item Master Data → Purchasing Data* tab → *Preferred Vendor*).	
Unit Price	Displays the price from the price list linked to the preferred vendor. Note that if special prices are defined for the linked preferred vendor, these are displayed instead (according to the standard behavior of prices in SAP Business One).	
Discount %	Displays the discount defined for the item's price list	
Price After Discount	Displays the unit price after subtracting the discount	
Whse	Displays the item's default warehouse code. It is possible to choose a different warehouse in the *Order Recommendation* window.	
Total	Displays the order's total amount according to the *Quantity * Price After Discount*	
Exception	Displays the remark "*Past Due*" for orders, which are past due according to the lead time definitions (their due date is red)	

Note

To display additional fields, choose (*Form Settings*) on the toolbar.

3. To save the recommendations for the current MRP run, choose the *Save Recommendations* button.

   SAP Business One saves recommendations for each scenario.

   If there are previous recommendations for the current scenario, the system displays the following message:
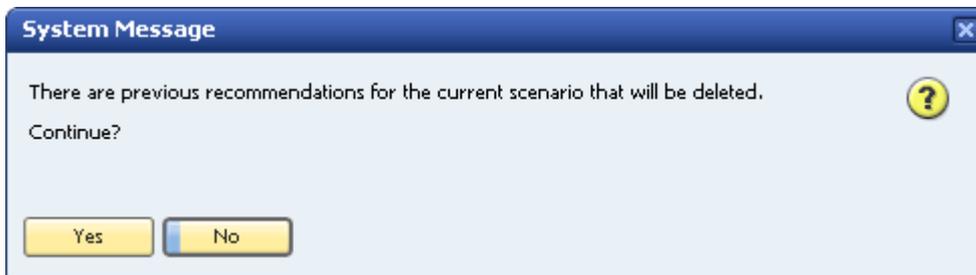
   To save the new recommendations, choose the *Yes* button.

   To go back to the *MRP Results* window, choose the *No* button.

4. To exit the wizard, choose the *Finish* button. If the results are not saved, the system displays the following message:

   Choose one of the buttons displayed:

   o *Yes* – saves the recommendations and exits the MRP wizard.

   o *No* – exits the *MRP Wizard without saving.*

   o *Cancel* – goes back to the *View Recommendation* window without saving.

5. To review and create actual production or purchase orders from the *MRP Results* window, use one of the following methods:

   o Right-click the header area and choose *Order Recommendation.*

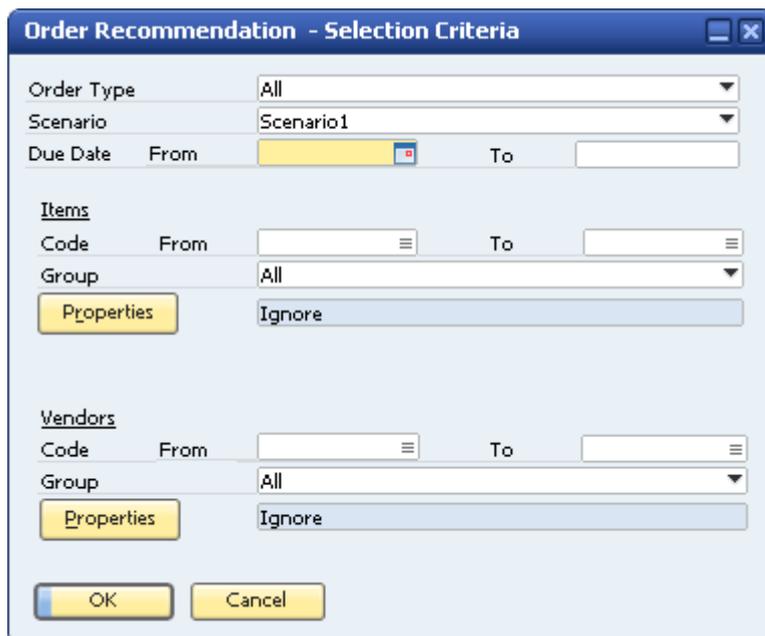   o From the *Goto* menu, choose *Order Recommendation.*

Creating Order Recommendations

You use the *Order Recommendation – Selection Criteria* window to specify selection criteria to filter the recommendations that were created during the last MRP run for the selected scenario. The window displays the results of the last MRP run, deleting the results of the previous one.

Procedure

1. From the SAP Business One *Main Menu*, choose *MRP → Order Recommendation.*

   The *Order Recommendation – Selection Criteria* window opens.

