Material Requirements Planning

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Material Requirements Planning

Implementation Options

The main function of material requirements planning is to guarantee **material availability**, that is, it is used to procure or produce the requirement quantities on time both for internal purposes and for sales and distribution. This process involves the monitoring of stocks and, in particular, the automatic creation of procurement proposals for purchasing and production.

In doing so, MRP tries to strike the best balance possible between

- **optimizing the service level** and

- **minimizing costs** and capital lockup.

The MRP component assists and relieves MRP controllers in their area of responsibility. The MRP controller is responsible for all activities related to specifying the type, quantity, and time of the requirements, in addition to calculating when and for what quantity an order proposal has to be created to cover these requirements. The MRP controller needs all the information on stocks, stock reservations, and stocks on order to calculate quantities, and also needs information on lead times and procurement times to calculate dates. The MRP controller defines a suitable MRP and lot-sizing procedure for each material to determine procurement proposals.

Integration

You must first create the master data to be able to work with the MRP component. To do this, you require the following components:

- **Material master**

- **BOMs**

When you use MRP for in-house production, you also need the following components if you want to determine production dates:

- **Work centers**

- **Routings**

You also need the following components:

- **Demand Management**

    You need the Demand Management component to define requirement quantities and requirements dates for finished products and important assemblies. Demand Management also determines the strategy you are to use for planning, procuring, or producing a certain finished product.

- **Sales and Distribution**, if necessary

Features

MRP at Plant or MRP Area Level

You can plan material requirements at **plant level** or for different MRP areas. With MRP at plant level, the system adds together stocks from all of the individual storage locations, with the exception of individual customer stock, to determine total plant stock. The requirements are combined in the planning run and procurement elements are created for these pegged

Material Requirements Planning

requirements with unknown sources. Individual storage locations can be planned separately or be excluded from planning.

In the case of material requirements planning on an **MRP area level,** only the stocks from the storage locations assigned to the respective MRP area are taken into account. Only the requirements in this MRP area are combined and procurement elements are created for them. This enables you to plan material requirements specifically for certain areas.

Lot-Sizing and MRP Procedures

The most common lot-sizing procedures are available in the system and you can easily integrate user-defined formulas.

You can use **MRP or consumption-based planning** as the materials planning procedure.

Automatic Planning Run

The automatic planning run in MRP determines any shortages and creates the appropriate procurement elements. The system generates messages for critical parts and unusual situations so that you can rework the planning results in the specific area with problems.

Material Requirements Planning in the Logistics Chain

Implementation Options

The main function of material requirements planning is to guarantee **material availability**, that is, it is used to procure or produce the requirement quantities on time both for internal purposes and for sales and distribution. This process involves the monitoring of **stocks** and, in particular, the automatic creation of **procurement proposals** for **purchasing and production**.

Process Flow

1. Sales and Distribution take requirements as concrete customer requirements from the market.

2. In Demand Management, sales are planned in advance via a **sales forecast**.

   The result is the independent requirement, that is, the requirement for the finished product, tradable assemblies, trading goods and replacement parts. This result triggers material requirements planning.

3. In order to cover these requirements, MRP calculates **procurement quantities** and **dates** as well as plans the corresponding procurement elements. The procurement element in the planning run is the planned order or, for external procurement, the purchase requisition. Both procurement elements are internal planning elements that can be changed, rescheduled or deleted at any time.

4. If a material is produced in-house, the system also calculates the **dependent requirements**, that is, the quantity of components required to produce the finished product or the assembly, by exploding the BOM. If a material shortage exists, planned orders are created at every BOM level to cover requirements.

5. The system then converts these planned procurement elements into exact procurement elements: **production orders** for in-house production and **purchase orders** for external procurement.

6. The **progress of the order** for materials produced in-house is controlled by using the **production order**. The production order contains its own scheduling procedures, capacity planning and status management. Cost accounting is also carried out via the individual production order.

7. Materials that are procured externally trigger the **purchasing procedure**. In this case, you must have chosen suitable vendors or you must have drawn up outline agreements.

8. The quantities made available by production or by external procurement are placed in stock and are managed by **Inventory Management**.

Various functions in the SAP System are planned, controlled and coordinated centrally for several areas.

Material Requirements Planning in the Logistics Chain

```
                    MRP          Independent          SD
                                 requirement       processing
       Dependent
       requirement
      Dependent
      requirement       Planned order

  Capacity                  Conversion
  planning

            Production order      Purchase      Scheduling
                                  requisition   agreement

  Final       Order              Purchasing     Invoice
  costing     processing         functions      verification
                                 Purchase orders

                    Warehouse
```
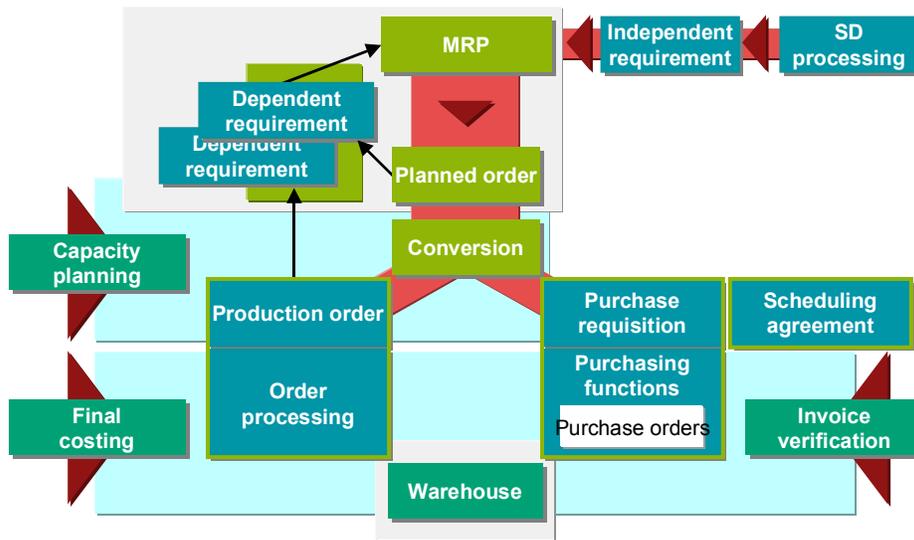
MRP Procedures

Use

The aim of material requirements planning is to tailor available capacities and receipts on time to suit requirements quantities. You can use **MRP or consumption-based planning** for this. A special form of MRP is master production scheduling.

Features

- Material requirements planning [Page 16] is carried out using current and future sales figures. The **planned and the exact requirements quantities** trigger the net requirements calculation.

- In Master production scheduling [Page 18], finished products and important assemblies, so-called master schedule items, are planned separately and with extra attention. **Only the master schedule items** are planned in this planning run. The system creates dependent requirements for the BOM level directly below the planning level. It does not, however, plan levels below this.

- Consumption-Based Planning [Page 22] uses **past consumption data (historical data)** to calculate **future requirements** with the help of the **material forecast** or statistical planning procedures. The net requirements calculation is not hereby triggered by an independent or dependent requirement, but is triggered either when stock levels fall below a reorder point or by forecast requirements.

Material Requirements Planning

Use

MRP is carried out using current and future sales figures. The **planned and the exact requirement quantities** trigger the net requirements calculation. The requirement elements of this calculation include sales orders, planned independent requirements, material reservations, dependent requirements received from BOM explosion, and so on. The net requirements calculation can give the exact requirements for each day.

As you require exact requirement quantities for MRP, this means that you can work with particularly **low safety stocks**.

Integration

The forecast can be used in MRP to calculate the total requirement quantity or the unplanned requirement quantity.

Material Requirements Planning Procedure

Prerequisites

You have set an *MRP type* for MRP in the material master (*MRP 1* view).

➡️

> You define MRP types in Customizing for MRP in the IMG activity *Check MRP types*.

Process Flow

1. The system **calculates net requirements** for all the requirement quantities that are to be planned. The system thereby compares available warehouse stock or the scheduled receipts from Purchasing and Production with planned independent requirements, material reservations and incoming sales orders. In the case of a **material shortage**, that is, if the available stock (including firmed receipts) is smaller than the quantity required, the system creates procurement proposals.

2. The system calculates the quantity recorded in the procurement proposal according to the **lot-sizing procedure** that you specified in the material master. Various lot-sizing procedures are supported by the system. You can define a lot-sizing procedure for each individual material.

3. The procurement proposal is also scheduled which means that, for materials procured externally, the delivery and release dates are determined, and for materials produced in-house, the production dates are calculated.

4. For materials produced in-house, the **dependent requirements** of the components are determined during the BOM explosion. For each component, the dependent requirements date is displaced by the in-house production time of the higher-level material.

5. **Additional requirements** (unplanned goods issues, excess consumption of components in production, and so on) can be covered by using the materials forecast within MRP. The historical values of unplanned requirements form the basis of the forecast. These requirements are then taken into account along with the exact requirement quantities.

Master Production Scheduling

Use

The aim of master planning and material requirements planning is to tailor available capacities and receipts to suit requirements quantities. To assure material availability, various floats and a safety stock are entered which inevitably lead to **high stock levels**. Thus, high storage costs are incurred, especially for valuable materials.

To **reduce these high storage costs**, and at the same time to increase planning stability, the planning of finished products and main assemblies should be closely coordinated. The master plan of these products greatly influences the entire production process: The planning of the dependent parts depends on the planning result of the finished products and main assemblies, even if the finished products represent a small share of all the materials to be planned. Frequent changes at finished product level can render the complete MRP run unstable.

It makes sense, therefore, **to plan finished products and important assemblies separately, with extra attention**. Such materials can be indicated in the SAP System as **master schedule items**, which can be planned and finely tuned using a series of special tools. Planning these master schedule items with special care leads to a **reduction in stock levels** and at the same time **an improved delivery performance and a reliable service level**. This procedure ensures that planning remains consistent and transparent.

Features

Separate Planning Run for Master Schedule Items

Only the master schedule items are planned in this planning run. The system creates dependent requirements for the BOM level directly below the planning level. It does not, however, plan levels below this. This means that the MRP controller can authorize any changes to the master plan before they affect the various BOM levels.

Planning Time Fence

You can protect the master plan from any automatic changes to master schedule items in the near future by using a planning time fence. Within the planning time fence (which is specifically determined for each master schedule item), no automatic changes are made to procurement proposals. All proposals made by the system must be authorized by you as the MRP controller. You can thus check the dates of procurement proposals and make sure that they match the resource requirements situation.

When specifying the planning time fence, you should bear in mind the maximum lead time of the master schedule items.

Processing the Planning Result Interactively

With interactive planning, you can check the results of the automatic planning run for master schedule items with simple and easy-to-use tools. You can change the master plan and the capacity requirements as often as necessary. You can check the results of the changes in a simulative planning run. The system does not save the planning data in the database until you save the interactive planning.

Interactive MPS is especially useful for adjusting dates of planned orders falling within the planning time fence.

Interactive MPS can be used for parts produced in-house as well as for parts which are procured externally.

Evaluating the MPS Run

With the help of the user-friendly structure of the planning results, you can react quickly and efficiently to any problems that may occur. A series of standard evaluations are available within MPS to achieve this. You can also generate user-defined evaluations according to your specific needs.

Master Production Scheduling Procedure

Prerequisites

- You have set an *MRP type* for master production scheduling in the material master (*MRP 1* view).

    ➡️

    You define MRP types in Customizing for MRP in the IMG activity *Check MRP types*.

- You have entered a planning time fence.

    − You can define a <u>Planning Time Fence [Page 469]</u> per material or you can also use the MRP group in the material master to assign a planning time fence to a material. The planning time fence that you assign manually has priority over the planning time fence in the MRP group.

    − The <u>Firming Type [Page 468]</u>, which you have defined in Customizing, determines whether the system is to create procurement proposals for material shortage in the planning time fence and how these procurement proposals are to be scheduled.

Process Flow

1. You start the **total planning run for master schedule items or single-item planning for master schedule items**.

    Master schedule items are planned per plant using the MPS total planning run. The planning run for the other materials is carried out independently of the total planning run. The MPS run is carried out daily or once a week depending on how many materials are flagged as master schedule items and on how often the master schedule items are to be adjusted to suit changed requirements.

    Depending on the settings of the MRP type, any changes to be made to the master plan are only proposed within the planning time fence. Outside of the planning time fence, procurement proposals are created as usual.

    In contrast to the MRP run, this planning run only plans the master schedule item level. The system creates dependent requirements for the BOM level directly below the planning level. However, this level and lower levels are not planned.

2. You check the **results of this planning run** using the **interactive master production scheduling functions**. At this level, you finely tune the master plan for the master schedule items. The procurement proposals required to cover shortages within the planning time fence are planned and scheduled.

    It is also possible to plan individual master schedule items using the single-item, single-level planning run. In this case, as for total planning, the system only plans at master schedule item level and dependent requirements are created for the next lower level only.

3. Once the master plan has been finely tuned for the master schedule items, you start the **total planning run** for all dependent parts. Various options exist here:

    − You can start the planning run for all BOM levels directly from the total planning run for MPS. To do this, you set the indicator *Process MRP materials* in the initial screen

of the total planning run for MPS. The system will only plan the other BOM levels if this indicator is set.

– If you want to plan the total BOM structure for individual master schedule items only, you can work with the single-item, multi-level planning in the menu for MPS.

See also:

Interactive Planning [Page 319]

Carrying Out the Planning Run [Page 286]

Consumption-Based Planning

Use

As the name suggests, consumption-based planning procedures use **past consumption data (historical data)** to calculate **future requirements** with the help of the **material forecast** or static planning procedures. Consumption-based planning procedures have no reference to the master plan. This means that the net requirements calculation is not triggered by an independent or a dependent requirement. Instead, the net requirements calculation is triggered when stock levels fall below a **reorder point** or by **forecast requirements** calculated from past consumption data.

The advantage of this type of planning is that it is easy to use and you do not require extensive data.

Prerequisites

- The material consumption is consistent with only a few fluctuations.

- You have an efficient and current inventory management.

Features

The MRP procedures supported in consumption-based planning are:

- Reorder Point Planning

- Forecast-Based Planning

- Time-phased planning

See also:

Forecast Parameters [Ext.]

Significance of the Material Forecast for Materials Planning [Ext.]

Reorder Point Planning

Use

In reorder point planning, procurement is triggered when the sum of plant stock and firmed receipts falls below the **reorder point**.

Features

The **reorder point** should cover the average material requirements expected during the replenishment lead time.

The **safety stock** exists to cover both excess material consumption within the replenishment lead time and any additional requirements that may occur due to delivery delays. Therefore, the safety stock is included in the reorder level.

The following values are important for defining the reorder point:

- Safety stock

- Average consumption

- Replenishment lead time

The following values are important for defining the safety stock:

- Past consumption values (historical data) or future requirements

- Vendor/production delivery timelines

- Service level to be achieved

- Forecast error, that is, the deviation from the expected requirements

Manual Reorder Point Planning

In manual reorder point planning, you define both the reorder level and the safety stock level manually in the appropriate material master.

Automatic Reorder Point Planning

In automatic reorder point planning, both the reorder level and the safety stock level are determined by the integrated forecasting program.

The system uses past consumption data (historical data) to forecast future requirements. The system then uses these forecast values to calculate the reorder level and the safety stock level, taking the service level, which is specified by the MRP controller, and the material's replenishment lead time into account, and transfers them to the material master.

Since the forecast is carried out at regular intervals, the reorder level and the safety stock level are continually adapted to the current consumption and delivery situation. This means that a contribution is made towards keeping stock levels low.

Reorder Point Planning Procedure

Prerequisites

- You have set an *MRP type* for reorder point planning in the material master (*MRP 1* view).

    ➡️

    You define MRP types in Customizing for MRP in the IMG activity *Check MRP types*.

- In the material master, you have entered or let the system automatically calculate and enter the values for the reorder point (*MRP 1* view) and for the safety stock (*MRP 2* view).

Process Flow

1. The **continuous monitoring** of available warehouse stock within reorder point planning is carried out in Inventory Management.

    Every time a **material is withdrawn** from the warehouse, the system checks whether this withdrawal has caused stock levels to fall below the reorder level. If this is the case, the system makes an entry in the planning file for the next planning run (see also Checking the Planning File [Page 65]).

    If a **material is returned** to the warehouse, the system checks in exactly the same way whether the available warehouse stock exceeds the reorder level again. If this is the case, an entry is made in the planning file, which acts as an indicator for the planning run to delete any unnecessary procurement proposals.

    If planned receipts are no longer required due to **material returns**, for example, then the system will suggest that these receipts should be cancelled. In this case, the MRP controller in cooperation with Purchasing or Production must check whether the purchase order or the production order can be cancelled.

2. The system then **calculates the net requirements**. The system compares the available stock at plant level (including safety stock) plus the firmed receipts that have already been planned (purchase orders, production orders, firmed purchase requisitions and so on) with the reorder point. If the sum of the stock plus receipts is less than the reorder point, a material shortage exists.
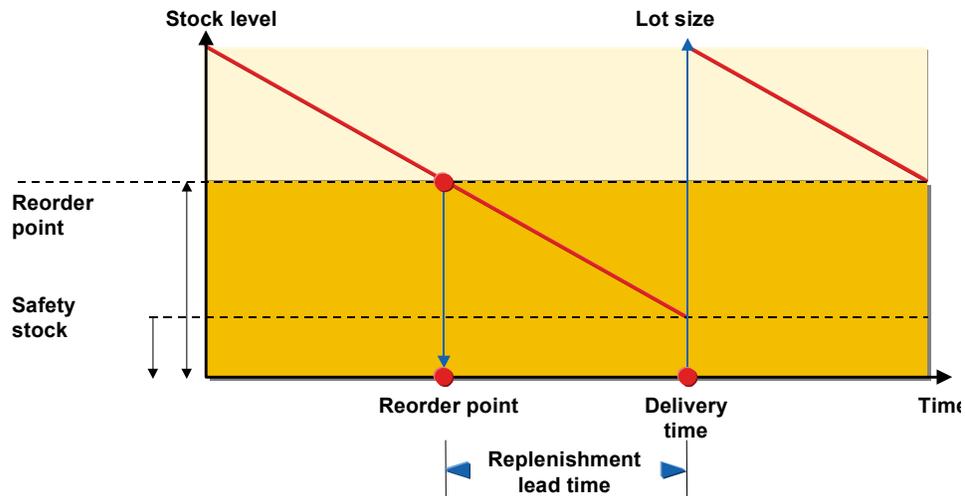
3. The system then calculates the **procurement quantity** according to the **lot-sizing procedure** defined in the material master.

   For reorder point planning, the system supports the *Fixed lot size* and *Replenish up to maximum stock level* lot-sizing procedures.

   You can also use period or optimum lot-sizing procedures for reorder point materials. In this case, you must calculate future requirements using the forecasting functions. The forecast values are then interpreted as requirements.

4. The system then **schedules** the procurement proposal, that is, the system calculates the dates on which the purchase order has to be sent, or when production has to begin and the date on which the vendor has to deliver the goods or by which production has to have the goods ready.

Reorder Point Planning with External Requirements

Use

In reorder point planning, an entry is only created in the planning file and the net requirements calculation is only carried out if stock levels fall below the reorder point. To avoid overplanning, sales orders, dependent requirements, reservations and so on are not usually included in the net requirements calculation as these future requirements are already planned with the reorder level. However, to guarantee that the MRP controller is informed of current issues, the system displays sales orders, dependent and manual reservations and so on.

In certain circumstances, however, it is necessary to include such external requirements in the net requirements calculation for reorder point materials.

Integration

The indicator for taking external requirements into account is set in Customizing in the IMG activity *Check MRP type* for the individual time-phased MRP procedure.

Features

Sales orders and manual reservations are included in planning during the **replenishment lead time**. In Customizing you can also enter settings for the respective MRP type, so that

- sales orders and manual reservations are included in planning not just during the replenishment lead time but during the whole horizon.

- alongside sales orders and manual reservations various other requirements are taken into account in the material requirements planning.

Forecast-Based Planning

Use

Forecast-based planning is also based on **material consumption**. Like reorder point planning, forecast-based planning operates using historical values and forecast values and future requirements are determined via the integrated forecasting program. However, in contrast to reorder point planning, these values then form the basis of the planning run. The **forecast values** therefore have a direct effect in MRP as **forecast requirements**.

Features

The forecast, which calculates future requirements using historical data, is carried out at regular intervals. This offers the advantage that requirements, which are automatically determined, are continually adapted to suit current consumption needs. The forecast requirement is reduced by the material withdrawal so that the forecast requirement quantity that has already been produced is not included in the planning run again.

Reducing Forecast Requirements

- **Reducing forecast requirements** by consumption

    If consumption is higher than the forecast requirements in the current month, then the system also reduces future forecast requirements.

- **Reducing current forecast requirements** by consumption

    If consumption is higher than the forecast requirements in the current month, then the system does **not** reduce future forecast requirements.

- **Average reduction** of the forecast requirements

    The reduction of the forecast requirements is based on average daily consumption. Actual consumption data is not relevant.

    The system calculates the average daily requirement first using the formula *forecast requirement/number of workdays in the forecast period.*

    The forecast requirements are then reduced by the quantity resulting from the following formula: *number of workdays worked x average daily requirements.*

Period Pattern and Forecast Periods

You can specify the **period pattern for the forecast** (daily, weekly, monthly or per accounting period) and the **number of periods to be included in the forecast** individually for each material. It is possible, however, that the forecast period pattern is not specific enough for planning purposes. In this case, you can define per material that the forecast requirements should be divided according to a finer period pattern for planning. You can also define how many forecast periods are to be taken into account during requirements planning. The splitting indicator is defined in Customizing for MRP per plant and per period unit and is assigned to the material in the material master.

> For a monthly forecast, the requirements date would be set on the first workday of the month because, for planning, it is assumed that the total requirement must be

Forecast-Based Planning

available at the beginning of the period. You can then divide this monthly
requirement into either daily or weekly requirements.

Forecast-Based Planning Procedure

Prerequisites

You have set an *MRP type* for forecast-based planning in the material master (*MRP 1* view).

> You define MRP types in Customizing for MRP in the IMG activity *Check MRP types*.

Process Flow

1. The system copies the requirements quantities that it has forecast in the requirements planning run and **calculates net requirements**. During this calculation, every period is checked to make sure that the forecast requirements are covered either by available stock, by planned receipts from purchasing or by production. If a material shortage occurs, the system generates a procurement proposal.

2. The system calculates the **quantity** recorded in the procurement proposal according to the **lot-sizing procedure** that you specified in the material master. Depending on the lot-sizing procedure, several forecast requirements are grouped together into one lot.

3. For every procurement proposal, the system calculates the date on which it must be converted into a purchase order or a production order.

Time-Phased Planning

Use

If a vendor always delivers a material on a particular day of the week, it makes sense to plan this material according to the same cycle, in which it is delivered.

Features

Materials that are planned using the time-phased planning technique are provided with an **MRP date** in the planning file. This date is set when creating a material master and is re-set after each planning run. It represents the date on which the material is to be planned again and is calculated on the basis of the planning cycle entered in the material master.

The net change planning indicator and the net change planning horizon indicator are irrelevant for materials planned using the time-phased planning procedure. The system does not therefore set these if changes are made in the planning run.

If you want to plan a material earlier than the specified MRP date, you can enter an MRP date during the planning run. For example, if the planning run is set for Monday, you can bring it forward to Saturday instead.

> If you use the SAP Retail System, the system proposes the planning cycle from the vendor sub-range when you create a material master record. The vendor sub-range contains all the goods of a particular vendor that, from a logistical view, can be planned similarly.

Time-phased planning can be executed using consumption-based planning or MRP:

- If you want to carry out time-phased planning using **consumption-based planning** techniques, the requirements have to be created using the material forecast. If you use consumption-based planning, only the forecast requirements are included in the net requirements calculation. For reducing the forecast requirements, you can choose the same settings in Customizing as used for forecast-based planning.

- If you want to carry out time-phased planning using MRP, all the requirements that are relevant to MRP are included in the net requirements calculation. For this purpose, the indicator *Time-phased with requirements* must have been selected in the MRP type. The forecast requirements can also be taken into account in this process.

Time-Phased Planning Procedure

Prerequisites

In the material master:

- You have entered an *MRP type* for time-phased planning and the *planning cycle* in the form of a planning calendar (*MRP 1* view).

- You have defined a *planned delivery time* (*MRP 2* view).

- You have entered *lot-for-lot order quantity* as the MRP lot size (*MRP 1* view).

> ⇨
>
> You can also use the optimum lot-sizing procedures for time-phased planning. They are used here in the same way as in reorder point planning.

> ⇨
>
> You define MRP types in Customizing for MRP in the IMG activity *Check MRP types*.

Process Flow

1. When you start the planning run, the system uses the MRP date recorded in the planning file to check which materials are actually to be planned. The planning date is calculated using the planning cycle.

2. The system calculates **requirements**. It also then determines a time interval. This **time interval** must take into account that the material has to cover all requirements up to the next MRP date including the delivery time.

   The requirements are calculated according to the following formula:

   Forecast requirements - or other requirements in the interval (interval = planning cycle + purchasing processing time + planned delivery time + goods receipt processing time) + safety stock

Time-Phased Planning Procedure
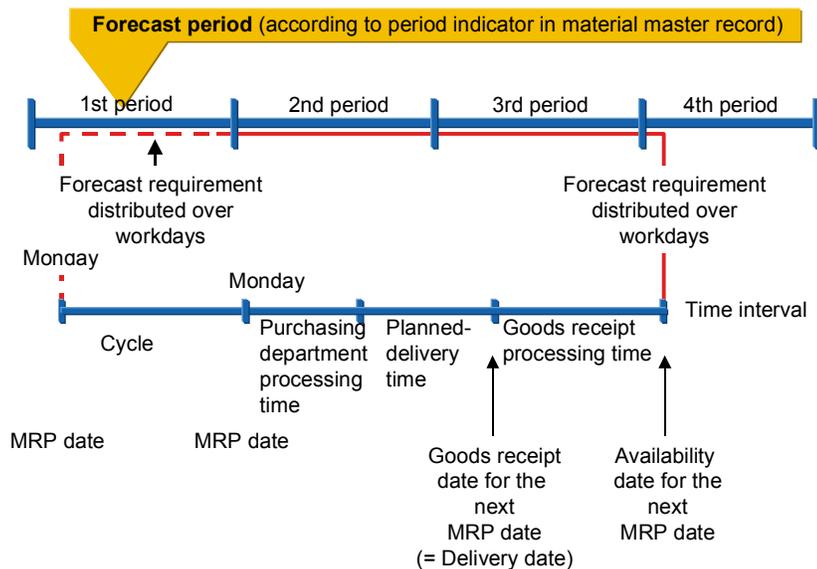
The requirements of the periods that completely lie within the interval in question are taken into account when calculating the requirements. If a requirement does not completely lie within the interval, the system only takes part of it into account.

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The planned delivery time is calculated according to calendar days and the purchasing processing time and the goods receipt processing time are calculated in workdays.

3. In the net requirements calculation, the system reduces the requirements calculated in the interval by stock and firmed receipts. The remaining quantity is equal to the **shortage quantity**.

4. If you use the lot-for-lot, the system creates a **procurement proposal** for the amount of the shortage quantity. If you have selected another lot-sizing procedure, the quantity in the order proposal depends on the lot-sizing procedure.

➡️

During the calculation, the system takes for granted that the firmed receipts lie in the interval in question. It does not matter whether the firmed receipts are available at the beginning or not until the end of the interval. This means that a temporary shortage may exist, however, this is accepted.

Range of Coverage Profile in Time-Phased Planning

Use

Using the **range of coverage profile**, you can determine a safety stock level based on current requirements. This safety stock level is calculated using the average daily requirements quantity.

Prerequisites

You have a *range of coverage profile* in the material master (*MRP 2* view).

➡️

You define range of coverage profiles in Customizing for MRP in the IMG activity *Define range of coverage profile (dynamic safety stock)*.

Features

Example

For example, a material that has a planned delivery time of 2 days is always planned on Tuesdays. In the net requirements calculation during the planning run, the system uses the interval between the MRP date and the availability date of the next MRP date. In this particular case, the interval starts on Tuesday and ends on Thursday of the following week (8 workdays).

• Requirements calculation **without entering a range of coverage profile**

   The system calculates a requirement of 160 pieces using the information from the forecast that was carried out previously. If the system does not take a range of coverage into account, it simply creates a **procurement proposal for 160 pieces**, if the stock level is equal to zero and no firmed receipts exist.

• Requirements calculation when the following range of coverage is entered

Minimum range of coverage	3 days
Dynamic minimum safety stock	60 pieces
Target range of coverage	5 days
Dynamic target safety stock	100 pieces
Maximum range of coverage	12 days
Dynamic maximum safety stock	240 pieces

   – If warehouse stock is equal to zero, the system adds a further 100 pieces to the procurement proposal for 160 pieces mentioned above as the incoming quantity has to cover an extra 5 days. This means that the system creates a procurement proposal for 260 pieces.

   – If warehouse stock is equal to 200 pieces, the system creates a procurement proposal for 60 pieces as the remaining 40 pieces would only cover a further 2 days and the stock should cover at least another 3 days. If the minimum safety stock level is not fulfilled, the system replenishes up to the target safety stock level.

   – If warehouse stock is equal to 220 pieces, the system creates no procurement proposal, as the remaining 60 pieces will still cover the next 3 days requirements.

Range of Coverage Profile in Time-Phased Planning

− If warehouse stock is equal to 410 pieces, the system creates an exception message in the planning run to the effect that excess stock exists - the stock will last longer than 12 days (160 + 12x20 = 400). Moreover, the system also indicates that the stock level of 150 pieces is too high. The target stock level is 260 pieces (requirements + target safety stock).

See also:

Time-phased Planning Process with Delivery Cycle

Use

If you have to deal with more complex situations, you can define a **delivery cycle** in addition to the **planning cycle**. In so doing, you define the days on which the vendor delivers the goods.

You enter a delivery cycle if the delivery date (or the goods receipt date) depends on the day on which you order the goods. For example, you execute the planning run and place your orders on Mondays and Tuesdays. If you place the order on Monday, the delivery is made on Wednesday. If you place the order on Tuesday, the delivery is not made until Friday.

> If you use the SAP Retail System, the system proposes the delivery cycle from the vendor sub-range when you create a material master. The vendor sub-range contains all the goods of a particular vendor that, from a logistical view, can be planned similarly.

Prerequisites

In the material master (*Planning calendar* field in the *MRP 2* view), you have defined a *delivery cycle* in the form of a planning calendar in addition to the planning cycle.

Features
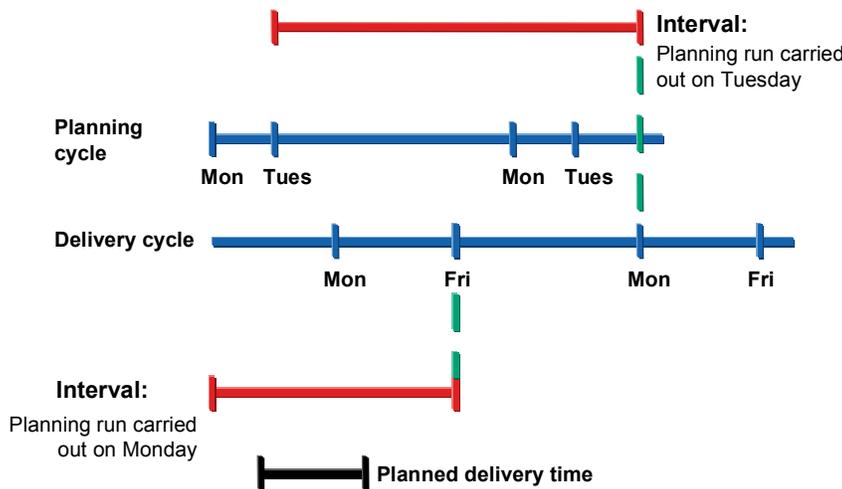
If you start the planning run, the system uses the MRP date recorded in the **planning file** to check which materials are actually to be planned. The system **calculates requirements** independently from that, whether you have entered a delivery cycle or not. The system uses the **time interval** between the MRP date and the availability date for the next MRP date as a basis for calculating the requirements quantity. It also takes for granted that the vendor requires at least the planned delivery time before he can deliver his goods. This means the following (if no goods receipt processing time has been maintained):

- If the MRP date is a Monday, the interval used for the calculation is from Monday to Friday, as the Friday is the goods receipt date of the **next** MRP date (Tuesday).

Time-phased Planning Process with Delivery Cycle

• If the MRP date is a Tuesday, the interval used for the calculation is from Tuesday to the Wednesday of the following week, as the Wednesday is the goods receipt date of the **next** MRP date (Monday).

The material's stocks (stock plus firmed receipts in the interval) must cover this interval. If a material shortage occurs, the system creates a new procurement proposal.

The system interprets the planned delivery time as the 'minimum delivery time'. That is, it takes at least this number of days for the goods to be delivered from the time that the order was placed. Thus, the system recognizes in the example above that if the planning run is carried out on Tuesday, the material will not be delivered until Friday and not on Wednesday.

> The processing time required for the Purchasing department is taken into account. The planned delivery time plus the purchasing processing time must be smaller than the period between the date of the next planning run and the corresponding goods receipt date.

Time-phased Planning Process with Reorder Point Planning

Use

You can combine time-phased planning with reorder point planning.

Prerequisites

- You have set the *MRP type* for time-phased planning in the material master (*MRP 1* view).

- You have defined a reorder point or a forecast has calculated it automatically and you have entered it in the material master (*MRP 1* view).

Features

The material is not only planned up to the **MRP date** recorded in the planning file, but it is also planned if **stock falls below the reorder level due to a goods issue**. When the stock level falls below the reorder level, the system automatically sets the net change planning indicator in the planning file, which means that the material will be included in the next planning run.

It calculates the interval that starts from the moment that stocks fall below the reorder level to the availability date of the next regular MRP date and uses this for the requirements calculation. The ordered quantity must cover this interval. On the following MRP date, the material is planned as usual.

Availability date
for the next
MRP date

Planning
cycle

R   **X**   **R**   Purchasing processing time
+
planned delivery time +
goods receipt processing-
time   **R**

Time interval

R = MRP dates   **X** = extraordinary MRP date,
       according to cycle   as stock fallen below reorder level
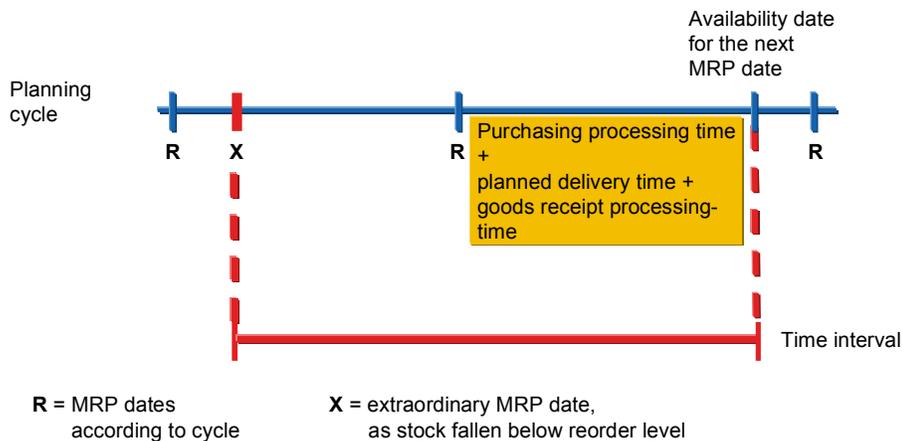
Master Data

Features

The following is included in the master data for material requirements planning:

- Planning calendar

- Quota arrangements

- BOM explosion number (fixed key date)

Planning Calendar

Definition

Planning calendars define flexible period lengths for material requirements planning at plant level.

Use

- Using the planning calendar, you can define flexible periods for a period lot-sizing procedure in master production scheduling and in MRP. The system groups together the purchase order proposals, which fall within the period defined in the planning calendar, to form a lot. You allocate this special lot-sizing procedure to the material in the material master together with the planning calendar (see Period Lot-Sizing Procedures [Page 89]).

- You can also use the periods in the planning calendar for the **period totals display in the stock/requirements list**. If a planning calendar is valid for a particular material or if a planning calendar is entered at plant level in Customizing, the receipts and issues in the period totals display can also be grouped together according to the periods of the planning calendar(see Display of Period Totals [Page 360]).

- Finally, you can also use it to define **flexible splitting periods for demand management**. The total planned independent requirements quantity for a certain period (for example, for one year) is then divided up according to the period defaults in the planning calendar.

Creating Planning Calendars with Calculation Rule

1. Starting from the *MRP* menu choose *Master data → Planning calendar → Create periods*.

   The initial screen for planning calendar maintenance now appears.

2. Enter the plant for which the planning calendar is to be valid.

3. Enter a combination of numbers or letters of up to three digits in length for identifying the calendar and choose ✅. This entry is alphanumeric.

   The screen used for maintaining the planning calendar now appears.

4. Enter a short description of the planning calendar.

5. Enter the *minimum period*.

   The minimum period is used as a time limit for maintenance of a calendar that is no longer valid. You use the minimum period to define the period necessary for reprocessing the calendar. If the time limit is exceeded, the system displays the calendar for processing (see Changing the Planning Calendar [Page 43]), even when the *Valid to* date has not been reached yet. You should therefore define the minimum period so that, in the future, the system displays the planning calendar for processing on time in the future.

   You define the validity period of the calendar after you have defined the planning rule.

6. Specify how the system should proceed if the period start happens to fall on a day that is not defined as a workday in the factory calendar.

7. Choose ✅.

   The system displays the *Select calculation rule* dialog box. The calculation rule determines the calculation of the periods for the planning calendar.

8. Choose the calculation rule you require:

   − *weeks (*weekdays)

      Example: period start on Monday and Wednesday every week

   − *months (weekdays)*

      Example: period start on every second Wednesday of the month

   − *months (workdays)*

      Example: period start on every fifth workday of the month

      You can specify the workday/workdays of the planning calendar according to the workdays defined in the factory calendar.

   − *years (workdays)*

      Example: period start on every fifth workday of the year

      You can specify the workday/workdays of the planning calendar according to the workdays defined in the factory calendar.

   − *workdays*

      Example: period start on every fifth workday from a particular start date

You can specify the workday/workdays of the planning calendar according to the workdays defined in the factory calendar.

−   *weekdays*

Example: period start on every second Wednesday from a particular start date

9. Choose ✔.

In the screen area *Calculation rule for period specification*, the system asks you to specify the parameters of the corresponding calculation rule.

10. Enter data as required.

11. Choose 🔴 *Calculate periods*.

The system displays the *New dates* dialog box.

The system displays a start date in the *Valid from* field. You can change the date here, if necessary.

In the *Valid to* field, the time period that results from the minimum period is displayed. Here, you enter the date up until which the system is to calculate the periods.

12. Choose ✔.

The system then displays the calculated periods.

➡

The number of the displayed periods is used in the stock/requirements list for the period totals display, if the display is set according to a planning calendar.

13. Save your entries.

Creating Planning Calendars without Calculation Rule

1. Proceed as described in Creating Planning Calendars with Calculation Rule [Page 40] under points 1 to 7.

2. Choose 🖉 *Periods*.

3. Enter the start and finish dates as well as the number of periods.

   If you enter only start dates, the finish dates are automatically calculated by the system (except for the last finish date).

   If you only enter finish dates, the system will automatically calculate the start dates.

4. Save your entries.

Changing the Planning Calendar

1. Starting from the *MRP* menu choose *Master data → Planning calendar → Change periods*.

    The initial screen for planning calendar maintenance now appears.

2. Enter the plant for which the planning calendar is to be valid.

3. Choose *Calendar overview* or *Calendar no longer valid.*

    Calendar overview: the system displays all the planning calendars available in the system.

    Calendar no longer valid: the system displays all calendars, for which the minimum period independent of the *Valid to* date has been exceeded, and suggests them for reprocessing.

4. Select one or more planning calendars and choose ✔.

    The first selected planning calendar now appears. Here, you can carry out the necessary changes.

Function	Menu path	What you should know
Calculating new periods	*Change calculation rule*	Proceed as described in Creating Planning Calendars with Calculation Rule [Page 40].
Adding periods	🖊 *Periods*	Choose *New entries*.
Inserting periods	🖊 *Periods*	Position the cursor on the line where you want to insert a new period. Choose *Edit → Insert* and enter a new period end and a new period start.
Changing periods	🖊 *Periods*	Overwrite the *From date* or the *To date*.
Deleting periods	🖊 *Periods*	Position the cursor on the period that you want to delete. Choose *Edit → Delete*.
Fixing periods	🖊 *Periods*	Select the *fixing indicator* for the period(s) to be protected. Fixed periods are not changed if you instruct the system to automatically calculate new periods.

5. Save your entries.

    If you selected several calendars in the overview, the system now automatically displays the next planning calendar that you selected.

Quota Arrangements

Use

If a material can be obtained from **various sources of supply**, each individual source of supply can be allocated a **quota arrangement**. The quota arrangement is valid for a certain period of time and specifies exactly how the receipts are to be distributed amongst each source of supply.

You can set the quota arrangement for **in-house production** as well as for **external procurement**. Sources of supply can be:

- an individual vendor or outline agreement

- another plant, from which material should be procured

- a production version

Prerequisites

- You have maintained the **quota arrangement usage** for the respective material in the material master (*MRP 2* view).

  The quota arrangement usage determines whether a material is included in a quota arrangement and which operations lead to a quota arrangement. You can define, for example, that only purchase orders are included in quota arrangements or that procurement proposals created by the system in the planning run are also included.

  You define the quota arrangement usage in Customizing for Purchasing in the IMG activity *Define quota arrangement usage*.

- You have maintained the **quota file** for the material.

  You define the **sequence** of the sources of supply, the **quotas** per source of supply and numerous other parameters in the quota file.

Features

During the planning run, the system determines the sources of supply according to the quota file and assigns the procurement proposals to the sources of supply.

> In external procurement, the procurement proposal is allocated to the appropriate vendor. This vendor is copied to the purchase requisition.

For every procurement proposal with a quota arrangement, the system updates the **quota file**, so that the quota arrangement is always based on the current situation.

Two procedures are available:

- **Allocation quota arrangement**: every lot is assigned to a source of supply

- **Splitting quota arrangement**: a lot is split among various sources of supply

Further functions are also available for controlling quota arrangements. For example, you can set a maximum release order quantity that defines the maximum delivery capacity of one particular vendor.

Allocation Quota Arrangement

Use

Using this procedure, you **assign an exact source of supply** to every lot, if you have not entered a *maximum lot size* or *maximum release quantity* in the quota file.

Features

The assignment is determined using the **quota rating**. The system calculates the quota rating using the following formula:

Quota rating = Quota-allocated quantity (+ quota base quantity) / Quota

The **quota-allocated quantity** is thereby the total quantity, which has been procured for the relevant source of supply up until then.

You can control the quota arrangement using the **quota base quantity** without having to change the quota, if, for example, a new source of supply is to be added to the quota arrangement .

The **quota** is the percentage rate that defines which part of an occurring requirement is to be taken from a source of supply.

The source of supply, which has the lowest quota rating, receives the complete lot. The quota rating determines the sequence according to which the sources of supply are chosen.

Example for Allocation Quota Arrangement

$$\text{Quota rating} = \frac{\text{Quota-allocated quantity + Quota base quantity}}{\text{Quota}}$$

Reqmt 1:   1000 pieces

Source of supply	Quota	Quota-allocated quantity	Quota base quantity	Quota rating
1	25	500	--	20
2	75	3000	--	40

Reqmt 2:   1000 pieces

Source of supply	Quota	Quota-allocated quantity	Quota base quantity	Quota rating
1	25	1500	--	60
2	75	3000	--	40

The first procurement proposal is allocated to item 1, and the second procurement proposal to item 2.

Splitting Quota Arrangement

Use

You can use the splitting quota arrangement to distribute a procurement proposal **among various sources of supply**, that is, split them up.

Prerequisites

In the material master (*MRP* 1 view), you have assigned a **lot-sizing procedure with splitting quotas** for the materials to be included in this procedure.

> This quota arrangement logic with the splitting quota is set in Customizing per lot-sizing procedure.

Features

Order Quantity Calculation

The order quantity is calculated according to the following formula:

(Quota source of supply X * Requirement quantity) / Total of all quotas

The quota-allocated quantity of a source of supply or the quota rating is not relevant for the splitting quota.

The system splits the requirements according to the sequence that is defined by the quota, that is, the vendor with the highest quota is selected first. The sequence defined by the quotas can be overruled by priorities. This means that vendors that have been allocated priorities are always selected first. The quantity, however, is always calculated according to the formula above using the quotas.

Determining a Minimum Quantity for Splitting

The **minimum quantity** for the splitting quota determines that the lot has to amount to the minimum quantity (at least) before it can be split.

If a requirement is smaller than the minimum quantity, the system only selects the vendor whose turn it is according to the quota arrangement calculation, that is, it is processed on the basis of the allocation quota arrangement procedure and is not split.

If a requirement quantity has already been split and the remaining quantity causes a lot that is smaller than the minimum quantity, the system does not further split this quantity. The remaining quantity is assigned to the source of supply with the lowest quota rating.

See also:

Lot-Sizing Procedures [Page 82]

Example for Splitting Quota Arrangement

Example Data

Minimum quantity	400
Requirement	1000
Lot size	Lot-for-lot order quantity

	Quota
Vendor A	40
Vendor B	30
Vendor C	20
Vendor D	10

Order Quantity Calculation

Vendor A receives the first order due to having the highest quota. The quantity results from the above-mentioned formula with 40* 1000 / 100 as 400 pieces.

There is a remaining quantity of 600 pieces. Vendor B receives the next order with the quantity 30 * 600 / 60 as 300 pieces. As A has already been used, that quota is not taken into account.

There is a remaining quantity of 300 pieces. As the value is smaller than the minimum quantity, the system does not split it further. The system assigns the complete remaining quantity to vendor D, as this vendor has the lowest quota rating.

Lot Size and Rounding Profile in Quota Arrangement

Use

You can maintain a minimum lot size, a maximum lot size and a rounding profile for each quota item.

Integration

The minimum lot size, maximum lot size or rounding profile that you have maintained in the quota item override the entries in the material master and are valid for the assigned sources of supply. If you have maintained the minimum or maximum lot size in the material master, the values that you have entered there are valid for all sources of supply.

Features

Minimum Lot Size

The minimum lot size defines a **minimum quantity** for the procurement proposal. If a source of supply is determined on the basis of the quota arrangement logic, for which a minimum lot size has been entered and if the requirement quantity is smaller, the system creates the procurement proposal for the amount of the minimum quantity.

Maximum Lot Size

The maximum lot size determines the **largest possible quantity** for the procurement quantity. If a requirement exceeds the maximum lot size recorded for the quota item, then several procurement proposals are created for the maximum lot size until the total requirement is covered. If there is a remaining quantity that is smaller than the maximum lot size, the last procurement proposal is created to cover the amount of this rest quantity.

> After each procurement proposal is created, the quota arrangement is restarted, that is, the quota rating is recalculated to check which source of supply is to be used next. If the quota of a source of supply is high, then it can be used, if necessary, to create several procurement proposals for the maximum lot size.

"Only Once" Indicator

To avoid a situation where more than one order proposal is created per requirement for a source of supply, with the maximum lot size, you can set the *Only once* indicator for this particular source of supply. This source of supply is then only used once per requirement.

> It only makes sense to use the *Only once* indicator in combination with the maximum lot size.

Rounding Profile

If a quota item with a rounding profile is selected, then the quantity of the procurement proposal is adjusted according to the rounding profile.

Example for Maximum Lot Size

Example Data

Requirement	1000 pieces
Lot size	Period lot size with weekly grouping

	Quota	Maximum lot size	Previous quota-allocated quantity	*Only once* indicator
Vendor A	80	200	200	X
Vendor B	15		200	
Vendor C	5		200	

Order Quantity Calculation

The quota rating of vendor A is the lowest. Therefore, vendor A receives a procurement proposal for 200 pieces due to the maximum lot size.

The quota rating is then recalculated. Although the quota-allocated quantity has increased to 400 for vendor A, the quota rating for this vendor is still smaller than for the other two vendors. According to this, the next procurement proposal (200 pieces) would go to vendor A again. However, as the *Only once* indicator is set, vendor A cannot be used a second time. The system assigns the next procurement proposal to vendor B, as this vendor has the next lowest quota rating. Therefore, the next procurement proposal is made for vendor B for 800 pieces as no maximum lot size has been set for this vendor.