2. Specify the following information:

Field	Activity/Description	Comments
Order Type	Specify the type of MRP recommendation you would like to display in the report. In the dropdown list, choose *Production Orders* or *Purchase Orders.* To display them both in the report, choose *All*.	
Scenario	MRP recommendations are saved for each scenario. Specify the scenario you would like to view in the report.	The scenarios checked as '*Simulation*' are not available for selection.
Due Date From, To	Filters the report according to the due date of the orders	
Items	Standard item selection fields, similar to other reports in SAP Business One	

Field	Activity/Description	Comments
Vendors	Standard vendor selection fields, similar to other reports in SAP Business One	Note that the vendors you select here relate to the *Preferred Vendor* field (can be defined in *Purchasing Data* tab page – choose *Item Master Data → Purchasing Data* tab).

3. To display the *Order Recommendation*, choose the *OK* button.

The *Order Recommendation* window opens.

💡 **Note**

The *Order Recommendation* window is similar to the *MRP Recommendation* window that can be displayed from the MRP wizard. However, unlike in the wizard, here you can access, update, and change almost all the fields. You must enter data in all the active fields to create production or purchase orders.

4. View or specify the following information:

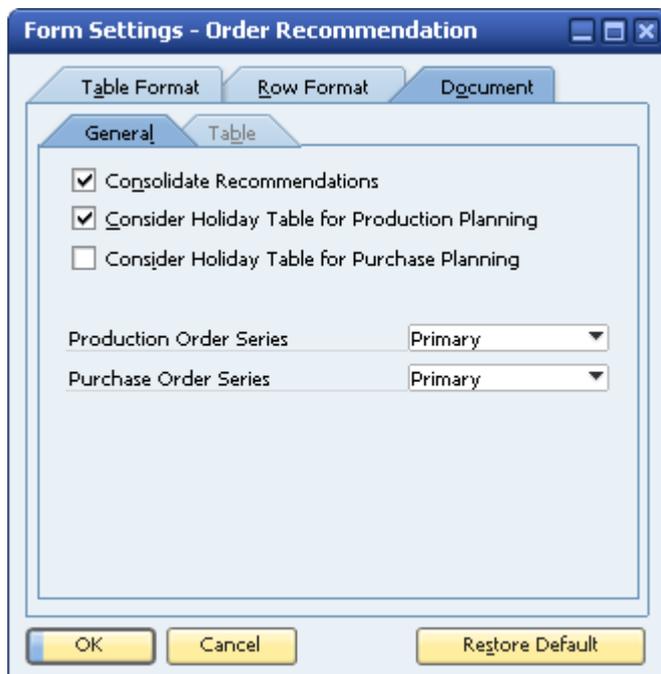| Field	Activity/Description	Comments
Find	Use this field to locate a certain item row.	The value you search by is determined by the column you choose to use as the sorting criteria.
Create	Select the checkboxes under this column next to every production or purchase order you would like to create from the recommendations.	
Order Type	From the dropdown list in this field, choose the type order: purchase order or production order.	

Field	Activity/Description	Comments
Item Number	Displays the number of the item. You can change the item number. To select an alternative item, right-click the *Item Number* field and choose *Alternative Items*.	A relevant message is displayed if there are no such alternative items defined for this item.
Quantity	Displays the quantity recommended by MRP. For purchase orders, the quantity is displayed in the purchasing UoM. You can specify a different quantity if required.	
Due Date	Displays the suggested due date for the production or purchase orders. If the recommended order is past due, depending on the item's lead time, the due date appears in red. You can update the due dates manually as required.	
Vendor Code	Displays the preferred vendor code of the item. You can choose a different vendor or select one manually.	
Unit Price	Displays the price from the price list linked to the preferred vendor. Note that if special prices are defined for the linked preferred vendor, these are displayed instead (depending on the standard behavior of prices in SAP Business One). You can update the price manually.	
Discount %	Displays the discount defined for the price list of the item. If you change this field, the *Price After Discount* and the *Total* fields are updated accordingly.	
Whse	Displays the item's default warehouse code. You can choose a different warehouse if necessary.	You choose the default warehouse as follows: • For *'Buy'* items, choose the warehouse based on the definitions on the *Inventory Data* tab in the *Item Master Data* window. If there is no default warehouse for the item, this information derives from *General Settings → Inventory* tab → *Default Warehouse*. • For *'Make'* BOM items the default warehouse is based on the BOM definition.

💡 **Note**

The information described above relates only to the active fields. For information on the informative fields, see <u>MRP Results Window – View Recommendations</u>.

5. You can make several definitions and display additional fields by choosing ![Form Settings icon] (*Form Settings*) in the toolbar.