With the *Only once* indicator, you achieve a situation where vendor A only receives one procurement proposal per week (due to the weekly grouping of the period lot size) for a maximum of 200 pieces (for example, due to limited capacity). With this type of capacity monitoring, quantities that have already been released are not taken into consideration.

Priority and Maximum Release Quantity per Period

Features

Priority

Using the priority function, you can define the **sequence of sources of supply** irrespective of the quota rating and thus, **irrespective of the quota-allocated quantity**. If several sources of supply have priorities, then the source of supply with the smallest number in the priority field is selected first. Only once all the sources of supply with priorities have been selected, does the system then select the sources of supply with no priorities. Then, the system implements the normal logic for quota arrangements using the quota rating (see Allocation Quota Arrangement [Page 46]).

Maximum Release Quantity

The maximum release quantity defines the **maximum available capacity** of a source of supply and thus makes it possible to monitor capacities.

The maximum release quantity is defined for a certain period of time. In addition, you enter the number of periods for which the release quantity is valid, for example, a quantity of 200 pieces per week. The system checks whether the there are firmed receipts (firmed purchase requisitions and planned orders, firmed schedule lines, production orders, purchase orders) in the specified period that have already been scheduled or allocated and compares this quantity with the maximum release quantity.

If more firmed receipts are scheduled in a certain period than the maximum release quantity allows, then this source of supply is no longer used. Here, the system always checks using the availability date of the MRP element. For newly created procurement proposals, the system uses the requirement date of the source requirement.

If a certain percentage of the maximum release quantity has already been used for a source of supply and a further requirement occurs that exceeds the remaining quantity, then the system splits the requirement quantity. Another procurement proposal is created for this source of supply for the difference between the release quantity and the order proposal quantity. The rest of the requirement quantity is allocated to the next vendor whose turn it is according to the quota rating logic.

Example for Priority and Maximum Release Quantity

This example only applies to the **allocation quota arrangement**, that is, a splitting quota arrangement is not defined. You thus allocate every lot to one source of supply.

Example Data

In the procurement procedure for a particular material, you have a preferred vendor A that is always to be selected first. However, this vendor can only deliver 100 pieces per week. If you require more than 100 pieces, then the remaining quantity is to be procured from vendor B. However, this vendor also has a limited capacity and can only deliver 200 pieces per week. If you require more than 300 pieces in a week, the remaining quantity is to be divided between vendors C and D in the ratio 70 : 30.

The sources of supply are maintained as follows:

	Quota	Priority	Maximum release quantity
Vendor A		1	100
Vendor B		2	200
Vendor C	70		
Vendor D	30		

Allocation Quantity Calculation

The requirement quantity amounts to 1000 pieces.

The system selects vendor A first. However, due to the limited capacity situation, he only receives a procurement proposal for 100 pieces. Vendor B is then used. He receives an order proposal for 200 pieces. The **remaining** 700 pieces are **supplied by** either vendor C **or** D, depending on whose quota rating is the lowest.

This represents the typical procedure unless other purchase orders or firmed receipts already exist for vendors A or B in the week that the new procurement proposals are created. If, for example, a purchase order already exists for vendor A in this week for 100 pieces, then this vendor is no longer taken into account. If a purchase order for 40 pieces already exists, then he receives another order proposal for 60 pieces. The remaining quantity is distributed further.

Maintaining the Quota File

You can maintain the quota file in Purchasing or MRP. In this section, a description is given of how to maintain this file from Material Requirements Planning.

1. Starting from the *MRP* menu, choose *Master data → Quota maintenance*.

    The initial screen for maintaining quota appears.

2. Enter the material number and the plant for the material that you want to use to maintain the quota file and choose ✔.

    The header screen for maintaining quotas appears.

3. Enter the *Valid to* date for the quota arrangement item.

    You can only define continuous validity periods for one material. In the first interval, the system sets the current date in the *Valid from* field. The *Valid from* dates of the other intervals are set continuously so that the day after the end date of the last quota item is set as the start date for the next item.

4. If you want to work with splitting quota arrangements, enter a minimum quantity here.

5. Double-click on the item that you want to process.

    The item screen now appears.

6. Define the source of supply and other control parameters per item.

    Allocating the source of supply to the quota item determines the procurement type that the procurement proposal receives. Therefore, you can specify via the quota arrangement that, for example, 60% of a material is produced in-house and the other 40% is procured externally.

7. Save your entries.

BOM Explosion Number (Fixed Key Date)

Use

. The system explodes the BOM that is valid on this date.

For multi-level BOM structures, larger time intervals may exist between the explosion dates of the individual assemblies. If BOMs (or alternative BOMs) have been changed in the meantime (for example, exchanging individual components due to new technical drawings, changed production techniques, due to parts to be discontinued etc.) a situation may exist whereby an assembly that is used repeatedly is produced with different BOM structures.

If you want to ensure that for a certain production unit, the BOM structure is always **exploded with the same date**, you can allocate a BOM explosion number to the planned order (or for make-to-order production it can be directly allocated to the sales order).

Prerequisites

- You have created a BOM explosion number.

- You have entered the BOM explosion number in the sales order, or entered it when creating the planned independent requirements or when manually creating/changing planned orders.

  The system can automatically specify the BOM explosion number when entering planned independent requirements or customer independent requirements or when entering the sales order.

Features

By means of the **BOM explosion number**, you can define a common explosion date (**fixed key date**) for all BOM levels. BOM explosion is then carried out with this fixed key date for all levels.

BOM Explosion Without Fixed Key Date

BOM Explosion with Fixed Key Date

See also:

BOM Explosion Number (Fixed Key Date)

Creating BOM Explosion Numbers

1. Starting from the *MRP* menu, choose *Master data → BOM explosion number → Edit*.

    The system displays the initial screen for maintaining the BOM explosion number.

2. Choose ⏳.

    The screen for maintaining the BOM explosion numbers now appears.

3. Choose *New entries*.

    A screen now appears where you can enter new BOM explosion numbers.

4. Enter data as required.

    –   **BOM explosion number**

        The BOM explosion number is the object for which the following data is maintained. It can be entered alphanumerically.

    –   **Fixed key date**

        The fixed key date determines which bill of material is exploded.

    –   **Plant**

        You can also specify a BOM explosion number for a specific plant. Enter the appropriate plant in this case.

    –   **Material**

        You can specify a BOM explosion number for a specific material. Enter the appropriate material in this case.

    –   **Status**

        You can set the BOM explosion number to active or inactive using the status field. Only active BOM explosion numbers are used in the planning run.

5. Save your entries.

Changing BOM Explosion Numbers

1. Starting from the *MRP* menu, choose *Master data* → *BOM explosion number* → *Edit*.

    The system displays the initial screen for maintaining the BOM explosion number.

2. If necessary, enter certain restrictions for the selection of existing BOM explosion numbers:

    −   if you want to maintain a specific BOM explosion number, enter it in the *From BOM explosion number* field. This BOM explosion number is then displayed first.

    −   if you want to maintain all the BOM explosion numbers for a specific interval, enter the appropriate BOM explosion numbers in the *From BOM explosion number* and *To BOM explosion number* fields.

    −   enter the maximum number of BOM explosion numbers to be selected in the *Maximum number for selection* field.

    −   if you only want to maintain the BOM explosion numbers of a certain plant, enter the appropriate plant in the *Plant* field.

    −   if you only want to select the BOM explosion numbers of a specific material, enter this material in the *Material* field.

3. Choose 🕒.

    The screen for maintaining the BOM explosion numbers now appears.

4. Select the BOM explosion number(s) that you want to change and choose ✔.

    The selected BOM explosion numbers are now made ready for input.

5. Change the corresponding data.

6. Save your entries.

Assigning a New Key to the BOM Explosion Number

Use

The BOM explosion number is transferred to the planned order of the finished product or of the main assembly during the planning run and copied to the planned orders for the main assemblies on all BOM levels when determining dependent requirements.

If you want an individual assembly within the BOM structure to be exploded with a different date, you can assign a new key to the BOM explosion number, that is, assign a different BOM explosion number to the main assembly.

This is also the case, when a main assembly is used in several BOMs and various BOM explosion numbers have been maintained for the higher levels. The new key assignment then determines that the main assembly is always produced with one standard BOM explosion number.

Procedure

1. Proceed as described in Changing BOM Explosion Numbers [Page 60] under points 1 to 3.

2. Select the BOM explosion numbers that you want to assign a new key to.

3. Choose *Maintain new key assignment.*

    The screen for maintaining new key assignments now appears.

4. Enter the following data:

    − **Plant** for the material that you want to assign a new key to.

    − **Material number** for the material that you want to assign a new key to.

    − **BOM explosion number**, that is, the new BOM explosion number that the material should receive.

5. Choose ✔.

    The system displays the fixed key date, the short description of the reassigned BOM explosion number, and the short text of the material.

6. Save your entries.

Assign New Project Account Assignment to Material Components

Use

In Sales Order Management, the sales order is assigned to a **WBS element** account. In the planning run, procurement proposals for all dependent materials that are included in the project structure are assigned to the WBS account to which the sales order is assigned.

If you want to assign certain assemblies and material components to the account of a sub-project of the project structure, you can use this function to assign the material numbers to the **WBS elements of the sub-project**.

In the planning run, the material component determined here and all materials dependent on this material are assigned to the sub-project account.

Prerequisites

You have assigned a WBS element to the sales order.

Procedure

1. Starting from the *MRP* menu, choose *Master data → Project assignment → Edit*.

    The system displays the *Process project allocation* screen.

2. Enter the sales order and the sales order item and choose ✔.

3. Enter the plant, the material number and the WBS element of the sub-project.

4. Save your entries.

Planning Process

This section deals with the business and technical procedures of material requirements planning.

Process Flow

The system carries out the following processes in the planning run:

1. The system checks the **planning file**. During this process, the system checks whether a material is to be planned due to a change relevant to MRP, and how to proceed if there are already existing procurement proposals (see Checking the Planning File [Page 65]).

2. The system **calculates net requirements** for every material. For this calculation, the system checks whether the requirements are covered by the warehouse stock and dispatched receipts from Purchasing or Production. If the requirements cannot be covered, the system creates a **procurement proposal** (see Net Requirements Calculation [Page 76]). If a material has been assigned a range of coverage profile, the **dynamic safety stock** is also calculated during the planning run using the **range of coverage profile**. This ensures sufficient material availability even for unplanned additional requirements (see Calculating the Statistical Range of Coverage Using the Range of Coverage Profile [Page 179]).

3. The system **calculates procurement quantities**. When doing this, the system takes into account the selected **lot-sizing procedure** and, if necessary, **scrap** and **rounding** values (see Calculating Procurement Quantities [Page 81]).

4. The system carries out the scheduling in order to calculate the start and finish dates for the procurement elements (see Scheduling [Page 112]).

5. The system determines **procurement elements**. Dependent upon the defined setting, **planned orders, purchase requisitions or delivery schedules** are created by the system for a material (see Determining the Procurement Element [Page 132]). If you have maintained the necessary entries for **quota arrangements**, the system also determines the **source of supply** and allocates this to the procurement element (see Quota Arrangements [Page 135]).

6. For every procurement element of an assembly, the system explodes the BOM and determines the dependent requirements (see BOM Explosion and Determining Dependent Requirements [Page 143]).

7. During the planning run, the system recognizes **critical situations** that have to be assessed manually in the planning result by the work scheduler. The system creates exception messages and, if necessary, checks rescheduling (see Creation of Exception Messages [Page 175], Rescheduling Check [Page 176]). The system also calculates the **actual range of coverage** and the **days' supply and receipt days' supply** (see Days' Supply and Receipt Days' Supply [Page 190], Actual Range of Coverage [Page 192]).

The planning run is usually carried out at plant level. In addition, the following are also possible:

Storage Location MRP [Page 211]

Planning with MRP Areas [Page 220]

Multi-Plant/Site Planning [Page 253]

Result

After the planning run, the MRP controller can check and edit the generated procurement elements. Various evaluations are supported by the system.

See also:

Checking the Planning File

Implementation Options

The first process in MRP is the checking of the planning file.

The planning run and the scope of the planning run (which materials are planned in which planning run) are controlled by the planning file.

The planning file contains a list of all materials relevant to the planning run. As soon as a material master record is created with MRP data and a valid MRP type, this material is then automatically included in the planning file.

Prerequisites

The planning file has been set up and includes all materials relevant to MRP.

Process Flow

1. The system checks whether the material to be planned is included in the planning file, that is whether the material number is in the *planning file* and whether the NETCH or NETPL indicator has been set for *net change planning or net change planning in the planning horizon* (see also Planning Run Types and Scope of Planning [Page 67]).

2. The system reads the low-level code. The low-level code defines the sequence in which the materials are to be planned. The system plans materials with the low-level code 000 first and then those with 001, and so on. (See also Calculating Low-Level Codes [Page 71]).

3. The system checks whether the BOM is to be re-exploded due to existing procurement proposals. The system re-explodes the BOM if an X has been entered in the *BOM explosion* column of the planning file.

4. The system checks whether procurement proposals existing since the last planning run for a material are to be deleted and recreated. The system does this if an X has been entered in the *Reset Order Proposals* column (see also Planning Mode [Page 69]).

5. The system reads the MRP date in addition to the planning file entry if time-phased planning or MRP combined with time-phased planning is used. The MRP date is copied from the planning calendar and determines when planning is to be carried out for the material.

6. The system checks whether the material is a master schedule item. The system does this if an X has been entered in the *MPS Item* column of the planning file. This indicator is set if the material has an MRP type for master production scheduling.

Individual Customer Planning File Entries

Use

If you create or change the configuration or the sales order BOM for a sales order, the system then creates an individual customer planning file entry. In the planning run, only the planned orders for the changed sales orders are re-exploded, that is to say, not all the planned orders for all the sales orders. System performance is thus improved.

Integration

The individual customer planning file entries have their own individual customer planning file. This file differs from the planning file only due to the additional fields: sales order number and sales order item.

You cannot display individual customer planning file entries.

Features

The system checks whether an individual customer planning file entry exists for a material that is to be planned. If this is the case, only the planned orders that belong to the changed sales order are re-exploded. This also applies for the subordinate components.

After the planning run has been carried out, the individual customer planning file entries are deleted.

Planning Run Types and Scope of Planning

Use

The planning run type controls the scope of planning, that is, it defines which materials are to be planned:

- Regenerative planning (NEUPL)

    The system plans all the materials that are contained in the planning file

- **Net change planning** (NETCH) or **Net change planning in the planning horizon** (NETPL)

    The system only plans materials that have undergone a change relevant to MRP since the last planning run

Features

Net Change Planning (NETCH)

In net change planning only those materials are planned for which the net change planning indicator in the planning file has been set as a **planning file entry**. The system usually sets the indicator automatically as soon as a change is made to the material that is relevant to MRP.

The following changes cause an entry to be made in the planning file:

- Changes to stock, if these change the stock/requirements situation of the material

- Creation of purchase requisitions, purchase orders, planned orders, sales requirements, forecast requirements, dependent requirements or reservations

- Changes to fields that are relevant to the planning run for these receipts and issues or in the material master

- Deleting receipt or issue quantities

    If you have changed the settings of an MRP type, a lot-sizing procedure or a purchasing department processing time in Customizing, the materials that are affected by these changes thus have no planning file entry and are not included automatically in the net change planning. To enable the changes made to take effect, you choose *regenerative planning* in the initial screen of the planning run or make an entry manually in the planning file.

Net change planning in the planning horizon (NETPL)

You can also use a **planning horizon** to further limit the scope of the planning run. In "net change planning in the planning horizon", the system only plans materials that have undergone a change that is relevant to the planning run within the period which you defined as the planning horizon. The system sets the *net change planning horizon*

Activities

- During the planning run, the system checks every entry for a material in the planning file:

Planning Run Types and Scope of Planning

- In a **regenerative planning run**, the system plans all materials that are included in the planning file irrespective of all indicators.

- In a **net change planning run**, the system only plans those materials that are provided with the net change planning indicator.

- In **net change planning in the planning horizon**, the system only plans those materials provided with the net change planning horizon indicator.

- On completion of the planning run, the appropriate indicator is automatically deleted in the planning file:

  - The system deletes the net change planning indicator and the net change planning horizon indicator for a regenerative planning run and a net change planning run.

  - The system only deletes the net change planning horizon indicator for a net change planning run in the planning horizon

    If a termination occurs when planning a material, the indicators for this material remain in the planning file so that the material is planned again in the following net change planning run. However, depending on the error, you can manually delete the indicators in Customizing for MRP in the IMG activity *Define Error Processing in the Planning Run* if necessary (for example, if a certain material is not available in the planning plant). This means that you can avoid a situation where materials are pointlessly planned again and again.

Planning Mode

Use

The planning mode controls how the system is to deal with procurement proposals (planned orders, purchase requisitions, scheduling agreement lines) from the last planning run, which are not yet firmed, in the next planning run.

Usually, the master plan is adjusted in the planning run to adapt it to either new dates or quantities. If a requirements quantity was increased, the system automatically adjusts the quantity of the corresponding procurement proposal. If changes are made in the BOM or material master, the planning mode controls whether or not these changes will have an effect in planning.

Features

The planning mode is set automatically in the planning file. However, you can overwrite it in the initial screen of each planning run.

Planning Mode in the Planning File

- **Planning Mode 1**

    Planning mode 1 is if you have only set the planning file entries (*net change planning* indicator and *net change planning horizon* indicator*)* in the planning file for a material (see Planning Run Types and Scope of Planning [Page 67]).

    In the planning run in planning mode 1 the system reactivates the existing planning data, that is, procurement proposals remain on the database and are only then adapted, if the dates and quantities do not suit the new planning situation. System performance is thus improved.

    Example of changes that cause planning mode 1 to be set:

    – Changes in date and quantity

    – Requirement changes

    – Changes in the lot-sizing procedure or MRP type

- **Planning Mode 2**

    Planning mode 2 is if a material has planning file entries and the *Re-explode BOM* indicator is also set in the planning file.

    In the planning run in planning mode 2 the system re-explodes the BOMs for existing procurement proposals.

    Example of changes that cause planning mode 2 to be set:

    – Changes to the material BOM

    – Changes to the sales order BOM

    – Changes to the phantom assembly BOM

    – Changes to references assigned within BOM

    – Changes to material classification

    – Change of production version in material master or planned order

Planning Mode

       –   Change or conversion of BOM explosion number

- **Planning Mode 3**

  Planning mode 3 is if a material has planning file entries and the *Reset order proposals* indicator is also set in the planning file.

  In planning mode 3 existing procurement proposals are completely deleted from the database and recreated. The system then re-explodes the BOMs.

  Example of changes that cause planning mode 3 to be set:

  –   In-house production time

  –   Planned delivery time

  –   Scheduling margin key

  –   MRP controller

- **No Planning File Entry**

  The following types of changes do not cause a planning file entry:

  –   **Customizing**, such as changes in purchasing department processing time in the plant parameters

  –   **MRP-relevant changes to the routing**, such as change in the standard time

Planning Mode in Initial Screen of the Planning Run

The planning mode set in the planning file for a material can be overruled by the planning mode in the initial screen of the planning run. The following applies to this: For planning a particular material the planning mode that has the highest numerical value takes priority. Planning mode 2 (re-explode BOM) thus takes priority over planning mode 1 (adapt planning data), planning mode 3 (delete and recreate planning data) takes priority over planning mode 1 (adapt planning data) and planning mode 2 (re-explode BOM).

It is usually sufficient to set planning mode 1 in the initial screen of the planning run. If you have to plan a material with another planning mode, the system then sets the corresponding planning mode in the planning file. The system reads the information in the planning run.

       ➡

       It is important to set the planning run to planning mode 2 or 3 in the initial screen if changes have been made in Customizing or the routing, because no planning file entries are created automatically for the materials affected by these changes.

See also:

Calculating Low-Level Codes

Implementation Options

Materials may appear in several products and in several production levels of a product. The **low-level code** represents the **lowest level of usage** of a material within all product structures.

It determines the sequence in which the materials are planned. The system plans materials with the low-level code 0 first and then those with 1 and so on. The lower the low-level code is, the higher the number assigned to the level.

Prerequisites

You have created BOMs for the materials that you want to plan.

Process Flow

Planning direction
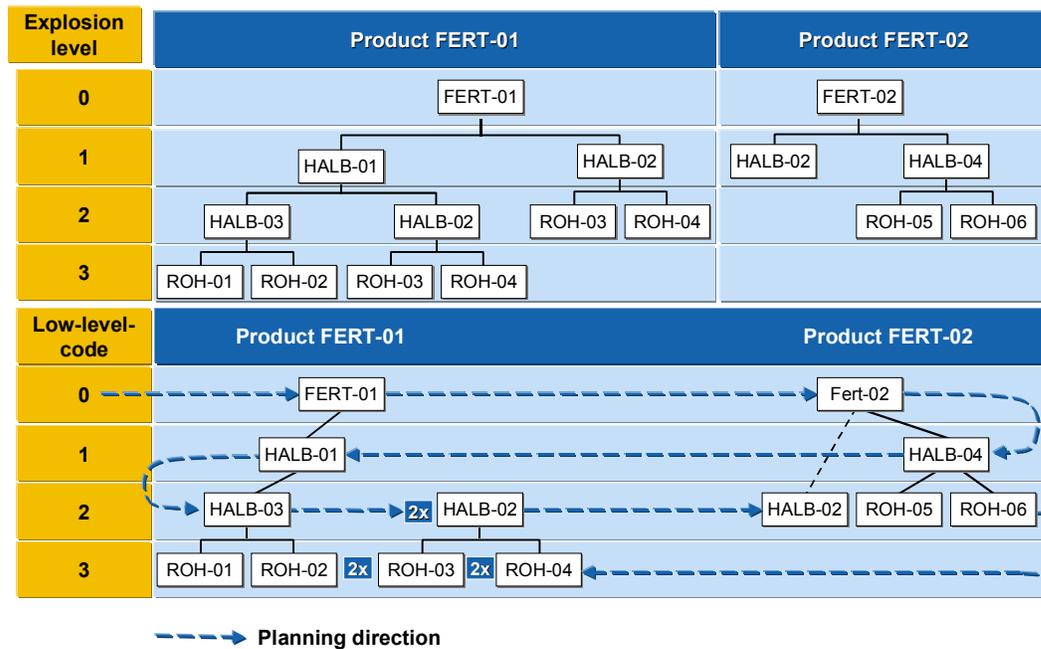
Result

The low-level code is stored in the BOM management program in the material master (*Additional data*, ℹ️) and is entered in the planning file.

Displaying the Planning File

1. Starting from the *MRP* menu choose *Planning → Planning file entry → Display*.

   The initial screen for displaying planning file entries now appears.

2. Enter your selection criteria:

   If you leave the m*aterial, MRP area, plant* and *low-level code* fields blank, the system selects all materials in all MRP areas and all plants.

3. Choose ✔.

   The system displays a list of all the materials that fulfill your selection criteria.

   − The record type of the planning file entry is given in column RT. MRP materials are automatically provided with a *B* and phantom assemblies with a *D*.

   − In the *low-level code* column, you can see the respective low-level code of the material. In the material master record, each material is allocated one low-level code (field L.Lvl Code) which is determined by the bill of material (BOM) management program. You can also display the low-level code in the material master (*Additional data*, 🛈).

      If a material does not appear in a bill of material, the system will automatically allocate the highest level (999).

   − In the *MPS item* column, the indicator for a master schedule item is set.

   − If the *Net change planning* indicator is set for a material then it is included in the net change planning run.

   − If the *Net change planning horizon* indicator is set for a material then this material is included in the net change planning in the planning horizon.

   − If you set the *BOM explosion* indicator, then available planned orders are taken over but the BOM is re-exploded and the routing re-released.

   − If you set the *Reset order proposal* indicator, then planning dates that may be available are always deleted and recreated.

4. Choose 🎯 *Statistics*.

   A window with statistical data appears. Here you see how many materials have been selected in total and how many of these exist for each of the indicators mentioned above.

Setting Up the Planning File

Use

If a material was created before the planning run was activated for a plant, you must generate an entry in the planning file for all materials in this plant that are to be included in the planning run.

➡

This function can only be carried out in background mode.

Procedure

1. Starting from the *MRP* menu choose *Planning → Planning file entry → Set up in background*.

   The initial screen for the setting up of planning file entries appears.

2. You can use a selection variant to plan the creation of planning file entries at a later date, or you can start the process immediately.

3. Once you have started the process, the system checks each material in this plant to see whether it is relevant for MRP. If a material fulfills the appropriate prerequisites, it is included in the planning file and either the *net change planning* indicator or the *net change planning horizon* indicator is set.

Result

These materials are then included in the following MRP run.

Creating Entries in the Planning File Manually

Use

Planning file entries are usually set automatically by the system. In some exceptional cases, however, you may find it necessary to make an entry in the planning file manually.

Procedure

1. Starting from the *MRP* menu choose *Planning → Planning file entry → Create*.

   The screen for creating a planning file entries now appears.

2. Enter the material number and plant or MRP area as well as, if required, further planning indicators.

3. Choose ✔.

Result

The system checks the relevancy of the entered material for MRP and confirms the successful entry in the planning file.

Check the Consistency of the Planning File

Use

Since the entries in the planning file are permanent, you must check their MRP relevancy regularly. If, for example, a plant is subsequently excluded from material requirements planning, its materials will still be included in the planning file. The same applies for materials that are subsequently flagged with the MRP type *No MRP* and are thus excluded from MRP. In such cases, you should delete the entries in the planning file.

Procedure

1. Starting from the *MRP* menu choose *Planning* → *Planning file entry* →*Consistency check*.

   The initial screen for checking consistency now appears.

2. By using a selection variant, you can either plan the consistency check of the planning file entries to take place at a later date or you can start the process immediately.

3. Once the consistency check has started, the system checks each entry for the following information:

   – Does the material still exist, that is, does a material master record still exist for the material?

   – Is material requirements planning activated for the plant?

   – Does the material have a valid MRP type in the material master?

   – Does the low-level code still match the one in the material master?

Result

If one of these criteria no longer applies, the respective entry is deleted from the planning file.

If the low-level code no longer corresponds to the one in the material master record, the entry is deleted from the planning file and a new one is created with the current low-level code.

Net Requirements Calculation

The net requirements calculation is carried out in MRP in the planning run after the planning file check and at plant level. The system checks whether it is possible to cover requirements with the plant stock and fixed receipts already planned. In the case of a shortage the system creates a procurement proposal.

Process Flow

1. The system calculates **plant stock**. For all storage locations which belong to this plant and which are not excluded from materials planning or are planned separately, the following stocks are grouped together to form plant stock:

    − Unrestricted-use stock

    − Stock in quality inspection

    − Unrestricted-use consignment stock

    − Consignment warehouse stock in quality inspection

    In Customizing for MRP in the IMG activity *Availability of Stock in Transfer/Blocked Stock/ Restricted Stock*, you can also determine whether stock in transfer, blocked stock and restricted-use stock are included in the plant.

2. The system also takes into account all the **goods issues and receipts** for a material. Receipts are, for example, planned orders or purchase requisitions and issues are, for example, customer requirements, planned independent requirements, or reservations.

3. Therefore, the system checks to make sure that for each issue date, the requirement is covered by one or several receipts or by warehouse stock. If this is not the case, the system then calculates the shortage quantity and creates a procurement proposal. The lot-sizing procedure, scrap and rounding determine the quantity in the procurement proposal (see Calculating Procurement Quantity [Page 81]).

    ⇨

    The net requirements calculation supports the following types of planning: Reorder point planning, forecast-based planning, material requirements planning (MRP). In each procedure, the system calculates the available stock differently.

Net Requirements Calculation for MRP

Use

In **MRP**, requirement quantities are maintained in the system as **planned independent requirements, customer requirements, dependent requirements, material reservations as well as forecast requirements**. The system checks every exact requirement and every forecast requirement to determine whether they are covered by available warehouse stock and/or receipts (purchase orders, firmed procurement proposals, production orders, and so on).

Prerequisites

You have set an MRP type in the *MRP Type* field in the material master (View *MRP 1*) to *MRP* for the material.

Features

Available stock is calculated as follows:

```
        Plant stock

    –   Safety stock

    +   Receipts (purchase orders, firmed procurement proposals,
        production orders)

    –   Requirements quantity (for example, planned independent and
        customer requirements, material reservations, forecast
        requirements for unplanned  additional requirements)
        ─────────────────────────────────────────────────────
    =   Available stock
```

A shortage occurs if available stock is negative, that is, the requirement quantities are greater than expected receipts and stock quantity.

The system specifies the date of the issue (for example, customer requirement, planned independent requirement, reservation, forecast requirement) as the requirements date.

Net Requirements Calculation for Reorder Point Planning

Use

In **reorder point planning**, the net requirements calculation is only carried out once **the stock level has fallen below the reorder level**. Issue elements, such as, customer requirements, planned independent requirements, or reservations are only displayed and are not included in the net requirements calculation.

Prerequisites

You have set an MRP type for the material in the *MRP Type* field in the material master (View *MRP 1*) to *Reorder point planning, for example VB or VM*.

Features

Available warehouse stock is calculated as follows:

	Plant stock
+	Open order quantity (purchase orders, firmed planned orders, firmed purchase requisitions)
=	Available stock

If available warehouse stock falls short of the reorder level then the shortage quantity is the difference between these two.

The system specifies the date of the planning run as the requirements date.

> Safety stock is ignored when calculating the shortage quantity. However, if stock should fall below the safety stock level, the MRP controller receives an exception message.

Net Requirements Calculation for Forecast-Based Planning

Use

The basis of **forecast-based planning** is the **forecast of the total requirements**. The system only considers the forecast requirement quantities as issues. Other issue elements, such as, customer requirements, planned independent requirements, or reservations are only displayed and are not included in the net requirements calculation. The system checks every forecast requirement to determine whether it is covered by available warehouse stock and/or receipts (purchase orders, firmed procurement proposals).

Prerequisites

You have set an MRP type for the material in the *MRP Type* field in the material master (View *MRP 1*) to *forecast-based planning*.

Features

Available stock is calculated as follows:

	Plant stock
–	Safety stock
+	Receipts (purchase orders, firmed purchase orders)
–	Requirements quantity (forecast requirements)
=	Available stock

A shortage occurs if available stock is negative, that is, the requirements quantity is greater than expected receipts.

The system specifies the forecast requirements date as the requirements date. In this case, it assumes that forecast requirements are needed at the beginning of the period. This means that the requirements date is the first workday of the respective period.

> If the requirements of a particular period are not to be set on the first workday, but are to be evenly distributed over the period instead, select the splitting function of the forecast requirements (see *Define Splitting of Forecast Requirements for MRP* in the documentation for Consumption-Based Planning.

Gross Requirements Planning

Use

Gross requirements planning is initiated by planning with the planning strategy *Make-to-stock prod./gross reqmts plng.* Planned independent requirements, created using this requirements type, are **not compared with warehouse stock** in material requirements planning. The system only checks **against the expected receipt quantity** (from planned orders, purchase requisitions, and so on). This means that a mandatory master plan can be stored in the system.

> The gross requirements plan is displayed in a separate segment in the MRP list as well as in the stock/requirements list.

Prerequisites

- You have assigned the planning strategy *Make-to-stock prod./gross reqmts planning* to the material in the field *Strategy group* in the material master (*MRP 3* view).

- You have set the indicator for gross requirements planning for the material in the *Mixed MRP* field in the material master (MRP 31 view).

Features

Available stock is calculated as follows:

	Maximum stock level
+	Total requirements
−	Current plant stock
−	Existing firmed receipt elements
=	Lot size

A shortage occurs if available stock is negative, that is, the requirement quantity is greater than expected receipts.

The system specifies the date of the issue (for example, customer requirement, planned independent requirement, reservation, forecast requirement) as the requirements date.

Calculating Procurement Quantity

Implementation Options

The system calculates procurement quantities in MRP. The system determines material shortages for requirement dates in the net requirements calculation. Receipts must now cover these **shortage quantities**. The system calculates the receipt quantity in the lot-size calculation, which is carried out during the procurement quantity calculation.

Prerequisites

- You have defined the required lot-sizing procedure in Customizing for MRP in the IMG activity *Check lot-sizing procedure*.

- You have assigned the required lot-sizing procedure to the material in the material master (*MRP 1* view) and, if necessary, have specified additional restrictions:

  – Minimum lot size (minimum procurement quantity pro lot)

  – Maximum lot size (maximum procurement quantity pro lot)

  – Rounding value (The procurement quantity must be a multiple of this value)

  – Rounding profile (staggered rounding values)

- You have entered values for calculating scrap in the material master or the BOM.

Process Flow

1. The system adjusts the determined shortage quantities to match the parameters of the required **lot-sizing procedure** and thus determines the lot size.

2. If you have made an entry for scrap, the system calculates the **scrap quantity** and settles this against the lot size.

3. If you have defined a **rounding value** or **rounding profile**, the system rounds up the lot size and thus calculates the **procurement quantity**.

4. If you have made an entry for scrap, the system calculates the scrap quantity again and settles this against the lot size in order to determine the **yield**.

Result

The system uses the result of the procurement quantity calculation as the quantity for production or procurement of the material. This is made up of the estimated yield and scrap. You can display and change the procurement quantity in the procurement proposal. The estimated yield and scrap are displayed in the MRP list and the stock/requirements list.

See also:

Examples for Calculating Procurement Quantities and Yields [Page 110]

Lot-Sizing Procedures

Use

Lot-sizing procedures serve to calculate the procurement quantities, that is, the purchase order and production quantities.

Integration

- You define lot-sizing procedures in Customizing for MRP in the IMG activity *Check lot-sizing procedure*.

- You assign the required lot-sizing procedure to the material in the *Lot size* field in the material master (*MRP 1* view).

Features

Three groups of lot-sizing procedures are available:

- Static lot-sizing procedures

- Period lot-sizing procedures

- Optimum lot-sizing procedures

You can also use the **short-term and long-term** lot size to divide the planning period for the lot-size calculation into a short-term and a long-term area. Therefore, it is also possible to use a different lot-sizing procedure for calculating the lot size in each of these areas.

The **last lot** can be planned **exactly**, independent of the selected lot-sizing procedure.

Static Lot-Sizing Procedures

Use

In static lot-sizing procedures, the procurement quantity is calculated exclusively by means of the quantity specifications entered in the material master.

Features

The following static lot-sizing procedures are available:

- Lot-for-lot order quantity

- Fixed lot size

- Fixed lot size with splitting and overlapping (see Lot Sizes with Splitting and Overlapping [Page 99])

- Replenishment up to maximum stock level

Lot-for-Lot Order Quantity

Use

You plan using lot-for-lot order quantity, when you want to procure the exact lot size again.

This procedure is also referred to as the lot-for-lot procedure.

Prerequisites

You have set the indicator EX for lot-for-lot order quantity in the *Lot size* field in the material master (*MRP 1* view) for the material.

Features

When planning using lot-for-lot order quantity, the system uses the exact shortage quantity (requirement minus available stock) as the order quantity in the case of a material shortage. At the time of the requirements date, the planned plant stock is zero.

Planning is carried out daily. The system groups requirement quantities from the same day together in one procurement proposal.

Fixed Lot Size

Use

It is useful to select a fixed lot size for a material, if it is only delivered, for example, in **pallets of a certain quantity** or in **tanks of a certain size**.

Prerequisites

You have set the indicator *FX* and entered the fixed lot-size quantity in the *Lot size* field in the material master (*MRP 1* view) for the material.

Features

When planning using fixed lot size, the system will use the fixed order quantity recorded in the material master for the lot-size calculation if a material shortage exists. If the fixed lot size is not sufficient to balance out the material shortage, then several lots are planned for the same date until the material shortage is eliminated.

>   You can specify a threshold value for the maximum number of order proposals for the fixed lot size in Customizing for MRP in the IMG activity *Define error processing in the planning run*. If this value is exceeded, that is, if too many procurement proposals are created for a date and for a material, the material is provided with a termination message.

Replenishment up to Maximum Stock Level

Use

You use the lot-sizing procedure **Replenishment up to maximum stock level** if you want to fill the stock up to the highest possible level or if you can only store a **certain quantity** of a material due to the container size. This applies to a tank, for example. The capacity of the tank determines the maximum stock level.

Integration

⚠️

You can use this lot-sizing procedure with reorder point planning or MRP.

Prerequisites

You have set the indicator *HB* in the *Lot size* field and the maximum quantity to stock in the *Maximum stock level* field in the material master (*MRP 1* view) for the material.

Features

- In **material requirements planning**, the system creates an order quantity to bring the stock level up to the maximum stock level. If, however, the requirements for one day are greater than the maximum stock level the system creates an order quantity for the required quantity. In this case, a balanced stock/requirements situation is given higher priority than the lot-sizing procedure.

- In **reorder point planning without taking external requirements into account** you only use stocks. MRP then calculates the lot sizes as follows:

	Maximum stock level
–	Current plant stock
–	Existing fixed receipt elements
=	Lot size

- In **reorder point planning where external requirements are taken into account**, where additional requirements are also included in the calculation, MRP tries to achieve two goals:

  - All requirements must be covered

  - Once requirements have been covered, the defined maximum stock level must not be exceeded, but also does not have to be reached

  The requirements dates are not taken into account. The system calculates the total of all requirements.

  The calculation of the lot size occurs in two steps using two formulas:

  Formula 1

	Maximum stock level
–	Current plant stock
−	Existing fixed receipt elements
=	Lot size

Formula 2

	Reorder point
+	Total requirements (or total requirements in replenishment lead time)
−	Current plant stock
−	Existing fixed receipt elements
=	Lot size

The system creates the order proposal using the greater of the two lot sizes calculated.

- For **reorder point planning where external requirements are taken into account** as well as **MRP** there is an additional option, whereby you can set the *Maximum stock level variant 1 (Maximum stock level after covering requirement).* The MRP thus tries to achieve the following two aims:

  − All requirements must be covered

  − The defined maximum stock level must be reached after covering the requirements

  The system calculates the lot size using the following formula:

	Reorder point
+	Total requirements
−	Current plant stock
−	Existing fixed receipt elements
=	Lot size

Example

Example Data

Maximum stock level	5.000
Reorder point	2.000
Current plant stock	1.000

Replenishment up to Maximum Stock Level

Existing fixed receipt elements	None
Total requirements	4.000

Lot-Size Calculation

1. Reorder point planning without taking external requirements into account	5.000 - 1.000 = **4.000**
2. Reorder point planning where external requirements are taken into account	Formula 1: 5.000 - 1.000 = 4.000 Formula 2: 2.000 + 4.000 - 1.000 = **5.000** (this value is the larger and is copied over)
3. Reorder point planning where external requirements are taken into account or MRP, **maximum stock level variant 1**	5.000 + 4.000 - 1.000 = **8.000**

Period Lot-Sizing Procedures

Use

In period lot-sizing procedures, the system groups several requirements within a time interval together to form a lot.

Features

- You can define the following periods:

  - days

  - weeks

  - months

  - periods of flexible length equal to posting periods

  - freely definable periods according to a planning calendar

    The system can interpret the **period start of the planning calendar** as the availability date or as the delivery date.

- Splitting and overlapping are also possible for all period lot-sizing procedures (see Lot Sizes with Splitting and Overlapping [Page 99]).

- The system sets the **availability date** for **period lot-sizing procedures** to the **first requirements date** of the period. However, you can also define that the availability date is at the **beginning or end of the period**.

Availability Date for Period Lot-Sizing Procedure

Use

The system sets the **availability date** for **period lot-sizing procedures** to the **first requirements date** of the period. However, you can also define that the availability date is at the **beginning or end of the period**.

The availability date is the date by which the material must be available for production and includes the goods receipt processing time.

Integration

You define the availability date for period lot-sizing with the *Scheduling* indicator in Customizing.

Features

In the standard system, the availability date for period lot-sizing procedures is set to the first requirements date of the period. From this date, the system subtracts the goods receipt processing time to calculate the delivery date or order finish date for the procurement proposal. The requirements that lie between the period start and end are grouped together into a lot.

If the setting has been made in Customizing for the availability date to be at the beginning or end of the period, the basic dates of the planned order are rescheduled as well as the dependent requirements for the components.

Example for Determination of Availability Date

If you use **period lot sizing** in MRP and set the **availability date as the period start**, the system determines the availability date from the delivery date and the goods receipt processing time. The system then reschedules the availability date to the start of the next period that lies after the calculated availability date.

Example Data

MRP type	Material requirements planning
Lot size:	
▪ Lot-sizing procedure	▪ P (period lot size)
▪ Lot size indicator	▪ M (monthly lot size)
▪ Scheduling	▪ 1 (Period start = availability date)
Procurement type	F (External procurement)
Planned Delivery Time	20 calendar days
Goods receipt processing time	1 working day
Dependent requirements	29 August, 30 September and 31 October

Planning Result

The planning run was executed on 14 August. The system schedules the following dates:

29.08.	DepReq	2 individual requirements	100,00-
30.09.	DepReq	5 individual requirements	150,00-
01.10.	Pl.ord	0000001000	100,00
01.10.	Pl.ord	0000001001	150,00
01.10.	Pl.ord	0000001002	300,00
31.10.	DepReq	3 individual requirements	300,00-

The system displaces the availability dates for planned orders 1000 and 1001 to the start of the next period possible (1 October) which lies after the date (4 September) determined by forward scheduling.

The date 4 September results from forward scheduling from 12 August + 20 calendar days + 1 day for goods receipt processing time.

Delivery Date Instead of Availability Date

Use

⚠️

You can only use this function with the lot-sizing procedure **Period Lot Size According to Planning Calendar**.

The system normally interprets the **period start of the planning calendar** as the availability date. You can, however, set it to be interpreted as the delivery date.

Prerequisites

You define the setting for the availability date or delivery date for period lot-sizes with the *Interpretation of events* indicator in Customizing.

Integration

⚠️

It is not possible to use the indicator for scheduling together with the interpretation of the planning delivery period as delivery date.

Features

If you set the appropriate indicator in Customizing, the system interprets the period start as the delivery date. The system subtracts the planned delivery time from this delivery date to calculate the release date and then it adds the goods receipt processing time to calculate the availability date. The availability date is thus displaced by the goods receipt processing time.

The grouping of the requirements is also displaced to guarantee that goods are available on time for all requirements. In this case, the requirements are not strictly grouped together within the defined period length, but within the availability dates resulting from displacing the goods receipt processing time.

Example for Delivery Date Instead of Availability Date

Example Data

Planned delivery time	3 days
Goods receipt processing time	2 days
Planning calendar period 1	Tuesday 1 March until Monday 14 March
Planning calendar period 2	Tuesday 1 March until Monday 28 March

The vendor therefore delivers every two weeks on Tuesdays. The planned delivery time means that you must inform the vendor of the required quantity at least 3 days before the delivery date.

Requirements

Planning calendar period 1	Requirement 1 on 3 March for 100 pieces
	Requirement 2 on the 8 March for 70 pieces
Planning calendar period 2	Requirement 1 on 14.03 March for 150 pieces
	Requirement 2 on 16 March for 90 pieces

Example of Delivery Date

For the standard setting (availability date = start of period), the system groups all requirements in period 1 together and creates a procurement proposal for 170 pieces for the start of the period 1, that is for the 1 March.

The availability date of this procurement proposal is 1 March. Starting from here, the system schedules backwards, that is, the goods receipt processing time is subtracted, resulting in the delivery date 28 February. Then the system subtracts the planned delivery time of three days which results in the release date 24 February.

The requirements are grouped together between the period basic dates. This results in a lot of 170 pieces for the 1 March and another lot for 240 pieces for the 12 March.

Example of Delivery Date

With the setting *Interpretation of the Planning Calendar Periods as Delivery Dates,* the delivery date of the first period is 1 March and the delivery date of the second period is 15 March. This means that, including the goods receipt processing time, the requirement on the 15 March can no longer be completely covered, as the availability date of the procurement proposal in the second period is 17 February. Therefore, the requirement of the 15 March must be added to the period lot with the delivery date 1 March.

Thus, for the first period, three requirements are grouped together: the requirement of 3 March, of 8 March and of 15 March for 320 pieces. The procurement proposal for 15 March is created for 90 pieces.

Optimum Lot-Sizing Procedures

Use

In static and period lot-sizing procedures, the costs resulting from stockkeeping, from the setup procedures or from purchasing are not taken into consideration. The aim of optimum lot-sizing procedures, on the other hand, is to group shortages together in such a way that **costs are minimized**. These costs include **lot size independent costs** (setup or order costs) and **storage costs**.

Taking Purchasing as an example, the following problem hereby arises:

If you order often, you will have low storage costs but high order costs due to the high number of orders. If you only seldom place orders then you will find that your order costs remain very low, but your storage costs will be very high since warehouse stock must be large enough to cover requirements for a much longer period.

Features

The starting point for lot sizing is the first material shortage date that is determined during the net requirements calculation. The shortage quantity determined here represents the minimum order quantity. The system then adds successive shortage quantities to this lot size until, by means of the particular cost criterion, optimum costs have been established.

The only differences between the various optimum lot-sizing procedures are the cost criteria. The following procedures are available:

- Part Period Balancing

- Least Unit Cost Procedure

- Dynamic Lot Size Creation

- Groff Reorder Procedure

Part Period Balancing

Use

The part period balancing procedure adheres to the "classic" lot size formula for the minimum costs whereby variable costs (storage costs) are equal to the lot size independent costs.

Prerequisites

In the material master (*MRP 1* view) for the material, you have set the indicator for *SP* for *Part period balancing* in the *Lot size* field and the *Lot size independent costs* and *storage costs indicator*.

Features

Starting from the shortage date, successive requirements are grouped together to form lots until the **sum of the storage costs equals lot size independent costs.** (In other words, this procedure involves an adjustment between costs independent of quantity and costs dependent of quantities and time.)

Example

Price:	$ 20
Lot size independent costs:	$ 100
Storage cost percentage:	10 %

$$\text{Storage costs} = \frac{\text{Reqmt. x Price x Storage.cst.pct. x Time in storage}}{100 \times 365}$$

Requirements date	Reqmts. quantity	Lot size	Lot size ind. costs	Storage costs	Total storage costs
06.07.	1000	1000	100	0	0
13.07.	1000	2000		38,36	38,36
20.07.	1000	3000		76,71	115,07
27.07.	1000	4000		115,07	230,14

Optimum

The most appropriate lot size is 2000 pieces because if further requirements were added to this lot, total storage costs would be larger than the lot size independent costs.

Least Unit Cost Procedure

Prerequisites

In the material master (*MRP 1* view) for the material, you have set the indicator for *WI* for *Least unit cost procedure* in the *Lot size* field and the *Lot size independent costs* and *storage costs indicator*.

Features

Starting from the shortage date, successive requirements are grouped together to form lots until **total costs per unit** reach **a minimum** level. The total costs are equal to the sum of the lot size independent costs plus the total storage costs.

Example

Price:	$ 20
Lot size independent costs:	$ 100
Storage cost percentage:	10 %

$$\text{Storage costs} = \frac{\text{Reqmt. x Price x Storage.cst.pct. x Time in storage}}{100 \times 365}$$

Requirements date	Reqmts. quantity	Lot size	Lot size ind. costs	Storage costs	Total costs	Unit costs
06.07.	1000	1000	100	0	0	0,100
13.07.	1000	2000		38,36	138,36	0,069
20.07.	1000	3000		76,71	215,07	0,072
27.07.	1000	4000		115,07	330,14	0,083

Optimum

The most appropriate lot size is 2000 pieces.

Dynamic Lot Size Creation

Prerequisites

In the material master (*MRP 1* view) for the material, you have set the indicator for *DY* for *Dynamic lot size creation* in the *Lot size* field and the *Lot size independent costs* and *storage costs indicator*.

Features

Starting from the shortage date, successive requirements are grouped together to form lots until **additional storage costs** become **greater than lot size independent costs**.

Example

Price:	$ 20
Lot size independent costs:	$ 100
Storage cost percentage:	10 %

$$\text{Storage costs} = \frac{\text{Reqmt. x Price x Storage.cst.pct. x Time in storage}}{100 \times 365}$$

Requirements date	Reqmts. quantity	Lot size	Lot size-ind. costs	Storage-costs
06.07.	1000	1000	100	0
13.07.	1000	2000		38,36
20.07.	1000	3000		76,71
27.07.	1000	4000		115,07

Optimum
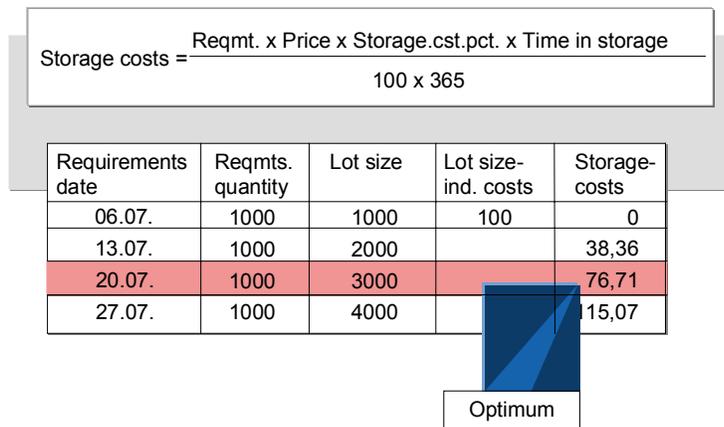
The most appropriate lot size is 3000 pieces because an additional requirement of 1000 pieces for the 27 July would mean that the lot size independent costs would be exceeded.

Groff Reorder Procedure

Use

The Groff reorder procedure is based on the fact that additional storage costs are equal to the saving in lot size independent costs according to the classical lot sizing formula for the minimum costs. Additional storage costs resulting from an increase in the lot size are, therefore, compared with the resulting savings in lot size independent costs.

Prerequisites

In the material master (*MRP 1* view) for the material, you have set the indicator for *GR* for *Groff reorder procedure* in the *Lot size* field and the *Lot size independent costs* and *storage costs indicator*.

Features

Starting from a certain period, the system keeps grouping requirements into a lot **until the increase in the average storage costs per period is larger than the decrease in the lot size independent costs per period.**

Example

Price:	$ 20
Lot size independent costs:	$ 100
Storage cost percentage:	10 %

$$\text{Additional storage costs} = \frac{\text{Reqmt. x Price x Storage.cst.pct x Time in storage}}{100 \times 365 \times 2}$$

$$\text{Savings in lot size ind.csts} = \frac{\text{Lot size independent costs}}{\text{Time in storage x (Time in storage +1)}}$$

Requirements date	Reqmts. quantity	Lot size	Lot size ind. costs	Savings in lot size ind. csts	Additional storage csts
06.07.	1000	1000	100	0	0
13.07.	1000	2000		1,79	2,74
20.07.	1000	3000			
27.07.	1000	4000			

Optimum

The most appropriate lot size is 1000 pieces because for a further requirement of 1000 pieces, additional storage costs would then exceed the savings in lot size independent costs.

Lot Sizes with Splitting and Overlapping

Use

You can determine whether a fixed or period lot size is divided into partial quantities and that these are to be produced at regular intervals that overlap each other.

This lot-sizing procedure is very useful if the actual requirement quantities that occur in the period or the quantity to be produced for a certain date are very large but production is only laid out for smaller quantities.

Integration

⚠️

Splitting and overlapping are only possible for fixed lot sizes and period lot sizes.

Prerequisites

- In Customizing for MRP, you must determine in the IMG activity *Check lot-sizing procedure* whether the procurement proposals are to overlap in the future or in the past starting from the requirements date:

Fixed Lot Size with Splitting and Overlapping

- You have maintained the following fields in the material master (*MRP 1* view):

  - *Lot size* field*: FS* indicator for *fixed lot size with splitting and overlapping*

  - *Fixed lot size* field*:* total order quantity

  - *Rounding value* field: Partial quantities, into which the total quantity is grouped. The fixed lot size must be a multiple of the rounding value.

  - *Takt time* field: The period of time that the procurement proposals are to overlap.

Period Lot Size with Splitting and Overlapping

- You have maintained the following fields in the material master (*MRP 1* view):

  - *Lot size* field*: FS* indicator for *period lot size with splitting and overlapping*

  - *Maximum lot size* field: Partial quantities, into which the total quantity is grouped.

  - *Takt time* field: The period of time that the procurement proposals are to overlap.

Features

The system generates procurement proposals for the rounding value until the fixed lot size quantity has been reached. The in-house production times overlap by the takt time.

Short-Term and Long-Term Lot Size

Use

If you define a short-term and a long-term lot size for a material, you can split up the time axis for the material requirements planning into a short-term and a long-term area and thus carry out the procurement quantity calculation using two different lot-sizing procedures.

You can therefore, for example, group together requirements over a larger period in the long-term area to produce a rough picture of the future master plan and select a more precise lot size to suit your requirements in the short-term area.

Prerequisites

You have defined the settings for the short-term and long-term lot size in the IMG activity *Check lot-sizing procedure* in Customizing for MRP.

Features

During the planning run the system calculates the time axis for the validity of both lot-sizing procedures. The procurement quantities in the first, short-term area are calculated using the short-term lot size. From the valid from date of the long-term lot size the system switches to the long-term lot size.

If no long-term lot size has been specified for a lot-sizing procedure, the system plans the complete planning period using the short-term lot size.

Calculating the Long-Term Lot Size

The start of the effectivity period of the long-term lot size is determined using the number of periods specified in Customizing. The system always rounds up to the end of a period that has already started and then sets the *valid from date* to the beginning of the next complete period. The system normally offers period lot sizes for the long-term lot size. This ensures, that the period requirements grouping is always traceable within the defined period length of the period lot size.

> The calculation of the date from which the long-term lot size is valid is 15 March. Four months have been entered for the periods for this calculation. The system calculates four months into the future (15 July) and then rounds up to the beginning of the next complete period. The long-term lot size is thus valid from 1 August.

> You can also define a **period for lot-for-lot order quantity** in Customizing, which is set for the short-term and the long-term period. The system then always plans using lot-for-lot order quantity in this period, even if other lot-sizing procedures have been defined in the short-term and long-term period.

Lot-for-Lot Remaining Order Quantity

Use

You can determine in the lot-sizing procedure that the last lot of the planning run is always planned exactly. You thus prevent that the procurement quantities exceed the requirement quantities and, for example, cause remaining stock levels of discontinued materials with high scrap costs.

Integration

This function can be used for all lot-sizing procedures. It is valid for the whole planning horizon.

You cannot use the function in reorder point planning and time-phased planning.

Prerequisites

You have assigned a lot-sizing procedure, for which lot-for-lot remaining order quantity has been defined, to the material in the material master.

You set the *Last lot exact* indicator in Customizing for MRP in the IMG activity *Check lot-sizing procedure,* in order to define lot-for-lot remaining order quantity.

Features

The last lot is planned exactly in the net or gross planning segment of the MRP list and the current stock/requirements list. The available quantity at the end of these segments is thus equal to zero.

Calculating Scrap

Use

You can calculate and plan the scrap quantity that will result from production. These scrap quantities are then included in the planning run and in the calculation of production costs.

Prerequisites

Which calculation the system uses depends on the settings in the material master record or in the BOM.

Features

The scrap quantity is settled against the net requirements quantity.

Three calculation procedures are supported by the system:

- Assembly scrap

- Component scrap

- Operation scrap

Assembly Scrap

Use

You use this function to plan the scrap that results from the production of an assembly.

Prerequisites

You have maintained the assembly scrap in the material master (*MRP 1* view) as a percentage in the *Assembly scrap* field for the assembly header material.

Features

The system automatically increases the quantity to be produced by the percentage of scrap.

However, the system always uses the **estimate yield** for the availability calculation for the assembly. Furthermore, the estimate yield of the assembly is always displayed in the MRP list or in the stock/requirements list.

Assembly scrap increases the order quantity of the assembly and subsequently increases the order quantity for corresponding components. The dependent requirements of the material components are therefore increased correspondingly.

Example

Estimate yield	200
Assembly scrap	10%
This results in a scrap quantity of	20 pieces
and a required quantity of	220 pieces

Component Scrap

Use

You use this function to plan the scrap of a component that may break during production of an assembly.

Prerequisites

You have entered values for calculating component scrap in the material master or the BOM:

- in the BOM on the *Item Detail Screen: General Data* (data block for quantity data). This component scrap is only relevant for the individual BOM.

- in the material master (view *MRP 4*) in the *Component scrap* field. This component scrap is relevant for all BOMs.

⚠

The component scrap quantity maintained for a material component in the BOM has the higher priority.

Features

- Component scrap increases the dependent requirements quantity of the component.

- If a scrap quantity was planned for a higher-level assembly, assembly scrap and component scrap are added to the component level.

Example

Estimate yield	200
Assembly scrap	10%
Component scrap	10%
This results in a scrap quantity of	42 pieces
and a required quantity of	242 pieces

Operation Scrap

Use

Before high-value components are built into an assembly, the system carries out a **quality control check** of the assembly, if necessary. Faulty materials that were taken into account in assembly scrap are not passed on to the next operation. They are **removed**.

Therefore, for a high-value component, you plan using operation scrap instead of general assembly scrap.

Prerequisites

You have maintained the operation scrap in the BOM, on the *Items Detail Screen: General Data,* under quantity data. You must also set the *operations scrap net indicator* at the same time.

Features

- This scrap quantity refers to the quantity **of one** component that is to be processed in an operation meaning that the planning run is more exact and you can determine service and quantity consumption more precisely.

- If the component is contained in an assembly, for which an assembly scrap quantity has been maintained, the system **only** takes the operation scrap into account.

- The net indicator instructs the system to calculate the component operation scrap **without** taking assembly scrap into account (net usage scrap).

  You should also set the net indicator, if operation scrap has not been maintained and assembly scrap has been entered. The assembly scrap should not, however, be taken into account.

Example

	Quantity to be produced (required quantity)	1,000 pieces
	Assembly scrap	10 %
Component 1	Operation scrap	No entry
	Net indicator	Not set => assembly scrap is taken into account
	=> **Scrap quantity**	100 pieces
Component 2	Operation scrap	1%
	Net indicator	Set => assembly scrap is **not** taken into account
	=> **Scrap quantity**	10 pieces

Before component **2** is built into the assembly, the incorrect assemblies are rejected and the system only takes the smaller operation scrap quantity into account. Therefore, component

Operation Scrap

quantity of component **1** refers to **1,100** pieces to be produced; and the component quantity of component **2** refers to **1,010** pieces to be produced.

Rounding

Use

In rounding, you adapt the procurement quantities to the delivery, packaging or shipment units. This is useful, for example, if deliveries can only be made in lots of 10 pieces or if the quantity produced can only be packed and transported in full pallets.

Integration

The system evaluates the set lot-sizing procedure first, then it allocates possible scrap and rounds the determined quantity.

Features

Two rounding options are available:

- Rounding value (quantities must be a multiple of this value)

- Rounding profile (staggered rounding values)

Rounding Profile

Use

You use a rounding profile if you want to round the procurement quantity up to quantities, which can be delivered or transported.

Prerequisites

You have assigned a rounding profile to the material in the *Rounding profile* field in the material master (*MRP 1* view).

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> You define rounding profiles in Customizing for MRP in the IMG activity *Define rounding profiles*.

Features

A rounding profile consists of threshold and rounding values, whereby every threshold value is assigned a rounding value. If the requirement lies below the first threshold value, the system copies the original requirement value unchanged. If the requirement exceeds the first threshold value, the system always rounds up.

Example

A material's base unit of measure is 1 piece. The material is to be transported in layers (one layer corresponds to 5 pieces) or in pallets (one pallet corresponds to 8 layers which corresponds to 40 pieces).

You have defined the following rounding profile in Customizing:

$2 \rightarrow 5$
$32 \rightarrow 40$

From a requirement of 2 pieces, the system rounds up to 5 pieces, from a requirement of 32 pieces, it rounds up to 40 pieces.

The system then calculates the procurement quantities as follows:

Requirement	Procurement quantity
1	1
2	5
6	10
7	10
21	25
31	35
32	40
41	45
74	80

- For a requirement of 7 pieces, the system checks how many times 5 fits into 7. This results in a procurement quantity of 5 pieces (1x5 = 5). The system rounds up the remaining 2 pieces to 5 pieces. Thus, for a requirement of 7 pieces, one procurement proposal is created for 10 pieces.

- For a requirement of 74 pieces, the system checks how many times 40 in fits into 74. This results in a procurement quantity of 40 pieces (1x40 = 40). The system rounds up the remaining 34 pieces to 40 pieces. Thus, for a requirement of 74 pieces, a procurement proposal is created for 80 pieces.

Examples for Calculating Procurement Quantities and Yields

Example 1

Example Data

Net requirements	20 pieces
Lot size	Lot-for-lot order quantity
Scrap	1%

Process Flow

1. Define lot size	20 pieces (estimated yield = receipt quantity in the stock/requirements list)
2. Define scrap quantity	0.2 pieces => rounded to 1 piece
3. Add scrap quantity to lot size	21 pieces (order quantity = order quantity of planned order)

Example 2

Example Data

Net requirements	20 pieces
Lot size	Lot-for-lot order quantity
Scrap	1%
Rounding value	40

Process Flow

1. Define lot size	20 pieces
2. Define scrap quantity	0.2 pieces => rounded to 1 piece
3. Add scrap quantity to lot size	21 pieces
4. Round lot size	40 pieces (procurement quantity = order quantity of planned order)
5. Redefine scrap	1 piece
6. Subtract scrap from rounded lot-size	39 pieces (estimated yield = receipt quantity in the stock/requirements list)

Example 3

Example Data

Net requirements	20 pieces
Lot size	Fixed lot size of 30 pieces
Scrap	1%

Examples for Calculating Procurement Quantities and Yields

Process Flow

1. Define lot size	30 pieces (procurement quantity = order quantity of planned order)
2. Define scrap quantity	0.3 pieces => rounded to 1 piece
3. Subtract scrap quantity from lot-size	29 pieces (estimated yield = receipt quantity in the stock/requirements list)

Scheduling

Implementation Options

The system executes scheduling in MRP. During the net requirements calculation, the system determined the shortage quantities and material shortage dates. During the procurement quantity calculation, the system calculated the procurement quantities necessary for covering requirements.

During scheduling, the system determines **start and finish dates** for the procurement elements of materials that are **produced in-house** and for materials that are **procured externally**.

Process Flow

```
                          ┌──────────────────────────┐
                          │        Scheduling        │
                          └──────────────────────────┘
        ┌──────────────────────┐  ┌──────────────────────┐
        │      External        │  │      In-house        │
        │    procurement       │  │     production       │
        └──────────────────────┘  └──────────────────────┘
  ┌────────────────────────────┐  ┌────────────────────────────┐
  │ Calculation of delivery    │  │ Calculation of basic dates  │
  │ and release dates          │  │ for production              │
  │         using              │  │         using               │
  │ ┌──────────┐  ┌──────────┐ │  │ ┌──────────┐  ┌──────────┐  │
  │ │ Backward │or│ Forward  │ │  │ │ Backward │or│ Forward  │  │
  │ │scheduling│  │scheduling│ │  │ │scheduling│  │scheduling│  │
  │ └──────────┘  └──────────┘ │  │ └──────────┘  └──────────┘  │
  └────────────────────────────┘  └────────────────────────────┘
                                   ┌────────────────────────────┐
                                   │   Lead time scheduling      │
                                   │ (Calculation of production  │
                                   │          dates)             │
                                   └────────────────────────────┘
```
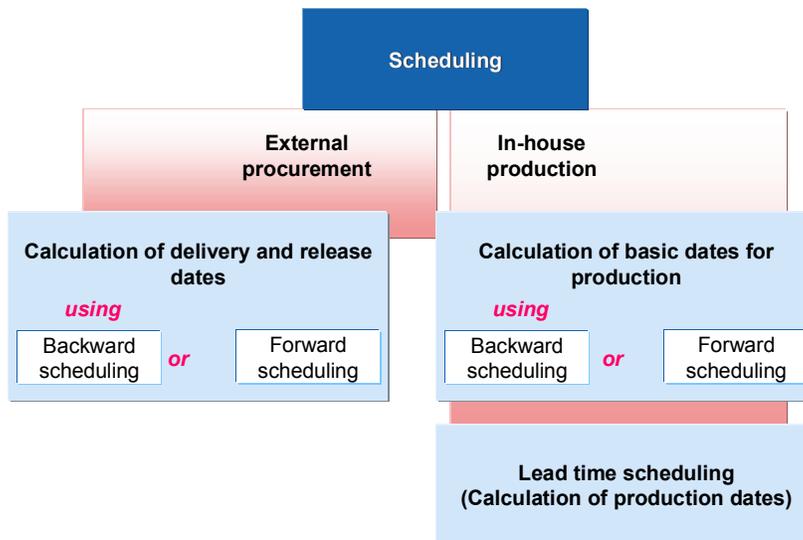
Scheduling: In-House Production

Process Flow

1. The system calculates the basic dates for planned orders.

   The basic dates are the **order finish date** and the **order start date**. The order finish date determines the latest possible date by which production has to be finished and the order start date determines the earliest possible start of production.

   Basic dates are calculated automatically during every planning run.

2. The system calculates the exact production dates (lead time scheduling).

   The production dates are the **production start date** and the **production finish date**.

   Additionally, capacity requirements are created during lead time scheduling.

   Lead time scheduling is only carried out on request.

Calculating Basic Dates

Implementation Options

The basic dates determine the outermost time limits for production. During material requirements planning and forecast-based planning, the system calculates the order start and finish dates in addition to the order opening date of the planned order.

Prerequisites

- You have determined the **goods receipt processing time** (in workdays) in the material master (view *MRP 2*).

- You have defined a lot size dependent or independent in-house production time in workdays (see In-House Production Time: Independent of Lot Size [Page 115], In-House Production Time: Dependent on Lot Size [Page 116]).

- You have defined the **opening period** for each plant in Customizing for MRP in the IMG activity *Define floats (scheduling margin key)*.

  The **opening period** is the time required by the MRP controller to convert the planned orders into purchase requisitions. It is only taken into account with backward scheduling.

Process Flow

1. The system always determines the basic dates for planned orders using backward scheduling.

2. The system automatically switches to **forward scheduling** if the determined start date lies in the past.

   If you do not want the system to switch to forward scheduling automatically, you can specify per plant in Customizing for MRP, in the IMG activity *Parameters for determining the basic dates* that the system is to continue the backward scheduling calculation even if the resulting start date lies in the past.

In-House Production Time: Independent of Lot Size

Use

You use lot size independent in-house production time, if the lot size independent times (for example, queue time, or setup time) control production to a greater extent than the lot size dependent processing time.

Prerequisites

You have entered the lot size independent in-house production time in the material master (*Work scheduling* or *MRP 2 view*).

Features

The basic dates are determined only by the value for the lot size independent in-house production time and independently from the order quantity.

In-House Production Time: Dependent on Lot Size

Use

You use lot size dependent in-house production time if the processing time controls production to a greater extent than the lot size independent times, for example, queue time or setup time.

Prerequisites

You have maintained the following times in the material master (*Work scheduling* view):

- Setup time

- Processing time

- Base quantity of the processing time

- Interoperation time

Features

- The setup time and the interoperation time are both **independent of the lot size**.

    The **setup time** is the number of days that are necessary to set up and tear down machines that are required to process the material.

    The **interoperation time** is the sum of the wait times, queue times and move times as well as the float before and after production.

- On the other hand, the **processing time depends on the lot size** and is adapted correspondingly to the lot size in the order. The **base quantity** is used as the basis for calculating the processing time dependent on the lot size. The processing time is generally made up of **machine times and labor times**.

The system determines the lot size dependent in-house production time from both times depending on the lot size in the order.

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　　　　The floats (for example, float before production, float after production) are not included in the calculation of the in-house production time, but actually form part of the in-house production time. The total floats are maintained through the interoperation time.

Backward Scheduling for In-House Production

Implementation Options

For materials that are planned according to the MRP and forecast-based planning procedures, the requirement dates in the future are known. Scheduling is always backward. The system automatically switches to forward scheduling only if the start date lies in the past.

Process Flow

1. The system calculates the **goods receipt processing time** backwards using the requirements date and thus determines the **order finish date**.

2. The system calculates the **in-house production time** backwards using the order finish date and thus determines the **order start date**.

3. The system calculates the **opening period** backwards using the order finish date and thus determines the **order opening date**.
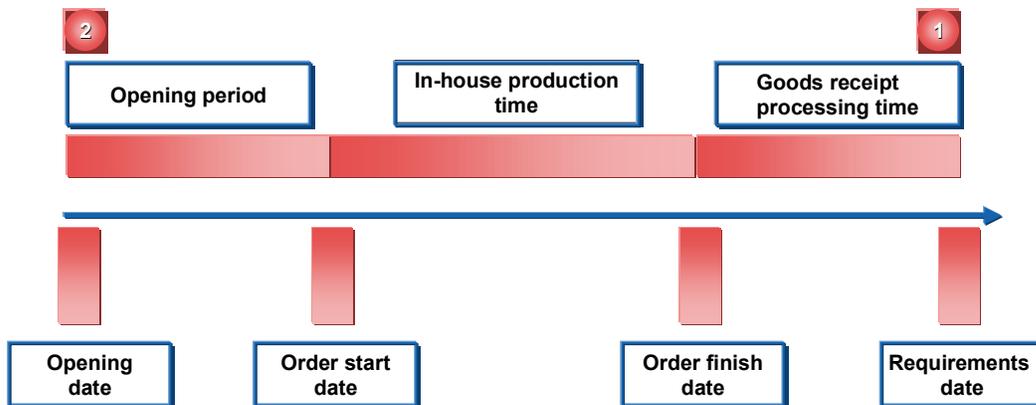
See also:

Availability Date for Period Lot-Sizing Procedure [Page 90]

Example of Backward Scheduling for In-House Production

Example Data

Requirements date	25.6. (Friday)
Goods receipt processing time	2 days (workdays)
In-house production time for the material:	6 days (workdays)
Opening period	6 days (workdays)
Workdays = Monday to Friday, no bank holiday	

Scheduling

1. Requirements data minus goods receipt processing time = order finish date

    25.6. (Friday) minus 2 workdays = 23.6. (Wednesday)

2. Order finish date minus in-house production time = order start date

    23.6. (Wednesday) minus 6 workdays = 15.6. (Tuesday)

3. Order start date minus opening period = order opening date

    15.6. (Tuesday) minus 6 workdays = 7.6. (Monday)

Forward Scheduling for External Procurement

Implementation Options

- If an order start date which lies in the **past** is calculated by backward scheduling for either the MRP or the forecast-based planning procedure, the system automatically switches to forward scheduling in order to receive realistic scheduling data.

- Forward scheduling is always carried out for **reorder point planning**.

Process Flow

1. The current date is entered as the **order start date**. The system adds the **in-house production time** to the current date and thereby calculates the **order finish date**.

2. The system adds the **goods receipt processing time** to the order finish date and thereby calculates the **availability date**. On this date, the material is available.
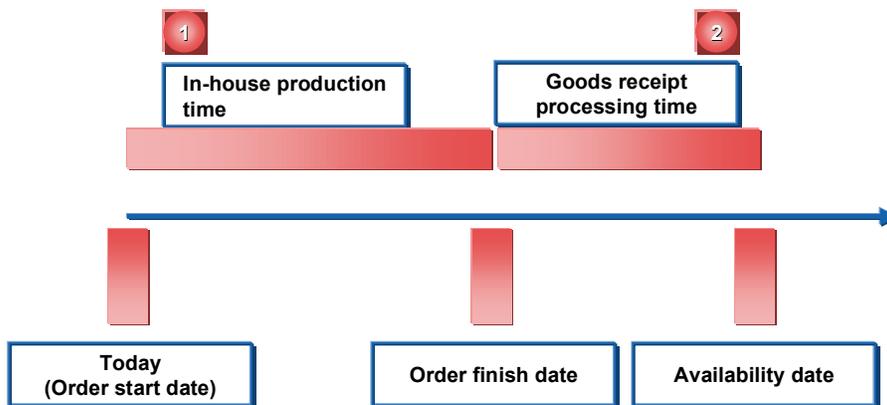
The order reopening date does not exist.

Calculating Production Dates (Lead Time Scheduling)

Implementation Options

If the basic dates calculation is not exact enough for your needs, you activate the calculation of production dates using lead time scheduling.

Prerequisites

- You have created a **routing** for the material.

- You have assigned a **scheduling margin key** to the material in the material master.

    You can define the scheduling margin key in Customizing for MRP by choosing *Define floats (scheduling margin key).*

- You have maintained the following parameters for lead time scheduling in Customizing for MRP by choosing *Define scheduling parameters for planned orders:*

    – Scheduling levels - to differentiate between detailed, rough-cut, and rate-based scheduling

    – Parameters for determining the routing

    – Parameters that determine if and how scheduling is carried out

    – Parameters that determine if and how basic dates are to be adjusted

Process Flow

In lead time scheduling, the precise production times, that is, the **production start date** and the **production finish date**, are specified for materials that are produced in-house. Capacity requirements are also created during lead time scheduling and the date, on which the components must be provided, is also determined.

The **production dates** are determined using the routing. The system hereby uses the floats that are allocated to the material via the scheduling margin key in the material master. These floats include the float before production and the float after production, as well as the extra time factors specified in the routing such as the queue times, setup times, labor times, machine times, and so on.

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        The system normally executes the lead time scheduling with backwards scheduling and starts from the determined order finish date. The system only switches to forward scheduling and starts from the order start date, if the times in routing are substantially shorter than the times in the material master and the determined production start date is therefore further in the future than necessary.

1. The system calculates the **float after production** using the order finish date and thus determines the **production finish date**. Starting from the production finish date, the individual operations of the routing are then scheduled backwards. The starting date of the first operation is the **production start date**.

    The **float after production** is the number of workdays that are planned as a buffer between the production finish date and the order finish date. This serves to compensate for interruptions during production to avoid displacing the order finish date.

2. The system checks whether the production start date is later than the order start date. If you have determined that the order start dates are to be adjusted in lead time scheduling in Customizing for MRP (IMG activity *Define scheduling parameters for planned orders)*, the system subtracts the **float before production** from the production start date to calculate the new **order start date**. If you do not want the system to adjust the order start date, the system will not change the old order start date.

> The **float before production** is the number of workdays that are planned as a buffer between the order start date and the production start date. By using this float, delays in material staging do not cause delays in starting production. Additionally, if there are capacity bottlenecks or delays in an incoming sales order, the production dates can be brought forward.

3. The system checks whether the production start date is earlier than the order start date and, if necessary, determines new production dates. To do this, you must determine a possible time **reduction** in two places:

   – To reduce the floats before and after production, you must define the reduction for the plant, the planning type and, if necessary, for a production scheduler in Customizing for MRP.

   – To reduce the times in the operation, you must assign a reduction strategy to the operation in the routing.

> ⇨
>
> The system must set an order finish date so that the material is available for the start of production. Therefore, the order finish date always lies after the production finish date. If you have not maintained a float after production, the order finish date always lies exactly one day after the production finish date.
>
> If the in-house production time is much less than a day and if you want the material to be available for the production finish date, then you maintain the in-house production time in the material master record with zero (the float after production likewise with zero). Then, the production date is the same as the order finish date.
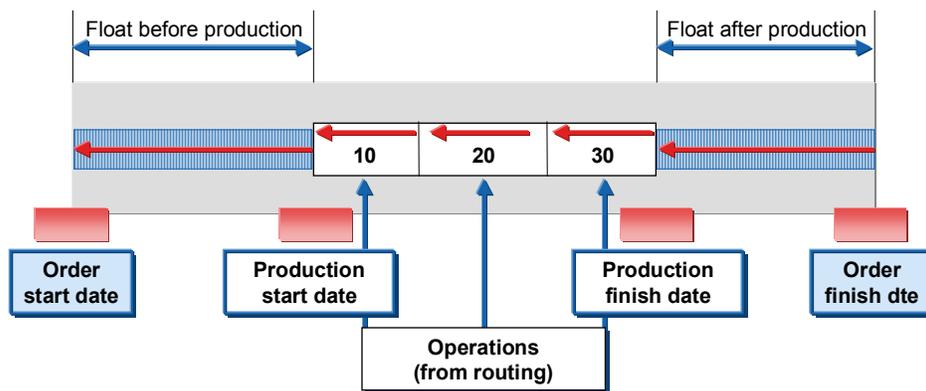
Levels of Scheduling

Use

The scheduling level defines which scheduling data will be used for lead time scheduling.

Integration

You use rate-based scheduling in repetitive manufacturing.

You use rough-cut scheduling in demand planning and preliminary planning.

Features

You can carry out lead time scheduling at three different levels:

- **Detailed scheduling** uses the times recorded in the routing. The execution time is subdivided into the operation steps, setup, processing and tear down.

   You can also define additional parameters for detailed scheduling such as reduction, and the scheduling type (backward, forward) in Customizing for MRP.

- You use **rate-based scheduling** in repetitive manufacturing. This type of scheduling uses the times recorded in the rate routing.

- **Rough-cut scheduling** procedures usually use the scheduling data from the rough-cut planning profile. This type of scheduling is used for a higher level planning level (sales and operations planning) to gain an overview of the capacity situation. The rough-cut planning profile represents an overview of the total BOM structure.

   In **MRP**, you usually use the **detailed scheduling** procedure.

Determining Capacity Requirements

Use

In the second step of lead time scheduling, the capacity requirements for the order are calculated and scheduled.

Prerequisites

You have set the *Cap. reqmts* indicator in Customizing for MRP, in the IMG activity *Define scheduling parameters for planned orders*. This creates capacity requirements at the Scheduling Levels [Page 122] with which you would like to carry out scheduling.

Features

The capacity requirements are calculated for an operation using the formulas that are maintained for the capacity categories on the capacity overview screen of the work center. The dates of calculated capacity requirements correspond to the dates of the operation.

For more information, see the R/3 Library *<PP - Capacity Planning>*.

Starting Lead Time Scheduling

Use

You can execute lead time scheduling during the planning run in addition to the calculation of basic dates, in order to determine the production dates for planned orders. In contrast to the calculation of basic dates, the system does not automatically execute lead time scheduling.

Prerequisites

- See Calculating Production Dates (Lead Time Scheduling) [Page 120]

- The system must be able to determine routing for at least one scheduling level. In addition, scheduling must be allowed for this scheduling level.

Procedure

In the initial screen of the planning run, set the *scheduling indicator* to *2* for lead time scheduling.

Result

Lead time scheduling is executed with times from routing.

You can check the result of the lead time scheduling in the planned order. You find a tab index with corresponding scheduling information there for every scheduling level, for which lead time scheduling has been executed.

Calculating the Provision Date for Components

Implementation Options

The system also calculates the provision date of the material components during lead time scheduling.

Process Flow

The materials and required quantities are determined using the BOM explosion. The provision times are calculated as follows:

- When the **basic dates are calculated**, the dependent requirements date of the components is calculated from the order start date of the source planned order. If a lead-time offset has been maintained, the dependent requirements date is rescheduled accordingly (see Calculating the Dependent Requirements Date [Page 169]).

- In **lead time scheduling**, the dependent requirements date is based on the operation dates in the routing. The system uses the component assignment in the routing to determine the components that must be available at the operation start date.

> In Customizing for the scheduling levels, you can also set that the dependent requirement dates can be scheduled to the order start date instead of the operation start date in lead time scheduling.
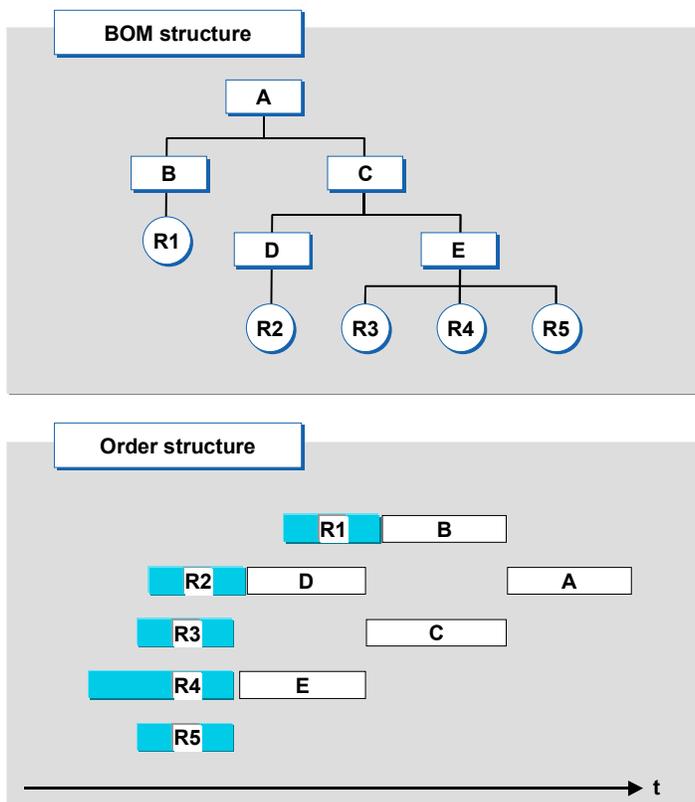
Calculating the Provision Date for Components

Scheduling for External Procurement

Implementation Options

Only the **basic dates** for procurement elements are determined for external procurement.

Prerequisites

- You have entered the purchasing **processing time** (workdays) in Customizing for MRP either in *Plant parameters* or in the IMG activity *Define external procurement*.

- You have determined the **planned delivery time** (calendar days) in the material master (view *MRP 2*).

- You have determined the **goods receipt processing time** (in workdays) in the material master (view *MRP 2*).

Process Flow

In the MRP and forecast-based planning procedures, backward scheduling is used to determine the basic dates. In reorder point planning, however, the basic dates are determined by forward scheduling.

- For the planned order this includes the order start date and the order finish date.

- For the purchase requisition, the following dates are determined:

  - The delivery date (which corresponds to the order finish date)

  - The release date (which corresponds to the order start date)

Backward Scheduling for External Procurement

Use

For materials that are planned **according to the MRP and forecast-based planning procedures**, the requirement dates in the future are known. The materials must be available by these dates. The release date for the purchasing department is calculated during scheduling, that is, the date by which the materials must be ordered so that they are available for the requirements date.

Process Flow

The system starts with the requirements date and then schedules backwards to determine the release date of the purchase requisition (order start date of planned order, which is to be procured externally).

②				①
Opening period	**Processing time for purchasing**	**Planned delivery time**		**Goods receipt processing time**

| **Opening date** | **Release date** | | | **MRP date** |
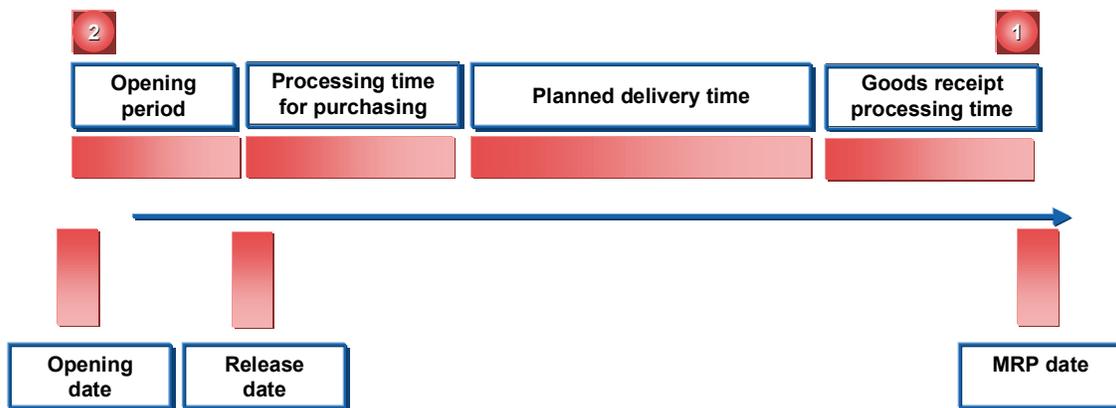
In MRP and forecast-based planning, the system always uses backward scheduling procedures to calculate the basic dates. Only if the start date that is calculated in backward scheduling happens to lie in the past, will the system automatically switch to **forward scheduling**.

> If you do not want the system to switch to forward scheduling automatically, you can specify per plant in Customizing for MRP, in the IMG activity *Parameters for determining the basic dates* that the system is to continue the backward scheduling calculation even if the resulting start date lies in the past.

Example of Backward Scheduling for External Procurement

Example Data

Requirements date	31.10. (Monday)
Planned delivery time of the material	10 days (calendar days)
Processing time for purchasing	1 day (workdays)
Goods receipt processing time	2 days (workdays)
Opening period	10 days (workdays)
Workdays = Monday to Friday	

Scheduling

1. Requirements data minus goods receipt processing time = order finish date (provision date for vendor)

   31.10. (Tuesday) minus 2 workdays = 27.10. (Friday)

2. Order finish date minus planned delivery time minus processing time for purchasing = release date for purchase requisition or order start date of planned order for external procurement.

   27.10. (Friday) minus 10 calendar days minus 1 workday = 16.10. (Monday)

3. Release date minus opening period for planned order = opening date of planned order

   16.10. (Monday) minus 10 workdays = 2.10. (Monday)

Forward Scheduling for External Procurement

Use

- For materials planned according to the **reorder point procedure**, the material shortage date is the date that the shortage was detected by the planning run. If the stock level should fall below the reorder level, then procurement must be arranged immediately.

- **Materials that are planned using MRP or forecast-based planning** are switched to forward scheduling if the start date calculated in backward scheduling was in the past.

Process Flow

The system determines the date by which the material will be available again, starting from the material shortage date.

➡️

> In forward scheduling, the opening date is of no significance as the ordering process is started immediately.
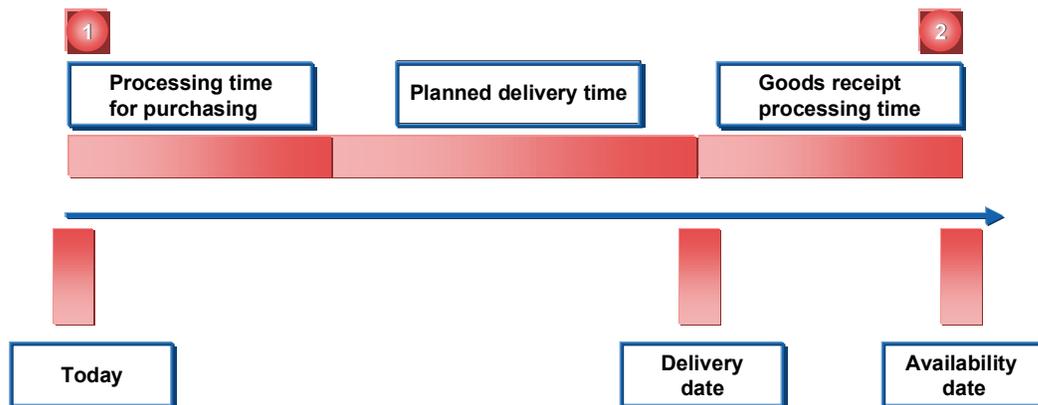
Example of Forward Scheduling for External Procurement

Example Data

Material shortage date	01.08 (Friday)
Planned delivery time of the material	10 days (calendar days)
Processing time for purchasing	1 day (workdays)
Goods receipt processing time	2 days (workdays)
Opening period	10 days (workdays)
Workdays = Monday to Friday, no bank holiday	

Scheduling

4. Material shortage date plus processing time for purchasing plan plus planned delivery time = delivery date

    01.08. (Friday) plus 1 workday + 10 calendar days = 14.08. (Thursday)

5. Delivery date plus goods receipt processing time = availability date

    14.08. (Thursday) plus 2 workdays = 18.08. (Monday)

Determining Procurement Elements

Implementation Options

Procurement elements are used to procure the shortage quantity. The system creates either procurement proposals or **delivery schedules**. Procurement proposals are internal planning elements that can be changed, rescheduled or deleted at any time: **purchase requisition** and **planned order**. In contrast, delivery schedules are fixed elements, which must be followed.

Process Flow

- In the case of **in-house production**, the system always creates **planned orders**. These planned orders are used to plan production quantities. Once the MRP controller is satisfied with the results of planning, these planned orders are converted into production orders and passed on to production. Production orders are fixed elements, which must be followed.

- In the case of **external procurement**, the system creates either a **planned order** or directly creates a **purchase requisition**. Procurement proposals for external procurement plan the external procurement quantity. Once the MRP controller is satisfied with the results of planning, the planned orders are converted into purchase requisitions or the purchase requisitions are converted into purchase orders and are passed on to the purchasing department. Purchase orders are also fixed elements, which must be followed.

   ➡

   If you create a planned order in external procurement first, this has the advantage that the MRP controller has more control over the procurement proposals. Only once the MRP controller has checked the planned orders and converted them into purchase requisitions can the purchasing department order the material. Otherwise, the purchase requisition is immediately available to the purchasing department, which then takes over responsibility for material availability and warehouse stocks.

   – You use the creation indicator for purchase requisitions in the initial screen of the planning run to control whether the system is to create purchase requisitions immediately or whether it is to create planned orders first (see Creation Indicator [Page 290]).

   – If a **scheduling agreement** exists for a material and if an entry exists in the **source list** that is relevant to MRP, you can then also instruct the system to create **delivery schedules** in the planning run. To do this, you set the creation indicator for delivery schedules in the initial screen of the planning run (see Creation Indicator [Page 290]).

See also:

For more information, refer to *MM - Purchasing* under:

Scheduling Agreement [Ext.]

Source List [Ext.]

Procurement Type and Special Procurement Type

Use

When the system determines the procurement element, it first asks whether procurement should take place via in-house production or external procurement.

Prerequisites

- You have defined whether **in-house production, external procurement or both** are allowed for the material, in the material master record, in the *Procurement type* field. The procurement type is preset by the **material type** in Customizing for the material master.

- If necessary, you have defined more precisely how the in-house production or external procurement is to be carried out, in the material master (*MRP 2* view), in the *Special procurement* field.

    ➡

    You define special procurement keys in Customizing for MRP in the IMG activity *Define special procurement type*.

Features

Procurement Type

If both in-house production and external procurement are defined for the material via the material type (indicator X in *Procurement type* field), then you can set the procurement type as follows:

- By overwriting the indicator in the material master

- By converting the planned order either into a production order or a purchase requisition

- By using quota arrangements, in that you define that a certain percentage of the material is to be procured via in-house production and the rest via external procurement (see Quota Arrangements [Page 135]).

    ➡

    If you leave the indicator **X** for both procurement types in the material master record, and you have not maintained any quota arrangements, the system automatically switches to in-house production. The planned order therefore firstly creates planned orders, which you can then convert into production orders or purchase requisitions.

Special Procurement Type

The special procurement type is used to precisely define how in-house production and external procurement is to be carried out.

Special Procurement for In-House Production

- For a phantom assembly

- Production in alternative plant

- Withdrawal from an alternative plant

Procurement Type and Special Procurement Type

- Direct production

Special Procurement for External Procurement

- Consignment

- Subcontracting

- Stock transfer

- Direct Procurement

See also:

Special Planning Processes [Page 193]

Quota Arrangements

Use

If a material can be obtained from **various sources of supply**, each individual source of supply can be allocated a **quota arrangement**. The quota arrangement is valid for a certain period of time and specifies exactly how the receipts are to be distributed amongst each source of supply.

You can set the quota arrangement for **in-house production** as well as for **external procurement**. Sources of supply can be:

- an individual vendor or outline agreement

- another plant, from which material should be procured

- a production version

Prerequisites

- You have maintained the **quota arrangement usage** for the respective material in the material master (*MRP 2* view).

    The quota arrangement usage determines whether a material is included in a quota arrangement and which operations lead to a quota arrangement. You can define, for example, that only purchase orders are included in quota arrangements or that procurement proposals created by the system in the planning run are also included.

    You define the quota arrangement usage in Customizing for Purchasing in the IMG activity *Define quota arrangement usage*.

- You have maintained the **quota file** for the material.

    You define the **sequence** of the sources of supply, the **quotas** per source of supply and numerous other parameters in the quota file.

Features

During the planning run, the system determines the sources of supply according to the quota file and assigns the procurement proposals to the sources of supply.

    In external procurement, the procurement proposal is allocated to the appropriate vendor. This vendor is copied to the purchase requisition.

For every procurement proposal with a quota arrangement, the system updates the **quota file**, so that the quota arrangement is always based on the current situation.

Two procedures are available:

- **Allocation quota arrangement**: every lot is assigned to a source of supply

- **Splitting quota arrangement**: a lot is split among various sources of supply

Further functions are also available for controlling quota arrangements. For example, you can set a maximum release order quantity that defines the maximum delivery capacity of one particular vendor.

Quota Arrangements

Determining Source of Supply for External Procurement

Use

For purchase requisitions or delivery schedules, which are created during the planning run, the system can determine the source of supply directly from the planning procedure.

Features

Determining the Source of Supply via the Source List

The system first checks whether a quota arrangement has been maintained for the material, which has a validity period that covers the requirements date of the purchase requisition.

It then checks whether only one entry exists in the source list that is relevant to MRP. The indicator for source list usage must therefore be set for a particular vendor so that purchase requisitions and delivery schedules, which are created during the planning run, are automatically assigned to this vendor. In the case of a delivery schedule, you must also have maintained a **scheduling agreement** for this entry.

If you have maintained all the entries correctly, the system creates a purchase requisition with the source of supply that is recorded in the source list.

Determining Source of Supply by Quota Arrangements and Source List

The system first checks to see whether a **quota arrangement**, which is valid for the delivery date of the purchase requisition, has been maintained in the quota file for the material. It also checks to see whether the indicator for quota arrangement usage has been correctly maintained in the material master. The system then calculates from which vendor the material should be procured, using the quotas specified for the vendors.

As the next step, the system checks whether an entry for the vendor that is relevant to MRP exists in the **source list**. For this, the indicator for source list usage must be set correspondingly. If this is the case, then all further data required for the purchase requisition or the delivery schedule is copied from the source list.

> You can maintain the source list in the *Purchasing* task level menu by choosing, *Master data → Source list → Maintain*.

Source of Supply Determination Using the Manufacturer Part Number

In the procurement process, you can use your firm's own material number as well as the **manufacturer's material or part number**.

You can also create purchasing info records for this material number. However, you create the source list and, if required, the quota arrangement for your firm's own material number. When determining the source of supply, the system finds the appropriate info record for the manufacturer's part number.

See also:

For more information, refer to *MM - Purchasing* under:

Scheduling Agreement [Ext.]

Determining Source of Supply for External Procurement

Source List [Ext.]

Manufacturer Part Number (MPN) [Ext.]

Manufacturer Part Number: Features [Ext.]

Scheduling Agreements for Make-to-Order Production

Use

Material requirements planning can also generate scheduling agreements for make-to-order production.

This process is useful if a long-term supply relationship exists with a particular customer and if a finished product or a component, which is regularly procured externally from a particular vendor, is delivered to this customer.

This process can also be used for individual project planning.

Prerequisites

- You have created a SD scheduling agreement, which is assigned to the sales order item of the requirement.

- You have entered the scheduling agreement in the source list and set the indicator 2 for *Record relevant to MRP. Sched. lines generated automatically* as source list usage there.

- You have set the *Schedule lines* indicator in the initial screen of the planning run (see).

> You can maintain the scheduling agreement in the Purchasing task level menu: *Outline agreement → Scheduling agreement → Create* or *Change*. You can maintain the source list in the Purchasing task level menu by choosing, *Master data → Source list → Maintain*.

Shipping Notification

Use

In Purchasing, you can maintain **confirmations** for purchase orders or scheduling agreements. The confirmations include, among other things, order acknowledgments, loading and transport confirmation and the actual shipping notification. These confirmations can serve purely for information purposes or the dates and quantities can be taken into account in material requirements planning.

> All of these confirmations are collectively referred to as **shipping notification** in material requirements planning. The term shipping notification will therefore always be used in the following information.

Working with shipping notifications provides the planning department with a more exact planning procedure as more reliable information about the delivery to be received is available from the vendor between the order date and the desired delivery date.

Prerequisites

In Customizing for Purchasing in the IMG activity *Set up confirmation control*, you have defined the confirmation control key and determined whether the individual confirmations in the material requirements planning should be taken into account or not.

Features

Shipping Notification in the MRP List or Stock/Requirements List

In the MRP list or in the stock/requirements list, you can see which purchase order quantities have been either partially or completely reduced by more current shipping notification. The delivery quantity of the corresponding purchase order is reduced in the net requirements calculation by the notified quantity. If the total order quantity has been confirmed, only the shipping notification is displayed in the MRP list or in the stock/requirements list.

> The shipping notification (MRP element, ShpgNt) has the same number as the corresponding purchase order.

Shipping Notification in Availability Check According to ATP Logic

In the availability check, the shipping notification is considered as an available quantity, if the shipping notification was added to the scope of the check of the checking rule.

You must distinguish between the following cases:

- If you only select the purchase order when determining the scope of the check, shipping notifications are automatically taken into account.

- If you only select the shipping notification, only notified quantities are taken into account in the availability check, whereas the purchase orders are not.