Specify the following information:

Field	Activity/Description	Comments
Consolidate Recommendations	Select this checkbox to group the recommendations for the purchase orders related to the same vendor into one document. If the recommendations have the same vendor, item, warehouse, and delivery date, they are grouped into the same row in the purchase order document.	
Consider Holiday Table for Production Planning	Select this checkbox to increase the lead time for the production process according to the holiday definition (see Step 2 – Scenario Details Window).	
Consider Holiday Table for Purchase Planning	Select this checkbox to increase the lead time for the purchasing process according to the holiday definition (see Step 2 – Scenario Details Window).	
Production Order Series	In the dropdown list, choose a numbering series for the production orders.	The default series is the one that was defined as such in the *Document Numbering* window.
Purchase Order Series	In the dropdown list, choose a numbering series for the purchase.	

6. After reviewing the *Order Recommendation*, in the *Create* column, select the checkboxes to specify which production or purchase orders you actually want to create.

7. To create the selected orders, choose *Update*.

If you create orders, a system message appears that states how many orders were created.

Note

The string "MRP" is entered automatically in the *Origin* field in the created production orders. The string "Origin: MRP" is entered automatically in the *Remarks* field in the purchase orders created.

Printing MRP Recommendations

With SAP Business One you can print MRP recommendations using default print templates.

Procedure

1. In the *Tools* menu, choose *Print Layout Designer*, or click in the toolbar.

2. Choose the preferred printing template.

3. From the *File* menu, choose *Print*, or click in the toolbar.

> **Note**
>
> You can edit the default templates or create new ones by using Print Layout Designer. For more information about Print Layout Designer, see the document *How to Customize Printing Layouts with Print Layout Designer* in the documentation area of the SAP Business One Customer Portal at
> http://service.sap.com/smb/sbocustomer/documentation.

Authorizations

For information about the authorizations required for MRP, see the online help for SAP Business One and the document *How to Define Authorizations* in the documentation area of SAP Business One Customer Portal at http://service.sap.com/smb/sbocustomer/documentation.

Database Tables Reference

For information about the tables used in MRP, see the .chm file: *Database Tables Reference.* You can download it from the SAP Community Network.

To download the *Database Tables Reference* .chm file:

1. Go to https://www.sdn.sap.com/irj/sdn/businessone.

2. Under *BUSINESS ONE KNOWLEDGE CENTER*, click the link of the SAP Business One release version you want.

3. Click the SDK Help Center link.

4. In the *File Download* window, do one of the following:

   o To open the .zip file, choose the *Open* button; then extract the `REFDB.chm` file to your computer.

   o To save the .zip file to your computer, choose the *Save* button. You can open the .zip file and extract the `REFDB.chm` file later.

Appendix

Example: Procurement Method

- A box of chocolates is a parent item in a production BOM, composed of a wooden box and 25 chocolates as child items.

- The box is purchased from an external vendor and the chocolates are produced by your company.

The '*Make*' procurement method should be chosen for the box of chocolates item and the chocolate items and a '*Buy*' procurement method for the wooden box. As a result, to make one box of chocolates, MRP issues the recommendations for quantities needed to assemble the product, which is a production order for 25 chocolates and a purchase order for one wooden box.
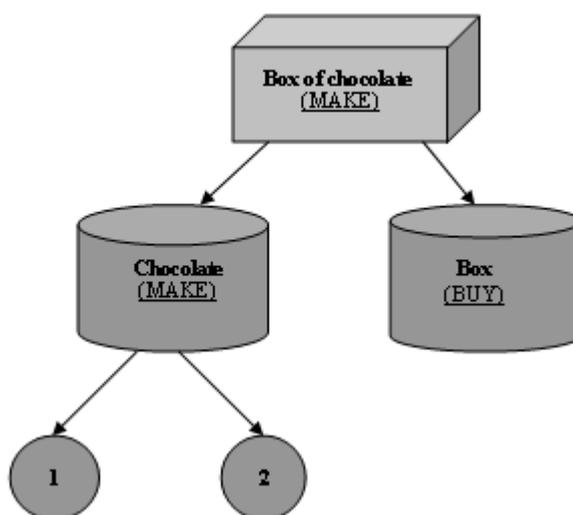
Example: Consumption Method

This is an example of a sales forecast and its consumption by a sales order.

The *Backward- Forward* method of the forecast consumption was selected with a range of 10 days backward and forward.

The forecast was defined as follows:

Item No.	01/15/09	01/16/09	02/15/09	03/01/09
TAB2004	10	20	20	40

The following sales orders were received:

Document No.	Item No.	Due Date	Quantity	Consume Forecast (from the Sales Order)	Result
10001	TAB2004	01/01/2009	5	YES	No forecast found in the defined range.
10002	TAB2004	01/06/2009	5	YES	5 pieces are subtracted from 01/15.
10003	TAB2004	01/16/2009	100	NO	An additional unexpected requirement, which is not on the account of the forecast.
10004	TAB2004	01/20/2009	20	YES	20 pieces are subtracted from 01/16.
10005	TAB2004	02/25/2009	30	YES	20 pieces are subtracted from 02/15 and 10 pieces are subtracted from 03/01.

💡 **Note**

The calculation is always done from the earliest sales order to the latest according to their due dates.
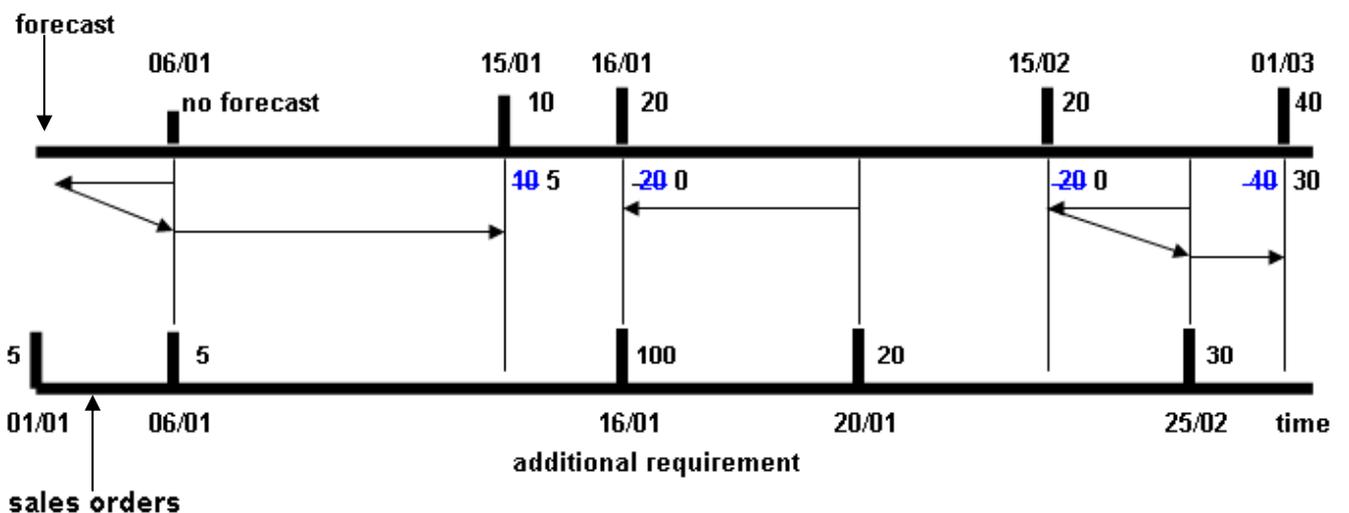
The forecast represents the company's projection for future sales. If there is an actual order on the account of the forecast, the sales order replaces it. Only the forecast that was not 'consumed' by the sales order is considered during the MRP run, as displayed in a table below.

The forecast after consumption

| Item No.	01/15/08	01/16/08	02/15/08	03/01/08
TAB2004	5	0	0	30

Net Requirements (Forecast + Sales Orders)

Item No.	01/01	01/06	01/15	01/16	01/20	02/25	03/01
TAB2004	5	5	5	100	20	30	30

Example: Maximum Cumulative Lead Time

- The MRP horizon starts on June 1 and ends on August 31.
- The maximum cumulative lead time is one month.
- A sales order's due date of a certain parent item falls in the middle of September (falls in the range of the maximum cumulative lead time).
- The lead time of the parent item (as defined in the *Item Master Data*) is 25 days.

The requirements for the child item fall into the range of the MRP horizon. In this case, the requirements (orders) for the child item are issued during the current MRP run.
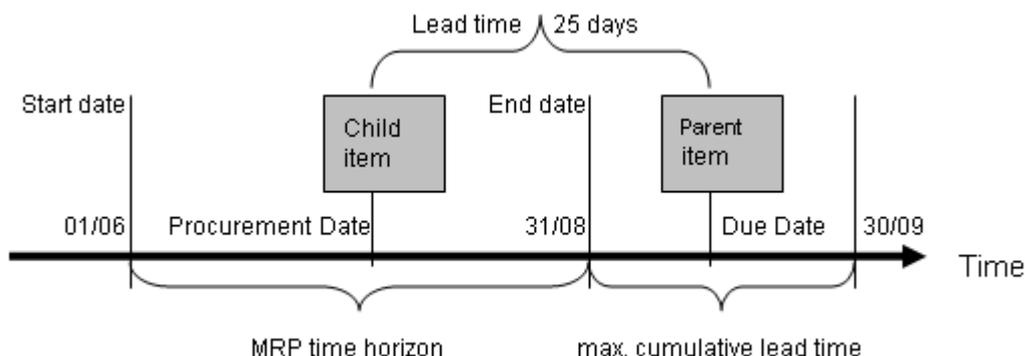
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