Activities

You can thus check the shipping notifications in the material requirements planning:

1. In the stock/requirements list: Position the cursor on the purchase order and choose 🖊 or 👣.

    The item screen of the selected purchase order appears.

2. Choose *Item → Confirmations → Overview*.

    The overview screen for the confirmations now appears.

Document Types for Purchase Requisitions

Use

You can use document types to **specify and group** purchase requisitions more exactly.

The following document types are available for purchase requisitions:

- standard purchase order

- subcontracting

- stock transfer

Prerequisites

- In Customizing for Purchasing under *Purchase requisition*, you have created your document types in addition to the standard document type *NB* in the IMG activity *Define document types.*

- In Customizing for MRP in the IMG activity *Define external procurement*, you have determined the document type for each MRP group, which you want to use in the material requirements planning.

Features

- The document type is used

  - when generating purchase requisitions in the planning run

  - when converting planned orders into purchase requisitions

- The system displays the document type from the MRP list or stock/requirements list in the detail screen of the purchase requisition. You have no control function in material requirements planning. The system only displays the information.

- The system always generates purchase requisitions for direct procurement with the document type *NB* for standard purchase order.

    You do not normally have to make entries for the document types in Customizing. If you have not defined a document type, the system will always generate purchase requisitions with the document type NB.

BOM Explosion and Determining Dependent Requirements

Implementation Options

The BOM is exploded and the dependent requirements are determined within MRP during the planning run, after the system has performed the procurement quantity calculation, lot-size calculation and scheduling.

The bill of material is exploded for every new procurement proposal for an assembly during the planning run. Dependent requirements, which mean the required quantities, are determined for all the assemblies and components needed to produce the product.

Prerequisites

- You have created a BOM that has a valid period and area (see Period/Area of Validity of BOMs [Page 147]).

- The BOM status is set to active for MRP (see BOM Status [Page 151]).

- The BOM components are relevant for production (see BOM Items Relevant for Production [Page 164]).

- You have maintained a selection ID for the priority of the BOM in Customizing for Bills of Material, in the IMG activity *Define order of priority for BOM usages*.

    If you have created alternative BOMs, you have entered the corresponding indicator for the alternative BOM selection in the *Selection method* field in the material master (see Multiple BOMs [Page 152]).

If the system is also to re-explode the BOM for existing procurement proposals during the planning run, at least one of the following prerequisites must be fulfilled:

- The quantity or date of the procurement proposal has changed.

- The BOM for the assembly has changed.

- You have entered the indicator *2* for *Re-explode BOM* in the *Planning mode* field of the initial screen of the planning run.

Process Flow

1. The system determines the valid BOM that is to be used for the explosion and for determining the dependent requirements (see Determining the Valid BOM [Page 145]).

2. Alternative items and discontinued parts are taken into account within the valid BOM (see Alternative Items [Page 157], Discontinued Parts [Page 161]).

3. Special cases:

    − If you work with variant configuration and you have created a super BOM for the standard product, the system plans the components of the configurable product when the BOM is exploded in the planning run (see BOM Explosion for Variant Configuration [Page 165]).

    − Phantom assemblies are also taken into account when the BOM is exploded (see BOM Explosion with Phantom Assemblies [Page 166]).

BOM Explosion and Determining Dependent Requirements

4. You can define for products with a high number of components that total requirements are to be generated when determining the dependent requirements. You can thus improve system performance during the planning run (see Total Requirements [Page 167]).

5. The system determines the date for the dependent requirements on which the components are to be available for the production (see Determining the Dependent Requirements [Page 169]).

6. The system can determine the issue storage location for the components when the BOM is exploded. The system then displays this issue storage location in the component list for the planned order (see Storage Location Determination in BOM Explosion [Page 170]).

7. Direct procurement and direct production of components are also triggered in the BOM explosion of the planning run (see Direct Procurement [Page 204], Direct Production [Page 199]).

8. If necessary, existing revision levels are taken into account in the BOM explosion (see Linking the Revision Level [Page 172]).

Determining the Valid BOM

Process Flow

1. The system checks which BOM usage in the plant has the highest priority (see BOM Usage [Page 146]).

2. For this usage, the system then checks whether there is a valid BOM for the explosion date (see Period/Area of Validity of BOMs [Page 147]). The explosion date is the planned start date of the planned order.

3. If, for a particular production unit, you want to ensure that the total BOM structure is always exploded using the same explosion date and have assigned a BOM explosion number and fixed key date to the sales order, the planned independent requirement, or the planned order, the system chooses the BOM that is valid for this date (see BOM Explosion Number (Fixed Key Date) [Page 148]).

4. The system checks, whether the chosen BOM has the status *active for MRP* (see BOM Status [Page 151]).

5. If a multiple BOM exists, the system checks which alternative BOM corresponds to the preconditions of the alternative selection (see Multiple BOMs [Page 152]).

BOM Usage

Use

By means of BOM usage, you can manage **separate bills of material** for various internal organizational areas (**engineering/design, production, costing**, and so on).

The main differences in the BOM structure result from the different responsibilities in the various organizational areas, which all process different item data.

Prerequisites

In Customizing for MRP, you have defined a sequence for the possible BOM usages for each plant in the IMG activity *Define BOM and routing selection* using the BOM *selection ID*.

Features

The system first searches for a valid BOM or alternative BOM for the BOM usage with the highest priority. If the system does not find a valid BOM or alternative BOM in the selected BOM usage, then the BOM usage with the next-lowest priority is selected. The system then looks for valid BOMs for this BOM usage.

Period/Area of Validity of BOMs

Use

During the planning run the system tries to determine the valid bill of material that is suitable for the planning situation.

Features

Area of Validity

For material requirements planning, the BOM must be maintained in the **planning plant**. If production is carried out in a different plant from the planning plant, then the BOM must also be maintained in this other plant.

Validity Period

The validity period represents the time period during which the bill of material is valid. This time period is defined by entering a *Valid from date* and a *Valid to date*.

However, the bill of material (or alternative BOM) can have various validity periods on the time axis, caused by changes (for example, in the BOM structure). Each change status then has a *Valid from date* and a *Valid to date*.

During the planning run, the bill of material is chosen with the validity period in which the order start date of the planned order falls.

BOM Explosion Number (Fixed Key Date)

Use

. The system explodes the BOM that is valid on this date.

For multi-level BOM structures, larger time intervals may exist between the explosion dates of the individual assemblies. If BOMs (or alternative BOMs) have been changed in the meantime (for example, exchanging individual components due to new technical drawings, changed production techniques, due to parts to be discontinued etc.) a situation may exist whereby an assembly that is used repeatedly is produced with different BOM structures.

If you want to ensure that for a certain production unit, the BOM structure is always **exploded with the same date**, you can allocate a BOM explosion number to the planned order (or for make-to-order production it can be directly allocated to the sales order).

Prerequisites

- You have created a BOM explosion number.

- You have entered the BOM explosion number in the sales order, or entered it when creating the planned independent requirements or when manually creating/changing planned orders.

    The system can automatically specify the BOM explosion number when entering planned independent requirements or customer independent requirements or when entering the sales order.

Features

By means of the **BOM explosion number**, you can define a common explosion date (**fixed key date**) for all BOM levels. BOM explosion is then carried out with this fixed key date for all levels.

BOM Explosion Without Fixed Key Date

BOM Explosion with Fixed Key Date

See also:

BOM Explosion Number (Fixed Key Date)

Assigning a New Key to the BOM Explosion Number [Page 61]

BOM Status

Use

The BOM status specifies whether a bill of material is **active or inactive** for different organizational areas.

Prerequisites

You have set a BOM status in the header of the BOM, which switches the BOM to active for MRP.

> You define the BOM status in Customizing for Production Basic Data in the IMG activity *Define BOM status.*

Activities

To set the BOM status, starting from the item overview in the BOM, choose .

Multiple BOMs

Use

A multiple BOM groups together several BOMs, which describe different, alternative material compositions for one and the same product.

For multiple BOMs, you must specify which **alternative BOM** should be selected by the system during the planning run.

Prerequisites

You have determined the procedure to be used for selection for an assembly in the material master (*MRP 4* view) in the *Selection method* field.

Features

Three procedures for selection are supported by the system:

- Selection using **order quantity** (lot size)

- Selection using **explosion date**

- Selection using **production version**

BOM Selection Using Order Quantity

Prerequisites

You have defined the lot size range of an alternative BOM in the BOM header.

Features

The order quantity uses the **lot size** according to the chosen lot-sizing procedure as a reference.

During the planning run, the system checks whether a valid alternative BOM exists for the order quantity (lot size) in the planned order. The valid alternative is exploded and dependent requirements are created for the components.

If the system does not find a valid or appropriate alternative for the order quantity, an **exception message** is created.

BOM Selection Using Explosion Date

Prerequisites

- You have set the indicator *1* for *Selection by explosion date* in the *Selection method* field for an assembly in the material master (view *MRP 4*).

- You have entered the assemblies, for which selection using explosion date should take place, in the table for alternative selection using date (see below).

Features

For BOM explosion according to a specific date, you define time intervals for each assembly and different BOMs are assigned to each of these time intervals. During the planning run, the system then checks the **time intervals, which have been specified for the assembly** and selects the alternative that is valid for the explosion date. The order start date of the planned order is set as the explosion date. The appropriate alternative is exploded and dependent requirements are created for the components.

If the system does not find a valid or an appropriate alternative BOM for the explosion date, it uses the BOM with the appropriate lot size.

Activities

You maintain the table for the selection of alternatives using date as follows:

1. Starting from the *MRP* menu choose *Master data → BOM by date.*

    The table for specifying the alternative BOM selection using the date now appears.

2. Enter the necessary parameters for each material whose alternative BOM selection is to be carried out using the date.

3. If you want to allocate several alternative BOMs with different time intervals to a material, you must determine the valid from date for each alternative in the *Valid from* field.

    The valid from date of the subsequent alternative BOM marks the expiry date of the preceding alternative.

4. Save your entries.

BOM Selection Using Production Version

Prerequisites

- You have set the indicator *2* or 3 for *Selection by production version* in the *Selection method* field for the assembly in the material master (view *MRP 4*).

- You have created one or more production versions for the assembly in the material master (*MRP 4 view*).

Features

The production version determines the different **methods of production** according to which material can be produced.

During the planning run, the system checks whether a production version matches the quantity and the date of the planned order. If it finds a valid production version, the BOM with the respective usage and alternative is exploded and dependent requirements are created for the components.

If the system does not find a valid or suitable production version:

- it uses the BOM with the appropriate **lot size**, if you have set the indicator *2* for *Selection by production version*.

- it creates an **exception message**, if you have set the indicator *3* for *Selection only by production version*.

You also have the option of predefining the production version(s). There are two possibilities:

- Directly allocating a production version to an **order**

    You can manually enter the production version in the planned order. The system then automatically selects the alternative BOM that is specified in this production version for the BOM explosion of the planned order.

- Determining the production version using quota arrangements

    In the **quota file**, you can specify which production versions can be used for materials that are produced in-house and how often (expressed as a percentage) each production version is to be used in production (see Quota Arrangements [Page 135]).

You can find further information on maintaining the production version in the SAP document, *LO - Managing Material Master Data*.

Determining the Valid BOM Items

Process Flow

When the valid BOM is determined, the system checks the items to see if they require the creation of secondary requirements:

1. If you have maintained **alternative items**, the dependent requirements of the alternatives are calculated according to the usage probabilities (see Alternative Items [Page 157]).

2. The system checks whether a BOM item is a discontinued material and, if necessary, diverts the requirements to a follow-up material (see Discontinued Parts [Page 161]).

3. In the planning run, dependent requirements are only created for BOM items that are **relevant for production**. The system copies only these items to the planned order (see BOM Items Relevant for Production [Page 164]).

4. For variant configuration, the BOM that corresponds to the configuration of the sales order is exploded. Thus, the system only plans those components that are to be used in production as specified by the configuration from the super BOM (see BOM Explosion for Variant Configuration [Page 165]).

5. If a BOM item is a **phantom assembly**, the dependent requirements of the higher-level assembly are directly passed on to the components of the phantom assembly. The phantom assembly itself is still not taken into account (see BOM Explosion with Phantom Assemblies [Page 166]).

Alternative Items

Use

If you would like to use one or several alternative components in an assembly, you can enter these in the bill of material and combine them by **grouping the alternative items**.

These alternative items can then be taken into account when exploding the BOM during the planning run.

Prerequisites

- You have entered the materials that can be used as alternatives within an assembly in the BOM as components.

- You have entered the same **grouping key** for all alternative items in the item data in the *Alternative item group* field, thus combining the alternatives (see below).

- You have entered the **usage probability** on the *Alternative Item Data* screen. This percentage specifies the probability with which the component will be used for the assembly.

Features

The alternative items can be taken into account in MRP according to the defined usage probability or can be defined in the BOM purely for information purposes for the employee.

Activities

Proceed as follows to combine components that you would like to use as alternatives into a **group**:

1. Enter the materials as items in the item overview of the BOM.

2. Double-click on the *Item* field to call up the item data for the first alternative item.

3. Enter the key for your alternative group in the *Alternative item group* field in the *Basic data* and choose *Enter*.

4. Enter the *usage probability* for the components. Enter a *priority* and *strategy* to define the procedure used for the withdrawal posting for the production order.

Alternative Items in BOM Explosion

Use

The alternative items are to be planned in the planning run with certain **usage probabilities**.

Prerequisites

In the *Alternative item data* dialog box in the BOM, you have entered a *usage probability* for each component that belongs to an alternative item group.

Features

The dependent requirements of the alternative items are calculated according to the usage probabilities.

Example

Alternative item 1	Usage probability 60 %
Alternative item 2	Usage probability 30 %
Alternative item 3	Usage probability 10 %

The dependent requirements are passed on in the amount of 150 pieces. The system uses 90 pieces of alternative item 1, 45 pieces of alternative item 2, and 15 pieces of alternative item 3.

Alternative Items for Information Purposes

Use

With this function, you can specify for a component in the BOM that if a situation should arise with missing parts, then specific alternative components are available that can be used instead.

Prerequisites

*   In the *Alternative item data* dialog box in the BOM, you have entered a usage probability of 100 % for the component that is always to be used.

*   You have entered a usage probability of 0 % for the components that can be used if there are missing parts.

Features

No dependent requirements are created in the planning run for the alternative items with the usage probability 0 %. However, if a missing parts situation arises for the main component, the employee in production has access to information on available alternative items that can be used instead.

Withdrawal Posting of Alternative Items

Use

Withdrawal posting is used for components that have been **reserved for the production order**. The alternative items are taken into account during this process.

Prerequisites

For each alternative item, you have maintained a sequence and a strategy for the withdrawal in the *Alternative item data* dialog box in the BOM.

> The system does not take the strategy into account during MRP.

Features

You can define a **withdrawal sequence** and several **withdrawal strategies** for the withdrawal posting of alternative items for the reservation of a production order:

- Manual specification of the withdrawal

    You define manually which material is withdrawn.

- Withdrawal according to usage probability

    The system uses the usage probabilities and the sequence to decide which material to withdraw.

- Withdrawal only with 100% availability of an alternative

    The system looks for the material that is first in the sequence to cover the complete requirement and reserves this material for the withdrawal. The system will only withdraw an alternative if it can completely cover the requirement. The requirement cannot be split among several alternative items.

You can find further information on this in the SAP document *PP – Bills of Material.*

Discontinued Parts

Use

You can determine in engineering/design that a material is to be replaced by another one at a certain point in time. When **replacing a component with another**, however, the stock of the old material should be **used up** before the new one is introduced in order to avoid dead stock.

It may be necessary to replace one part for another if:

- one part is replaced by a more technically advanced part

- an expensive part is replaced by a less expensive part

The task of MRP when discontinuing parts is to reassign the dependent requirements for the **component to be discontinued** to the **follow-up material**, once the stock of the part to be discontinued has completely been used up.

The system differentiates whether

- exactly one material is to be replaced by one follow-up material (**simple discontinuation**), or

- a group of materials is to be replaced by another group of materials (**parallel discontinuation**).

Prerequisites

- Both the part to be discontinued and the follow-up part must be MRP parts.

- The base unit of measure of the follow-up part must correspond to the base unit of measure of the part to be discontinued

- Both the part to be discontinued and the follow-up part must be either a stock item or a variable-sized item in the bill of materials

- The follow-up part is not a phantom assembly.

- You have defined a **main material to be discontinued** for **parallel discontinuation**. When the stocks of this material are used up its dependent requirements and the dependent requirements of the rest of the materials in the group are reassigned.

- You have entered the following data in the material master (*MRP 4* view) for the material to be discontinued (in parallel discontinuation: for the main material to be discontinued):

    – Indicator *1* for *Single/parallel discontinued part/material*

    – Follow-up material

    – Effective-out date

    In parallel discontinuation, you set the indicator *3* for *Dependent parallel discontinued part/material* in the material master for materials dependent on the main material to be discontinued.

- In parallel discontinuation, you have defined the link between the parts to be discontinued and the follow-up material in the BOM:

    – All parts to be discontinued and all follow-up materials have been entered in the BOM.

Discontinued Parts

–   Parallel discontinued parts have the same **discontinuation group**. You enter these in the BOM item.

–   The follow-up parts are set to the **follow-up group**. You also enter these in the BOM item. The follow-up group key is set correctly with respect to the discontinuation group.

You can find further information on this in the SAP document *PP – Bills of Material.*

Features

During the planning run, the system checks the discontinuation indicator and the effective-out date in the material master and reassigns the materials correspondingly. The system reassigns the requirements during the planning run for the discontinued material and not during the BOM explosion. The system reassigns only dependent requirements and dependent reservations.

Reassigning Dependent Requirements

Starting from the effective-out date, no new procurement proposals are created for the material to be discontinued. Once all the stocks of this material have been used up, its dependent requirements are reassigned to the follow-up material. If there is still enough stock of the material to be discontinued to cover a part of the dependent requirements, this stock is used and the rest quantity is reassigned to the follow-up material.

In parallel discontinuation, you use the indicators in the material master and the link in the BOM to instruct the system to discontinue all materials in the group when the stocks of the main material to be discontinued have been used up. How the dependent parts react depends completely on the stock of the main material to be discontinued. These dependent parts are replaced once the stocks of the main material to be discontinued have all been used up. The dependent requirements are then reassigned to the follow-up materials.

Additional Requirements

Additional requirements created after the effective-out date are not reassigned and no new procurement proposals are created for them. The system sets the *Uncovered requirement after effective-out date* exception message. This applies to the following requirement types:

•   Manual reservations

•   Independent requirements and forecast requirements

•   Sales orders

•   Requirements for subcontracting

Safety Stock

The safety stock is not used up after the effective-out date because safety stock should also be maintained after then to cover unplanned requirements such as a requirement for a replacement part.

The system therefore reassigns the dependent requirements to the follow-up material even if safety stock is available. If the stock level drops below the safety stock, the system also creates a procurement proposal for the discontinued material after the effective-out date. The system issues the *Receipt after effective-out date* exception message for the procurement proposals.

If you want to consume the safety stock, you can set the safety stock to 0 in the material master on the effective-out date.

Fixed Receipts

When discontinuing parts, the system does not include fixed receipts such as order proposals or production orders if they are after the effective-out date. The system issues the *Please cancel* and *Receipt after effective-out date* exception messages.

BOM Items Relevant for Production

Prerequisites

You have flagged the BOM item as relevant for production in the BOM (see below).

Features

In the planning run, dependent requirements are only created for BOM items that are relevant for production. The system copies only these items to the planned order.

Activities

In order to indicate the relevance of an item for production, choose the tab index *Status/lng text* in the item overview screen of the BOM and select the *Production relevant* field.

BOM Explosion for Variant Configuration

Use

You can create open variants using the function Variant Configuration.

Features

If a finished product contains many variants, you can group these variants together in a standard product. You can group together all possible components in the super BOM of the standard product instead of creating a separate bill of material for every variant. This super BOM contains all the **non-variable parts**, that is, the parts that are always used, as well as the **variant parts**, which are configured. You use **object dependencies** to define under which circumstances which components are used to assemble the finished product.

The standard product is configured in the sales order, that is, you specify which option model of the standard product is to be produced.

The BOM that corresponds to the configuration of the sales order is exploded in material requirements planning. Thus, the system only plans those components that are to be used in production as specified by the configuration.

You can find further information on this in the SAP document *PP - Variant Configuration.*

Activities

You check the configuration data as follows:

From the Planning Result after the Planning Run

1. You double-click on the corresponding planned order.

    The system displays detailed data for the planned order in the *Planned order* screen area.

2. Choose 🗃.

    The characteristic value assignment appears.

From the Planned Order or from the Stock/Requirements List

1. Choose *Planned order → Change* or *Planned order → Display*

    or

    in the stock/requirements list: Position the cursor on the planned order and choose 🖉 or 👓.

    The planned order itself appears.

2. Choose 📝 *Configuration*.

    The characteristic value assignment appears.

BOM Explosion with Phantom Assemblies

Use

The **phantom assembly** represents a **logical grouping of materials**. These materials are grouped together from the construction point of view and are all maintained together. From the production point of view, however, these materials are normally **not assembled**. The phantom assembly is also used as an entry aid.

Prerequisites

You have entered a special procurement key for *Phantom assembly* in the *Special procurement* field in the material master (*MRP 1* view) for the assembly.

> You define special procurement keys in Customizing for MRP in the IMG activity *Define special procurement type*.
>
> You can combine the *Phantom assembly* attribute in Customizing with every possible **special procurement type**. Example: A material, on the one hand, is sold as a spare part from stock to customers and is procured using stock transfer as the special procurement type. The same material, on the other hand, also appears in several BOMs, but is treated as a phantom assembly there.

Features

If a BOM item is a **phantom assembly**, the **dependent requirements** of the higher-level assembly are **directly passed on to the components of the phantom assembly**. The phantom assembly itself is still not taken into account.

> If it is necessary, in individual cases, to create dependent requirements and procurement proposals for the phantom assembly during the planning of a material, you can override the *Phantom assembly* attribute in the BOM. Enter an appropriate indicator for the **explosion type** in the item screen of the BOM. You maintain the explosion type in Customizing for MRP in the IMG activity *Item data → Define explosion types*.

Total Requirements

Use

For industries such as the automotive industry, in which large numbers of sales orders for finished products with very many components are planned every day, the **performance** of the material requirements planning run can be improved greatly by generating **total requirements for the components**.

Prerequisites

Finished Product

You must be able to produce the finished product through repetitive manufacturing.

- You have set the *Repetitive manufacturing indicator* in the material master (*MRP 4* view) and entered a *repetitive manufacturing profile*.

- You have selected the indicator for the generation of collective requirements in the *repetitive manufacturing profile* that you have entered.

- If you want to assign costs to the material and not the sales order, you have created a production cost collector for the material.

Components

- You have set the indicator *2* for *Collective requirements* in the *Individual/collective* field in the material master (view *MRP 4*).

> Collective requirements are not the same as total requirements. In the case of collective requirements the individual requirements are still displayed with their pegged requirements. The system can display these collective requirements combined in a single line or completely expanded in the MRP list and the stock/requirements list. With regards to planning, collective requirements, like total requirements, allow all the requirements to be covered collectively using one procurement element.

Features

The system does not generate individual requirements for each pegged requirement. It does, however, generate a total requirement for each component, which contains the daily cumulated quantity of all dependent requirements for this component. For example, if 1000 sales orders are planned for one day, the system does not create 1000 individual requirements for the dependent requirement of a particular component, but creates a single total requirement (requirement quantity multiplied by 1000).

An individual requirement for components is generated in addition to the total requirement:

- if the availability check is allowed for the material in the material master

- if you have set the indicator *0* (zero) for the generation of total and individual requirements for the components in the *Requirements grouping* field in the material master (view *MRP 4*)

- if the components in the planned order are firmed

Total Requirements

⇒

> You may not generate total requirements for components that are produced using make-to-order-production. You therefore enter the indicator *1* for *Individual requirements* in the *Individual/collective* field in the material master (view *MRP 4*) for the components.

Displaying the Total Requirements

The total requirements are displayed as an individual MRP element (TotReq) in MRP **evaluations**. You cannot access pegged requirements for these total requirements.

You can access the components, for which only total requirements have been generated, in a special list in the **planned order**. To do this, you select *Total requirements* in the header of the planned order. (This function is only provided if total requirements are available.) In the standard component list, the system only displays the components, for which individual requirements are presented.

Calculating the Dependent Requirements Date

Use

As the components and the assemblies are needed for the production of a higher-level planned order, they must be available by the order start date of this higher-level planned order.

Features

If no lead-time offset has been maintained, the system uses the order start date for the source planned order as the dependent requirements date for the components (see Calculating the Provision Date of the Components [Page 125]).

Distribution of Dependent Requirements Quantity

Use the distribution function if the complete quantity of dependent requirements for a particular component is not needed on the order start date, but is to be **delivered throughout the production process** (between the order start and order finish dates). The dependent requirements quantity determined from the BOM explosion is then distributed between the order start date and the order finish date.

You define the distribution key for splitting component consumption in the BOM.

You can find further information on adapting scheduling to the operations in the SAP document *PP - Routings*.

You can find further information on the distribution function in the SAP document *PP - Repetitive Manufacturing*.

Lead-Time Offset

In situations where orders have long lead times, the calculation of dependent requirements dates can result in components being provided much earlier than they are actually needed in the production process. To avoid this situation, the dependent requirements date of the subordinate components can be rescheduled by the **lead-time offset**.

You have determined the lead-time offset in the BOM by entering the number of workdays by which the staging of components is to be displaced in the *Lead time offset* field in the item overview screen.

If you enter a positive value, the dependent requirements date of the component is displaced into the future by this value, starting from the order start date of the assembly's planned order.

If you enter a negative value, the dependent requirements date will be brought forward.

Storage Location Determination in BOM Explosion

Use

In order for the system to find the issue storage location for components in a BOM explosion in MRP or in a backflush in repetitive manufacturing, you can make the appropriate settings according to the assignment of storage locations in the plant.

Integration

The process flow for the storage location determination described here is the same as the process flow for supply area determination (if you use Kanban), thus only storage location determination is described below.

Prerequisites

- In the **BOM** for the assembly or for the finished product, you have defined the production storage location for the component in the BOM item.

- If you have not defined a production storage location in the BOM item, you can define in **Customizing** for MRP or in Customizing for Repetitive Manufacturing which strategy the system is to use to find the issue storage location and from which location the components are to be withdrawn in the BOM explosion. You do this in the IMG activity *Define stor.loc./supply area determination for BOM explosion*

Features

Production Storage Location in the BOM Item

If you have defined a production storage location in the **BOM item** for the withdrawal of the components, the system finds it during the BOM explosion and adopts it in the planning run. You can check it in the component overview for the planned order.

No Customizing Strategy, No Production Storage Location in the BOM Item

If you have not entered a production storage location in the BOM item nor defined a strategy in Customizing, the system checks whether the production storage location has been maintained in the **material master** for the component and uses it as the issue storage location in the BOM explosion.

Customizing Strategy, No Production Storage Location in the BOM Item

If you have determined a strategy in Customizing and if no storage location has been defined, the system reads the MRP group for the assembly and determines the strategy for the storage location determination. The following strategies are available:

- If you set indicator 1 *Only components* (or no indicator) in Customizing, the system checks to see whether the production storage location has been maintained in the material master of the components and uses this as the issue storage location.

  You use this strategy if you always withdraw one particular component from the same storage location.

- If you set **indicator 2** *Only assembly*, the system checks to see whether the **proposal issue storage location** has been maintained in the **production version** of the assembly or

finished product. If this has been maintained, the system uses this issue storage location for all components of the BOM for the assembly or finished product.

> If no proposal issue storage location has been maintained, the system adopts the receiving storage location of the assembly or finished product. The system then uses the receiving storage location as the issue storage location for the components.

> You can define the receiving storage location in the production version of the assembly in the *To location* field or in the material master of the assembly or finished product in the *Production storage location* field.

> You use this strategy if you work with repetitive manufacturing and all components lie together in one storage location close to the production line where they are required.

- If you set **indicator 3**, the system then proceeds as with indicator 1. If it does not find a storage location, it then proceeds as with indicator 2.

- If you set **indicator 4**, the system then proceeds as with indicator 2. If it does not find a storage location, it then proceeds as with indicator 1.

Linking the Revision Level

Use

Changes to a bill of material, to the material master record, to a standard task list, or to a document, which are made with **reference to a change number**, can be additionally marked by a **revision level**.

You can find further information on creating change numbers and revision levels in the SAP document *PP – Bills of Material*.

Checking the Revision Level in MRP

Use

The system determines which **revision level** is to be used for production or purchasing for each procurement proposal during the planning run.

For materials produced in-house, the revision level is determined via the **explosion date** of the planned order. In BOM explosion, the dependent requirements date is used for determining the revision level for the assemblies and components.

For materials procured externally, the revision level is determined via the **release date** of the purchase requisition or the **order start date** of the planned order.

The revision level is displayed in a separate column in the MRP list as well as in the stock/requirements list.

Prerequisites

You have maintained revision levels for the material.

Procedure

Checking the Revision Level for the Planned Order and Components

1. Choose *Planned order → Change* or *Planned order → Display*

   or

   in the stock/requirements list: Position the cursor on the planned order and choose ✏ or 👓.

   The planned order itself appears.The revision level of the planned order is displayed on the *Header* tab page.

2. Choose 🖧 *Components*.

   The component overview appears.

3. Select the required component and choose *Extras → For item*.

   Additional data for the components, including the revision level, appear.

Checking the Revision Level for the Purchase Requisition

- In Purchasing, choose Requisition → Change or Requisition → Display

   or

- in the stock/requirements list: Position the cursor on the purchase requisition and choose ✏ or 👓.

The details screen for the purchase requisition item appears. The revision level is displayed in the screen area entitled *MRP data* and can be changed in the change mode.

Adapting the Revision Level if Dates Change

Use

If you change the dates of a planned order, the order start date will be moved to another revision level if necessary. In order to make the changes to the revision level effective, you must **trigger** the **BOM explosion** for this planned order **manually**.

Prerequisites

You have maintained revision levels for the material.

Procedure

In the planned order, you choose *Edit → Explode BOM*.

During the BOM explosion, the system determines the valid revision level using the explosion date of the planned order.

Creation of Exception Messages

Use

Exception messages depend on the transaction being carried out and are meant to **inform** you of an **important or critical event** (for example, start date lies in the past, safety stock has been exceeded).

By means of the exception messages, you can easily sort out any materials that you need to **reprocess manually**. Special search and selection functions are available for this in the evaluations for MRP.

Process Flow

During the planning run, the system recognizes exceptional situations where you usually have to manually reprocess the planning result and it records these situations as exception messages. The system displays the exception messages in the **evaluations for MRP**.

Exception messages refer to an individual MRP element. If several exception messages occur for one MRP element, the most important ones are stored.

Rescheduling Check

Use

An important group of the exception messages mentioned above are the **rescheduling proposals**. In the net requirements calculation, the system checks whether warehouse stock or firmed receipts are available in sufficient quantity to cover requirements. If a material shortage exists, the system usually creates a new procurement proposal. The rescheduling check is used to change the dates of already existing **firmed receipts** not planned on the same day as the requirement to suit the requirement date. For this purpose, the system displays the appropriate exception messages with rescheduling proposals for these firmed receipts to be processed by the MRP controller.

Prerequisites

You have defined the rescheduling parameters in Customizing for MRP:

- per plant in the IMG activity *Carry out overall maintenance of plant parameters*

- per MRP group in the IMG activity *Carry out overall maintenance of MRP groups.*

The **rescheduling horizon**, which defines the period for bringing forward the receipts, and the **receipt elements**, which should be taken into account in rescheduling, are included in these.

> You can also define tolerance values for the creation of exception messages, in Customizing. These values define a time period in which no exception message is to be created, despite the fact that a rescheduling proposal may exist. The MRP controller can thus avoid a situation where too many exception messages are created if a certain buffer has already been planned for scheduling basis dates.

Process Flow

- *Bring process forward (reschedule in)*

    Within this rescheduling horizon, the net requirements calculation checks whether, after a requirement, a firmed receipt exists, which can be used to cover this requirement. Then the system displays a **rescheduling date** as well as the exception message *Bring process forward* for this receipt. The net requirements calculation then uses this receipt and the system will only create another procurement proposal if the receipt quantity is not sufficient to cover the complete requirement. Several firmed receipts can be used to cover one requirement.

    > The rescheduling horizon is always calculated from the MRP date.

- Postpone process (reschedule out), or cancel process

    The net requirements calculation checks over the complete time axis whether availability could still be guaranteed without the receipt in question. If this is the case, the system checks whether the receipt planned here could be used to cover a future requirement. If the system can find such a requirement, it then displays a **rescheduling date** as well as the exception message *Postpone process* for this receipt.

If the system finds no future requirement, for which the receipt is required, the system displays the exception message *Cancel process*.

Ranges of Coverage in MRP

Use

The range of coverage is the number of days in which a **material** must **still be available** to cover requirements.

On the one hand, the work scheduler defines the range of coverage as a planned number of days, so that fluctuations in requirements can be cleared. If necessary, the system creates corresponding procurement proposals.

On the other hand, the system calculates the range of coverage in MRP Evaluations to enable the work scheduler to see how many days' requirements are covered by the material available.

Features

Various procedures for calculating the range of coverage are available in MRP:

- Calculating the Statistical Range of Coverage [Page 179]

    You define the minimum, maximum and target range of coverage for particular periods in the range of coverage profile. The system calculates the minimum, maximum and target range of coverage using the defined range of coverage values and the **average daily requirements**. If the available quantity is below the minimum stock level, the system creates a procurement proposal so that stock can be replenished up to the target stock level. The system thus obtains a dynamic safety stock based on requirements

- Safety Time/Actual Range of Coverage [Page 188]

    You define the safety time/actual range of coverage in the material master as a planned number of days in which the warehouse stock of a material covers requirements without new receipts being taken into account.

    The system simulates bringing forward the **existing requirements** on the time axis by the number of days defined and creates procurement proposals correspondingly. This ensures that the stock of a material is received before the actual requirements date. This enables the warehouse stock to cover requirements even with fluctuations.

- Days' Supply and Receipt Days' Supply [Page 190]

    The days' supply and receipt days' supply indicate how many days the **plant stock currently available** (in the case of the receipt days' supply, plant stock plus certain receipts) will be able to cover the existing requirements.

    Both types of days' supply are calculated by the system during the planning run and are displayed in MRP Evaluations.

- Actual Range of Coverage [Page 192]

    The actual range of coverage specifies how long the **available quantity of a material at a particular date or in a particular period** can cover the requirements in subsequent periods. This is specified in number of days.

    The system calculates the actual range of coverage during the planning run and displays it in the period totals display in MRP Evaluations and in the planning table for repetitive manufacturing.

Calculating the Statistical Range of Coverage

Implementation Options

Calculating the range of coverage serves to determine a **dynamic safety stock level** based on current requirements. Statistical, in this context, means it is not the actual requirements that are taken into account, but the average daily requirements within a defined period that are calculated by the system.

During the planning run, the system recalculates the dynamic safety stock for each MRP element and this safety stock is then available for planning purposes.

➡

> The statistical range of coverage calculation usually refers to the concrete requirements of make-to-stock production. You can therefore only use this for requirements, which the system lists in the **net or gross planning segments** of the MRP list and the stock/requirements list.

Prerequisites

- The system divides up the requirements relatively evenly, that is, there are not any great variations in the requirements within the periods based upon the calculation.

- In Customizing for MRP, you have defined a range of coverage profile in the IMG activity *Define range of coverage profile (Dynamic safety stock)*. There you have determined the parameters for calculating average daily requirements as well as minimum, maximum and target ranges of coverage for different time periods.

  ➡

  > To do this, you start from MRP in the SAP Easy Access menu and choose *Environment → Current settings → Define range of coverage profile (Dynamic safety stock)*. You do not therefore need any customizing authorization in order to maintain an appropriate profile.

- You have assigned the range of coverage profile to the material in the material master (*MRP 2* view).

Process Flow

1. The system calculates the average daily requirements using the parameters defined in the range of coverage profile (see Calculating the Average Daily Requirements [Page 181]).

2. The system reads the defined ranges of coverage in the range of coverage profile and calculates the minimum, maximum and target range of coverage (see Calculating the Minimum, Maximum and Target Stock Level [Page 183] and Values of the Statistical Range of Coverage Calculation [Page 187]). The target stock level represents the safety stock level.

3. The system checks for every MRP element whether the available quantity is below the minimum stock level. If stock falls below the minimum stock level due to a requirement, the system creates a procurement proposal and thus calculates the procurement quantity, so that the available quantity is replenished up to the target stock level (see Calculating the Dynamic Safety Stock [Page 184]).

Calculating the Average Daily Requirements

Implementation Options

The system uses the calculation of the average daily requirements as the basis for calculating the dynamic safety stock.

Prerequisites

In Customizing for MRP, you have defined the parameters for calculating the average daily requirements in the range of coverage profile itself using the IMG activity *Define range of coverage profile (Dynamic safety stock)*. The individual parameters are:

- *Periods* (month, week or PPC planning calendar period)

  The periods are calendar periods, that is, the system calculates them from the calendar start of the period. A weekly period, for example, is calculated from Monday to Sunday and a month is calculated from the first calendar day to the last calendar day of the month.

- *Number of periods* that are included in calculation of average daily requirements

- Period length

  - *Workdays*

    The system defines workdays using the factory calendar.

  - *Calendar days*

    The system defines calendar days using the Gregorian calendar.

  - *Standard days*

    You can specify, for example, that 20 days are to be used for the calculation of the monthly average.

Process Flow

1. The system uses the defined parameters to determine the **number of days** used for calculating the average daily requirements. If the period is defined as a *week*, the period length as *standard days* (5 days) and the number of periods as 2, the system divides the total of the requirements by 10 days.

2. The system then calculates the **total of the requirements** for this period.

   The system takes into account all requirements in the current period, even requirements that lie in the past but are still in the current period. For example, if the planning run is carried out in the middle of the month, then those requirements that were planned at the beginning of the month are also included in the calculation of the average daily requirements.

3. The average daily requirement is calculated using the formula:
   Requirements in the specified number of periods / Number of days within the total period length

Calculating the Average Daily Requirements

With **time-phased materials planning**, the system does not calculate average daily requirements using the number of days defined in the profile. It calculates the average daily requirements using the number of days in the interval between the MRP date and the availability date to the next MRP date.

See also: Range of Coverage for Time-Phased Materials Planning [Page 33]

Calculating the Minimum, Maximum and Target Stock Level

Prerequisites

In Customizing for MRP, you have defined the ranges of coverage for the individual time periods in the range of coverage profile itself using the IMG activity *Define range of coverage profile (Dynamic safety stock)*.

- You can define the **ranges of coverage for up to three time periods**, whereby you can maintain different minimum, maximum and target ranges of coverage for each period.

- In addition to the ranges of coverage for the three periods, you can define **different ranges of coverage** for particular periods. This can be useful when, for example, you have to plan using a higher safety stock level due to increased demand in the months just before Christmas.

Process Flow

1. During the planning run the system checks whether there are any date-specific ranges of coverage on the dates of the MRP elements (requirements, planned orders, and so on). If this is the case, the system uses these different range of coverage values. If there are no date-related range of coverage values on these dates, the system uses the values that you have maintained for the three periods.

2. The system calculates the stock levels for the corresponding time periods using the following formulas:

   - Minimum stock level: average daily requirements * minimum range of coverage

   - Target stock level (= dynamic safety stock): Average daily requirement * target range of coverage

   - Maximum stock level: average daily requirement * maximum range of coverage

Calculating Dynamic Safety Stock

Process Flow

1. During every planning run, the system checks for every MRP element (requirements, planned orders and so on) whether the available quantity is below the **minimum stock level**.

2. If stock falls below the minimum stock level due to a requirement, the system creates a procurement proposal and thus calculates the procurement quantity, so that the available quantity is replenished up to the **target stock level**, that is, the **dynamic safety stock**.

3. If the maximum stock level is exceeded, the system adjusts the quantities for procurement proposals that are not firmed correspondingly. If the procurement proposal is firmed, the system displays an exception message.

Example

The system determines an average daily requirement of 15 pieces. You have defined a minimum range of coverage of 3 days, a maximum range of coverage of 7 days and a target range of coverage of 5 days.

The system calculates the following:

Minimum stock level = 3 x 15 pieces = 45 pieces

Maximum stock level = 7 x 15 pieces = 105 pieces

Target stock level = 5 x 15 pieces = 75 pieces

The available quantity is 40 pieces and is therefore less than the minimum stock level. Therefore, the system creates a procurement proposal for 35 pieces (= target stock level 75 pieces – actual quantity of 40 pieces) during the planning run.

> The system does not plan the dynamic safety stock as a gross quantity but takes it into account in the net requirements calculation. That means that the system then increases only the quantity of an existing planned order when it is necessary due to the availability situation. If sufficient material quantities to cover the safety stock quantity are already in stock, no additional planned order is created.

> In the case of time-phased materials planning, the range of coverage is calculated differently to the method described here. For information, see Range of Coverage for Time-Phased Materials Planning [Page 33]

Example for Calculating Statistical Range of Coverage

Example Data for Average Daily Requirement

Requirement for 1st period	1000
Requirement for 2nd period	2000
Calendar period	Week
Period length	Standard days (5 days)
Number of periods	2

Example Data for Determining the Range of Coverage

Target range of coverage for period 1	2 days
Period 1	2 weeks
Target range of coverage for period 2	4 days
Period 2	3 weeks

Calculation

- Calculation of the average daily requirements:

    (1000 + 2000)/(2*5) = 3000/10 = 300

- Calculating dynamic safety stock:

    Average requirement * range of coverage in period 1
    300 * 2 = 600

    Average requirement * range of coverage in period 2
    300 * 4 = 1200

Result

For the first two weeks starting from the MRP date, a safety stock level of 600 pieces is planned.

For the following three weeks, a safety stock level of 1200 pieces is planned.

Results of the Statistical Range of Coverage Calculation

Use

You can check the values calculated by the system in **MRP Evaluations**.

Prerequisites

- In Customizing for MRP, you have defined a range of coverage profile in the IMG activity *Define range of coverage profile (Dynamic safety stock)*.

- You have assigned the range of coverage profile to the material in the material master (*MRP 2* view).

- You have completed a planning run.

Features

MRP Evaluations

You can check the calculated values in the stock/requirements list or in the MRP list in the **period totals display**. The period totals display appears, if you choose ⬚ in the stock/requirements list or in the MRP list.

The system displays the following data:

- Statistical range of coverage

- Target range of coverage

- Minimum range of coverage

- Maximum range of coverage

- Average daily requirements

- Target stock level (dynamic safety stock)

- Minimum stock level

- Maximum stock level

Planning table for Repetitive Manufacturing

When using the planning table for repetitive manufacturing, you can also check particular values by proceeding as follows: Starting from the planning table, choose *View → Range of coverage:*

- Target stock level (dynamic safety stock)

- Minimum stock level

- Maximum stock level

- Statistical range of coverage

Values of the Statistical Range of Coverage

Value	Formula
Average daily requirement	Requirements in the specified number of periods/ Number of days within the total period length
Statistical range of coverage	Available quantity at the respective date/Average daily requirements The statistical range of coverage then corresponds to the target range of coverage if no requirements shortage or excess requirements exist.
Minimum, maximum and target range of coverage	You determine an interval for the calculation of the safety stock level with the minimum and maximum range of coverage. The system checks whether the statistical range of coverage is below the minimum range of coverage. If this is the case, the system recalculates the safety stock quantity in the next planning run using the target range of coverage. If the maximum range of coverage is exceeded, the system will display an exception message.
Minimum stock level	Average daily requirements * minimum range of coverage
Maximum stock level	Average daily requirements * maximum range of coverage
Target stock level	Average daily requirements * target range of coverage

Safety Time / Actual Range of Coverage

Use

The safety time / actual range of coverage ensures that the planned warehouse stock covers the requirements of a defined number of days. It therefore serves as a **time float** and thus works alongside the **safety stock**, which acts as quantity float.

Prerequisites

- You have set the *Safety time indicator* in the material master (*MRP 2* view).

- You have entered the actual range of coverage in the *Safety time/actual range of coverage* field in the material master (*MRP 2* view).

- If you want to use a different actual range of coverage in addition to this one for particular periods:

  In Customizing for MRP, you have defined a **period profile** in the IMG activity *Define period profile for safety time/actual range of coverage* and assigned this to the material in the material master.

  ➡️

  To do this, you start from MRP in the SAP Easy Access menu and choose *Environment → Current settings → Define period profile for safety time/actual range of coverage.* You do not therefore need any customizing authorization in order to maintain an appropriate profile.

Features

Safety Time / Actual Range of Coverage

The system simulates bringing the requirements forward by the number of days entered and the planning for the receipts, which are created for these requirements in the planning run, is also brought forward by this number of days. Using the safety time indicator, you can control whether receipts are only to be brought forward for planned independent requirements (planned independent requirements and customer requirements) or for all requirements.

➡️

The work scheduler defines the safety time / actual range of coverage as 2 days. A requirement exists for January 31st. During the planning run, the system simulates bringing the requirements date forward by 2 days and generates a planned order with finish date January 29th. However, the actual requirements date (January 31st) does not change.

🗨️

The disadvantage of this procedure is that a procurement element is created for each requirement. The system only summarizes the procurement quantities necessary for the requirements into a procurement element if you work with weekly lot sizes or monthly lot sizes.

Safety Time / Actual Range of Coverage for Time-Phased Materials Planning

Time-phased materials planning is based on the interval between the MRP date and the availablity date of the next MRP date. By using the actual range of coverage, the number of days defined as the actual range of coverage is added to this availability date. Time-phased materials planning is then carried out for the changed period.

Period Profile for Safety Time / Actual Range of Coverage

In certain periods, it may be necessary for you to plan using a different range of coverage from the one that you have defined in the material master. In order to smooth out seasonal fluctuations, you can use the **period profile** for any freely definable period of time to define a different actual range of coverage from the one that you have defined in the material master. You can thus, for example, set in the period profile that a higher range of coverage than in normal months should be used to cope with increased demand in the months leading up to Christmas.

During the planning run, the system checks whether you have assigned a period profile to the material and whether the requirements date falls in one of the periods that are defined in the profile. If that is the case, the system calculates using the actual range of coverage from the period profile. If that is not the case, the system uses the actual range of coverage from the material master.

Days' Supply and Receipt Days' Supply

Use

The **days' supply** of a material indicates how long a material will cover requirements if you only take current plant stock into account.

The **receipt days' supply** of a material indicates how many days the stock will last if stock that you are certain to receive is also taken into account. You can define two different receipt days' supplies. You can thus define, for example, that with receipt days' supply 1, all possible receipt elements are to be taken into account, whereas with receipt days' supply 2, only the absolutely certain receipt elements, such as shipping notifications and production orders, are taken into account.

By using these range of coverage types, the work scheduler is able to see whether any further action is required for a material.

Integration

The system calculates the days' supplies in every planning run and every time the current stock/requirements list is called up.

The system displays both of these types of days' supply in the planning results, in the material overviews in collective access and in the header details in the MRP list and the current stock/requirements list.

In the collective display of the MRP list, you can use these key figures to select MRP lists.

Prerequisites

You can define the receipt elements that are to be taken into account for the receipt days' supply 1 and 2 in the IMG activity *Define receipt elements for the receipt days' supply* in Customizing for MRP.

Features

Defining the Receipt Elements for the Receipt Days' Supplies

In Customizing, you define the receipt elements that the system is to take into account when calculating the receipt days' supply 1 and 2.

In the case of in-house production, you have the choice between production/process orders and firmed planned orders and as of Release 4.5A assigned planned orders. Assigned planned orders are planned orders that have been assigned a *production version*. In repetitive manufacturing, this corresponds to the manufacturing of a particular production line.

Calculating Days' Supply and Receipt Days' Supply

For calculating the days' supply and receipt days' supply, you define in the *Safety stock* field in Customizing whether the system is to use the **safety stock** or the **actually available stock** to determine the number of days that a material will cover requirements.

If the safety stock is to be taken into account, the system calculates the number of days until the stock level falls below the safety stock level. If only the actually available stock is to be taken into account, the system calculates the number of days until the stock level falls below 0.

Actual Range of Coverage

Use

The actual range of coverage specifies how long the available quantity of a material at a particular date or in a particular period can cover the requirements in subsequent periods. This is specified in number of days.

Integration

The system calculates the actual range of coverage both during the planning run and in the stock/requirements list. It can then be displayed in the **Period totals display** in the **MRP list** or in the **stock/requirements list**.

The system also displays the actual range of coverage in the planning table for repetitive manufacturing.

Features

The actual range of coverage is calculated for all periods that are displayed in the Period totals display. The **available quantity on the particular date** is used to carry out the calculation. This provides the work scheduler with an overview of the ranges of coverage in the future.

In contrast, the days' supply only displays the current situation as it is calculated using the current available quantity.

Special Planning Processes

Implementation Options

You use special planning processes,

- if you do not want to plan on a plant level, but either **on a multi-plant level** or only for a particular **part of a plant**

- if you want to work with **special procurement types**.

Features

Special planning processes include

- subcontracting

- direct production

- direct procurement

- storage location MRP

- planning with MRP areas

- multi-plant (site) planning

- requirements grouping for individual project planning

Subcontracting

Use

In subcontracting, the vendor is provided with materials (components), which he uses to produce the finished product.

Integration

- From the point of view of materials planning, subcontracting is initiated by the special procurement key *Subcontracting*. The special procurement key is allocated to the finished product or the assembly in the material master (*MRP 2* view) (see also Procurement Type and Special Procurement Type [Page 133]).

- In order to plan specific material requirements for each individual subcontractor, you can use MRP areas. You can thereby create an individual MRP area for every subcontractor (see Planning for Components to be Provided in Subcontracting [Page 244]).

You can find further information on subcontracting in the SAP document *MM – Inventory Management* under Subcontracting [Ext.].

Subcontracting Procedure

Prerequisites

- You have set the special procurement key *Subcontracting* in the material master (*MRP 2* view) for the finished product or assembly that is to be produced by the subcontractor.

- You have entered the *subcontractor* in the *source list* or in the *quota arrangement* for this assembly. If you do not use quota arrangements, you have to set the *Record relevant to MRP* indicator in the MRP column of the *source list*.

- You have set the *Scheduling info record/agreement* indicator in Customizing for MRP in the IMG activity *Define external procurement.*

Process Flow

1. If a requirement exists for the finished product or assembly, the planning run generates a **purchase requisition** with item category *L* (subcontracting) or a **planned order** with special procurement *Subcontracting*. This planned order is converted into a purchase requisition with item category *L*.

   You can see the item category or the special procurement type when you display the MRP element in the stock/requirements list or in the MRP list.

2. At the same time, the system explodes the BOM for the finished product or the assembly. **Dependent requirements for the components** are generated at finished product level either at the start date of the planned order or at the release date of the purchase requisition.

   These dependent requirements are included in the net requirements calculation as special dependent requirements (MRP element *SubReq*). However, if you make changes to quantities or dates, you can do so in the same way as for normal dependent requirements.

3. The system then determines the **source of supply**, that is, the subcontractor, using the source list or quota arrangement and source list (see also Determining the Source of Supply for External Procurement [Page 137]).

Subcontracting with Production Version

Use

If an assembly is produced by **different subcontractors** or produced in-house with **different BOMs**, the system is to take this into account during the BOM explosion in the planning run.

Prerequisites

- You have entered the special procurement key *Subcontracting* in the material master (*MRP 2* view) of the assembly.

- You have created a *production version* in the material master (*MRP 4* view) of the assembly, in which you have entered the *alternative BOM* relevant to the subcontractor/vendor.

- You have entered this *production version* in the *purchasing info record* for the subcontractor.

- You have entered the *subcontractor* in the *source list* or in the *quota arrangement* for this assembly. If you do not use quota arrangements, you have to set the *Record relevant to MRP* indicator in the MRP column of the *source list*.

- You have set the *Scheduling info record/agreement* indicator in Customizing for MRP in the IMG activity *Define external procurement.*

Integration

You can find the transactions for maintaining *info records* and the *source list* in the *Purchasing* menu, under *Master data*.

Features

- Material requirements planning adopts the **production version from the subcontractor's purchasing info record** and explodes the corresponding **alternative BOM** that is defined in the production version. This also applies to planned orders and purchase requisitions.

    ⚠️

    The production version from the subcontractor purchasing record has a higher priority than the production version from the quota arrangement.

- In Purchasing, when assigning the source of supply, the production version is copied from the subcontractor info record into the purchase requisition or purchase order and is used for selection in the BOM.

- Production versions that you have entered in the quota arrangement are taken into account in MRP and Purchasing.

Planning Components to be Provided

Use

The net requirements calculation for components to be provided in subcontracting takes into account that the **provision stock** can only be used to cover the corresponding **requirement of material provided**. The provision stock that is already available from a subcontractor (vendor) can only therefore be used to cover the requirements of material provided at this subcontractor.

The system uses only the **stock that has not been assigned to a subcontractor** as **unrestricted-use stock** to cover all requirements.

Integration

If you carry out **MRP with MRP areas**, you can define an MRP area for each individual subcontractor and thus plan the components to be provided separately for each subcontractor (see Planning for Components to be Provided in Subcontracting [Page 244], Example for Planning with MRP Areas [Page 220]).

Features

Subcontractor Segments

The system displays the provision stocks and requirements in additional **segments for subcontracting** in the MRP list or stock/requirements list. A separate planning segment is created for each subcontractor (vendor) for which stocks or requirements for material provided exist.

The system displays the **provision stock and requirements of material provided** (MRP element SubReq) for a subcontractor in the segment for subcontracting. This display only serves for **information**, as the actual planning only takes place in the net requirements segment.

The system displays requirements for material provided for a subcontractor without existing provision stock in the segment for subcontracting and displays and plans the requirements in the net requirements segment.

The system also includes subcontracting third party orders and subcontracting third party requisitions in the subcontracting segment.

Planning in the Net Requirements Segment

In the net requirements segment, the system calculates the **difference between stock already provided and requirements for material provided**.

The system does not include requirements of materials provided by a subcontractor (vendor) that are already covered by existing stocks at the subcontractor's plant in the net requirements calculation. The system therefore does not display these requirements in the net requirements segment.

The system displays and plans requirements for material provided that are not covered by provision stocks in the net requirements segment. You can display the total requirement quantity and the open quantity still to be provided for a requirement of material provided (SubReq) by double-clicking on the requirement of material provided.

Planning Components to be Provided

Manually Processing Components to be Provided

If you change the planned order or the purchase requisition of the finished product manually, these changes are automatically transferred to the components to be provided. The dependent requirements of the components to be provided are adjusted. You can also change or delete the dependent requirements manually.

Further Processing Options in Inventory Management

In Inventory Management, you must post the **transfer posting of unrestricted-use stock to the provision stock of the subcontractor** (stock with vendor) for the material components. This posting is independent from a purchase order.

The subcontractor dependent requirements for the components are not changed by this transfer posting.

The system only reduces the provision stock of the subcontractor for the components and reduces the subcontractor dependent requirements for the components once the goods receipt for the product has been posted.

> During a partial goods receipt, the subcontractor dependent requirements are reduced proportionally.

You can find further information on subcontracting in the SAP document *MM – Inventory Management* under Subcontracting [Ext.].

Direct Production

Use

If you **do not use direct production**, no link exists between the planned orders/production orders within the BOM structure. This means that the production order is scheduled individually and costs are dealt with individually for every assembly and component (with the exception of make-to-order production - here you can jointly consider the costs for several production levels). Once production is finished, the goods receipt for these components is posted in the warehouse so that goods issue of the components can be carried out for the production order of the superior assembly.

In contrast, the aim of direct production is to jointly regard **scheduling** and **costing procedures** for finished products, assemblies and components within a BOM structure.

The components that are produced directly are connected with each other in a multi-level **collective order** by entering the respective superior and leading planned order or production order. The collective order can be scheduled together and the costs incurred for the collective order can also be dealt with together (see Costs in Collective Orders [Ext.]).

A further advantage of direct production is the simplified process: Components that are produced directly are not placed in stock and are consumed directly by the superior production order. No manual goods receipt/issue postings are necessary. These postings are increasingly executed automatically during the confirmation of an operation in a production order.

⚠️

Direct production **does not** take into account available plant stock.

Prerequisites

- If you want to use direct production **for a particular component** all the time, you have entered the special procurement key for direct production in the material master for the component (*MRP 2* view).

- If you want to use direct procurement **for a particular BOM** only, you have entered the special procurement key for direct procurement in the corresponding BOM item in the *MRP data* area. This entry overwrites the entry in the material master.

➡️

If you have activated direct production in the material master, you can switch off direct production for a particular BOM, if you deactivate direct production in the *MRP data* area of the corresponding BOM item under *Explosion type*. This entry overwrites the entry in the material master.

Features

Direct production is always triggered in the planning run.

- A special indicator is set internally for **dependent requirements** of the components that are produced directly. This passes on the relevant information for direct production to MRP. During the planning of these components, the system creates corresponding **planned orders for direct production** for these dependent requirements. The system displays

Direct Production

dependent requirements and planned orders for direct production in a separate **direct production segment** in the MRP list and the stock/requirements list.

- When the planned order for the finished product is converted into a production order, all planned orders for subordinate components that are to be produced directly are automatically converted into production orders.

- The system adapts planned orders for direct production to changes in date and quantity of the superior assembly, even if they are firmed, so that the consistency of the collective order is kept. Manual changes are reversed.

    When **firmed purchase requisitions for direct production are changed**, the system automatically sends the MRP controller a **mail** with the data for the change (see Message Transmission in Direct Production [Page 202]).

You can find further information on the direct production in the SAP document Collective Orders [Ext.].

Planned Orders for Direct Production

Use

The system creates planned orders for direct production during planning for components in the collective order that are produced directly.

Features

Every planned order for direct production contains the number of the **superior planned order** as well as the number of the **leading planned order** (tab index *Assignment*, screen area *Direct production*).

- The requirement to be produced directly comes from the superior planned order.

- The leading planned order is the planned order at the head of the collective order.

The entry for the superior and leading planned order is purely informative. If you double-click on the number, the display for the respective planned order appears.

> After conversion into production orders, the respective superior and leading production order is also entered in the direct production orders.

> You can change planned orders for direct production manually, but such changes are not advised, as they lead to inconsistencies and are overwritten by the next planning run. Only change fields that are not critical, for example, where you add or delete a component, and then convert the planned order immediately.

Message Transmission in Direct ProductionUse

If a planned order for direct production, which has been changed manually and is therefore firmed, is changed or deleted by the next planning run, the MRP controller responsible must be notified of the change as soon as possible. The MRP controller receives an e-mail with the information about the change automatically.

Prerequisites

- You have set the *Message indicator* in Customizing for MRP in *Settings for direct procurement*.

- You have set the control parameters for e-mail message transmission in *Maintain e-mail partner for direct production.*

Features

The system sends an e-mail if a planned order for direct production is changed or deleted or if the BOM had to be re-exploded.

Customizing Settings for Direct Production

Use

You can implement a **multi-plant collective order** with **production in another plant** using the special procurement key.

Integration

In Customizing for MRP, you have maintained the special procurement key in the IMG activity *Define special procurement type* (see also Procurement Type and Special Procurement Type [Page 133]).

Features

In Customizing, the system creates a **special procurement key for direct production** as standard. The special procurement key contains the procurement type *E* for in-house production and the *Direct production* field is selected.

You can create a further special procurement key by setting the special procurement type *P* for *Production in alternative plant* as well as entering the *production plant* in addition to making the direct production settings. The settings work in addition to each other and do not block each other. This is how you create a **multi-plant collective order**.

A material is to always be produced **in an alternative plant** (plant 0002) and simultaneously be **produced directly** as a BOM component.

During the planning, the system creates a planned order for direct production for the material when there is a requirement in plant 0001. In plant 0002, the BOM is exploded and dependent requirements are created. When the system converts the superior planned order into a production order, the planned order for direct production for the material in plant 0001 is also converted automatically into a production order. The dependent requirement in plant 0002 is converted into a dependent reservation and production of the components in plant 0002 is initiated.

If the material is simultaneously sold to customers from the warehouse, for example, as a spare part, it is also produced in plant 0002. The setting for direct production is not valid in this case, as the material is a finished product and not a BOM component.

Direct Procurement

Use

Using the **direct procurement** procedure, you can order BOM components for a planned order directly instead of via the warehouse.

> Direct procurement is also possible in connection with make-to-order production and engineer-to-order production.

There are **two alternative processes**:

- using the **special procurement key** *Direct procurement*

  This process is like the direct production process.

- using the **item category** *Non-stock item.*

We recommend the process using the special procurement key.

Prerequisites

- For the plant and/or for an MRP group, you have defined **when** the direct procurement is to be triggered. In Customizing for MRP, you have set the indicator in the *Direct procurement* field of the IMG activity *Settings for direct procurement* as follows:

  - Indicator *1* or *3* (these are identical), if direct procurement is to be triggered during MRP

  - Indicator *2* or *blank* (these are identical), if direct procurement is only to be triggered after the conversion or creation of a production order.

Process Using the Special Procurement Key for Direct Procurement

- You have set the item type *stock item* for the components in the BOM, which are to be procured directly.

- If you want to use direct procurement **for a particular component** all the time, you have entered the special procurement key for direct procurement in the material master for the component (*MRP 2* view).

- If you want to use direct procurement **for a particular BOM** only, you have entered the special procurement key for direct procurement in the corresponding BOM item in the *MRP data* area. This entry overwrites the entry in the material master.

> If you have activated direct procurement in the material master, you can switch off direct procurement for a particular BOM, if you deactivate direct procurement in the *MRP data* area of the corresponding BOM item under *Explosion type*. This entry overwrites the entry in the material master.

Process Using the Item Category for *Non-Stock Item.*

- You have set the item type *non-stock item* for the components in the BOM that are to be procured directly. You have also entered an item number and a detailed long text for the BOM item.

  This is the only possible process for materials without a material master.

Features

The system automatically triggers direct procurement at the selected time.

- In the planning run, the system does not create dependent requirements for **materials without a material master**, but does create purchase requisitions directly for them. The system thereby copies the BOM long text into the purchase requisition. The system does not display the materials in the MRP list or stock/requirement list, because they do not have a material number and the system can only display materials with material numbers in these lists.

  You set the copying of the long text for the BOM item in Customizing for Purchasing in the IMG activity *Define text types and copying rules.*

- For **materials with a material master**, MRP creates dependent requirements and (according to the creation indicator for the planning run) planned orders for direct procurement or purchase requisitions for direct procurement. The system displays these in a separate **direct procurement segment** in the MRP list and the stock/requirements list.

- When the planned order for the finished product is converted into a production order, all planned orders for subordinate components that are to be procured directly are automatically converted into purchase requisitions.

- The system adapts planned orders for direct procurement and purchase requisitions for direct procurement to changes in date and quantity of the superior assembly, even if they are firmed, so that inconsistencies in planning are avoided. Manual changes are reversed.

  When **firmed purchase requisitions for direct procurement are changed**, the system automatically sends the buyer a **mail** with the data for the change (see Message Transmission in Direct Production [Page 209]).

  You can only make restricted changes to purchase requisitions for direct procurement. Changes to quantities and dates are not possible.

Copying the BOM Long Text

Use

In the planning run, the system creates a purchase requisition directly for non-stock items without a material master. The system thereby copies the BOM long text into the purchase requisition.

Prerequisites

- The component does not have a material master record and is set in the BOM as a *non-stock item* in the *Item category* field.

- You have entered a long text in the BOM item.

Procedure

1. From Customizing for Purchasing, choose the IMG activity *Define text types and copying rules.*

   The screen for maintaining the text types now appears.

2. Choose *New entries*.

3. Enter a text ID for the text type and enter *BOM Item text* as the meaning.

4. Select the line with the newly created text type and double-click in the left screen area on *Links.*

   The screen for maintaining the text links for the selected text type now appears.

5. Choose *New entries*.

6. Enter a sequence number and choose *BOM* as source object and *BOM item text material BOM* as the source text.

7. Save the text link and text type.

   You see the newly created text type, when you choose *Goto → Texts → Text overview* in the item overview or the item details of the purchase requisition.

   ⚠

   The Customizing for text types is cross-client. The Customizing for links is dependent upon the client.

Account Assignment for Direct Procurement Purchase Requisitions

Use

Purchase requisitions, which are created by the system during direct procurement, bypass the warehouse and are set with the account assignment category *Unknown.* (The account assignment category *U* is set in Customizing as a default value in the SAP Standard System.)

In make-to-order planning and individual project planning too, the system sets the purchase requisitions for direct procurement with the account assignment category *Unknown.* The system does not pass on the account assignment for the sales order or the project to the purchase requisition for direct procurement.

Features

If the planned order that caused a purchase requisition for direct procurement is converted into a **production order**, then the purchase requisition is automatically reassigned to the production order account. If the purchase order does not have to be created until the production order exists, then the purchase order is also automatically assigned to the production order account.

If, due to deadlines, you have to order before the production order exists, then you have to manually assign the purchase order to a service cost center account. Here, you must select an item category that allows account assignment to cost center and that leaves the goods receipt non-valuated.

If the production order still does not exist when the invoice is received, the costs remain with the service cost center. Otherwise, you must manually change the account assignment from the service cost center to the production order when posting the invoice receipt.

Activities

You see the number of the respective production order, if you display the account assignment of the purchase requisition for direct procurement. To do this, proceed as follows:

1. Starting from the Purchasing menu, select *Purchase requisition → Display*.

2. Enter the purchase requisition number and choose ✔.

    The item overview of the purchase requisition now appears.

3. Position the cursor on the required item and choose 🔲 *Account assignment*.

    The account assignment screen for the item appears. In the *Order* field, you will find the number of the superior production order.

Planned Orders for Direct Procurement

Use

The system creates planned orders for direct procurement during planning for components that are procured directly. Depending on which creation indicator for purchase requisitions you have set in the initial screen for the planning run, the system chooses between the following procedures:

- if you have set indicator 1 (*Purchase requisitions only*), the system does not create any planned orders for direct procurement.

- if you have set indicator 2 (*Purchase requisitions in opening period*), the system only creates planned orders for direct procurement after the opening period.

- if you have set indicator 3 (*Planned orders*), the system only creates planned orders for direct procurement.

Features

Every planned order for direct procurement contains the number of the **superior planned order** (tab index *Assignment*, screen area *Direct procurement*). The requirement to be procured directly comes from the superior planned order.

The entry for the superior planned order is purely informative. If you double-click on the number, the display for the planned order appears.

> You can change planned orders for direct procurement manually, but such changes are not advised, as they lead to inconsistencies and are overwritten by the next planning run. You should only change fields that are not critical, for example, where you add or delete a component, and then convert the planned order immediately.

Message Transmission in Direct Procurement

Use

If the source planned order or requirement is changed or deleted during the next planning run, this also affects the purchase requisition for direct procurement. The buyer responsible must be notified of the change as soon as possible. The buyer receives automatically an e-mail with the information about the change.

Prerequisites

- You have set the *Message indicator* in Customizing for MRP in *Settings for direct procurement*.

- You have set the control parameters for e-mail message transmission in *Maintain e-mail partner for direct procurement.*

Features

A mail is sent when a purchase requisition for direct procurement has been changed or deleted and if this purchase requisition had already been fixed or if purchase orders already exist for this purchase requisition. The buyer receives a detailed long text.

Customizing Settings for Direct Procurement

Use

By using the special procurement key, you can combine direct procurement with other special procurement types. The material will then be planned differently, depending on whether it is planned as a BOM item or as a finished product.

Integration

In Customizing for MRP, you have maintained the special procurement key in the IMG activity *Define special procurement type* (see also Procurement Type and Special Procurement Type [Page 133]).

Features

In Customizing, the system creates a **special procurement key for direct procurement** as standard. The special procurement key contains the procurement type *F* for external procurement and the *Direct procurement* field is selected.

You can create a further special procurement key by setting one of the special procurement types *K* for *Consignment, L* for *Subcontracting* or *U* for *Stock transfer* in addition to making the direct procurement settings. The indicators are not, however, coactive, but work alternatively depending on the context.

This enables the following:

If the material is planned **as a BOM component**, it is procured directly at the vendor. If, however, the material is planned **as a finished product**, because, for example, it is sold to customers as a spare part directly from the warehouse, it is not directly procured, but is procured using the special procurement type that you have entered.

> ⚠️
>
> Direct procurement is normally executed as **direct procurement at vendor**. Direct procurement using consignment, subcontracting or stock transfer is not possible.

Storage Location MRP

Dispositionsbereichen [Page 217]

Definition

With Storage location MRP, material requirements planning is carried out at storage location level. The storage location stock is no longer included in the available stock of the plant MRP area as the storage location is planned separately.

Use

Material requirements planning is carried out at plant level. This means that the system adds together stocks from all of the individual storage locations, with the exception of individual customer stock, to determine total plant stock. It may be necessary to exclude storage location stock from the plant's MRP run, or you may want to plan certain stocks separately. For example, if a storage location is situated too far away from the place of production that is planned in this plant's MRP run or if the stock of a storage location is only available for service and not for production.

The following options are available:

- The storage location is to be planned separately. Fundamentally, separate storage location MRP is carried out using consumption-based planning. In this case, you must also define a reorder level and a replenishment quantity (fixed lot size) at storage location level. In so doing, it is possible to monitor this storage location's stock automatically, and if the stock level should fall below the reorder level the storage location is also replenished automatically.

   To do this, the system creates an order proposal for the amount of the replenishment quantity or for a multiple of the replenishment quantity so that the stock level exceeds the reorder level again. Existing firmed receipts for the storage location are also taken into account (similar to the reorder point procedure at plant level). In the planning run, stocks that lie in storage locations which are planned separately are not contained in the available stock at plant level.

   Several options are available for procuring stock for storage locations that are planned separately: For example, via a stock transfer from storage location to storage location within a plant, by external procurement directly to the storage location and so on.

   If a receipt element (planned order, purchase requisition, purchase order, production order, and so on) or an issue element (reservation, sales order) refers to either a storage location that is excluded from the planning run or one that is planned separately these elements are not taken into account at plant level.

   Reservations and sales orders, which are planned in a storage location for which MRP is carried out separately, are not included when calculating plant stock. The net requirements calculation for these requirements is restricted to this storage location.

- The storage location can be excluded from the planning run. In this case, the storage location's stock is not contained in the available stock at plant level, nor is it included in the planning run. The exclusion of storage location stock is only relevant to the planning run - for example, this stock is still completely available for withdrawals.

For more information, refer to:

Storage Location MRP

Planning Storage Location Stock Separately

Excluding a Storage Location from MRP

Planning Storage Location Stock Separately

If you want the system to monitor storage location stocks for one or more storage locations automatically during material requirements planning and, if necessary, replenish stock when the reorder level is exceeded, you can do this by maintaining the following data in the material master record (section of the screen entitled, Storage location MRP).

- In the *MRP indicator*, select "Storage location stock is planned separately".

- You define a reorder level and a replenishment quantity (fixed lot size).

- You must also decide which type of procurement is to be used for this storage location:

    - By a stock transfer from storage location to storage location in a plant

    - By a stock transfer from another plant

    - By external procurement directly to the storage location

    - By in-house production directly to the storage location

    - By production in another plant

    - By consignment procurement

    For procurement from storage location to storage location of a plant, you only have to enter the MRP indicator, the reorder level and the replenishment level.
    All other procurement types are defined via the field, *Special procurement type, storage location*.

    No special procurement keys are included in the standard system for procurement types **External procurement directly to storage location** and **Internal procurement directly to storage location**. Create these procurement types in Customizing for MRP. For more information refer to *Define special procurement types.*

What Happens in the Planning Run?

During a planning run, the system compares the reorder level of storage locations to be planned separately with the stock of this storage location. If available storage location stock falls below the reorder level, a receipt element is created amounting to the replenishment quantity or, if necessary, for a multiple of the replenishment quantity.

The receipt can take the form of a purchase requisition, a planned order, a schedule line, and so on and directly refers to this storage location.

The system takes quota arrangements and the source list into account when creating a purchase requisition or a schedule line.

The source list can refer to a contract or a delivery schedule.

- If the source list refers to a delivery schedule, the system will only take the delivery schedule if the storage location recorded in it is the same storage location for which storage location MRP was defined in the material master record.

Planning Storage Location Stock Separately

- If the source list refers to a contract, the system will only take the contract if the storage location recorded in it is the same as the one for which storage location MRP was defined in the material master record.

For a stock transfer within a plant, the system creates a stock transfer reservation. This is regarded as a receipt at storage location level and as an issue at plant level.

The following diagram illustrates the procedure for stock transfer within a plant:

Planning at plant level

Receipts	Issues
	Other issues
◄ **Comparison** ►	
Receipts	Stock transfer reservation for 50 - issue at plant level
Warehouse stock in plant X	

Planning at warehouse level

Stock transfer reservation - a receipt for **50**	**Shortage**	
Warehouse stock in warehouse X : **30**	◄ **Comparison** ►	Reorder level: **50**

Reorder level for warehouse X: 30
Replenishment quantity for warehouse X: 50

For storage location "X", the reorder level was set to 30 pieces. Since stock (0) has fallen below the reorder level, a stock transfer reservation amounting to the fixed lot size (50) was created. At the same time, this stock transfer reservation produced an issue at plant level for the same amount.

Excluding a Storage Location from MRP

Use

Using storage location MRP, you can exclude a storage location from MRP at plant level, that is, materials requirements planning is not carried out for this storage location. The storage location stock is thus excluded from MRP. You can, however, still make withdrawals from this stock.

Prerequisites

You maintain the *MRP indicator* "Storage location stock excluded from MRP" for the storage location in the material master record (screen segment "storage location MRP").

Features

In this type of storage location MRP, the available warehouse stock at plant level is reduced by the stock in the storage locations to be planned separately. No net requirements calculation is carried out for these storage locations to be planned separately.

MRP Area

Definition

The MRP area represents an organizational unit for which material requirements planning is carried out independently.

Basically, there are three types of MRP area:

- **Plant MRP Area**

    The plant MRP area initially contains the plant together with all its storage locations and stock with subcontractors.

    When you have defined MRP areas for storage locations and for subcontractors and you have assigned the materials, the plant MRP area is reduced by exactly this number of subcontractors and storage locations, as they are then planned separately.

- **MRP Areas for Storage Locations**

    You can define an MRP area that consists of a particular storage location, by creating an MRP area and assigning the storage location to it. Material requirements for this storage location are then planned separately from the rest of the plant.

    You can also group several storage locations into one MRP area, by creating an MRP area and assigning the storage locations to it. These storage locations are then planned together.

    ⚠️

    A storage location of a plant may only be assigned to one MRP area.

- **MRP Areas for Subcontractors**

    You can also define an MRP area for each subcontractor.

    ⚠️

    A subcontractor/vendor may only be assigned to one MRP area. An MRP area of the subcontractor type may also only contain one subcontractor.

The following illustration shows an example of how a plant can be divided up after the implementation of MRP areas:

MRP Area

Plant 0001 / Storage location MRP → Conversion → Plant MRP area 0001 / MRP area 00002 (consists of: storage location 0001 and storage location 0002) / MRP area 00003 (consists of: storage location 0003) / MRP area 00004 (Subcontractor/ Vendor X)
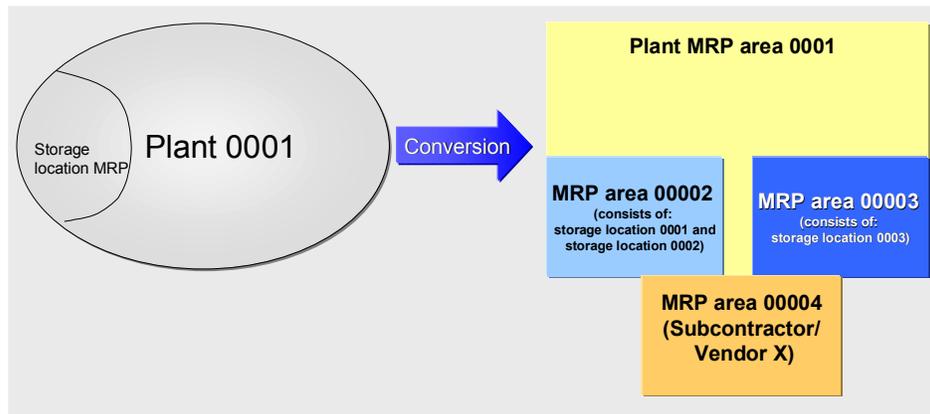
Use

- By defining MRP areas, you can plan material requirements specifically for these areas. This enables you to carry out differentiated material requirements planning. The requester can be, for example, the production on a particular assembly line or a subcontract order.

- The MRP area allows you to have specific control over the staging and procurement of important parts produced in-house and purchased parts for each shop floor area. You can, however, also plan the provision of components for the individual subcontractors.

- MRP areas of the *storage location* or *subcontractor* type are only suitable for MRP of components that are planned and produced for stock.

- MRP areas of the *storage location* or *subcontractor* type can only be used for finished products if the finished products are planned as make-to-stock production. By assigning a storage location in a sales order or by entering an MRP area when creating the planned independent requirements, you can define whether a material is planned in the plant MRP area or in the MRP area of the storage location.

- Finished products and important assemblies intended for *make-to-order or engineer-to-order production* are always planned in the *plant MRP area*.

Structure

- You define the *MRP areas* in *Customizing for MRP*. You can assign one or several storage locations to an MRP area, for example, a production storage location if you would like to carry out MRP, for example, for a particular assembly line.
  You can, however, also assign a subcontractor-vendor to an MRP area.

- You *assign the materials* to the different *MRP areas* in the material master by Creating an MRP Area Segment for a material, for each MRP area in which the material is used. In the *MRP area segment in the material master record*, you can define *MRP parameters* such as, for example, the lot size or MRP type. This allows you to plan the material differently in the MRP area, for example, an MRP area for a subcontractor, from how you plan it in the plant MRP area.
  When you create the MRP area segment in the material master, you define where and how the material is to be planned.

- If you do not enter any MRP areas in the material master, the material will remain in the plant MRP area. MRP for this material will automatically be carried out in the plant MRP area.

Integration

- You can carry out material requirements planning for MRP areas using all MRP procedures and all lot-sizing procedures.

- You can also carry out an independent material forecast for MRP areas using your own parameters.

- The material consumption values are updated separately for each MRP area.

- A separate ATP check is carried out for each MRP area.

  If several storage locations belong to an MRP area, the system can also carry out a check at two levels, that is, at storage location level and at MRP area level.

Planning with MRP Areas

The implementation of MRP areas provides more clarity and allows you to differentiate to a greater extent within a plant when planning material requirements.

The MRP area represents an organizational unit for which you can carry out material requirements planning independently.
The results of the planning run are displayed specifically for each MRP area.

Every MRP area can correspond to, for example, a production storage location of an assembly line, a service storage location or stock with a subcontractor. You can specifically plan dependent requirements and independent requirements, for example, spare parts, for individual MRP areas. In order to be able to plan independent requirements of a material, you can create a sales order with reference to a storage location, which belongs to an MRP area, or you can enter planned independent requirements specifying the MRP area in demand management.

MRP at Plant Level

Up to now, material requirements planning had been carried out at plant level. The various requirements were combined in the planning run and procurement elements were created for these pegged requirements with unknown sources. The following illustration shows the procedure used up to now:

Up to now: MRP at Plant Level

| Dependent requirement Assembly line 2 | Dependent requirement Assembly line 1 | Spare parts requirement | Subcontractor requirement |

| Components Storage location 1 | Components Storage location 2 |

MRP — Planned orders / Purchase requisition / Delivery schedule

In-house production | External procurement
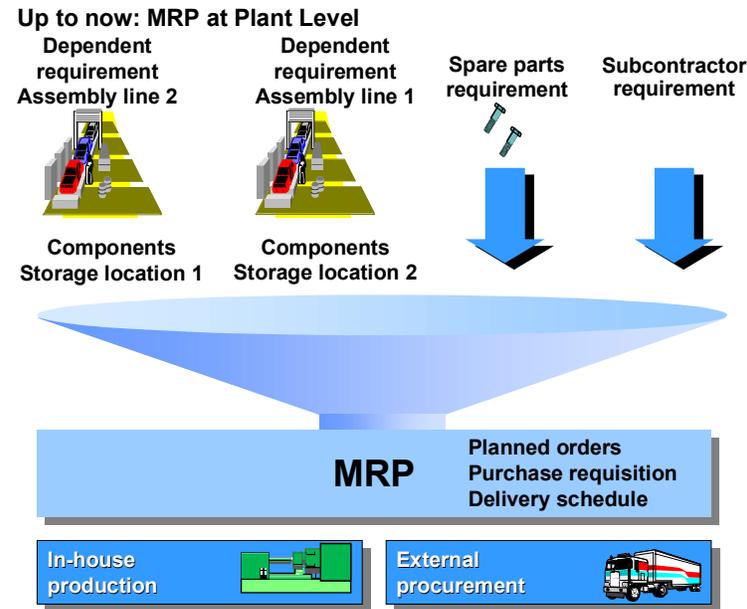
MRP for MRP Areas

Example: Assembly Area

Material requirements planning for each MRP area allows you to have specific control over the staging and procurement of parts produced in-house and purchased parts for each shop floor and assembly area. If, for example, you define an MRP area for the production storage location of an assembly line, the system plans the material requirements for the assembly line separately from all other requirements.

See also: .
The illustration shows the new procedure:

New: MRP for each Assembly Line
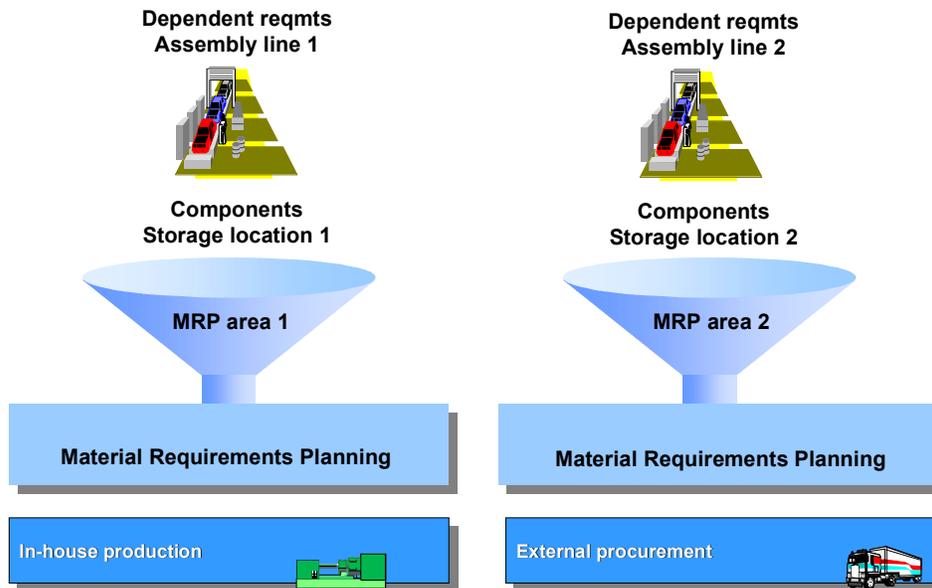
Example: Subcontractor

You can also carry out using an MRP area by defining an MRP area for every subcontractor and assigning the components to be provided to the MRP area of the subcontractor. You therefore plan the requirements to be provided for these components for one subcontractor separately from all other requirements.

The following illustration represents the procedure for material requirements planning for individual subcontractors, whereby each subcontractor corresponds to an MRP area.

MRP at Plant Level

New: MRP for each Subcontractor
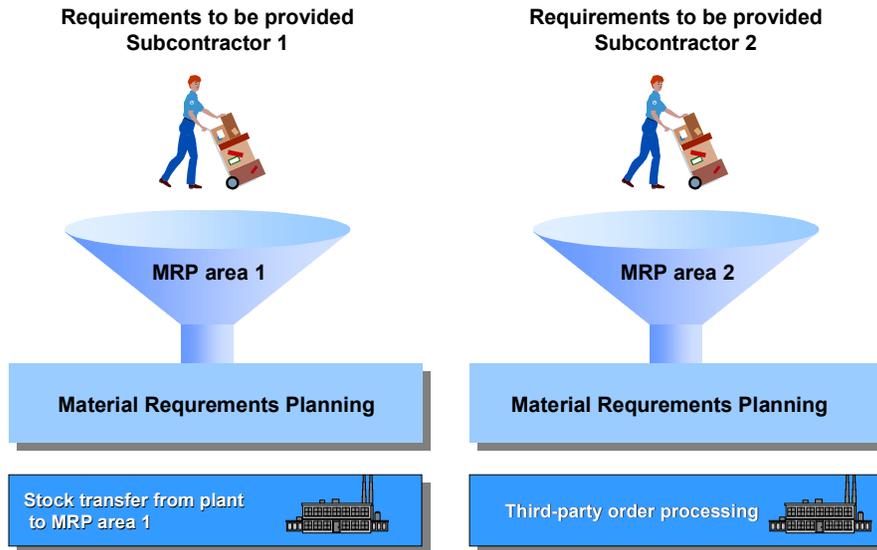
Requirements to be provided Subcontractor 1	Requirements to be provided Subcontractor 2

Depending on the requirements situation, the system creates either Stock Transfer Reservations from the plant to the stock of material provided to the subcontractor or it creates purchase requisitions within Subcontracting/Third-Party Order Processing, according to the special procurement key settings.

The stock transfer procedure is as follows:
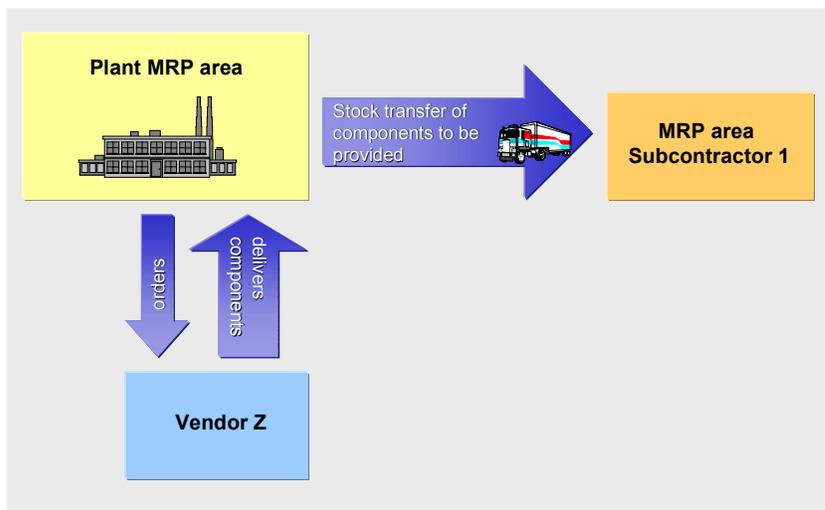
The subcontractor third-party processing procedure is as follows:

Plant MRP area

**MRP area
Subcontractor 2**

orders

delivers
components to
be provided

Vendor Z
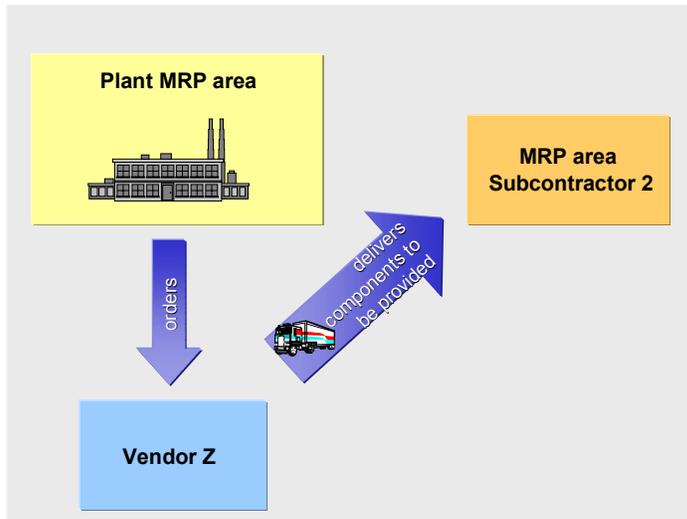
Reasons for Implementing MRP Areas

The main reason for you to implement MRP areas is if you would like to plan materials, which are required in different shop floor areas, storage locations or by subcontractors, separately from one another.

As soon as you have activated materials requirements planning with MRP areas, this type of MRP is active at client level, that is, MRP will be carried out in this way in all plants.

Material requirements planning with MRP areas cannot be reversed.

Implementation

You can implement material requirements planning with MRP areas in three steps:

1. For the first step, you can convert the existing planning file entries at plant level to planning file entries at MRP area level.

   During the conversion, the system creates a plant MRP area for every plant as a background job. This, however, will not affect your planning. The processes in material requirements planning and the planning results remain unchanged.

   ➡

   If you have to carry out the total planning run for several hundred plants, you can then achieve improved system performance due to the conversion of the planning file entries.

2. You have converted the planning file entries and now you activate material requirements planning with MRP areas in Customizing for MRP. This causes the MRP area field to appear in the applications of MRP and in related areas. When you enter the plant number, the system automatically fills the field with the number of the plant MRP area. The number of the plant MRP area is the same as the plant number.

   This, initially, does not affect the planning run as the plant MRP area still corresponds to the present plant.

3. In order to see how materials requirements planning works with MRP areas, for the time being it is sufficient for you to define an MRP area, for example, for a storage location. You then assign the materials that are to be planned for this storage location, by creating the segment for the MRP area in the material master.

4. Materials requirement planning for this storage location is then carried out separately. The storage location stock is no longer included in the available stock of the plant MRP area as the storage location is planned separately. The receipt and issue elements of this storage location (MRP area) are also not taken into account in the plant MRP area. They are only taken into account in the MRP area of the storage location.

   ⚠

   If you have already worked with storage location MRP, the system still carries out storage location MRP even after the *activation of MRP areas*. You need to decide in

principle whether you want to continue using storage location MRP or whether you want to create MRP areas for the storage locations that are planned separately and assign the materials to the MRP area. If you decide to use MRP areas, you should then try to convert all storage locations that are planned separately to MRP areas in one step. It is not possible to simultaneously plan a material via storage location MRP and MRP area for the same storage location.

Before you assign the material to the MRP area, you must remove the *MRP indicator*, which is located in the material master at the 'storage location' organizational level in the screen area *Storage location MRP*.

5. Fundamentally, the following applies: Even if you have defined MRP areas in Customizing, the materials are still planned in the plant MRP area until you have assigned the materials to the MRP areas. You assign the materials by creating an MRP area segment in the material master record for every MRP area in which a material is to be planned.

Thus, it is only the assignment of the materials to one or several MRP areas that actually causes changes in the material requirements planning.

Preparing for Material Requirements Planning with MRP Areas

Purpose

This process describes which master data you must maintain in order to be able to carry out material requirements planning at MRP area level.

Process flow

1. **Convert Planning File Entries**

   You convert the existing planning file entries at plant level to **planning file entries at MRP area level**. To convert the planning file entries, you use the report that you start in Customizing for MRP in the IMG activity *"Convert planning file entries for MRP areas"*. The conversion report causes the system to create a new planning file. In addition, the system creates MRP areas for the existing plants during the conversion. These MRP areas, however, do not affect how material requirements planning is carried out. The number of the plant MRP area is identical to the plant number and therefore has four digits.

   ⚠️

   You cannot create plant MRP areas manually. The plant MRP areas are automatically created by the conversion report.

   See also: Converting planning file entries [Page 229]

2. **Customizing**

   After the planning file entries have been converted, you define the necessary data in Customizing for MRP:

   a) In the IMG activity *Activate MRP for MRP areas,* you must set the *MRP area active* indicator. This activates material requirements planning with MRP areas at client level. In addition, the MRP area field appears for selection in MRP applications.

   b) In the IMG activity *Define MRP areas*, you create the MRP areas for every plant, for which you would like to carry out material requirements planning separately.

   In Customizing, you can define which MRP areas are to be used in a plant.

   When creating an MRP area, you enter the number, which must have at least **5 digits** to avoid any overlapping with the plant MRP area, the description and the MRP area type. You must also enter a storage location as a receiving storage location. This storage location must, however, belong to the MRP area.
   Finally, you assign the storage locations or the subcontractors to the MRP areas.

   There are three different types of MRP area:

   Type 01 for Plant

   The plant MRP area initially contains the plant together with all its storage locations and stock with subcontractors.

Preparing for Material Requirements Planning with MRP Areas

The plant MRP area is created automatically when you Convert Existing Planning File Entries For MRP Areas.

When you have defined MRP areas for storage locations and for subcontractors and you have assigned the materials, the plant MRP area is reduced by exactly this number of subcontractors and storage locations, as they are now to be planned separately.

➡️

If you have not assigned a material to an MRP area, that is, you have not created an MRP area segment in the material master record, the material will continue to be planned in the plant MRP area.

Type 02 for Storage Locations

You choose this type for MRP areas that consist of one or more storage locations. A storage location can only be assigned to one MRP area.

Type 03 for Subcontractors

You choose this type if you would like to define an MRP area for a subcontractor. You can only assign one subcontractor to an MRP area of the type subcontractor. You cannot assign the same subcontractor to another MRP area.

3. **Maintaining Master Data**

    After you have defined the MRP areas in Customizing, you assign the materials to the MRP areas. A material can be assigned to several MRP areas. You assign the materials in the material master record. MRP with MRP areas for the material is not activated until the material has been assigned to an MRP area. Without this assignment, the material will remain in the plant MRP area.

    Material master

    Material A Plant 0001

    MRP data
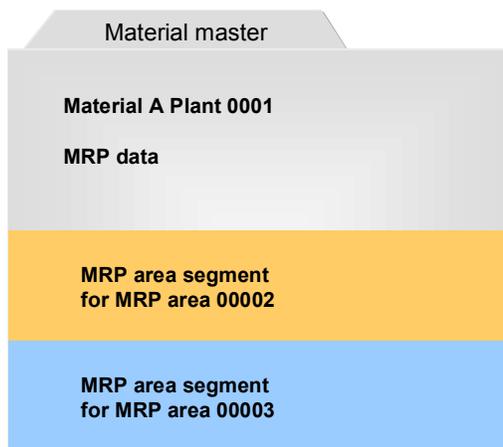
    **MRP area segment
    for MRP area 00002**

    **MRP area segment
    for MRP area 00003**

    See also:

4. **Checking Storage Locations**

    If you have already entered a storage location in the BOM (BOM item), in the work center (supply area) or in the production version, you should check whether this storage location is the storage location for the MRP area that you have assigned in the material master.

Preparing for Material Requirements Planning with MRP Areas

⚠️

The materials are assigned to an MRP area via the storage location that the system determines during the planning run. You should therefore check the storage locations that you have maintained in the master data as to whether the storage location in the master data is a storage location of the MRP area, for which you have created an MRP area segment in the material master. You can therefore ensure that material requirements planning will be carried out for the correct MRP area.

See also: Determining and Assigning Storage Locations to the MRP Area [Page 239]

Converting the Planning File Entries

Use

You must convert the existing planning file (table MDVM) to the new planning file (table DBVM) in order to be able to use MRP areas in materials requirements planning.

The conversion, however, is also useful even if you do not work with MRP areas, but still have to plan for several plants, as the new planning file improves system performance during the planning run.

Features

The planning file entries are converted using a report which you can start in Customizing for MRP. The following functions are carried out with the report:

- During the conversion, the system creates a plant MRP area for every plant.

- The existing planning file entries are copied from the planning file used up to now into the new planning file.

- The system deletes the planning file that had been used up to now after the conversion has taken place.

- At client level, the indicator *"Planning file entries for MRP area converted"* is set in a system table. This indicator causes material requirements planning to be carried out using planning file entries at MRP area level.

The report also converts the individual customer planning file entries at plant level to individual customer planning file entries at MRP area level.

Activities

Start the conversion report. You can find this report in Customizing for MRP in the IMG activity *Convert planning file entries for MRP areas*.

Setting Planning File Entries for MRP Areas

Use

In order for material requirements planning to be carried out for an MRP area material, an entry must exist for the material in the planning file. If changes are relevant to MRP, the system must set a planning file entry.

Prerequisites

You have converted the planning file entries at plant level to planning file entries at MRP area level.

Features

Creating/ Changing / Deleting Records in the Planning File

- If you assign a new MRP area to a material in the material master record, a new record is written in the planning file for this assignment.

- If you change settings in the MRP area for a material that are relevant to MRP, for example, the MRP type, lot-sizing procedure and so on, the corresponding record in the planning file is changed, that is, the system sets a planning file entry for the MRP area material.

Setting a Planning File Entry

If you change MRP elements, the system checks the plant, storage location and vendor (subcontractor) fields and determines the MRP area affected according to the MRP area assignment in the material master and the settings in Customizing. The system then sets a planning file entry for the material at MRP area level in the planning file.

During this process, the system decides whether the planning file entry has to be set **for just one MRP area** or **for all MRP areas**.

- If you change, for example, a purchase requisition, the system determines the effected MRP area and sets the planning file entry for just the effected MRP area for the material.

- If you, for example, change the BOM of a material, the system then sets the planning file entries for all MRP areas of the material, as a change in the BOM has an effect on all MRP areas that are assigned to the material.

Activities

- Displaying Planning File Entries

    If you would like to display the planning file entries for an MRP area, proceed as follows: Starting from the MRP menu, choose *Planning → Planning file entry → Display* and enter the MRP area.

- Creating a Planning File Entry Manually

    In general, the system automatically sets the planning file entries. In exceptional cases, however, it may be useful to create a planning file entry manually.

    If you would like to create a planning file entry for an MRP area of a material manually, proceed as follows:

Starting from the MRP menu, choose *Planning* → *Planning file entry* → *Create* and enter the material number and the MRP area.

Creating the MRP Area Segment in the Material Master

Use

In order to be able to assign a material to an MRP area, you have to create the MRP area segment in the material master.

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> Materials that have not been assigned to an MRP area automatically remain in the plant MRP area, thus materials requirements planning for these materials will continue to be carried out at plant level.

Prerequisites

You have defined the MRP areas in Customizing for MRP.

Features

- You can assign a material to one or more MRP areas by creating a segment for each MRP area.

- For each MRP area, you can enter individual **MRP and forecast parameters** that are different from those defined in the material master at plant level:

  - MRP 1

    On this screen, you can enter an MRP group and define the data required for the MRP procedure and lot-size calculation.

  - MRP 2

    On this screen you can define procurement data, that is, the special procurement key and the storage location in which the goods are to be received, in addition to an individual planning calendar and, if necessary, data for the net requirements calculation.

  - Forecast

    On this screen you can enter the Forecast Parameters [Ext.] if you want to execute a forecast for the material in this MRP area. This is also possible if you do not execute a forecast at plant level.

  - Consumption values

    On this screen you can enter historical Consumption Values [Ext.] for a material in an MRP area if you use forecast-based planning for the MRP area.

- You can delete the assignment of a material to an MRP area in the material master as long as no postings exist in that MRP area for the material. To do this, place the cursor on the MRP area in the *Overview: MRP Areas* dialog box and choose *Delete*.

Activities

You can copy the MRP data of a plant segment or the MRP data of an existing MRP area segment when you create an MRP area segment for a material. To create by copying, proceed as follows:

1. In the material master MRP data, choose the function key *MRP areas*.

   The *Overview: MRP areas* dialog box appears.

2. Choose the function key *Change with ref.*.

   The *Copy with reference* dialog box appears.

3. Specify, by selection, whether you wish to use the plant-level MRP data or the MRP data of an existing MRP area segment.

4. If you select the MRP area field, enter the number of the MRP area from which you wish to copy the MRP data.

5. Enter the MRP area, for which you wish to create the MRP area segment, in the *Dest. MRP area* field and choose *Copy*.

   The new MRP area segment is created and displayed in the overview list.

6. To check the data that was copied, select the MRP area and choose the function key *Change*.

7. Check the MRP and forecast parameters that were copied and carry out any necessary changes.

8. Choose the function key *Continue*.

   The *Overview: MRP areas* dialog box appears.

9. Choose *Continue* again and save the material master.

Maintenance of Mass Data

Use

When using MRP with MRP areas, it can be necessary to assign a material to a large number of MRP areas. That is the case, for example, with spare part storage for customer service technicians, when a material is available in many cars and every car is planned as an individual MRP area.

Features

SAP provides six function modules (function group **MD_MGD1**), with which you can program your own mass transactions. The function modules are integrated in the example report **RMMDDIBE**.

These function modules include:

- Copy with plant or MRP area template (**MD_MRP_LEVEL_CREATE_AS_COPY**)

    You create new MRP area segments by copying the plant MRP data or by copying an existing MRP segment.

- Creation with MRP/forecast profile (**MD_MRP_LEVEL_CREATE_PROFILE**)

    You create MRP area segments by assigning an MRP profile or a forecast profile, both of which are records of previously defined standard information that have been saved as a profile.

- Creation with data (**MD_MRP_LEVEL_CREATE_DATA**)

    You create a new MRP area segment by entering concrete MRP or forecast data.

- Change with MRP/forecast profile (**MD_MRP_LEVEL_CHANGE_PROFILE**)

    You change existing MRP area segments by assigning an MRP profile or a forecast profile.

- Change with data (**MD_MRP_LEVEL_CHANGE_DATA**)

    You change existing MRP area segments by entering concrete MRP or forecast data.

- Set deletion indicator (**MD_MRP_LEVEL_CHANGE_DELETION**)

    You set or delete the deletion flag for MRP area segments.

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    The report only serves as an example and will not be maintained or enhanced by SAP.

Activities

You call up the example report **RMMDDIBE** as follows:

Choose *System → Services → Reporting* and enter the report name.

You can save the result of the report and call it up for checking using the transaction SLG1.

Carrying Out Material Requirements Planning for MRP Areas

Vorbereitung der Bedarfsplanung mit Dispobereichen [Page 226]

Purpose

The process describes how to proceed if you would like to carry out material requirements planning with MRP areas.

Prerequisites

- You have converted the existing planning file entries at plant level to planning file entries at MRP area level.

- You have activated MRP for MRP areas in Customizing.

- You have defined the MRP areas in Customizing in the IMG activity *"Define MRP areas"*.

- You have assigned the materials to the MRP areas in the material master record.

Process flow

1. You create the independent requirements of a material for an MRP area. To do this, the following options are available:

   a) In Demand Management, you can create the Planned Independent Requirements [Ext.] of the materials for each MRP area. However, this is only possible if you use the *make-to-stock production* planning strategy

   b) You can create a sales order and specify a storage location. This customer requirement is assigned to an MRP area via the storage location that you have entered in the sales order.

   c) You can also carry out material requirements planning for the individual MRP areas based on forecast requirements. You can carry out the material forecast for each MRP area of a material separately.

   With finished products or important assemblies that are planned using planning strategies, for example, the planning strategy *Planning without final assembly*, you enter independent requirements at plant MRP area level, as make-to-order production is planned at plant MRP area level.

2. You carry out the planning run. During total planning, the system plans the MRP areas (if they exist) for each material one after the other and then plans the rest of the plant. You can however also start a total planning run for just one or several particular MRP areas if you have maintained the scope of planning in Customizing for MRP.

3. You evaluate the results of the planning run. In the MRP list and in the current stock/requirements list, you can specifically display and process the planning results of a material for each individual MRP area.

   In the collective display of MRP lists or current stock/requirements lists, you can specifically select materials for one MRP area or for all MRP areas of a plant. However, the individual lists are always calculated for each MRP area.

Carrying Out Material Requirements Planning for MRP Areas

If you choose the evaluation *Situation - prod.grp*, you are provided with a complete overview of all MRP areas of a material. This is, however, only possible if you have defined the material as a product group.

Planning Process

Purpose

This section contains technical information on how the planning run works with MRP areas. The process is to a great extent the same as the planning run at plant level.

Process flow

1. The system checks the planning file. The system checks whether a planning file entry exists for the material in the MRP area that is to be planned.

2. The system carries out a net requirements calculation for the material in the MRP area. During this calculation, the system checks whether the requirements that exist for the MRP area can be covered by the available stock in the MRP area and the planned receipts for the MRP area. If there is a shortage of stock, the system creates an order proposal for the MRP area.

3. The system then carries out the lot-size calculation. If you have defined a lot-sizing procedure in the MRP area segment of the material master record, the system calculates using this lot-sizing procedure.

4. Scheduling is carried out using the parameters defined in the MRP data of the material master record.

5. The system determines the procurement elements for the MRP area on the basis of the procurement type that is defined in the material master. See also: Determining the Procurement Element [Page 132].
   You can also have Delivery Schedules [Page 241] created for the MRP area of a material.

   If you have defined a different *special procurement type* in the MRP area segment, the system creates the corresponding procurement element. The system creates, for example, stock transport requisitions in the case of the special procurement *Stock transfer from plant to plant*.

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   With the special procurement keys, which are entered into the MRP area segment, the material requirements planning for the MRP area only takes into account the settings for special procurement types that do not refer to the BOM explosion.

   The settings for stock transfer are taken into consideration, for example, in contrast to the special procurement key *Phantom assembly*, which refers to the BOM explosion.

6. For every procurement element of an assembly, the system explodes the BOM and determines the dependent requirements.
   In order for the system to be able to determine requirements at MRP area level, you must ensure that the storage location determined during the planning run is the same as the storage location that is defined in the MRP area. See also: Determining and Assigning Storage Locations to the MRP Area [Page 239].

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   If you have entered an *MRP group* in the MRP area segment, the system uses the parameters that are defined in the *MRP group* during the planning run. The only

Planning Process

exceptions to this are: the *strategy group*, the parameters for the *consumption mode* and *period of adjustment* and the *checking rule for dependent requirements* in the case of the *availability check.* Even if you have defined these parameters in the MRP group, the system still uses the parameters from the MRP data of the material master.

Determining and Assigning Storage Locations to the MRP Area

Use

You assign goods receipt and issue elements to an MRP area via the receiving storage location in the case of receipt elements, and via the issuing storage location in the case of the issue elements.

Prerequisites

- You have defined the MRP areas in Customizing for MRP.

- You have assigned the MRP areas to the materials in the material master record.

- You have defined the issuing storage location for the components.

- You have defined the receiving storage location for the assemblies.

Features

Assigning the Receipts and Issue Elements to an MRP Area

The **receipt elements** (planned orders, purchase requisitions etc.) are assigned via the receiving storage location, which the system determines during the planning run. The receiving storage location is displayed in the MRP list or the current stock/requirements list in the column *Storage location* or it is displayed in the procurement element itself, for example, in the header data of a planned order. The system checks whether the receiving storage location that has been determined belongs to the MRP area. If this is the case, the system assigns the receipt element to the MRP area.

The **issue elements** (planned independent requirements, sales order, dependent requirements, reservations) are assigned via the issuing storage location, which the system determines during the planning run. The issuing storage location is displayed in the MRP list or the current stock/requirements list in the column *Storage location* as well as in the component list of the planned order.

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>
> If the system is unable to determine a storage location, the system assigns the receipt or issue element to the plant MRP area.

Determining the Storage Location for Receipt Elements

You can maintain the receiving storage location for a material on various screens of the system:

- Receiving storage location for repetitive manufacturing in the production version

- Production storage location/external procurement storage location in the MRP area segment in the material master (or the production storage location/external procurement storage location in the MRP data)

- Receiving storage location in Customizing for MRP in the IMG activity *"Define MRP areas"*

When determining the storage location, the system proceeds as follows:

Determining and Assigning Storage Locations to the MRP Area

1. First of all, the system checks whether a production version has been created. If this is the case, the system copies the receiving storage location from the production version into the receipt element. If this storage location belongs to an MRP area that has been assigned to a material, the system assigns the receipt element to the MRP area. If the storage location that has been determined belongs to the plant MRP area, the system then assigns the receipt element to the plant MRP area.

Example 1 (Assembly with two Production Versions):

An assembly is assigned to two MRP areas of the storage location type and can be manufactured on two different production lines (line 1 and 2). You have therefore created two production versions for the assembly:

Version 1 with production line 1 and the receiving storage location 0001

Version 2 with production line 2 and the receiving storage location 0002

You have defined one MRP area each for both storage locations and you have created the MRP area segments in the material master.

During the planning run, the system determines the production version on the basis of its settings that is valid for the procurement proposal, for example, production version 1.

Example 2 (Assembly with one Production Version):

An assembly with two different MRP areas is manufactured on a production line. You have therefore only created one production version. In this case, you are not allowed to maintain storage locations in the production version, as otherwise it would always be assigned to the same MRP area.

2. If a production version does not exist, the system then checks whether you have defined a storage location in the MRP area segment. If this is the case the system adopts this storage location.

3. If you have not maintained any of these storage locations, the system adopts the receiving storage location which you entered for the MRP area in Customizing in the IMG activity *"Define MRP areas"*.

Determining the Storage Location for Issue Elements

The system determines the storage location for the issue of components during the BOM explosion in the planning run. The system proceeds as follows: See Storage Location Determination in BOM Explosion [Page 170].

The storage location found determines the assignment to the MRP area.

Determining the Source of Supply for Delivery Schedules for MRP Areas

Use

If delivery schedules for an MRP area are to be created during the planning run, the system must determine a valid vendor or a valid delivery schedule.

You create delivery schedules and use message management by making entries into the *Source list*.

Prerequisites

- You have created a *Scheduling agreement* for each MRP area of a material.

- You have entered a *Receiving storage location* in the scheduling agreement, which belongs to the *MRP area*.

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    Only one scheduling agreement may be created for each vendor and receiving storage location, that is, you are only allowed to create one scheduling agreement for a particular vendor with a particular receiving storage location.

- You have created an individual item for each scheduling agreement in the *Source list* of the material.

- You have set the *MRP* indicator to *2* for "*Record relevant to MRP. Sched. lines generated automatically*" in the source list for each scheduling agreement item.

Features

A delivery schedule is assigned to an MRP area via the storage location that is entered in the scheduling agreement.

The system reads the source list for every material during the planning run. The system attempts to determine a valid vendor whose storage location belongs to the MRP area. If this is the case, the system creates a delivery schedule for the MRP area of the material.

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    There is only one quota agreement for each material and plant. When planning at MRP area level, only quota arrangement items are adopted that have a storage location which belongs to the MRP area.

Activities

You can maintain the scheduling agreement in the Purchasing task level menu: *Outline agreement → Scheduling agreement → Create → Vendor known*.

You can maintain the source list in the *Purchasing* task level menu by choosing, *Master data → Source list → Maintain*.

Determining the Source of Supply for Delivery Schedules for MRP Areas

Planning Components for a Production Line

You can use MRP areas to plan the procurement and staging of components on a particular production line.

The procedure is made clearer in the following example:

- Assembly A is produced on production line 1. Components B and C, which are procured externally, are necessary for the production and are withdrawn from storage location 0001.

- You can represent this situation in the system as follows:

- You create an MRP area of the storage location type for storage location 0001 in Customizing for MRP. You assign the MRP area to storage location 0001.

- You assign this MRP area to the components B and C in the respective material master records by creating an MRP area segment. You enter storage location 0001 in the *Storage loc. for EP* field in the MRP area segment, as this is also to be the receiving storage location for the components.

- You create a **production version** for production line 1 in the material master for assembly A. In this production version, you enter storage location 0001 as the issue storage location for the components.

In the planning run, the system calculates the dependent requirements for components B and C and determines the issuing storage location 0001 using the production version. This enables the assignment of the dependent requirements to the MRP area for storage location 0001. When the system determines the procurement elements for B and C, it reads the external procurement storage location and uses this as the receiving storage location. This is also storage location 0001 so the procurement elements are assigned to the MRP area for storage location 0001. You can use this procedure to selectively plan the components that you require on the production line.

If you do not work with production versions, you can also enter the *issue storage location* for the components in the BOM, in the work center using the *supply area*, or in the *Issue stor. location* field in the MRP data of the material master record.

Planning for Components to be Provided in Subcontracting

Bezugsquellenermittlung bei Fremdbeschaffung [Page 137]

Use

Using the MRP area, you can plan the provision of components for individual Subcontractors [Page 194] separately from the usual requirements.

Prerequisites

- You have created an MRP area for the *subcontractor X* in Customizing and have entered the vendor number of the subcontractor there.

- You have assigned the components to be provided to the MRP area for the subcontractor X, by creating an MRP area segment in the material master record of the components to be provided.

- You have entered the special procurement key Stock Transfer from Plant to MRP Area [Page 249] or the special procurement key for external procurement in the MRP area segment, if you directly procure the components to be provided using Subcontracting/Third-Party Purchase Requisitions [Page 246].

- You have entered the special procurement key for subcontracting in the material master record of the assembly that the subcontractor produces.

- You have made an entry in the source list for the assembly that the subcontractor produces, by entering the subcontractor as a fixed *vendo*r and have set the indicator to 1 for relevant to MRP in the *MRP* field.

Features

During the planning run, the system explodes the BOM of the assembly to be manufactured and determines the requirements for components that are to be provided to the *subcontractor X.* The dependent requirements of the components to be provided are only assigned to the MRP area of the subcontractor when the system can determine the subcontractor as the source of supply for the assembly. The source of supply is determined using the source list.

Depending on the requirements situation, the system creates either Stock Transfer Reservations from the Plant to the Stock of Material Provided to the Subcontractor [Page 245] or it creates planned orders/purchase requisitions within the subcontracting/third-party order processing. This depends on the setting that have been made.

Stock Transfer of Components to be Provided from the Plant to the MRP area of the Subcontractor

Bezugsquellenermittlung bei Fremdbeschaffung [Page 137]

Use

You can procure the components that you provide to a subcontractor for the production of an assembly, by transferring stock from a plant to the MRP area of the subcontractor.

Prerequisites

- You have created an MRP area for the *subcontractor X* in Customizing and have entered the *vendor number* of the subcontractor there.

- You have assigned the components to be provided to the MRP area for the *subcontractor X*, by creating an MRP area segment in the material master record of the components to be provided.

- You have entered a special procurement key for Stock Transfer from Plant to MRP Area [Page 249] in the MRP area segment.

- You have entered the *special procurement key for subcontracting* in the material master record of the assembly that the subcontractor produces.

- You have made an entry in the source list for the assembly that the subcontractor produces, by entering the subcontractor as a fixed *vendo*r and have set the indicator to 1 for relevant to MRP in the *MRP* field.

Features

During the planning run, the system determines the subcontractor X as the vendor for the assembly using the source list and creates a purchase requisition for the assembly.

The BOM of the assembly is then exploded. The dependent requirements of the components to be provided are assigned to the MRP area of the subcontractor X.

Due to the special procurement key in the MRP area segment of the components to be provided, the system determines that the components are to be procured by means of stock transfer from the plant to the MRP area. A stock transfer reservation is created in this situation. This type of reservation is the movement type 541.

Using the evaluation "SC Stock Monitoring for Vendor" (transaction ME2O), you can display the reservations of the components to be provided and post the goods movement.

Subcontracting/Third-Party Order Processing

Bezugsquellenermittlung bei Fremdbeschaffung [Page 137]

Use

If you carry out planning for the components to be provided for a subcontractor with an MRP area of the *subcontractor* type and the components to be provided are procured externally, you can process the procurement of these components using subcontracting/third-party order.

This type of processing has the advantage that the required components to be provided are delivered directly from the vendor, from whom you order this material, to the subcontractor.
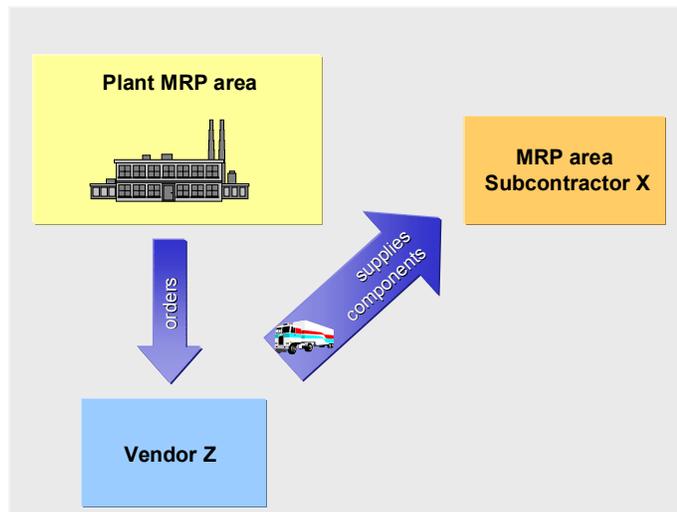
Prerequisites

- In Customizing for MRP, you create a special procurement key for external procurement with delivery directly to the subcontractor. For this, you enter an **F** for external procurement in the *procurement type* field. This special procurement key is the *special procurement key* **20** for *external procurement* in the standard R/3 system.

- In the material master records of the components, you create the MRP area segment for the MRP area of the subcontractor and assign the *special procurement key* to it.

- You have entered the *special procurement key for subcontracting* in the material master record of the assembly that the subcontractor produces.

- You have made an entry in the source list for the assembly that the subcontractor produces, by entering the subcontractor as a fixed *vendo*r and have set the indicator to 1 for relevant to MRP in the *MRP* field.

Features

During the planning run, the system determines the subcontractor X as the vendor for the assembly using the source list and creates a subcontract purchase requisition for the assembly.

The BOM of the assembly is then exploded. The dependent requirements of the components to be provided are assigned to the MRP area of the subcontractor X.

The system creates one or several purchase requisitions (depending on lot size) for the dependent requirements, which you can convert to purchase orders. These purchase orders are *subcontracting/third-party orders*.

When you display a subcontracting/third-party order, you will see the subcontractor's address in the space for the delivery address. The SC stock indicator X for subcontracting stock is set. The item type and account assignment type fields do not contain any values.

Activities

The components to be provided are delivered directly to the subcontractor. The goods receipt is posted to the subcontracting stock.

When the subcontractor has delivered the finished assembly, the goods receipt is posted to the subcontract order. The subcontracting stock and the reservations are then reduced.

Multi-Level Subcontracting

Use

You can also use MRP areas to plan multi-level subcontracting.

> You order "Assembly 1" at subcontractor X. Subcontractor X needs "Assembly 2" for the production, which he/she obtains from subcontractor Z. Subcontractor Z needs "Component to be provided 3", which you provide directly.

Prerequisites

- You have entered the *special procurement key for subcontracting* in the material master record of Assembly 1, which the subcontractor produces.

- You have made an entry in the source list for Assembly 1, which subcontractor X produces, by entering the subcontractor X as a fixed *vendo*r and have set the indicator to 1, for relevant to MRP, in the *MRP* field.

- You have defined a *Subcontractor* type of *MRP area* in which you have entered subcontractor X. You have assigned the material Assembly 2 to this MRP area, by creating an MRP area segment for subcontractor X in the material master record for Assembly 2. You have entered the *special procurement key* for *subcontracting* in the MRP data for the MRP area segment.

- You have defined an additional *Subcontractor* type of *MRP area* in which you have entered subcontractor Z. You have assigned the components to be provided to this MRP area, by creating the MRP area segment for Subcontractor Z in the material master record of the components to be provided. You have entered a special procurement key for Stock Transfer from Plant to MRP Area [Page 249] in the MRP area segment.

Features

During the planning run, the system determines subcontractor X as the vendor for Assembly 1 using the source list entry and creates a subcontract purchase requisition for Assembly 1. Subsequently, the bill of material for Assembly 1 is exploded. The dependent requirements of Assembly 2 are assigned to the MRP area of subcontractor X.

The system generates a subcontractor-planned order (or purchase requisition or delivery schedule) to cover the dependent requirements for Assembly 2. The system then explodes the bill of material for Assembly 2 and generates dependent requirements for the material "Component to be provided 3". These dependent requirements are assigned to the MRP area for the subcontractor Z.

Due to the special procurement key in the MRP area segment of the components to be provided, the system determines that the components are to be procured by means of stock transfer from the plant to the MRP area for subcontractor Z.

Stock Transfer from Plant to MRP Area

Use

If you would like to plan material requirements for a storage location separately, you can create an MRP area for this storage location. You can then procure materials that are planned for this MRP area via *Stock transfer from plant to MRP area.*

If you carry out the planning for components to be provided for a subcontractor using an MRP area of the *subcontractor* type, you can also procure the components to be provided via *Stock transfer from plant to MRP area*.
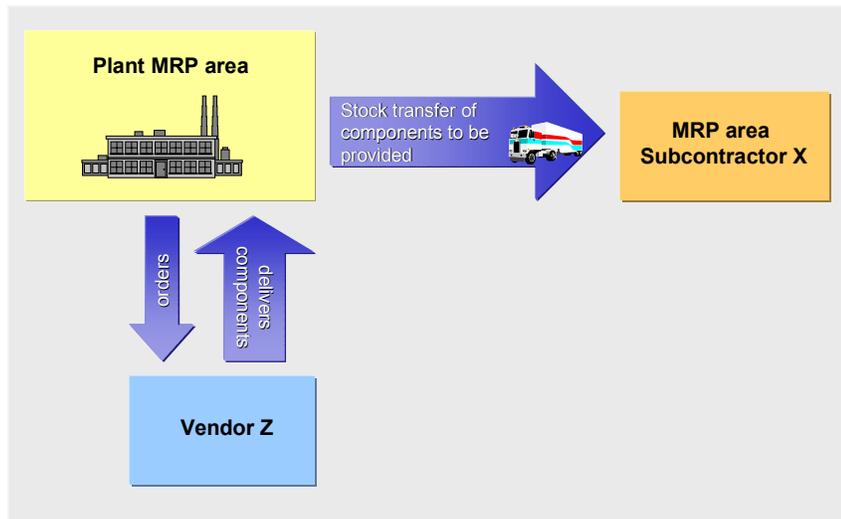
Integration

The process is the same as for Storage Location MRP [Page 213]. In contrast to the storage location MRP, you can use all MRP procedures and not only the reorder point planning procedure.

Prerequisites

- In Customizing for MRP, you create the *special procurement key "Stock transfer from plant to MRP area"* for the plant in which the MRP area is located. You then define the following parameters:

- Procurement type   F   External procurement

- Special procurement   U   Stock transfer

- Plant   Number of plant, to which the MRP area belongs

                                       .

- In the material master, you create the MRP area segment and assign the *special procurement key "Stock transfer from plant to MRP area"*.

Stock Transfer from Plant to MRP Area

Features

During the planning run, the system creates a stock transfer reservation for the material in the MRP area and a material reservation for the material in the plant MRP area.

The external procurement storage location that you have entered in the MRP area segment of the material master is used as the receiving storage location. If you have not maintained this field, the receiving storage location that you have entered for the MRP area in Customizing is used.

The actual procurement is processed by the plant. With stock transfer to the MRP area, you carry out the transfer posting for the material with reference to the reservation.

ATP Check with MRP Areas

As soon as you have activated material requirements planning with MRP areas, the ATP check is also activated at MRP area level. The activation of MRP areas causes the plant to be replaced by MRP areas, that is, if a check had been carried out for a material at plant level up to now, the check is now carried out at MRP area level. Thus, the availability check is carried out for the individual MRP areas. If you have not yet defined any MRP areas, the plant then corresponds to the plant MRP area and the availability check is carried out in the plant MRP area.

In the ATP check at MRP area level, the receipt and issue elements are dynamically assigned to the correct MRP area with the help of the receiving and issue storage locations and are settled against the available stock in the MRP area. Like the ATP check at plant level up to now, there are two different options:

- ATP check with storage location check

- ATP check without storage location check, that is, multi-site check

ATP without Storage Location Check

If you have not set the system to carry out a storage location check, it will only carry out a single-level check at MRP area level.

The MRP area of the receipt and issue elements to be taken into consideration, is dynamically determined by the receiving storage location, the issue storage location, the MRP area segment in the material master and the Customizing settings for the MRP area. However, only the storage location information is required for the determination of the suitable MRP area. The ATP check is only carried out within the MRP area.

Example:

The spare part A is assigned to the MRP area of the storage location 0002 and 0003.

A sales order is created for the spare part and the storage location 0002 is entered.

If you have not set the storage location check, the ATP check is only carried out for the material A in the MRP areas of the storage locations 0002/0003. No check against storage location 0002 is carried out.

If you do not enter a storage location in the sales order, the sales order belongs to the plant MRP area and the ATP check, in this case, is carried out in the plant MRP area.

ATP Check with Storage Location Check

If you have set the storage location check, the system carries out a double-level ATP check:

In the first step, the system determines the available quantity in the storage location.

In second step, the system determines the available quantity in the MRP area.

The system then takes the smaller of the two quantities as the result.

Example:

The spare part A is assigned to the MRP area of the storage location 0002 and 0003.

ATP Check with MRP Areas

A sales order is created for the spare part and the storage location 0002 is entered.

In the first step, the ATP check is carried out for the storage location 0002, that is, all defined receipts and issue as well as stocks in storage location 0002 are determined and the available quantity is calculated.

In the second step, the ATP check is carried out in the MRP area of the storage locations 0002/0003. During this check, the system determines all receipts and issues of the storage locations 0002 and 0003 and calculates the available quantity.

The smaller of the two quantities is taken as the result of the ATP check.

Multi-Plant (Site) Planning

Beschaffungsart und Sonderbeschaffungsart [Page 133]

Definition

Using multi-plant planning, you can carry out material requirements planning for various plants centrally. This planning procedure facilitates the production of a product in another plant and it also guarantees a smooth flow of materials between different plants. The following procedures exist:

- Stock transfer between plants

- Production in an alternative plant

- Withdrawal from an alternative plant

Integration

- In MRP, multi-plant planning is carried out by means of special procurement keys. You assign the special procurement key to the material in the material master record.

> These special procurement keys are determined in Customizing according to plant, procurement type, and special procurement type.
> When defining the special procurement key, you can also use the indicators, *Phantom item, Direct production* and *Withdrawal from alternative plant* to control the treatment of the material as a component during the BOM explosion.
>
> A material appears in several BOMs as a component because it is assembled in finished products in in-house production and is procured from an alternative plant.
>
> The same material, on the other hand, is also sold from stock to customers, who need the material as, for example, a replacement part. In this case, the material cannot be procured by withdrawing it from an alternative plant. Instead, it must be procured using a stock transfer. If a material shortage occurs after you have entered a customer requirement, a stock transfer purchase requisition is created in the planning run.
>
> You can do this in the SAP system by creating a special procurement key for a withdrawal from an alternative plant and by entering a **U** for stock transfer in the *Special procurement key* and by entering the plant from which the material is to be transferred. You assign this special procurement key to the appropriate material in the material master record.

> See also:

Customizing Settings for Multi-Plant (Site) Planning [Page 262]

- If you want a material to take part in multi-plant planning, then you must maintain the material master for this material in all plants concerned.

Multi-Plant (Site) Planning

When carrying out the planning run you must pay attention to the chronological planning sequence of the various plants. First plan the receiving plant and then enter the delivering plant or the producing plant to make sure you take all requirement quantities into account.

If special procurement keys for stock transfer that refer to each other have been created for a material at two plants, after having carried out the planning run for both plants, you must carry it out again for the first plant.

The individual procedures are explained in the following:

Stock Transfer from Plant to Plant

Withdrawal from Alternative Plant

Production in Alternative Plant

Stock Transfer from Plant to Plant

Umlagerung über Umlagerungsbestellung [Ext.]

Umlagerung von Werk an Dispobereich [Page 249]

Implementation Options

Within the stock transfer procedure, goods are produced and delivered within a company. The plant which is to receive the goods (receiving plant) orders the goods internally from another plant which is in a position to deliver the goods (delivering plant). The dependent requirements for the components to be transferred are determined in the receiving plant.
As well as the normal procedure with stock transport requisitions, orders and delivery schedules (see *MM - Managing Special Stocks*), you can also transfer stock from one plant to another automatically during planning by means of the special procurement type, "stock transfer".

You use the stock transfer procedure, if two plants are located far away from each other, as the transport of materials to be transferred is taken into account in MRP with this type of procedure.

Prerequisites

- You have maintained a special procurement key for *stock transfer* in Customizing for MRP, in the IMG activity *"Define special procurement type"* and you have entered the delivering plant there.

- You have entered the special procurement *key* for *stock transfer* in the material master record of the receiving plant.

- You have created a material master record for the material in the delivering plant.

Process Flow

The following example demonstrates the stock transfer procedure in MRP:

1. In plant 0001, a material receives the special procurement key, "stock transfer". This specifies that the material is to be procured from another plant (for example, from plant 0002).

2. First you carry out the planning run in the receiving plant and then in the delivering plant.

3. On detecting a shortage in plant 0001, the system automatically creates a planned order for stock transfer or a stock transport requisition in plant 0001 and a release order for the planned order or purchase requisition in plant 0002.

   The date of the release order in plant 0002 is determined during scheduling.

4. When the stock transport requisition is converted into a stock transport order, the release order in plant 0002 is automatically converted into a purchase order.

   If the planning run in plant 0001 had firstly created a planned order for stock transfer, you must convert this into a purchase requisition and then convert this into a purchase order.

5. Procurement is carried out in the delivering plant. The material is managed as stock in the delivering work.

6. When transferring stock, the following postings are necessary:

Stock Transfer from Plant to Plant

The removal from storage of the ordered quantity in plant 0002 is carried out by a transfer posting with reference to the release order.

The movement type in this case is: *Transfer posting* → *Plant to plant* → *To stock in transit.* **Stock in transit** is the quantity of a material which was withdrawn from the warehouse of the delivering plant but which has not yet been received by the receiving plant.

In the receiving plant, you post a goods receipt for the stock transfer order on receipt of the goods and enter the stock in transit into the warehouse of plant 0001.

The following example demonstrates the stock transfer procedure:

Outward Movements	Plant 0001		Plant 0002
	Available Quantity		Available Quantity
Stock Level 0	0	Stock Level 500	500
Requirements 100	- 100		
Purchase requisition 100 for stock transfer from plant 0002	0	Release - 100	400

Conversion of Purchase Requisition to Purchase Ord			
~~Purchase Requisition~~		~~Release~~	
Purchase Order 100	0	Reservation - 100	400
		Goods Issue for Stock in Transit	
~~Purchase Order~~		~~Reservation~~	
Goods Receipt for Purchase Order	100 Shipment	Stock Transfer 100	400
Stock Level 100		Stock Level 400	400

Creating Planned Orders for Stock Transfer

Use

With the special procurement *stock transfer from plant to plant*, it can be useful to create planned orders for stock transfer at an earlier planning stage rather than stock transport requisitions.

Prerequisites

You have entered the indicator *3* for *planned orders* in the *create pur.req* field of the initial screen of the planning table.

Features

In this case, the planning run creates planned orders for stock transfer instead of stock transport requisitions.

Planned orders for stock transfer can be converted into stock transport requisitions or into schedule lines.

The document type of planned orders for stock transfer is NB in the R/3 System and can be changed to, for example, UB, by a conversion.

➡

> In the case of cross-company code stock transfers, the document type NB must be used in the standard R/3 System.

Withdrawal from Alternative Plants

Implementation Options

You can specify for an assembly that the components required to build the assembly are to be withdrawn from a different plant from the planning plant (that is, the withdrawal plant). Dependent requirements for these components are directly created in the withdrawal plant. You can use *"withdrawal from alternative plant"* for both components produced in-house and procured externally. A special procurement key is defined for both procedures.

This procedure provides an alternative to using stock transport orders and is especially useful when plants are close together.

Prerequisites

- In Customizing for MRP, in the IMG activity *"Define special procurement type",* you have maintained a special procurement key for withdrawal in an alternative plant

- In the planning plant, you have maintained the special procurement key in the material master record of the component that is to be withdrawn from an alternative plant.

- You have created a material master record for the component to be withdrawn in the withdrawal plant.

Process Flow

The following example shows the steps involved in withdrawing material from another plant:
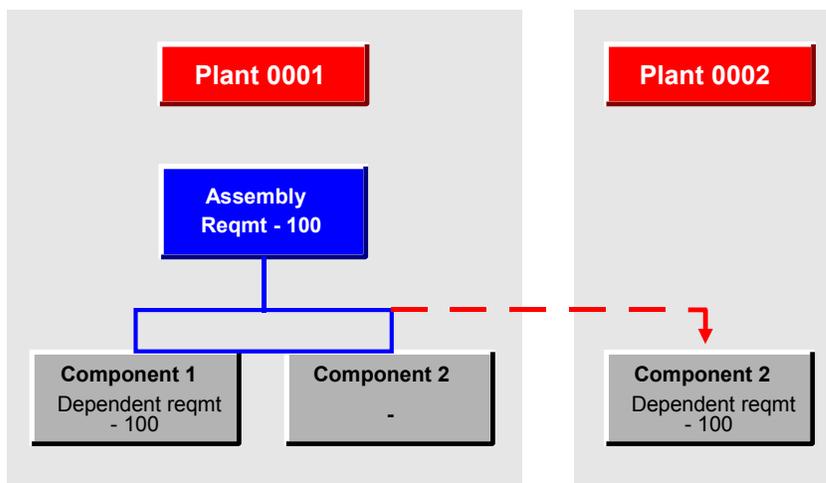
An assembly in plant 0001 contains two components. In plant 0001, component 2 has been provided with the special procurement key*, "withdrawal in alternative plant".* This means that this component is withdrawn from another plant (in this example, from plant 0002). Therefore, when producing the assembly in plant 0001, component 2 is withdrawn from the warehouse of plant 0002 but the other components are withdrawn from plant 0001.

1. You carry out a planning run in the plant 0001 (planning plant). During the planning run, the system creates a planned order for the assembly in plant 0001, if this is necessary.

2. The system creates a dependent requirement for component 2 in plant 0001. A dependent requirement is created in plant 0002 (withdrawal plant) for the component 2 with the special procurement *"withdrawal from alternative plant"*.

3. When the planned order for the assembly is converted into a production order, the dependent requirements of the components are automatically converted into dependent reservations. The withdrawal for the production order is carried out in plant 0001 for the component 1 and in plant 0002 for component 2.

Production in Alternative Plant

Purpose

You can define that a particular product is to be produced in an alternative plant (that is, the production plant) from the planning plant. The planning of the product is carried out in the planning plant but it is actually produced in the production plant. The product's BOM is created in the production plant.

Prerequisites

- In Customizing for MRP, in the IMG activity *"Define special procurement type"*, you have maintained a special procurement key for production in an alternative plant and you have entered the different production plant there.

- You have entered the special procurement key for production in an alternative plant in the material master record of the assembly for the planning plant.

- You have created a material master record for the material in the production plant.

Process flow

1. You firstly carry out a planning run in the planning plant. During the planning run, the system creates a planned order for the assembly in the planning plant, if this is necessary.

2. The following is to be taken into account for the scheduling of the planned orders in the planning plant:

   The system uses the in-house production times and scheduling margin key entered in the material master record for the planning plant to determine the basic dates.
   If MRP is carried out using lead time scheduling via the routing, the routing and scheduling margin key in the production plant are the basis of the production date calculation in.
   If you have defined that the basic dates are to be adjusted for the production dates in lead time scheduling, which you define in Customizing in *Define scheduling parameters for planned orders*, the system calculates the basic date by adding the production finish date and the float after production. The system uses the production start date minus float before production as the order start date. The system determines the float before production and the float after production from the scheduling margin key in the material master record for the production plant.

3. You carry out a planning run in the production plant. The system explodes the BOM for the assembly in the production plant and determines the dependent requirements.

4. You convert the planned order in the planning plant into a production order.

5. The dependent requirements in the production plant are converted into a dependent reservation and production of the components in the production plant is initiated.

6. When creating the goods receipt for the production order, the stock in the planning plant is increased.

The following example demonstrates the stock transfer procedure:

Planning Plant
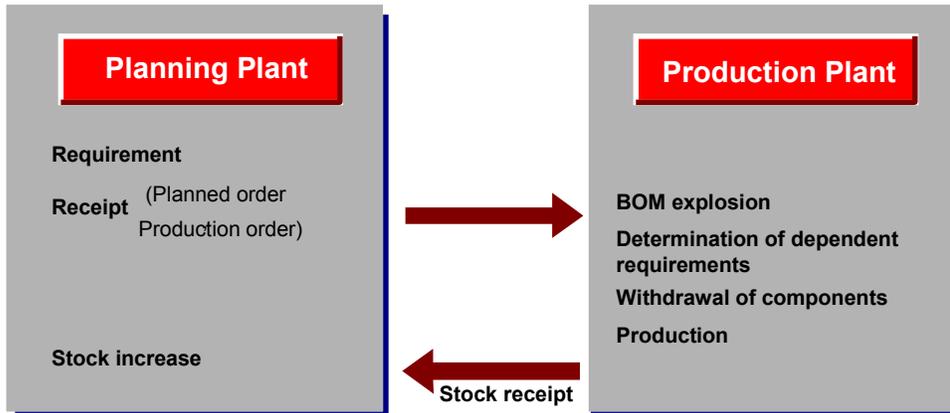
Requirement

Receipt (Planned order
Production order)

Stock increase

Stock receipt

Production Plant

BOM explosion

Determination of dependent requirements

Withdrawal of components

Production

Customizing Settings for Multi-Plant Planning

The following special procurement keys are set in the standard Customizing settings:

- Stock transfer

- Production in an alternative plant

- Withdrawal from an alternative plant

By using control indicators, you can also control how a material is dealt with as a component in the BOM explosion. The following options are available:

- If you select *Phantom item,* the system treats the material as a phantom assembly in the BOM explosion if the material is used as a component in a BOM, regardless of which type of special procurement has been set. The phantom assembly characteristics can be combined with any other special procurement type.

- If you select *Direct production,* the system uses direct production in the planning run for a material that is used as a component in a BOM. Direct production can be combined with the special procurement type, production in an alternative plant.

- If you select *Withdrawal from an alternative plant,* the system procures a material that is used as a component in a BOM by withdrawing it from an alternative plant. This only occurs if dependent requirements exist and is not dependent on the special procurement type defined. You can combine the Withdrawal from alternative plant procedure with any special procurement type.

It only makes sense to use these additional options, if the material is

- ordered directly

- used in in-house production as a BOM component and

- procured differently in both of these cases

    If a material is procured the same way in both cases, for example, using stock transfer, you only have to use the special procurement key for stock transfer as usual.
    The only exception is the special procurement key, withdrawal from an alternative plant. You can only use this key for materials for which only dependent requirements exist. This means, as soon as not only dependent requirements exist, but also independent requirements exist for the materials because the material is sold directly to customers, you must create a special procurement key for withdrawal from an

alternative plant and you must also set the special procurement key for a stock transfer.

Requirements Grouping for Individual Project Planning

Definition

Requirements grouping is a planning procedure for projects within material requirements planning.

Requirements grouping for individual project planning enables you to group material requirements that are caused by WBS elements within a project or also cross-project, and plan and procure them together. The requirements grouping for the materials of different WBS elements are carried out by using the grouping WBS element.

You can use requirements grouping within a project or across projects:

- If you would like to group requirements of **WBS elements within a project**, the Automatic Requirements Grouping [Page 275] function is available. With this procedure, all requirements are combined into one grouping WBS element of the project. This has the advantage that you have "real" individual project stock, or project definition stock, for the whole project.

- You carry out **cross-project requirements grouping** by assigning the WBS element to one or more grouping WBS elements. The grouping WBS element therefore has a grouping function. Thus, you can, for example, combine all WBS elements of projects from the private sector into one grouping WBS element and combine all WBS elements from the public sector into another grouping WBS element and plan each together. This procedure allows you to combine material requirements according to different grouping criteria and plan them together.

Use

Grouping requirements into one grouping WBS element enables you to save costs for the procurement of materials.

You use this procedure with materials that you wish to plan and procure collectively for cost reasons, which may be required by the ordering parties of the different projects.

Requirements grouping is only possible for operative WBS elements.

Structure

Requirements grouping in individual project planning has the following features:

- It combines several WBS elements into one grouping WBS element for the planning.

- It plans material requirements, that have been caused by WBS elements, together on the basis of the grouping WBS element.

- Material requirements planning creates procurement elements (planned orders, purchase requisitions) that are assigned to the account of the grouping WBS element.

- In MRP evaluations, an individual segment is managed for each grouping WBS element.

- You manage individual project stock for each grouping WBS element. All materials that are required by the WBS elements which are assigned to the grouping WBS element, are included in this stock.

- The materials in the project stock of the grouping WBS element are available for every WBS element that is assigned to the grouping WBS element.

- The complete procurement costs are incurred by the grouping WBS element. The costs are posted to the network activity with the withdrawal of the procured material for production. During the procurement phase, no costs are visible for the WBS elements which have caused the requirements. It is not until the withdrawal, that the procurement costs are assigned to the appropriate WBS element.

Integration

Basically, there are three procedures for planning material requirements in projects in the R/3 System:

- Individual Project Planning

    With individual project planning, only individual requirements are planned, that is, materials that are required for a project (WBS element) are specifically planned and are procured with reference to the WBS element. The materials in the individual project stock of the WBS element are managed and settled separately from the normal stock. Goods issue only takes place with reference to the WBS element.

    This procedure is used to plan finished products and important assemblies.

- Requirements Grouping for Individual Project Planning using Grouping WBS Elements

    With this procedure, material requirements for different WBS elements are combined and jointly planned and procured.

    If you combine the WBS elements within a project to one grouping WBS element, you will have real individual project stock.

    If you use cross-project requirements grouping, the ordering parties must give their consent that the assemblies and components are planned and procured using this procedure.

- Planning Collective Requirements (Make-to-Stock Production)

    You can plan and procure materials at subordinate BOM levels that are required in all projects, independently of WBS element, using make-to-stock production. During the planning run, the system calculates the total requirements of a material in a plant. The material is procured without reference to a WBS element.

    These materials are managed in the plant stock and are available for all projects.

The typical structure of project planning is depicted in the following illustration:

Requirements Grouping for Individual Project Planning

Individual
project
planning

Requirements grouping with
grouping WBS elements

Make-to-stock production
(collective requirements)
Plant stock
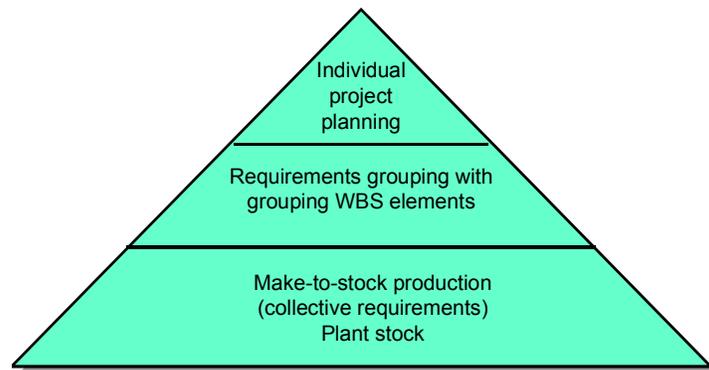
Grouping WBS element

Definition

A Grouping WBS element is a WBS element that has valuated project stock on which the requirements from several WBS elements are grouped together for materials requirement planning (MRP).

Use

You determine that a WBS element is a grouping WBS element by making the following settings for the *Grouping WBS element* field on the WBS element detail screen (on the *Basic data* tab page in the standard system)

- If this WBS element is to be the grouping WBS element for all components assigned to the WBS elements that have been assigned to this grouping WBS element, enter *Grouping WBS element for all materials* (1).

- If the material components assigned to a WBS element are to have different grouping WBS elements, enter *Grouping WBS element for selected MRP groups* (2). This could be the case, for instance, if you want to plan electrical and mechanical parts separately.

   The valid grouping WBS element is then selected on the basis of the MRP group and plant of the material.

Integration

If you have set the *Automatic requirements grouping* indicator in the project definition of a project, only one grouping WBS element is allowed in the project. In this case the first WBS element on level 1 is suggested as the grouping element. You must then have defined the WBS element as *Grouping WBS element for all materials* (1).

Preparing Requirements Grouping

Projektstrukturplan (PSP) [Ext.]

Netzplan [Ext.]

Purpose

This process describes the sequence of preparations that is necessary in order to be able to use requirements grouping for planning projects, in addition to the master data you have to maintain.

Prerequisites

To use the periodic lot-sizing procedure, which is selected for MRP in the material master, in individual project stock, you have to make the following settings in Customizing: For *period lot sizes*, such as **MB (monthly lot size)**, set the *indicator to 2 for Lot size as in planning horizon* in the *MTO lot size* field, in Customizing for MRP, in the IMG *activity "Check lot-sizing procedure".* This causes the system to actually use the monthly lot size in the lot-size calculation for MRP, if you have entered MB into the material master. If you have not set this indicator, the planning run then creates an order proposal with lot-for-lot order quantity for every requirement in the segment of the MRP element.

Process flow

1. Define which materials have to be planned with individual project planning. Define which materials you can plan using requirements grouping and which materials are to be planned as collective requirements.

2. Create MRP Groups [Page 333] for the materials in Customizing for MRP, in the IMG activity *"Maintain all MRP groups".*

3. Identify the MRP groups that are to be used with requirements grouping by setting the *Grp Reqmnt* indicator in the IMG activity *"Activate requirements grouping for project planning"* in Customizing for MRP.

4. Maintain the *MRP data* in the material master records:

   For materials that are to be planned with **individual project planning**, such as, for example, finished products, you assign an *MRP group* that has not been activated for requirements grouping.

   For materials that are to be planned with **requirements grouping**, you assign an *MRP group* that has been *activated for requirements grouping*.
   Enter a period lot size as the lot size, such as, for example, *MB (monthly lot size)* so that MRP combines the requirements of a material in a period according to the selected lot size strategy and creates an order proposal in the segment of the *grouping WBS element*.

   For materials that are managed in the **plant stock** and are planned together, set the indicator to 2 for **collective requirements only** in the *Individual/coll.* field.

5. Create the BOMs for the finished product and assemblies. You use materials BOMs for this.

6. Create a *project definition* and a *WBS element* for a grouping WBS element. When creating the WBS element, set the indicator in the *Grouping WBS element* field to 1 or 2. You also need to flag the *Valuated stock* field.

7. Create a project definition and the appropriate WBS elements for the sales orders.

8. Create a network for every project. Assign the project definition and a WBS element. Enter the necessary activities. Assign the required materials to the network operations.

9. Combine the WBS elements, whose materials are to be planned using requirements grouping, to a grouping WBS element. To do this, you assign the WBS elements to a grouping WBS element.

10. If a grouping WBS element is not to be used for all materials but rather for particular materials, you have to maintain the grouping WBS element's area of validity. You do this by entering the plant when assigning the MRP groups.

Creating a Project Definition and WBS Element for a Grouping WBS Element

Prerequisites

You have created a project profile in Customizing for Project System.

Procedure

1. Starting from the main R/3 menu, choose: *Logistics → Project management → Operative structures → Work breakdown structure → Create*

   The *Create Project: Initial Screen* appears.

2. Enter a *project definition* and a *project profile*.

3. Choose *Enter*.

   The *Create Project: Project Definition* screen appears.

4. Enter the description for the project definition and the necessary basic data.

5. Choose the *Control data* tab page. Enter the control data. Select the flag for the *Valuated stock* field.

6. Choose *Structure*.

   The *Create Project: Project Definition* screen appears.

7. Enter the WBS element, the description, and so on.

8. Select the WBS element and choose *Details → WBS detail screen.*

   The *Change WBS Element* dialog box appears.

9. Enter the indicator 1 in the *Grouping WBS element* field, if you would like to use this grouping WBS element for requirements grouping of all materials.

10. Enter the indicator 2 if you would only like to use the WBS element for materials with selected MRP groups. In this case, you have to create further grouping WBS elements.

11. Choose *Enter*.

    The *WBS Element Overview* screen appears.

12. Save your entries.

Assigning WBS Elements to a Grouping WBS Element

Prerequisites

- You have created a grouping WBS element.

- You have created WBS element for the projects.

Procedure

Starting from the main R/3 menu, choose: *Logistics* → *Project management* → *Planning* → *Resources* → *Requirements grouping* → *Allocation of WBS elements* → *Change.*

Assigning a Grouping WBS Element to MRP Groups

Use

Using this procedure, you can define the area of validity for a grouping WBS element by assigning the MRP groups for which the grouping WBS element is to be used.

Prerequisites

- You have created valid MRP groups and assigned the materials.

- You have created grouping WBS elements and entered the indicator 2 in the *Grouping WBS element* field.

Procedure

Starting from the main R/3 menu, choose: *Logistics → Project management → Planning → Resources → Requirements grouping → Assignment of MRP groups → Change.*

Carrying Out Material Requirements Planning with Requirements Grouping

Dispo-PSP-Elementen [Page 267]

Implementation Options

There are several options for grouping requirements of materials that are assigned to different WBS elements. The option you choose depends on the business and organizational prerequisites.

The following strategies are available:

- Automatic Requirements Grouping Within a Project [Page 275]

- Multi-Plant Requirements Grouping with a Grouping WBS Element [Page 276]

- Multi-Plant Requirements Grouping with Several Grouping WBS Elements [Page 277]

- Requirements Grouping with a Grouping WBS Element for Each Plant [Page 279]

- Requirements Grouping with Several Grouping WBS Elements for Each Plant [Page 281]

- Requirements Grouping with Hierarchically Structured Grouping WBS Elements [Page 283]

Prerequisites

- You have defined that a material is to be planned using requirements grouping by entering the appropriate MRP group in the material master.

- You have entered a period lot-size, for example, MB for monthly lot size, in the material master.

- You have assigned the *WBS elements* to one or several *grouping WBS elements*.

- If necessary, you have assigned a *grouping WBS element* to a *plant* and an *MRP group*.

Process Flow

Fundamentally, the planning run for the 5 different options are the same. The different planning results depend on the settings made in the master data.

1. The system checks for a material whether the MRP group entered in the material master has been activated for requirements grouping.

2. If the *MRP group* has not been activated for *requirements grouping* and the *individual/coll. indicator* in the material master has been set to *1*, the material is planned using individual project planning. In this case, material requirements planning creates order proposals that are assigned to the account of the WBS element that has caused the requirements.

   If you have set the *Individual/coll. indicator* in the material master to *2*, the material is planned at plant level and managed in the plant stock, irrespective of the MRP group settings.

3. If you have activated the MRP group entered, the system the groups the requirements for the material. The system determines the assigned grouping WBS element for the WBS elements that have caused the individual requirements.

Carrying Out Material Requirements Planning with Requirements Grouping

If the system is unable to determine a valid grouping WBS element, individual project planning is carried out for the WBS element that caused the requirements. In this case, material requirements planning creates order proposals that are assigned to the account of the WBS element that has caused the requirements.

4. The individual requirements are combined for the grouping WBS element. The system creates order proposals (planned orders, purchase requisitions) to cover these requirements. These planned orders / purchase requisitions) are assigned to the account of the grouping WBS element.

5. Check the planning results. In MRP Evaluations, you can view the individual segments for a material that the system created for a grouping WBS element. The requirements (these are usually reservations, that have been caused by networks) and the procurement elements are displayed in the individual segment.

Automatic Requirements Grouping Within a Project

Dispo-PSP-Element [Page 267]

Use

You use this procedure if you would like to group the material requirements within a project and jointly plan and procure them, without having to make lots of changes to the master data.

The individual WBS elements within a project definition are assigned to one single grouping WBS element that belongs to the same project. The system uses the first WBS element on the highest level of the work breakdown structure as the grouping WBS element. All remaining WBS elements of the project are automatically assigned to this grouping WBS element.

It is not possible to group across projects using this procedure, that is, only the material requirements of the WBS element that belong to the project can be planned together.

Prerequisites

- You have created MRP groups in Customizing for MRP that you have activated for requirements grouping.

- You have assigned these MRP groups to the materials that are to be planned with requirements grouping.

- You have entered a *period lot size*, for example, MB for *monthly lot size*, in the material master record.

- You have set the requirements grouping indicator in the project definition and selected the valuated stock field.

Features

Every material that is assigned to the project via networks and is allowed to be planned with requirements grouping, is planned with the highest WBS element of the work breakdown structure (this is the grouping WBS element of the project). Material requirements planning groups the requirements and creates procurement elements that are assigned to the account of the WBS element.

Multi-Plant Requirements Grouping with a Single Grouping WBS Element

Dispo-PSP-Elements [Page 267]

Use

You use this procedure if you would like to combine all requirements of the materials using a grouping WBS element. At the same time, you can use this grouping WBS element in all plants.

Prerequisites

- You have created MRP groups in Customizing for MRP that you have activated for requirements grouping.

- You have assigned these MRP groups to the materials that are to be planned with requirements grouping.

- You have entered a *period lot size*, for example, MB for *monthly lot size*, in the material master record.

- You have created a grouping WBS element and have entered the indicator 1 in the grouping WBS element field.

- You have selected the *valuated stock* field in the project definitions of the WBS elements and the grouping WBS element.

- All WBS elements that are to participate in requirements grouping must belong to the same controlling area.

- You have assigned the WBS elements whose material requirements are to be combined to the grouping WBS element (see also, Assigning WBS Elements to Grouping WBS Elements [Page 271]).

Features

In material requirements planning, every material that is allowed to be planned with requirements grouping is planned with the grouping WBS element. The individual requirements that are caused by the WBS elements are combined and the system creates a procurement element, which is assigned to the account of the grouping WBS element, for every material.

In MRP evaluations, an individual segment is displayed for the grouping WBS element.

⚠

If there are material requirements that are caused by a WBS element, such as, for example, reservations, and this WBS element has not been assigned to the grouping WBS element, the system then carries out individual project planning, that is, the material is planned for the WBS element and procured with reference to the WBS element.

Multi-Plant Requirements Grouping with Several Grouping WBS Elements

Dispo-PSP-Elemente [Page 267]

Use

You use this procedure if you would like to combine material requirements using several grouping WBS elements. At the same time, you can use these grouping WBS elements in all plants. The use of several grouping WBS elements can be useful if you want to form several groups across plants, such as, for example, certain WBS elements of sales orders from Europe are to be assigned to the grouping WBS element 1 in all plants and certain WBS elements of sales orders from USA are to be assigned to the grouping WBS element 2 in all plants.

Prerequisites

- You have created MRP groups in Customizing for MRP that you have activated for requirements grouping.

- You have assigned these MRP groups to the materials that are to be planned with requirements grouping.

- You have entered a *period lot size*, for example, MB for *monthly lot size*, in the material master record.

- You have created several grouping WBS elements and have entered the indicator 1 in the grouping WBS element field for them.

- You have selected the *valuated stock* field in the project definitions of the WBS elements and the grouping WBS elements.

- You have assigned the WBS elements whose material requirements are to be combined to the grouping WBS elements (see also, Assigning WBS Elements to Grouping WBS Elements [Page 271]).

Features

In material requirements planning, every material that is allowed to be planned with requirements grouping, is planned with the grouping WBS element that has been assigned the WBS element, which has caused the material requirement.

Example:

- Material A is allowed to be planned with requirements grouping.

- Material A is assigned to the WBS elements E1, E2 and E3 in the networks.

- You assign the WBS elements E1 and E2 to the grouping WBS element D1.
  You assign the WBS element E3 to the grouping WBS element D2.

The following happens in **material requirements planning**:

The requirements for material A that have been caused by WBS elements E1 and E2 are combined using the grouping WBS element D1. To cover these requirements, the system creates

Multi-Plant Requirements Grouping with Several Grouping WBS Elements

a procurement element (planned order or purchase requisition) that is assigned to the account of the grouping WBS element D1.

The requirements for material A that have been caused by WBS element E3 are combined using the grouping WBS element D2. The procurement element is assigned to the grouping WBS element D2.

In MRP Evaluations, the two grouping segments for the WBS elements D1 and D2 are displayed with the corresponding requirements and receipt elements for material A.

Requirements Grouping with a Grouping WBS Element for Each Plant

Dispo-PSP-Elements [Page 267]

Use

You use this procedure if you would like to combine all materials requirements of a plant using a grouping WBS element. You have to create an individual grouping WBS element for each plant if you want to group requirements for other plants.

Prerequisites

- You have created MRP groups in Customizing for MRP that you have activated for requirements grouping.

- You have assigned these MRP groups to the materials that are to be planned with requirements grouping.

- You have entered a *period lot size*, for example, MB for *monthly lot size*, in the material master record.

- You have created a grouping WBS element for each plant and have entered the indicator 2 in the grouping WBS element field.

- You have selected the *valuated stock* field in the project definitions of the WBS elements and the grouping WBS element.

- You have assigned the MRP groups of a plant, which has been activated for requirements grouping, to the grouping WBS element of the same plant. For example, all MRP groups in plant 1 that are relevant to requirements grouping are assigned to the grouping WBS element of plant 1. See also: Assigning a Grouping WBS Element to MRP Groups [Page 272]

- You have assigned the WBS elements of a plant, whose material requirements are to be combined, to the grouping WBS element (see also, Assigning WBS Elements to Grouping WBS Elements [Page 271]).

Features

In material requirements planning, every material in plant 1 that is allowed to be planned with requirements grouping, is planned with the grouping WBS element from plant 1. This is under the condition that the WBS element, which caused the requirement, is assigned to the grouping WBS element and at the same time, the MRP group is assigned to the grouping WBS element.

⚠️

If you have not assigned the WBS element, which has caused the material requirement, to the grouping WBS element, individual project planning is carried out for the material with reference to the WBS element. The procurement element is then assigned to the account of the WBS element.

➡️

When planning an assembly across plants, that is, for example, procured via stock transfer or production in an alternative plant, the dependent requirements are in the

Requirements Grouping with a Grouping WBS Element for Each Plant

planning plant (plant 1) and in the delivering plant/production plant (plant 2).
If you have only assigned the grouping WBS element in plant 1, which has been
assigned the WBS element of the assembly, to the MRP group in plant 1, then only
the requirements in plant 1 are planned with the grouping WBS element from plant 1,
as plant 2 is unable to determine an assignment for the requirements. In this case,
you also have to assign the WBS element from plant 1 to the grouping WBS element
of plant 2.

Requirements Grouping with Several Grouping WBS Elements for Each Plant

Dispo-PSP-Elemente [Page 267]

Use

You use this procedure if you would like to combine material requirements of different WBS elements in plant using several grouping WBS elements.

This is useful if, for example, you would like to group WBS elements within a plant according to certain criteria. In plant 1, you can, for example, assign all WBS elements from projects with ordering parties from the public sector to grouping WBS element 1 and assign all WBS elements from projects with ordering parties from the private sector to grouping WBS element 2.

You can thus group the WBS elements according to specific criteria and plan the material requirements accordingly in every plant.

Prerequisites

- You have created MRP groups in Customizing for MRP that you have activated for requirements grouping.

- You have assigned these MRP groups to the materials that are to be planned with requirements grouping.

- You have entered a *period lot size*, for example, MB for *monthly lot size*, in the material master record.

- You have created several grouping WBS elements and have entered the indicator 2 in the grouping WBS element field for them.

    If you would like to group the WBS elements according to two criteria, such as, for example, ordering parties from the public sector/ private sector, you create one grouping WBS element for each grouping criterion in the plant.

- You have selected the *valuated stock* field in the project definitions of the WBS elements and the grouping WBS elements.

- You have assigned the MRP Groups to every Grouping WBS Element [Page 272], for which the grouping WBS element is to be used, and have entered a plant.

- You have assigned the WBS elements whose material requirements are to be combined to the grouping WBS elements (see also, Assigning WBS Elements to Grouping WBS Elements [Page 271]).

Features

In material requirements planning, every material in a plant that is allowed to be planned with requirements grouping, is planned with the grouping WBS element that has been assigned the WBS element, which has caused the material requirement. However, this is only possible if you have assigned the MRP groups of the material to the grouping WBS element.

Requirements Grouping with Several Grouping WBS Elements for Each Plant

Example

Assembly A in plant 0001 (the MRP group 0001 is entered in the material master) is required for the WBS element 1, 2 and 3.

You have assigned the following:

WBS element is assigned to the grouping WBS element D1.
WBS element 2 is assigned to the grouping WBS element D1.
WBS element 3 is assigned to the grouping WBS element D2.

Grouping WBS element D1 is assigned to 0001/0001 (plant/MRP group).
Grouping WBS element D2 is assigned to 0001/0001 (plant/MRP group).

The following happens in **material requirements planning**:

The system combines the requirements of the assembly A, which are caused by the WBS elements 1 and 2, and creates a procurement element for these requirements that is assigned to the account of the grouping WBS element.

The system calculates the requirements of the assembly A, which are caused by the WBS elements 3, and creates a procurement element for these requirements that is assigned to the account of the grouping WBS element D2.

If you have not assigned the WBS element, which has caused the material requirement, to the grouping WBS element, individual project planning is carried out for the material with reference to the WBS element. The procurement element is then assigned to the account of the WBS element.

When planning an assembly across plants, that is, for example, procured via stock transfer or production in an alternative plant, the dependent requirements are in the planning plant (plant 1) and in the delivering plant/production plant (plant 2).
If you have only assigned the grouping WBS element in plant 1, which has been assigned the WBS element of the assembly, to the MRP group in plant 1, then only the requirements in plant 1 are planned with the grouping WBS element from plant 1, as plant 2 is unable to determine an assignment for the requirements. In this case, you also have to assign the WBS element from plant 1 to the grouping WBS element of plant 2.

Requirements Grouping with Hierarchically Structured Grouping WBS Elements

Dispo-PSP-Elemente [Page 267]

Use

You use this procedure if you would like to have several grouping criteria, that is, several grouping WBS elements, in a plant to combine requirements.

The grouping WBS elements are hierarchically structured in this procedure.

Prerequisites

• You have created MRP groups in Customizing for MRP that you have activated for requirements grouping.

• You have assigned these MRP groups to the materials that are to be planned with requirements grouping.

• You have entered a *period lot size*, for example, MB for *monthly lot size*, in the material master record.

• You have created several grouping WBS elements and have entered the indicator 2 in the grouping WBS element field for them.

> If you would like to group the WBS elements according to two criteria, such as, for example, ordering parties from the public sector/ private sector, you create one grouping WBS element for each grouping criterion in the plant.

• You have selected the *valuated stock* field in the project definitions of the WBS elements and the grouping WBS elements.

• You have assigned the MRP Groups to every Grouping WBS Element [Page 272], for which the grouping WBS element is to be used, and have entered a plant.

• You have assigned the WBS elements whose material requirements are to be combined to the grouping WBS elements (see also, Assigning WBS Elements to Grouping WBS Elements [Page 271]).

• You have assigned the grouping WBS elements at higher levels of the hierarchy to the grouping WBS elements at the lower levels of the hierarchy.

Features

In material requirements planning, a material that is allowed to be planned with requirements grouping, is planned with the grouping WBS element that has been assigned the WBS element, which has caused the material requirement. Alternatively, the material is planned with the grouping WBS element that is assigned to the dependent requirement (that is determined during the BOM explosion).

Example

The hierarchical structure is demonstrated in the following example:

Requirements Grouping with Hierarchically Structured Grouping WBS Elements

You can imagine the material requirements planning of a project in the form of a pyramid. At the top is the finished product that is planned with the individual WBS element.

The lower levels of the hierarchy represent the hierarchy of the grouping WBS elements. Every level simultaneously represents a BOM level. The lowest level represents the lowest BOM level with raw materials that are planned without reference to the grouping WBS elements as collective requirements and are managed in the plant stock.

The following illustration shows the hierarchical structure of grouping WBS elements in a plant. Every grouping WBS element has been created for a particular grouping criterion:

Hierarchy of Grouping WBS Elements in Plant 0001
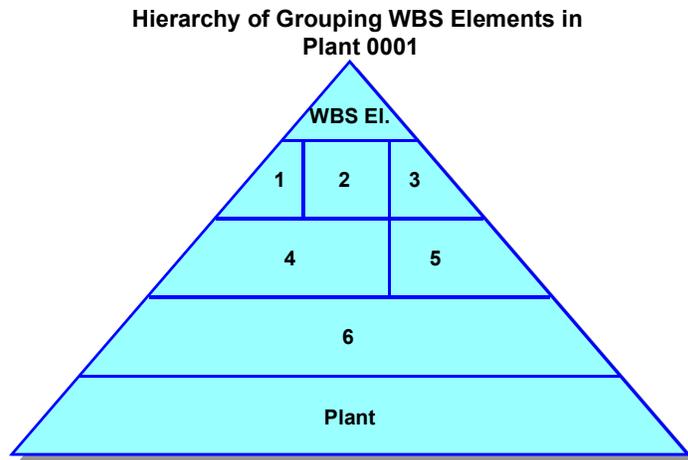
The **grouping WBS elements 1 to 6** correspond to the following grouping criteria:

Grouping WBS element 1 corresponds to domestic orders from the government

Grouping WBS element 2 corresponds to domestic orders from the private sector

Grouping WBS element 3 corresponds to orders from France

Grouping WBS element 4 corresponds to grouping of domestic orders

Grouping WBS element 5 corresponds to grouping of orders from Europe except for domestic orders.

Grouping WBS element 6 corresponds to grouping of all orders from Europe, including domestic orders.

The following **WBS elements** have been created in different projects:

WBS 1.1
WBS 1.2
WBS 1.3
WBS 2.1
WBS 2.2

The following assignment have to be maintained when **assigning the WBS elements to the grouping WBS elements.**

Grouping WBS el. 1	Grouping WBS el. 2	Grouping WBS el. 3	Grouping WBS el. 4	Grouping WBS el. 5	Grouping WBS el. 6

Requirements Grouping with Hierarchically Structured Grouping WBS Elements

WBS 1.1	WBS 2.1	WBS 2.2	WBS 1.1	WBS 2.2	WBS 1.1
WBS 1.2			WBS 1.2	Grouping WBS el. 3	WBS 1.2
			WBS 2.1		WBS 2.1
			Grouping WBS el. 1		WBS 2.2
			Grouping WBS el. 2		Grouping WBS el. 1
					Grouping WBS el. 2
					Grouping WBS el. 3
					Grouping WBS el. 4
					Grouping WBS el. 5

Assigning the Materials to Grouping WBS Elements in MRP

The finished product is not allowed to be planned with requirements grouping and is planned with the WBS element.

The assembly underneath the finished product is planned with the grouping WBS element 1, 2 or 3, if its MRP group has been assigned to the grouping WBS elements and the WBS elements, which have caused the requirements, have been correctly assigned.

The materials in the BOM level underneath this assembly, on the other hand, are planned with the grouping WBS elements that are correspondingly lower in the hierarchy, if the MRP groups are assigned to the grouping WBS elements and the WBS elements are assigned as displayed in the table. For example, the important raw materials are planned in the example with grouping WBS element 6. This also applies if the raw material is used for the final assembly and therefore a dependent requirement is at the highest BOM level.

Materials from the lowest BOM level (usually less important raw materials) are not planned using requirements grouping but rather as collective requirements.

Carrying out the Planning Run

Implementation Options

The section on carrying out the planning run applies to planning material requirements for all materials or assemblies, for which the requirements or stock situation has changed.

Material requirements planning is carried out in the form of a planning run.

Features

- You can carry out the planning run for a plant (total planning) or for a material (single-item planning).

    The following procedures are available for the planning run:

- Total Planning [Page 298]

- Single-Item, Single-Level Planning [Page 305]

- Single-Item, Multi-Level Planning [Page 307]

- Interactive Planning [Page 319]

- Multi-Level, Make-to-Order Production [Page 326]

- Individual project planning

- You can define the scope of planning for the planning run, for example, whether you only want to plan materials that have undergone changes relevant to MRP within a particular period of time (planning horizon).

- For material procured externally, you can define whether planned orders, purchase requisitions or delivery schedules are to be created during the planning run.

- You can define whether MRP lists are to be created or not.

Control Parameters for the Planning Run

Use

Various control parameters are available for the total planning procedure and for single-item planning which are set in the initial screen of the planning run.

Using these parameters, you can define how the planning run is to be carried out and which results are to be produced, for example, whether purchase requisitions are to be created for material procured externally, whether an MRP list is to be created, and so on.

Features

Scope of the Planning Run [Page 288]

Creation Indicator [Page 290]

Planning Mode in the Initial Screen [Page 293]

Scheduling Indicator [Page 295]

Displaying the Planning Result [Page 296]

Creating Runtime Statistics [Page 297]

Scope of the Planning Run

Use

Material requirements planning can be carried out for a different number of materials. You define the quantity of materials to be planned with the type of the planning run.

Prerequisites

You have defined the type of planning run in the *Processing key* field on the initial screen of the planning run.

Features

There are three different planning run types:

- During **regenerative planning**, all materials are planned for a plant. This makes sense when you are carrying out the planning run for the first time as well as later during production if data consistency cannot be guaranteed due to technical error. The disadvantage of regenerative planning is the fact that the system has to deal with high capacity loads because all materials are planned, including materials which may not be affected by the planning run.

- To overcome this disadvantage, it makes sense during production to carry out the planning run using the **net change planning** procedure. Die Veränderungsplanung wird auch als **Net-change-Verfahren** bezeichnet. In net change planning, the only materials which are included in the planning run are those which have undergone a change relevant to MRP since the last planning run, for example, because of warehouse issues or sales orders, changes to the BOM and so on. The net change planning procedure makes it possible for you to carry out the planning run in short intervals, for example, in daily intervals. This means that you are always working with the most up-to-date planning result.

- **Net change planning in the planning horizon** is another version of net change planning which shortens the MRP planning run even further. With this version, MRP is only carried out within a defined planning horizon. Changes outside the planning horizon are not taken into account. This means that only those materials are planned which have undergone a change relevant to MRP within the planning horizon. To plan the changes outside the planning horizon, you must carry out a net change planning run in larger time intervals.

  The planning horizon can be set in Customizing for MRP. The length of the planning horizon should be at least long enough to cover the period when sales orders are received. It must also accommodate delivery periods and the total lead times of the materials.

  In single-item MRP, you can only determine whether a net change planning is carried out or a net change planning in the planning horizon. In net change planning in the planning horizon, only those requirements are planned which lie within the planning horizon.

Creation Indicator

Bezugsquellenermittlung bei Fremdbeschaffung [Page 137]

Use

You use the creation indicator in the initial screen of the planning run to define whether planned orders or purchase requisitions, schedule lines, and MRP lists are created during the planning run.

Features

Creation indicator for purchase requisitions

You use the creation indicator, which refers only to materials that are procured externally, to control which of the following is created:

* Planned orders only

* Purchase requisitions only

* Purchase requisitions within the opening period [Page 292] and planned orders outside the opening period. When you select this indicator, the system creates purchase requisitions when it determines an opening date that is before the planning date.

Creation indicator for schedule lines

You use this creation indicator to control whether schedule lines are generated for materials that are procured externally. The following options are available:

* No schedule lines

* Schedule lines

* Schedule lines in the opening period [Page 292] and purchase requisitions outside the opening period.

If schedule lines are to be generated automatically by the planning run, the following prerequisites must be met:

* A scheduling agreement for the material exists in the system

* A valid entry that is relevant to MRP must exist in the source list

For more information on this topic, refer to Determining the Source of Supply for Delivery Schedules

Creation indicator for MRP lists

The result of the planning run can be stored in the form of MRP lists. These lists can be created during the planning run for each material. These lists can be evaluated at the end of the planning run according to various aspects. You can choose whether:

* an MRP list is created for every material

* no MRP lists are created

- the result is stored in the form of an MRP list only if an exceptional situation occurs (for example, abnormal termination of the planning run)

    Even if you do not save any MRP lists, the order proposals generated by the system are stored in the data base. You then process the results of the planning run by means of the stock/requirements list instead of the MRP list. If you use this method, however, you have less options for evaluating the results.

The following applies to the creation indicators:

- Total planning and single-item planning
  are planned using the creation indicator on the initial screen, **if** no different parameters for the material are maintained in the <u>MRP group [Page 333]</u>.

    You can maintain an additional plant-specific entry for the creation indicator for delivery schedule schedule lines. When a plant-specific entry exists, the following applies:

- When a material does not have an MRP group, it is planned using the plant-specific entry from Customizing.

- When a material has an MRP group, it is planned using the entry from the MRP group.

Opening Period

Definition

The **opening period** is a time buffer for converting planned orders into purchase requisitions. The opening horizon is calculated from the planned start date of the purchase requisition into the past, determining the opening date. You set the opening period via Customizing and assign it to the material in the material master record (MRP data) in the *GR processing key* field.

Planning Mode in the Initial Screen

Use

Usually, the master plan is adjusted in the planning run to adapt it to either new dates or quantities. If a requirements quantity was increased, the system automatically adjusts the quantity of the corresponding order proposal. An additional control indicator (the planning mode) is given if changes are made in the BOM or in Customizing to make these changes relevant to the planning run. The planning mode is set automatically in the planning file. However, you can overwrite it in the initial screen of each planning run.

Features

The following planning modes can be set in the initial screen of the planning run:

- Reactivate planning dates (planning mode 1): The system only creates new receipt elements if the already existing elements no longer suit the new planning situation.

- Re-explode BOM if changes are make to BOM (planning mode 2).

- Delete all planning data and re-create order proposals (planning mode 3).

   The following changes to master data require you to enter planning mode 3 in the initial screen to make the changes effective in the planning run:

   – Material master changes, like, for example, changes to in-house production or planned delivery times, processing key, MRP controller, changes to the dependent requirement indicator of an component.

   – Changes in Customizing for MRP, like, for example, processing time for Purchasing in the case of plant parameters.

➡

   The planning mode is automatically set in the planning file. This automatically set indicator can be overruled, if necessary, by the planning mode in the initial screen of the planning run. The following is valid for this: For planning a particular material, the indicator that has the highest numerical value has priority. The following table shows which planning mode has the higher priority:

To From	1	2	3	4	5	6
1	—	X	—	—	—	—
2	—	—	X	X	X	—
3	—	—	—	X	X	—
4	—	—	—	—	X	—
5	X	X	—	—	—	X
6	X	X	—	—	—	—

Planning Mode in the Initial Screen

Scheduling Indicator

Use

You use the scheduling indicator to define whether lead time scheduling is to be carried out for the calculation of the basic dates (planned dates) for materials produced in-house. Lead time scheduling calculates the precise start and finish dates for production. The system only creates capacity requirements if lead time scheduling has been carried out.

For more information on scheduling, please refer to the section, .

Displaying the Planning Result

Use

For single-item planning, you have the additional option to display and change the MRP result before saving it. Otherwise, the system automatically saves the MRP lists, and the order proposals which were generated, without displaying them first.

Prerequisites

- You have selected the *Display result* indicator in the initial screen of the planning run.

Features

If you have selected the indicator, the system displays the planning result screen. You can change existing order proposals or create new ones in this screen.

You can also check and change the capacity situation for planned orders from the planning results screen. For more information on capacity planning, please refer to the SAP document *PP - Capacity Planning*.

Creating Runtime Statistics

Use

For multi-level, single-item planning, the system can also be set to display a detailed list of the run-time statistics for the individual components of the complete BOM structure of the planned product.

Features

For each material planned, you receive a list including the following data: Time of the planning run, the length of time required to plan the material in seconds, the processing indicator, and the exception group for which exception messages were created.

Carrying Out Total Planning Online

Total planning covers the planning of all the materials in a certain plant which are relevant for requirements planning and includes BOM explosion for materials with a bill of material.

To carry out total planning for a certain plant, proceed as follows:

1. Starting from the menu screen of MRP, select, *MRP → Total planning → Online.*

   The initial screen for the planning run now appears.

2. Specify the plant for which you want to carry out total planning.

   In the MRP *Control parameters* section, you can enter different parameters for the planning run.

   – Processing key

   – Creation indicator for purchase requisitions

   > This indicator only refers to materials procured externally and is only valid if it is not overridden by the MRP group.

   – Creation indicator for delivery schedules

   > This indicator only refers to materials procured externally and is only valid if it is not overridden by the MRP group or by the plant entry from Customizing.

   – Creation indicator for the MRP list

   – Planning mode

   – Scheduling

   > If you want to save the parameters you entered in the initial screen for subsequent single-item planning runs, choose, *Settings → Save parameters*. These parameters will then appear the next time you access this screen.

3. Choose *Enter*.

   You receive a description for each of your entries.

   You now have the opportunity to change the parameters again. If you change the parameters, press ENTER again and you get a second chance to check your entries.

4. To start the planning run, choose ENTER.

   When the planning run is finished, you receive the run-time statistics. From the statistics, you can gain information on the extent of the planning run, on how many exception messages were created and on the number of terminations.

   You are also informed on how much time was required for the total planning run as well as how long it took to plan each individual material. The total run-time is the CPU time that was required. In the Sec column you see the accumulated CPU time for the individual materials.

   To limit the extent of these statistics, you can adjust the number of the materials to be displayed via Customizing.

If you carry out total planning in background mode, you can print out the statistics.

Carrying Out Total Planning in Background Mode

Procedure

1. Starting from the menu screen for MRP, choose, *MRP → Total planning → As background job*.

   The *Total planning: Variants* screen appears.

2. If you have not yet created any variants, you need to create a variant by choosing *Create variant*. The variant contains the control parameters for the total planning run.

3. Enter a name for the variant and choose *Create*.

   The *Variants: Change screen assignment* dialog box appears in which the "Batch structure for MRP run" screen is suggested.

4. Choose continue to accept this suggestion.

   The initial screen for the total planning run now appears. Enter the control parameters that the system is to use for the total planning run.

5. Choose *Continue*.

   The *ABAP: Save Attributes of Variant SAP_XXX:* screen appears.

6. Enter a description for the variant in the *description* field and choose *Save*.

7. Choose *Exit*.

   The *Total planning: Variants* screen appears.

8. Position the cursor on the variant and choose *Schedule job*.

   The *Total Planning Scheduling: Start Time* screen appears.

   On this screen, you can define whether the variant created is to be scheduled just once or periodically. If you choose periodically, the planning run is regularly carried out on the dates that you have specified and with the control parameters that you defined in the variant.

   ➡

   If you run the total planning run in background mode, you can print out the protocol and the resulting statistics.

Multi-Plant (Site) Total Planning

Use

To avoid having to plan each plant individually, you can plan as many plants as you want in one total planning run.

Using the scope of planning, you can control whether the total planning run is to be carried out:

- For one plant

- For several plants

- For one MRP area

- For several MRP areas

- For a combination of plants and MRP areas

.

Integration

You can use multi-plant total plant in material requirements planning, in master production scheduling and in long-term planning.

Prerequisites

You have summarized the plants or alternatively the MRP areas, which are to be planned together, in a group in Customizing for MRP, in the IMG activity "Define scope of planning".

You have made the necessary settings for Parallel Processing [Page 332] in Customizing for MRP.

Features

Defining the Scope of Planning

- You can define different scope of planning groups in Customizing.

- You specify the sequence of the individual MRP units (plants or MRP areas) for each scope of planning by entering a counter. This counter defines the sequence in which the MRP units are to be planned.

- You can enter as many plants as you like in the scope of planning.

- If you have activated material requirements planning with MRP areas, the entry of a plant thus includes all the MRP areas of this plant. During the planning run, the MRP areas of a plant are always planned in the following sequence: Plant MRP area, storage location MRP area, subcontractor MRP area.

- You can, however, also enter one or several MRP areas in the scope of planning. You can therefore control that the total planning run, for example. is only carried out for one or several particular MRP areas.

Multi-Plant (Site) Total Planning

Carrying Out the Total Planning Run for the Scope of Planning

- • You can carry out the total planning run online or as a background job for the scope of planning. The planning run always has to be started with parallel processing.

- • Planning file entries re-created due to stock transfer are automatically taken into consideration during the planning run. This way, you can ensure that a material is planned correctly in all relevant plants even if stock is transferred.

Activities

Carrying Out Total Planning Online for a Scope of Planning [Page 303]

Carrying Out Total Planning as a Background Job for a Scope of Planning [Page 304]

Carrying Out Total Planning Online for a Scope of Planning

Prerequisites

- You have defined a *scope of planning* in Customizing for MRP.

- You have defined the settings for [Parallel Processing [Page 332]](#) in Customizing for MRP.

Procedure

1. Starting from the MRP menu, choose *Planning → Total Planning → Online*.

   The initial screen for the planning run now appears.

2. Enter the *scope of planning* number.

3. Enter the *control parameters* for the planning run.

4. Set the *Parallel processing* indicator.

5. Start the total planning run.

Result

The total planning run is carried out for the scope of planning you defined. The individual plants or MRP areas are planned in the defined sequence.

Carrying Out Total Planning as a Background Job for a Scope of Planning

Prerequisites

- You have defined a *scope of planning* in Customizing for MRP.

- You have defined the settings for Parallel Processing [Page 332] in Customizing for MRP.

Procedure

1. Starting from the menu screen for MRP, choose, *MRP → Total planning → As background job*.

   The *Total planning: Variants* screen appears.

2. Define a variant for the scope of planning and schedule it.

   You have to enter the scope of planning number for the variant in the control parameters of the initial screen and set the parallel processing indicator.

   See also: Carrying out Total Planning in Background Mode [Page 300]

Carrying Out Single-Item, Single-Level Planning

Single-item planning only involves the planning of one individual material. Single-level means that planning is carried out without BOM explosion and that, therefore, planning is only carried out at one level.

In order to carry out single-level, single-item planning, proceed as follows:

1. Starting from the menu screen of material requirements planning, select *Planning* → *Sng-item, sng-level*.

   The initial screen for single-item, single-level planning appears.

2. Enter the material number for which you wish to carry out single-item, multi-level planning. Specify the plant in which you want to carry out planning.

   In the area entitled *MRP control parameters*, you can enter different parameters for the planning run.

   – Processing key

     Only the two following procedures are useful for single-item, single-level planning:
     netch net change planning
     netpl net change planning in the planning horizon

   – Creation indicator for purchase requisitions

     This indicator only refers to materials procured externally.

   – Creation indicator for delivery schedules

     This indicator only refers to materials procured externally.

   – Creation indicator for the MRP list

   – Planning mode

   – Scheduling

   – Display results

     If you want to save the parameters you entered here for subsequent single-item planning runs, choose *Settings* → *Settings* → *Save.* These parameters will then appear the next time you access this screen.

3. Choose *Enter*.

   You receive a description for each of your entries.

   You now have the opportunity to change the parameters again. If you change the parameters, choose ENTER again and you get a second chance to check your entries.

4. To start the planning run, choose ENTER.

   If you selected the *Display result* field on the initial screen, the system will display the result and, if necessary, you can make changes to the result before it is saved in the database. For more information on this topic, please refer to the section entitled, Functions in the Planning Result [Page 311]. When you are satisfied with the result save it.

Carrying Out Single-Item, Single-Level Planning

Carrying Out Single-Item, Single-Level Planning

Single-Item, Multi-Level Planning

During single-item, multi-level planning, the system explodes the bill of material for a material and generates dependent requirements for assemblies and components. These components are also planned to cover dependent requirements. If the components also have BOMs, the system explodes these BOMs too and plans the components. The system repeats this process until all BOM levels have been exploded.

You have the following options for single-item, multi-level planning:

* Without interactive checking of the planning results

    If you use single-item planning without interactively checking the planning results, the planning results are automatically saved to the database by the planning run.

    However, you also have the option of checking the results of all materials planned directly after the planning run. To do this, select *Display mat. list* in the initial screen. The system displays a material list [Page 310] for this purpose. You can branch from this list to the MRP list or the stock/requirements list for each material. If you make changes to the planning result of a particular material in this overview, you can repeat the planning run for all dependent materials directly from the overview.

* With interactive check of the planning results for each material

    The advantage of interactively checking the planning results of single-item planning is that the system does not save the results to the database until after you have checked, and when necessary changed, the results.

    You have two options for single-item planning with an interactive check of the planning results:

    – Planning with results display

        For planning with functions in the planning results [Page 311], set the *Display result* indicator. The system displays all the materials to be planned as stopping points and you can choose where the system is to stop. The system displays the planning results for every stopping point that you specify and you can make any necessary changes before the system continues planning. The changes have an immediate affect on the subsequent planning.

    – Planning in simulative mode

        If you use simulative single-item, multi-level planning [Page 316], the system plans all materials in a BOM and the planning results remain in the main memory. You can check the planning results for each material. The system displays problems on lower BOM levels at the finished product level. You can then solve the problems straight away. The system does not save the planning result to the database until after you save the planning results.

For more information, see:

Start Single-Item, Multi-Level Planning [Page 308]

Starting Single-Item, Multi-Level Planning

Procedure

In order to carry out single-item, multi-level planning, proceed as follows:

1. Starting from the menu screen of materials requirements planning, select, *Planning* → *Sng-item, multi-lvl*.

   The initial screen of single-item, multi-level planning appears.

2. Enter the material number for which you wish to carry out single-item, multi-level planning. Specify the plant in which you want to carry out planning.

   If you want to carry out the planning run for a product group whose members are materials, enter the material number of the product group in the field entitled, *Material*, and in the section of the screen entitled, *Scope of the planning run*, enter select the field *Product group*. The product group is then exploded by the planning run and all members are planned. The BOMs of these materials are also exploded and the assemblies and components are planned.

3. In the area entitled *MRP control parameters*, you can enter different parameters for the planning run.

   Processing key

   > You determine the type of the planning run via the processing key:
   > **netch** net change planning
   > **netpl** net change planning in the planning horizon

   Creation indicator for purchase requisitions

   > This indicator only refers to materials procured externally.

   Creation indicator for delivery schedules

   > This indicator only refers to materials procured externally.

   Creation indicator for the MRP list

   Planning mode

   > You use the planning mode to specify whether order proposals are to be reactivated, whether the BOM is to be re-exploded, or whether new order proposals are to be created. The planning mode applies to all materials in the BOM structure.

   Scheduling

   > You use this indicator to define whether basic dates only are to be calculated or production dates as well and capacity requirements created

   Display results

   > If you selected the field entitled, *Display results,* the system displays the planning results of the materials of your choice which you can process. For more information on changing the planning result, please refer to .

   > If you selected the *Display result* field, the system plans all the levels of the material and then displays the runtime statistics of the material list depending in your settings.

Plan all components

If you select the indicator, *Plan components*, the system explodes the complete BOM and all the components contained in the BOM are planned irrespective of whether any changes to the BOM have been carried out. The system includes all components of firm planned orders (as opposed to *planning mode 3*).

However, this indicator is not relevant for materials planned using consumption-based planning procedures. These materials are never included in multi-level planning runs.

Material list/Overview of the planning result

If you want the system to display a list of all the materials that were included in the planning run, select the field entitled, *Display mat. list*.

Simulative Mode

In order to carry out Single-Item, Multi-Level Planning in Simulative Mode [Page 316], select the *Simulative mode* field. This procedure has the advantage that all planning results are kept in the main memory so that you can more easily detect problems in lower BOM levels at the finished product level.

4. Choose *Enter*.

You receive a description for each of your entries.

You now have the opportunity to change the parameters again. If you changed the parameters, choose ENTER again to get a second chance to check your entries.

5. To start the planning run, choose ENTER again.

Result

The material is planned at multiple levels.

If you do not make any selections for the control parameters, the system only displays the runtime statistics.

If you select *Display result*, the system displays the planning results which you can process.

If you select *Display mat list*, the system displays the runtime statistics with the `Materials` button by which you can access the material overview.

If you select *Simulative mode*, the system displays the overview of the planning results where you can check all materials.

Material List Display

Use

You can use the material list to check the planning results for all materials planned directly after the planning run and to make any necessary changes.

Prerequisites

You have selected *Display mat. list* in the initial screen of the planning run.

Features

The following functions are available in this overview of the planned materials:

- From the overview screen, you can access the stock/requirements list, the MRP list, or interactive planning. If, for example, the planning run is terminated for a material, the reason for the termination is displayed in the MRP list.

    To do this, choose *Goto → Display MRP list,* and so on*.*

    In addition, the following search functions are available:

    – You can use the criteria material number and material short text, days' supply and receipt days' supply, exception groups, and processing indicator to search in the overview

    – You can search the lists for materials with certain exception messages or materials with certain MRP elements. If necessary, you can limit the search to a certain period.

- Re-start the planning run for materials directly from the *Planning result* overview, if changes relevant to planning were made and are to be transferred immediately to the dependent materials.
  To do this, position the cursor on the material required and choose *Display result*, or double-click the appropriate row. The system displays the planning result.

    If you want to make any changes, choose *Display <-> Change*.

    If you want to transfer these changes to dependent materials, choose *Planning → Save and Continue.*

    ➡

    If you want to save the parameters that you entered in the initial screen for subsequent single-item planning runs, choose *Settings → Settings → Save.* These parameters are preset when you subsequently access the planning run.

Functions in the Planning Result

Use

A function is available for displaying the planning results which you can check interactively and change, if necessary. The system firstly displays the planning results screen for the header material where you can make changes to the material. The system passes on the changes you make in the planning results immediately to dependent materials.

Prerequisites

You have selected the *Display result* indicator in the initial screen of the planning run.

Features

The most important functions that are available in the planning result screen are listed below:

Display exception message

To display the text for an exception message, position the cursor on the exception message and select, *Edit → Disp.except.message*.

Displaying additional data for the MRP element

If you want to look at additional data for an MRP element, position the cursor on the appropriate element and select, *Details → For MRP element*. The dialog box with the data you require appears.

Displaying material data

To display additional material data, select *Settings → Detailed header*. The data is displayed in the upper part of the resulting screen. The material data is sorted into individual screens according to subject. You can scroll through the individual screen or you can instruct the system to display all the material data in a separate screen. If you want to view the complete overview select, *Goto → Material data → Material overview.*

Changing order proposals

To change an order proposal, position the cursor on the appropriate element and select, *Edit → Change ord.proposal*.

A section appears on the lower half of the screen with the data of the selected order proposal where you can make the changes necessary.
To accept the changes, choose *Copy*.

> If you want to make sure that an order proposal cannot be changed automatically, you can set the firming indicator in the field, *Frmd*. Firmed order proposals are not changed in the planning run. Please also note the fixing logic for master production scheduling described in the section entitled, Firming Type [Page 468].

Rescheduling order proposals

If you want to reschedule an order proposal, position the cursor on the element in question and select, Resched. ord. proposal.

Functions in the Planning Result

If the system has already created a rescheduling proposal, the order proposal is automatically rescheduled to this date.

If the system has not issued a rescheduling proposal for an order proposal but you want to move it to another MRP date, the system displays a dialog box where you can enter the new MRP date for the order proposal. The order proposal is then rescheduled to this date.

Creating order proposals

To create a new order proposal, select Create ord.proposal.

A dialog box appears where you can specify the type of the order proposal (planned order, purchase requisition or delivery schedule) and the order profile.

Select, *Choose*.

In the lower half of the screen an area appears where you can enter the data for the order proposal. By choosing *ENTER,* the changed stock/requirements situation is displayed. To copy the new order proposal, select the Copy button.

Deleting order proposals

To delete an order proposal, position the cursor on the order proposal in question and select, *Edit → Delete ord. proposal*.

The system will then delete the order proposal.

Changing components of a planned order

You can change the components of a planned order by positioning the cursor on the planned order in question and choosing the *Chge ord.prop/PurOrd*. You then choose *Goto → Maintain component*.

A dialog box appears where you can make changes to the components.

Creating/changing production orders

In **single-item**, single-level planning, production orders can also be created or changed. To change a production order, position the cursor on the order in question and select, *Edit → Create order.*

In the lower half of the screen an area appears where you can enter the data for the production order.

To copy the new production order, select the Copy button.

To change a production order, select, *Edit → Change order*

In the lower half of the screen, an area appears where you can change the production order.

To copy the changed production order, select Copy.

Executing capacity planning

To check the capacity situation, you must have set the indicator for scheduling so that the system carried out lead time scheduling. Then select, *Goto → Capacity planning → Capacity leveling.*

Capacity planning is possible either from the material or from the planned order view. If you want to access the material view, select *Goto → Capacity planning → Capacity leveling →* Material view. If you want to check the capacity situation for one particular planned order, position the

cursor on the planned order and then press Change. Then select, *Goto → Capacity planning → Capacity leveling → Planned order view*.

Please refer to the SAP document *PP - Capacity Planning* for more information.

Printing the planning result

To print the result, select *Planning → Print*.

Activities

You then have two options for continuing the multi-level planning run with the results display:

- You can display and edit the planning result of all or some of the components and assemblies of the material, before you save the complete planning result. This process is called **"Continue planning with stopping points** ".

- You can plan the remaining BOM levels without the stopping points after you check the results in the header material. This process is called **"Continue planning without stopping points** ".

Planning with Stopping Points

To continue planning with stopping points, proceed as follows:

1. Select, *Planning* → *Save and continue*.

    The system displays the dialog box, *Next stopping point* and the next possible **stopping point**, that is, the next assembly or component at which the planning run can be stopped.

2. If you want to stop the planning run at the material displayed, select Continue. If you wish to stop at another point, choose " *Determine new stopping point* " and then choose *Continue*.

    The system displays the MRP result for the material that you selected.

    Skip points 3 - 5.

3. If you want to stop at a different stopping point to the one that the system proposed, choose, "determine new stopping point" and then Continue.

    The system proposes one or more stopping points depending on the number of components in the next BOM level to be planned.

4. Position the cursor on the appropriate material and choose Select.

    The " *Next stopping point* " dialog box appears again.

5. Now choose Continue.

    The system displays the MRP result for the material that you selected.

6. At every stopping point, you can either select the stopping point that the system proposes or you can manually select a different stopping point by following steps 3-5. You can process the MRP list at every level.

    Once the last level has been planned, the result of multi-level planning is automatically saved and you receive the planning run statistics.

Planning Without Stopping Points

To continue the planning run without any further stopping points, proceed as follows:

1. Choose, *Planning* → *Save and continue*.

   The " *Next stopping point* " dialog box appears.

2. Select " *Proceed without stopping* " and then Continue.

   The result of multi-level planning is automatically saved and you receive the statistics of the planning run.

   From the statistics, you receive information on the scope of planning, exception messages and terminations.

   You are also informed on how much time was required for the total planning run as well as how long it took to plan each individual material. The total run-time is the CPU time that was required. In the Sec column you see the accumulated CPU time for the individual materials.

   To limit the extent of these statistics, you can adjust the number of the materials to be displayed via Customizing.

   If you selected the *Display matl list* field in the initial screen then you also receive detailed statistics for both procedures on the individual planned materials. You can display the MRP list or the stock/requirements list for every material. Position the cursor on the appropriate material and select, Display MRP list or Display stock/reqmts.

Single-Item, Multi-Level Planning in Simulative Mode

Use

Single-item, multi-level planning in simulative mode enables you to check the results during the planning run and to make adjustments. The system displays problematic situations in lower level assemblies or components at the finished product level, which means, you can immediately solve the problems.

Integration

Single-item, multi-level planning in simulative mode is available in material requirements planning and in long-term planning.

Prerequisites

You have set the *Simulative mode* indicator in the initial screen of single-item, multi-level planning.

Features

- All the materials in a BOM structure are planned top-down.

- All changes are saved in the main memory. The results are not entered in the database until after changes are saved.

- The system sets an exception message in the planned order of the higher-level material and the system displays the delay for problems such as order dates in the past. The system displays the total number of days that a planned order is delayed due to a problem with a lower-level assembly or component. If the start date of an assembly is 3 days in the past, for example, and the start date of the component that is installed in the assembly is 5 days in the past, the system displays a delay time of 8 days. The system displays the delay in the planning results for the finished product that is produced from this assembly.

- Evaluation functions such as the order report and the pegging function enable you to quickly find the procurement element causing the delay or the exception message.

- You can change the procurement elements and repeat the planning run for the next lower level of the BOM to solve problems.
  You must set the firming indicator in the procurement element that has been changed for changes to take effect for planning.

Activities

To start the planning run in simulative mode, select the set the *Simulative mode* field in the initial screen of single-item, multi-level planning in addition to any other relevant parameters and then choose Enter twice.

Simulate Single-Item, Multi-Level Planning

Procedure

1. Enter the required data in the initial screen for single-item, multi-level planning and choose *Simulative mode.* To start the planning run, choose *Enter* twice.

    The material overview appears.

2. To scroll through the planning results for the materials, choose *Select all* and then *Sequence of results*.

    The system displays the planning results screen for the header material where you can make changes to the material. By choosing *Next result*, you can access the planning result for the next material (component).

    To display the planning results for only one material, double-click the material in the material overview.

3. Check the planning result for the header material.
   In the column *Exception at lower level,* the system displays the numbers of the exception messages that appear in lower BOM levels. The system displays the number of days a planned order is delayed in the *Delay* column.

    To display the text for an exception message number in the *Exception at lower level* column, position the cursor on the exception message number and choose *Edit* → *Disp.except.message*.

4. To display the cause of the BOM exception message for a planned order, that is, to display the component causing the problem, position the cursor on the planned order and choose *Order structure.*

    The dialog box *Order structure of MRP element* appears.

5. Choose *Open all* to display the MRP elements for the lower-level components.

    The system displays the MRP elements for the components. The system also displays the exception messages for the MRP elements. If you select an exception message, the system displays the text for the exception message in the status line of the planning results.

6. If you want to change a procurement element, for example, a planned order, position the cursor on the appropriate procurement element and choose *Select*.

    The planning result for the selected component now appears. The system also displays the details for the procurement element so that you can make changes.

7. Change the planned order, if necessary. If you want to start the planning run again with the new data, you must firm the changed planned order by setting the firming indicator. If you do not save this indicator, your changes are lost when you start the planning run.

    Choose *Copy planned order* to copy the data changed.

8. Start the planning run again for the material changed and the lower BOM levels by choosing *Carry out planning run.*

9. Repeat steps 3 to 8 until you are satisfied with the planning results for all BOM levels.

Simulate Single-Item, Multi-Level Planning

10. Save the results so that the system enters the planning results into the database. If you exit this transaction with saving, your planning results are lost.

Interactive Planning

Use

As no automatic changes are made to Master Schedule Items [Page 320] in the planning time fence, you must check and then finely tune the planning result. Interactive planning, however, is not only for master schedule items. It can also be used for all other materials that appear to need careful planning.

Features

The system first creates the current planning situation as in the current stock/requirements list. The planning and simulation functions are then manually started. Interactive MPS provides the following options:

- You can create order proposals for master schedule items produced in-house or for master schedule items that are procured externally.

- You can change or reschedule the order proposals created by MPS.

- You can carry out a rescheduling check, the net requirements calculation and the lot-sizing calculation (MRP calculation) as well as the ATP quantity calculation after every change.

- You can display the overview in individual lines or in period totals according to various period splits.

All changes are simulative until you save them and they are stored in the data base.

Master Schedule Items

In master production scheduling, those parts or products which greatly influence company profits or which take up critical resources are marked as master schedule items and are planned with extra attention. Master schedule items may be finished products, assemblies, or raw materials.

Carrying Out Interactive Planning

To carry out interactive single-item planning, proceed as follows:

1. Starting from the MPS menu screen, select *MPS → Sng-itm, interactive*

   The initial screen for interactive single-item planning now appears.

2. Enter the material number for which you wish to carry out single-item, multi-level planning.

3. Specify the plant in which you want to carry out planning.

4. In the *Control parameters* section, you can enter various parameters for the planning run.

   – Processing key

     You determine the type of the planning run via the processing key:
     netch   net change planning
     netpl   net change planning in the planning horizon

   – Creation indicator for purchase requisitions

     This indicator only refers to master schedule items that are procured externally.

   – Creation indicator for delivery schedules

     This indicator only refers to master schedule items that are procured externally.

   – Creation indicator for the MRP list

   – Planning mode

   – Scheduling

     To save the parameters set in the initial screen for subsequent interactive planning, select S*ettings → Settings → Save*. The saved parameters are then preset for every subsequent interactive planning.

   Choose *Enter*.

   You receive a description for each of your entries.

   You now have the opportunity to change the parameters again. If you change the parameters, choose ENTER again and you get a second chance to check your entries.

5. To start planning choose ENTER.

   The system first displays the planning result in the form of the latest stock/requirements list.

   The most important planning functions which can be carried out from this overview screen are explained in section .

6. When you are satisfied with the planning result save your data.

Interactive Planning Functions

Use

There are various functions with which you can check, and if necessary change, the planning results.

Features

Displaying Exception Messages

To display the text for an exception message, position the cursor on the exception message and choose *Edit → Disp.except.message*.

Displaying Additional Data for MRP Elements

To display additional data for an MRP element, position the cursor on the element and choose *Details → For MRP element*. The dialog box with the data you require appears.

Displaying Material Data

To display additional material data, choose *Settings → Detailed header*. The data is displayed in the upper part of the results screen. The material data is sorted into individual screens according to subject. You can scroll through the individual screens or you can display all the material data in a separate screen. Choose *Goto → Material overview* for the general overview of the material data.

Changing Order Proposals

To change an order proposal, position the cursor on the appropriate element and choose *Edit → Change ord.proposal*.

A section appears on the lower half of the screen with the data for the selected order proposal. You can make changes in this section.
To accept the changes, choose *Copy*.

Creating Order Proposals

To create a new order proposal, choose *Create ord.proposal*.
A dialog box appears where you can specify the type of order proposal and the order profile.

Choose *Choose*.

An area appears in the lower half of the screen where you can enter the data for the new order proposal in the fields provided. Choose *Enter* to display the changed stock/requirements situation resulting from the new order proposal.
To accept the new order proposal, choose *Copy*.

> To protect an order proposal from automatic changes, set the firming indicator in the *Firmed* field. Firmed order proposals are not changed in the planning run. Please also note the firming logic for master production scheduling (see Firming Type [Page 468]).

Checking Rescheduling

If you want the system to check rescheduling, choose *Planning* → *Rescheduling check.*

The system checks rescheduling and creates rescheduling proposals, if necessary.

Rescheduling Order Proposals

To reschedule an order proposal, position the cursor on the element in question and choose *Resched. ord. proposal*.
If the system has already created a rescheduling proposal, the order proposal is automatically rescheduled to this date.

If you want to move the order proposal to another MRP date without the system's rescheduling proposal, the system displays a dialog box where you can enter the new MRP date for the order proposal. The order proposal is then rescheduled to this date.

Changing Production Orders

To change a production order, position the cursor on the order and choose *Edit → Change order.*

An area with the data for the selected production order appears in the lower half of the screen where you can make your changes.
To accept the changes, choose *Copy*.

Creating Production Orders

To create a production order, choose *Edit → Create order.*

An area appears in the lower half of the screen where you can enter data in the fields for creating a new production order.
To accept the new production order, choose *Copy*.

Deleting Order Proposals

To delete an order proposal, position the cursor on the order proposal in question and choose *Edit* → *Delete ord. proposal*.

The system deletes the order proposal.

Planning Capacity

To plan capacity, you must have set the indicator for scheduling so that the system schedules lead times. You then choose *Goto → Capacity planning → Capacity leveling*.

You can plan capacity either from the material or from the planned order view. To access the material view, choose *Goto* → *Capacity planning* → *Capacity leveling* → Material view. To check the capacity situation for one particular planned order, position the cursor on the planned order and choose *Change*. You then choose *Goto → Capacity planning → Capacity leveling* → *Planned order view*.

For more information, see the SAP document *PP - Capacity Planning*.

Planning

To calculate net requirements and lot-sizes, choose *Planning* → *Execute planning run*.

The system calculates the net requirements as for single-item, single-level planning and displays the results. You can repeat this simulative planning run as often as necessary, for example, to

Interactive Planning Functions

check the new stock/requirements situation after rescheduling, and so on. The results are not saved in the database until you choose *Save*.

Exploding BOMs

When you access interactive planning, the system displays the current stock/requirements situation. If you want to explode the BOMs for selected planned orders, to check the components and make any necessary changes to component quantities, proceed as follows:

Position the cursor on the planned order and choose *Goto → Explode BOM.*

The component screen appears.

You can directly change requirement quantities, dates, and so on, for the component in this screen. Alternatively, you can access the detailed data for the component by double-clicking it in the lower screen area. You can create new components by choosing *Collective creation* or *Detailed creation*.

Maintaining Material Components

If planning has already been carried out, you can maintain the components without exploding the BOM again.

To do this, choose *Goto → Maintain component.*

If you want to change either the requirements date, the requirements quantity, the plant, or the item number, you can do this directly in the collective display.

Double-click a component if you want to maintain a distribution key for the component or if you want to display additional data for the component. The system displays an area in the lower section of the screen with detailed data for the component and the *Additional data* pushbutton.

Creating Material Components

To create new components for the production of a planned order, choose *Goto → Create component.*

The component screen appears.

Choose *Detailed entry* and enter the component as required.

Checking Availability

You can check component availability for planned orders.

Double-click the planned order in question.

Choose *Goto → Check availability.*

The system displays the overview screen of the availability for the component.

Calculating the ATP Quantity

To calculate the ATP quantity, choose *Goto → Calculate ATP qty*.

The system calculates the ATP quantity and displays the overview.

For more information, see Calculating the ATP Quantity in MRP.

Displaying Period Totals

To display the planning result in an alternative periodicity (in a monthly view, for example), choose the period totals display.

To do this, choose *Settings* → *Period totals*.

The display by period totals appears. The overview shows the planned independent requirements, the definite requirements (for example, sales orders and dependent requirements), the quantity available, and the ATP quantity according to the period pattern.

Use *Settings* → *Period change* to switch between the weekly and monthly totals for the MRP elements. You set the sequence of the periods in Customizing for MRP. In Customizing, you can also select the display according to accounting periods and planning calendar periods.

Printing the Planning Result

To print the result, choose *Planning* → *Print*.

Multi-Level, Make-to-Order Production

Use

If you want to use the strategy, "make-to-order production" (for example, for variant configuration) to plan a sales order through several production levels, you can carry out multi-level planning specifically for one planned order.

Features

- In multi-level, make-to-order production, the system does not plan all requirements as in the single-item planning run, but instead, it plans all the BOM levels of one particular sales order.

- Therefore, the MRP controller can check the planning result for the sales order at all BOM levels and can also make any necessary corrections during the planning run.

- An individual segment is created for the sales order at every BOM level that is relevant to make-to-order. The quantities required for the sales order are maintained and settled as individual customer stock.

- In the standard R/3 System, the lot-for-lot order quantity is used for make-to-order production. If necessary, you can go into Customizing for MRP to change to another lot-sizing procedure for this type of production.

- As an event-based planning procedure, make-to-order production can also be triggered automatically by creating or changing a sales order item. To make this possible, you must select the appropriate indicator in Customizing for Sales and Distribution (in the requirements class control).

Carrying Out Sales Order Planning (Multi-level)

To carry out this type of multi-level planning, proceed as follows:

1. Starting from the main menu of either material requirements planning or master production scheduling, choose, *MPS → Sng-item, sales ord.*

   The initial screen for sales order planning, multi-level appears.

2. Enter the number of the sales order and the item number of the sales order.

3. Define the following parameters for the planning run:

   Creation indicator for purchase requisitions

   This indicator is only relevant for materials that are procured externally and controls the period in which purchase requisitions or planned orders are created.

   Planning mode

   This indicator controls whether planning data is to be reactivated or not, whether the BOM is to be re-exploded, or whether existing order proposals are to be deleted and new ones created in their place.

   Scheduling

   This indicator controls whether the system is only to calculate basic dates for materials that are produced in-house or whether lead time scheduling is to be carried out as well.

4. Define the following parameters for the planning run and for the evaluation of the planning run:

   Display results

   This indicator instructs the system to display the planning result online before saving so that the MRP controller can check it and make any necessary changes before it is updated in the database.

   Plan all components

   If you select the indicator, *Plan components*, the system explodes the complete BOM and all the components contained in the BOM are planned irrespective of whether any changes to the BOM have been carried out. However, this indicator is not relevant for materials planned using consumption-based planning procedures. These materials are never included in multi-level planning runs.

   Material list/overview of the planning result

   If you want the system to display a list of all the materials that were included in the planning run, choose the field entitled, *Display mat. list*.

   In this overview of the planned materials, the following functions are available:

   – You can check the planned materials using the stock/requirements list, the MRP list or you can jump to interactive planning.

      To do this, choose, *Goto → Display MRP list,* and so on*.*

      The following search functions are also available:

Carrying Out Sales Order Planning (Multi-level)

–   You can search in the overview using the criteria, material number and material short text, stock and receipt range of coverage, exception groups, processing indicator

–   You can search in the lists according to materials and certain exception messages or materials with certain MRP elements, if necessary limited by a certain period.

–   Re-accessing the planning run for materials directly from the overview, *Planning result*, if changes relevant to planning were made to pass these changes directly on to dependent materials.

To do this, position the cursor on the material required and choose *Display result*. First, the system displays a version of the planning result.

If you want to make any changes, choose *Display <-> Change*.

If you then want to pass on these changes to dependent materials, choose *Planning → Save and Continue.*

If you want to save the parameters you entered here for subsequent single-item planning runs, choose *Settings → Settings → Save parameters.* These parameters will then appear the next time you access this screen.

5.   Choose *Enter*.

The material number of the product for which the sales order is being planned is displayed and the control data is also displayed along with a short description for checking purposes.

6.   To start the planning run, choose ENTER.

You then have two options for continuing the multi-level planning run with the results display:

–   You can display and edit the planning result of all or some of the components and assemblies of the material, before you save the complete planning result. This process is called **"Continue planning with stopping points** ".

–   You can plan the remaining BOM levels without stopping the process again. This process is called **"Continue planning without stopping points** ".

An individual segment is created for the sales order with the individual customer stock management.

The most important functions available in this display are described in the following section:

Functions in the Planning Result of Sales Order Planning

Use

Various functions are available for displaying the planning results which you can check and change, if necessary.

Features

Displaying Exception Messages

Position the cursor on the exception message and choose *Displ.except.message*.

Additional Data for MRP Elements

Position the cursor on the MRP element and select *Extras → For MRP element.*

Changing Order Proposals

Position the cursor on the order proposal and choose *change ord.proposal*.

The system displays the data of the selected order proposal in the lower section of the screen where you can make any necessary changes.

Creating Order Proposals

Choose Create ord.proposal.

The system displays a dialog box in which you can define the new order proposal and the order profile. Select, *Choose*.

The system displays an area in the lower half of the screen where you can enter the data for the new order proposal.

Rescheduling Order Proposals

Position the cursor on the appropriate order proposal and choose, *Reched.ord.proposal*.

The system displays a dialog box where you can enter the new MRP date of the order proposal.

Processing Material Components

Position the cursor on the planned order and choose, *change ord.proposal*.

The system displays the data of the planned order in the lower half of the screen.

Choose *Goto → Explode BOM*.

The component processing screen appears.

Checking the Capacity Situation

You can only check the capacity situation if capacity requirements were created in lead time scheduling. For more information on capacity leveling in MPS, please refer to the SAP document *PP - Capacity Leveling*.

Parallel Processing

Use

Using parallel processing functions, you can significantly improve the runtime of the total planning run. For example, if you are processing a lot of data, you can expect it to be 2 to 5 times faster. For parallel processing, you can either select to use various sessions on one server or you can use various servers.

Prerequisites

You have set parallel processing in Customizing for MRP, in the IMG *activity "Define parallel processing in MRP".* The corresponding destinations (application servers) are defined here with the number of sessions available.

Features

Parallel processing is carried out on the basis of the low-level code logic: A package size to be determined is distributed per RFC to the individual server/tasks. Once a task has completed processing one package, the next package of the same size is processed. Once a low-level code is completed, the finished tasks must wait until the last package is also complete - to avoid inconsistencies. Then the next low-level code is processed package by package.

You can use parallel processing for the total planning run online as well as a background job - it is switched on in the initial screen.

MRP Group

Definition

The MRP group is an organizational object which is used to assign special control parameters for planning to a group of materials.

Use

You can maintain MRP groups in Customizing if planning for each plant is not specific enough for your purposes and you would like to assign control parameters that differ from the control parameters defined for the plant to certain material groups. These include, for example, the creation indicator for purchase requisitions, delivery schedules, and so on, the planning horizon.

Integration

You define the MRP groups to suit your requirements and assign it to the material in the material master record (MRP 1 screen).

- In the total planning run and the single-item planning run, the system checks to see whether a material has been assigned an MRP group:

  - If the material has not been assigned an MRP group, it is planned using the parameters that were defined for the plant in which the planning run is being carried out.

  - If the material has been assigned an MRP group, it is planned using the parameters defined in the MRP group.

- The system always the uses the parameters entered in the initial screen for single-item planning. The system does not include the parameters defined in the MRP group or at plant level.

Evaluating the Planning Result

Implementation Options

During the planning run, the system analyzes the requirements that exist for the planned materials and creates procurement elements that cover these requirements. Evaluations display all **receipt and issue elements** for a material in the form of a table and enable you to gain a quick **overview** of the stock/requirements situation for the material as well as to branch into the **editing** function for the MRP elements for this material.

Features

The following evaluations are available for analyzing the planning result:

- MRP list

- stock/requirements list

- planning situation (corresponds to the MRP list with individual evaluation layout)

- planning result (corresponds to the MRP list with individual evaluation layout)

- planning table for repetitive manufacturing

MRP List and Stock/Requirements List

Definition of the MRP List

The system creates MRP lists during the planning run according to how you set the creation indicator. These lists contain the planning result for the material. The MRP list always displays the stock/requirements situation **at the time of the last planning run** and it also provides a work basis for the MRP controller. Changes that are made after the planning date are not taken into consideration, so the list is **static**.

MRP lists are stored in the system until they are either deleted manually or replaced by new lists from a subsequent planning run.

Stock/Requirements List

In the stock/requirements list, the **most up-to-date stock and requirements situation** is displayed.

The main difference between the MRP list and the stock/requirements list is that each time the stock/requirements list is called up, the system selects the various MRP elements and displays the most up-to-date situation. You thus always see the current availability situation of the material in the stock/requirements list. Changes that are made after the planning date are displayed directly, so the list is therefore **dynamic**.

Stock/requirements lists are not saved in a fixed state in the system, but are subject to change and only exist in the working memory.

Comparison

- The screen layout of both lists is basically the same.

- The system automatically runs the rescheduling check directly when both lists are created and puts forward rescheduling proposals.

- The number of exception messages displayed in each list is roughly the same. The only difference lies in the fact that, due to the nature of the list, no exception messages can occur for newly planned MRP elements in the stock/requirements list.

- Directly after the planning run, both lists contain the same information. As soon as a change relevant to MRP is made, the system updates the information in the stock/requirements list.

- As stock/requirements lists are subject to change, they cannot be set with a processing indicator.

Structure

Each MRP list is divided into a **header** and **items**.

Material data, such as the material number, the plant, and MRP parameters, is recorded in the MRP list header.

The items, on the other hand, contain information on the individual **MRP elements** (planned orders, purchase orders, reservations, sales orders, and so on). These are grouped by MRP data into individual **planning segments**. The beginning of each new planning segment is highlighted. The system carries out the net requirements calculation for each segment separately.

MRP List and Stock/Requirements List

Planning Segments

The following segments are individually displayed and individually planned:

- Net segment

  Consists of that part of the list for which the net requirements calculation in planning was carried out on plant level.

- Gross segment

  Groups together the gross requirements and the corresponding procurement proposals for gross requirements planning.

- Storage location segment

  For every separately planned storage location or for every location, which is not included in MRP.

- Individual customer segment

- Individual project segment

- Segment for planning without final assembly

  Displays the requirements that are planned without final assembly. This means that their procurement is triggered by the incoming sales orders and non-convertible planned sales orders with the order type VP.

- Segment for direct production planning

- Segment for direct procurement planning

- Direct production segment

- Direct procurement segment

- Segment for the provision of material for subcontracting

Material Requirements Planning

Implementation Options

You use this process, if you are an MRP controller in a medium-sized company and are responsible for the whole of the **material requirements planning process** and **material availability**. After a normal MRP run, you check the stock/requirements situation for the planned materials, make necessary changes and save the availability of the materials for the next days.

Prerequisites

- You have completed an MRP run.

- You have configured the lists as you want (for example, an overview tree, display of total replenishment lead-time).

     See Configuring Access to the Lists [Page 374]

- You have configured the overview tree as you want (for example, the materials in the tree are to be grouped according to processing indicator).

     See Select Fields in the Tree [Page 376], Sort/Group Fields in the Tree [Page 378]

- You have configured the traffic lights as you want (for example, all materials with dates in the past as well as all materials with terminations are to have a red traffic light).

     See Define Traffic Lights [Page 387]

Process Flow

1. You choose collective access to the MRP lists (MD06) from the role-based menu for the MRP controller or from the personal favorites.

2. In the screen for collective access, you select your own materials according to MRP controller and plant and enter that you only want to see materials with new exceptions. The overview list appears.

     See Using Collective Access for MRP Lists [Page 342]

3. In the overview list, find the materials that have priority for processing with red traffic lights.

     See Searching for Information [Page 350]

4. You copy these materials to the worklist tree. At this point, all of your materials are in the group of materials with unprocessed MRP lists.

     See Overview Tree [Page 375]

5. You call up the corresponding MRP list by double-clicking on the material in the tree and check which exception messages for this material have occurred during the total replenishment lead-time.

6. You double-click on every critical MRP element to call up the dialog window with the details for the MRP element. From the dialog window, you access the screen for processing the MRP element and, if necessary, change the dates or quantities after consulting the workshop, customers or vendors. The system then automatically firms the MRP elements, which you have changed manually.

     See Working with Individual MRP Elements [Page 361]

Material Requirements Planning

7. You check, if necessary, the result of the manual changes in the stock/requirements list. For critical quantity changes, you execute, if necessary, a new single-item planning run directly from the MRP list. You can use flexible transaction calls for this.

    See Flexible Transaction Calls [Page 381]

8. If necessary, you convert individual planned orders into production orders and individual purchase requisitions and thereby trigger the production or procurement. (A collective transaction for the conversion of a larger number of MRP elements is available.)

    See Working with Individual MRP Elements [Page 361]

9. Once you have completed the processing of a list, you set the processing indicator. The system automatically moves the material with the processed MRP list in the worklist tree to the group of materials with processed MRP lists.

    See Working with Whole Lists [Page 363]

10. You continue processing the MRP lists until the system has moved all materials in the worklist tree to the group of materials with processed MRP lists.

Result

The stock/requirements situation for your materials is cleared again.

Material Information

Implementation Options

- As a production scheduler, buyer, sales executive or MRP controller, you want to access information on the stock/requirements situation of a material and then gain an overview of the development of stock and requirements in the coming week. (1)

- As a production scheduler, you want to gain an overview of the procurement proposals for in-house production (planned orders, production orders, process orders, maintenance orders, dependent reservations). (2)

- As a buyer, you want to check which purchase orders and purchase requisitions exist for a material. (3)

- As a sales executive, you are only interested in the current sales orders for a material. (4)

- In the case of make-to-order production (strategy group 10), sales orders do not increase requirements quantities, because the emphasis of this strategy lies on the smoothing of the demand program. As an MRP controller, you are interested in available quantities on the basis of sales orders that have actually been received and not on the basis of the planned independent requirements. You therefore want the planned independent requirements to be displayed, but do not want to change the available quantity. (5)

- As an MRP controller, you want to be informed about the requirements of materials that are planned using consumption-based planning in order to check whether these requirements occur continually. The system should also occasionally display and, if necessary, settle reservations and dependent requirements for these materials. (6)

Process Flow

11. You choose individual or collective access to the stock/requirements list (MD04/MD07) from the role-based menu for the MRP controller or from the personal favorites.

    See Using Individual Access for Lists [Page 341], Using Collective Access for the Stock/Requirements List [Page 344]

12. You can use numerous methods of displaying further information for each material. (Scenario 1)

    See Individual Line Display [Page 357], Display of Period Totals [Page 360]

13. If you want to display particular MRP elements but do not want to influence the available quantity calculation, choose a suitable display filter. This limits the display to the MRP elements that are currently of interest to you. (Scenarios 2-4)

    See Filtering Information [Page 352]

14. If you want to display particular MRP elements and want to define whether or not these are to be included in the available quantity calculation, choose a suitable selection rule. This allows you to have a new business view of the data. (Scenarios 5, 6)

    See Filtering Information [Page 352]

15. If you want to always work with a particular display filter or a particular selection rule, you can configure the list so that the display filter and selection rule are fixed settings.

    See Configuring Access to the Lists [Page 374]

Material Information

Using Individual Access for Lists

Use

You want to display the **stock/requirements situation for a particular material** in the MRP list or the stock/requirements list.

Prerequisites

- You have run MRP using single-item planning or total planning.

- For **MRP lists** only, you have entered in the control parameters for the planning run, that the system should create MRP lists.

Procedure

1. From the MRP menu or the MPS menu, choose the menu path *Evaluations → MRP list - material* or *Evaluations → Stock/reqmts list*.

    The system displays the initial screen for the respective list.

2. Enter the following data:

    − the material number of the material, for which you want to call up the list

    − the corresponding plant

    − (if MRP areas have been activated on a client basis) the corresponding MRP area

3. If required, choose a display filter and/or a selection rule (see Filtering Information [Page 352]).

    You define display filters and selection rules in Customizing for MRP in the IMG activity *Define display filter* and *Display selection rule.*

    You can only use selection rules for the stock/requirements list.

4. Choose ✔ .

    The system displays the descriptions of the chosen settings.

5. Check the settings and choose ✔ again.

Result

The system displays the chosen list.

Using Collective Access for MRP Lists

Use

You want to display the **stock/requirements situation for a series of materials** in the **MRP list**.

Prerequisites

- You have run MRP for the materials using single-item planning or total planning.

- You have entered in the control parameters for the planning run that the system should create MRP lists.

Procedure

2. From the MRP or MPS menu, select *Evaluations → MRP list collective display*.

   You now branch into the collective access screen.

2. In collective access:

   – Enter the **plant** and either the **MRP controller** or the **product group**.

     If you do not enter any further selection criteria, the system selects all the materials assigned to this MRP controller or this product group in the respective plant.

   – If the work with MRP areas is activated for a single client, you enter either the **plant** (= all MRP areas including the plant MRP area) or only one particular **MRP area**, and, in addition, either the **MRP controller** or the **product group**.

     If you do not enter any further selection criteria, the system selects all the materials assigned to this MRP controller or this product group in the selected MRP area or in all MRP areas. Materials that are assigned to five MRP areas are displayed, where applicable, with five MRP lists.

3. If required, enter further **selection criteria**.

   – **Date**: for example, all MRP lists that were created or processed within the last two weeks, or MRP lists for all materials with insufficient stock for the next two weeks.

   – **Exception groups**: for example, MRP lists for all materials for which the planning run was terminated (exception group 8).

   – **Processing indicator**: for example, all MRP lists that have not yet been processed.

   – **Material data**: for example, MRP lists for all materials that are procured externally.

4. If required, choose a display filter (see Filtering Information [Page 352]).

   For example, a display filter that only displays the planned orders for the next two weeks in the stock/requirements list for the materials assigned to a selected MRP controller.

   You can save all selection parameters by choosing the menu path *Settings → Save*. They are then predefined the next time that you access the transaction.

6. Choose ✔.

The system displays long texts that describe the chosen settings.

7. Check the settings and choose ✔ again.

Result

The system displays an overview list of all the materials that fulfill your selection criteria (see ,).

Using Collective Access for Stock/Requirements Lists

Use

You want to display the **stock/requirements situation for a series of materials** in the **stock/requirements list**.

Prerequisites

You have run MRP for the materials using single-item planning or total planning.

Procedure

3. From the MRP or MPS menu, select *Evaluations → Stock/requirements list collective display*.

   You now branch into the collective access screen.

2. In collective access:

   − Enter the *plant* and at least one of the following parameters: *MRP controller, product group, class, vendor* and *production line*. In practice, the emphasis lies on the selection by MRP controller.

      If you do not enter any further selection criteria, the system selects all the materials assigned to this MRP controller (or the chosen selection) in the respective plant.

   − If the work with MRP areas is activated for a single client, you enter either the *plant* (= all MRP areas including the plant MRP area) or only one particular *MRP area*, and, in addition, at least one of the parameters *MRP controller*, *product group, class, vendor* or *production line.* In practice, the emphasis lies on the selection by MRP controller.

      If you do not enter any further selection criteria, the system selects all the materials assigned to this MRP controller (or the chosen selection) in the selected MRP area or in all MRP areas. Materials that are assigned to five MRP areas are displayed, where applicable, with five stock/requirements lists.

3. If required, enter further selection criteria.

   − Material data: for example, stock/requirements lists for all materials that are procured externally.

   − File entries for MRP: for example, stock/requirements lists for all materials with a file entry in the planning file.

4. Choose whether the stock/requirements lists should be created in the background first.

   If you select the *Set up lists in background* field, the lists are created, and the traffic lights, the calculated ranges of coverage and exception messages for the materials are shown in the overview list that the system subsequently displays. As the creation of the lists can take a long time, the system displays a confirmation prompt if more than 25 materials are involved.

   If you do not select the field, the lists are not created, and the system displays them without traffic lights, with a calculated range of coverage of 0, and without exception messages in the overview list that the system subsequently displays. In this case, the calculation of values in the lists only takes place when the materials are accessed individually.

5. If required, choose a display filter and/or a selection rule (see Filtering Information [Page 352]).

    For example, a display filter that only displays the planned orders for the next two weeks in the stock/requirements list for the materials assigned to a selected MRP controller.

    You define display filters and selection rules in Customizing for MRP in the IMG activity *Define display filter* and *Display selection rule.*

8. Choose ✔.

    The system displays the descriptions of the chosen settings.

9. Check the settings and choose ✔ again.

Result

The system displays an overview list of all the materials that fulfill your selection criteria (see Sorting Materials in Overview Lists [Page 346], Sorting Materials in Overview Lists [Page 346]).

Sorting Materials in Overview Lists

Use

You can determine that the materials that are in the **overview list** after collective access to the MRP list or stock/requirements list are sorted according to certain criteria. For example, you want to sort the materials alphabetically according to material number.

Prerequisites

You have entered the required selection criteria in the collective access to the MRP list or stock/requirements list and have called up the overview of all the materials that correspond to these criteria.

Procedure

1. Choose 🖨.

   The system displays the *Sort* dialog box.

2. Enter the sequence number by which you want to sort the materials in the overview list next to each field.

   You want to sort the *Traffic light, Planning plant, MRP area* and *Material* fields in this sequence. Enter:

Traffic light	1
Planning plant	2
MRP area	3
Material	4

   You want to change the defined sequence so that the material is first. Enter the following change:

Material	1

   The remaining fields are resorted automatically when you confirm the entry with
   ENTER.

3. Select the *Descending* field if you want to sort in descending order.

   A descending sort is only recommended for the following fields:

▪ *Traffic light*

   Materials with red traffic lights, which means those whose processing has priority, are displayed first (red is the highest value, green the lowest).

▪ *List created* (only stock/requirements lists)

   Materials for which a list has been created are displayed first (list created is the highest value, list not created is the lowest value).

- *Range of coverage*

  Materials with the highest days' supply, which means those with high stock levels, are displayed first (highest days' supply is the highest value, lowest days' supply the lowest).

- *Exception group*

  Materials with the most exception messages in this group are displayed first (the most exception messages per group is the highest value, the least exception messages the lowest).

4. Choose *Execute sort* to activate the settings for the current display, or 🖫 to save them permanently.

Result

The materials in the overview list are sorted and grouped according to the selected fields.

Creating Worklists

Use

You want the system to create a **worklist of particular materials in the overview list**.

Prerequisites

You have entered the required selection criteria in the collective access to the MRP list or stock/requirements list and have called up the overview of all the materials that correspond to these criteria.

The overview list includes the following for each material: traffic light, ranges of coverage, the number of exception messages per exception group, the current plant stock, and various other material data.

Procedure

1. In the overview list, select the materials for which you want to display the MRP lists or stock/requirements lists:

   – individual materials by clicking on the line

   – all materials by using ▦.

   – a block of materials by clicking on the first and last line and then choose ▦.

   ➡

   You can find the required materials in two ways:

- with the search function in the overview list using ▦. For example, you search for all the materials with stocks that are sufficient for less than two weeks.

- by sorting the overview using ▦. For example, you sort the overview list so that all materials for which an opening date in the past was determined (exception group 1) are displayed first.

2. To access the appropriate list, double-click the first material or choose ⚙ *Selected stock/requirements lists* or ⚙ *Selected MRP lists*.

   The system displays the list for the first material.

3. Choose *Show overview tree*.

Result

The system displays all the materials that you selected in the overview list in a worklist tree on the left-hand side of the screen. Double-click the appropriate material in this tree, or choose ▦ and ▦, to change from list to list.

Working with the Lists

Use

The MRP list and the stock/requirements list offer a wide range of **information about material availability**.

Prerequisites

You have called up the MRP list or the stock/requirements list for a material.

Features

You can show material data, choose between different views, filter information, access information from Customizing settings or from other applications, change between materials as required, and branch to many other transactions.

> As for all other tables, you can use the mouse to adjust the sequence and width of all the columns that are displayed as standard in the lists. You can save these settings as display variants by choosing in the upper right-hand corner of the screen beside the table. Please note that this does not include additional columns that the system only displays when they have contents.

Searching for Information

Use

By using this function, you search specifically for **particular materials** or for **particular information for a material**.

Prerequisites

- You are in the overview list, the MRP list, or the stock/requirements list.

- For searching in the tree: you have displayed the overview tree in the form of a worklist tree.

Features

Searching in the Overview List or in the Worklist Tree

- *Search in the overview* (according to name, range of coverage, exceptions, traffic lights and, in the overview list for the MRP lists also according to processing indicator)

- *Search according to exceptions* (in the overview list for the MRP lists, also according to new/old exceptions)

   The system only displays the exception messages that actually appear in the materials from the overview list or from the worklist tree. The system also displays how often each exception message appears.

- *Search according to MRP elements*

If you are in the overview list, the system selects the materials, which it has found, and goes through the list until the first material that it has found is at the top. If you choose 🔍, the system goes through the list until the next material that it has found is at the top.

If you are in the worklist tree, the tree is shortened so that it only includes the materials that meet the search criteria.

> ➡️
>
> If you, as the MRP controller, are looking for materials with new exceptions in the overview list for the MRP lists, the system selects all materials that had new, unprocessed exception situations in the last planning run. If you are searching for materials with unprocessed MRP lists, the system selects all materials, for which you have not yet set a processing indicator.

Search in the Lists

- *Search according to exceptions*

- *Search according to segments*

- *Search according to MRP elements*

The system goes through the list until the first element that it has found is on the second line. If you choose 🔍, the system goes through the material overview until the first element that it has found is displayed on the second line.

Activities

Run the required search.

- In the overview list or segregated lists: choose .

- In the worklist tree: choose *Find in worklist* in the context menu for the worklist tree (right mouse button).

Filtering Information

Use

- You can use **selection rules** to define which MRP elements and which stocks are included in the quantity and stock calculation. You hereby define your own **business views**.

- You can use **display filters** to define which MRP elements and MRP segments are displayed. This enables you to reduce the information displayed to a **clear selection**.

You define display filters and selection rules in Customizing for MRP in the IMG activity *Define display filter* and *Display selection rule.*

> You can only use selection rules for the stock/requirements list, but not for the MRP list.

Prerequisites

You have accessed the initial screen or the main screen of the MRP list or the stock/requirements list.

Features

- A **selection rule** consists of particular MRP elements and stocks that are grouped together in a rule, which controls the selection (or import) of the data in the stock/requirements list and the planning table for Repetitive Manufacturing:

  – The system only displays the MRP elements that are selected in the selection rule.

  – Of the MRP elements displayed, the system only takes those indicated as affecting availability in the selection rule into consideration for the calculation of the quantity available and the ranges of coverage.

  – The system only takes the stocks defined in the selection rule into consideration to calculate the unrestricted-use stock.

    This creates a new business view of the data in the lists.

- A **display filter** consists of particular time information, MRP elements, and MRP segments grouped in a filter that controls the display of the MRP list and the stock/requirements list.

  – The system only displays MRP elements in the period that is defined in the display filter.

  – The system only displays segments in this period that are selected in the display filter.

  – Within these segments, the system only displays MRP elements that are selected in the display filter.

    The data in the lists is thus reduced to a clear selection.

    In contrast to selection rules, the calculation of the quantity available and the ranges of coverage is not influenced by display filters.

Activities

Select a display filter and/or a selection rule. If necessary, enter a display horizon for the display filter, which means a period to which you want to limit the display.

If you always work with a particular display filter and/or selection rule, choose . The system displays the *Settings* dialog box. Use this to define that this display filter or selection rule should always be activated when you access the lists.

Working with List Header and Overview Tree

Use

The list header contains **material data** from the material master and displays, if necessary, which **display filter** and which **selection rule** are active.

In the overview tree, you can put together a **worklist** from the materials that are currently of interest to you.

Prerequisites

You have called up the MRP list or the stock/requirements list for a material.

Procedure

Function	Starting the function	What you should know
Expand or collapse header details for a material	📇, 🗂	Header details show different views for master and movement data for the chosen material. Which views are displayed depends on the MRP type. This enables you to display different data for consumption-based and requirement-based materials. There is a special view for the MRP list that shows, amongst other things, that exception messages exist for the chosen material.
		You define the screen sequence in Customizing for MRP in the IMG activity *Define screen sequence for header details.*
Choose a different unit	*Unit* field	If different units of measure have been maintained for a material, for example, unit of issue in the warehouse and order unit for purchasing, you can display the lists for this material in every unit of measure that has been maintained.
Create or display a material memo	📝	The system displays the name of the last person to change this memo and the date of the change next to the symbol for the material memo.
		Material memos are valid for both types of list.
Set processing indicator (only for MRP lists)	✅	During the next planning run, the exception messages for this material are no longer considered to be new exceptions.
		This function is also supported in the overview list.
Show and hide overview tree	*Show/hide overview tree*	See Overview Tree [Page 375]

In the overview tree: switch between the worklist tree, the order tree and the product group tree	🖼 , 🖧 , 🌐	
In the overview tree: select fields in the tree	Context menu in tree: *Define display*	See Select Fields in the Tree [Page 376]
In the overview tree: sort and group fields in the tree	Context menu in tree: *Define grouping/sort*	See Sort/Group Fields in the Tree [Page 378]
In the overview tree: define column widths	Change column width using the mouse	The column width is lost when you leave the list.
In the overview tree: define column sequence	Drag & Drop the column headers	The column sequence is lost when you leave the list.
Display overview list	🔼	See Creating Worklists [Page 348]
Activate and deactivate display filter and selection rule	🔽 , 🔽	See Filtering Information [Page 352] You define display filters and selection rules in Customizing for MRP in the IMG activity *Define display filter* and *Display selection rule.*

Individual Line Display

Use

All MRP elements are **listed individually** in an individual line display. With this type of display, you can determine exactly which MRP elements **currently** have a **material shortage**.

Prerequisites

- You have called up the MRP list or the stock/requirements list for a material.

- You are in the individual line display. Choose 🖼 if you are still in the period totals display.

Features

If you use the global settings, the system displays the following columns for the items:

- Planning date

- MRP element data (short description, number, item, and so on)

- Rescheduling date

- Exception message key

- Receipt and requirements quantities, if necessary in two different units

- Available quantity (planned warehouse stock), if necessary in two different units

By scrolling with the mouse in the section of the screen to the right of the *MRP element* column, you can also display the following columns: *Start/release date, Opening date.*

If the corresponding data is available, the system also displays the following columns: *Scrap, Production version, Receiving plant, Issuing plant, Stock in transit, Storage location, BOM explosion number, Revision level.*

The system only displays the *Stock in transit* column if you use stock transfer between two plants and only displays it in the receiving plant. The stock in transit is the quantity that is in transport to the receiving plant.

If the corresponding data is available, you can access the customer and vendor columns (*Debitor/customer name* or *Creditor/vendor name*) via pushbuttons.

Individual Line Display

Function	Starting the function	What you should know
Switch between period totals display and individual line display	∑, 📅	
Sorting the individual segments by date of the first requirement or by segment number.	🖨 Date, 🖨 No.	
Display requirements individually or collectively	🗔, 🗖, 🗗, 🗕	If the *individual/collective* indicator for a material has been set in the MRP data of the material master so that collective requirements can be created, and if there are several dependent requirements for a material for one day, these dependent requirements can be grouped to a collective requirement.
		The collective requirements are indicated by the 🗗 icon, and the number of grouped dependent requirements is displayed. You can expand or collapse either individual or all collective requirements
Only for purchasing elements: display goods receipt date or availability date as requirements or receipt date	🗓 *GR*, 🗓 *AV*	The availability date is the date resulting from the addition of goods receipt processing time to the goods receipt date, which means the date on which the material is actually available for planning. The availability date is, therefore, after the goods receipt.
Activate and deactivate safety time	🗓 *ST on*, 🗓 ST off	The requirements are brought forward by the number of days that are defined in the safety time. You define the safety time in the MRP data for the material master (see also Safety Time/Actual Range of Coverage [Page 188]).
Show and hide total replenishment lead time	🗔 *On*, 🗔 Off	The system displays the total replenishment lead-time in the list in a separate row. This makes it clear up to which date the replenishment of materials is critical. You define the total replenishment lead-time in the MRP data for the material master.
Show and hide customer data	*Customer*	The system displays the *Customer* and *Customer name* columns, with customer numbers and customer names, for materials that are procured for a sales order.

Individual Line Display

Show and hide vendor data	*Vendor*	The system displays the *Vendor* and *Vendor name* columns, with the vendor name and number, for materials that are procured externally.

Display of Period Totals

Use

MRP elements are **grouped by period** for the period totals display. This type of display provides you with a faster overview of the **development** of material availability **over time**.

Prerequisites

- You have called up the MRP list or the stock/requirements list for a material.

- You are in the period totals display. Choose 🗐 if you are still in the individual line display.

Features

The **daily, weekly, or monthly** display is offered as standard. If have made appropriate settings in Customizing, you can display by **accounting period, planning calendar**, or by **individual period splits**.

> ➡️
>
> You define the period display in Customizing for MRP in the IMG activity *Define period display for period totals.*

The system displays the following columns:

- Planned independent requirement

- Requirement (customer requirements and reservations)

- Receipts (procurement proposals)

- Available quantity

- ATP quantity

- Actual range of coverage

When there are several procurement proposals for a material within the same period, the system displays cumulative quantities.

If range of coverage profiles have been defined in Customizing, and you have assigned a range of coverage profile to the material in the material master, the system displays additional range of coverage columns (see also Calculating the Statistical Range of Coverage [Page 179]).

Display of Period Totals

Function	Starting the function	What you should know
Switch between individual line display and period totals display	🔲, 🔲	
Set individual split or planning calendar	🔲	See Configuring Access to the Lists [Page 374] You define individual splits and the planning calendar in Customizing for MRP in the IMG activities *Maintain planning* calendar and *Define individual period split for period totals*.
Display alternative period value	Choose tab index	
Set period value, which should be displayed in the foreground as a standard when the function is chosen	🔲	See Configuring Access to the Lists [Page 374]
Display individual MRP elements for a period	Double-click on period or click 🔲	The display is in the form of a split screen. The periods are listed in the top part of the screen. The selected period is highlighted. The system displays the MRP elements, which belong to the selected period in the lower part of the screen. The display in this area of the screen corresponds to that of the individual line display.

Working with Individual MRP Elements

Use

You have numerous possibilities for accessing information and processing functions for individual MRP elements. You can thus recognize material shortage situations quickly and rectify these by, for example, changing dates or quantities in an MRP element.

Prerequisites

• You have called up the MRP list or the stock/requirements list for a material.

• You are in the individual line display. Choose ▣ if you are still in the period totals display.

• If required, you have positioned the cursor on the MRP element, with which you want to work.

Procedure

Function	Starting the function	What you should know
Display information for exception messages	Double-click on the message number of the message text	In the respective list, you access the descriptive text for a message number in the status line by double-clicking the number of the exception message. To access further information about the message, double-click the status line. In the details dialog box for an MRP element, you access further information about an exception message by double-clicking the exception message.
Display details for an MRP element	Double-click on MRP element or click once and choose ▣	The system gives you additional information about the selected MRP element in a detail dialog box. For a planned order, for example, you are given the order number, order quantity, basic dates, and the two most important exception messages that occurred during the planning run. You can also • access the planned order yourself and change quantities or dates • convert the planned order directly into a production order • create your own link to planned order processing by using ▣ (see Define User-Specific Transaction Calls per MRP Element [Page 384])

Working with Individual MRP Elements

Set manual firming date	*Edit → Set firming date*	The manual firming date lengthens, if necessary, the planning time fence (see also Manual Firming Date [Page 470]). This function is only supported in the stock/requirements list.
Display order report for an MRP element		In an order report for a planned order, for example, the system determines and displays the dependent requirements with their planned receipt elements. This gives you an overview of the status for all BOM levels, which enables you to recognize possible bottlenecks in material availability much faster.
Display order tree for an MRP element		The system shows the order tree in the left section of the screen or you switch to the order tree from the overview tree. In the order tree, the system displays all BOM items from the multi-level BOM hierarchically.
Display pegged requirements for the MRP element		When you display the pegged requirements for a dependent requirement for a raw material, for example, you can trace: • which requirements caused the dependent requirement • which independent requirements, especially sales orders, are endangered by the loss or change in date or quantity of a procurement proposal for this raw material.

Working with Whole Lists

Use

Functions that are relevant for whole lists are, for example, printing, deleting, and setting the processing indicator.

Prerequisites

You have called up the MRP list or the stock/requirements list for a material.

Procedure

Function	Starting the function	What you should know
Indicating MRP lists as processed or as unprocessed (also possible in overview list)	Switch between (unprocessed) and (processed)	The quick-info for the icon displays the date when the MRP list was processed. During the next planning run, the exception messages for a material with a processed MRP list are no longer considered to be new exceptions. You can use the processing indicator in collective access for the MRP lists as a selection criterion.
Create or display a material memo		The system displays the name of the last person to change this memo and the date of the change next to the symbol for the material memo. Material memos are valid for a material in all lists
Graphic display of MRP list	*MRP list → Graphic*	The receipts are represented as upward deflections and the issues as downward deflections. The available quantity is the connecting line between both deflections and represents the difference between receipts and issues.
Display stock statistics	*Goto → Stock statistics*	By using , you receive an apportionment of the cumulative receipts/issues quantities for each field of the stock statistics.
Display sales statistics	*Goto → Sales statistics*	
Reorganize MRP lists	*MRP → Environment → Reorganize MRP lists*	The MRP lists that are no longer required are deleted from the database. You can also reach this function via MPS.

Working with Whole Lists

Delete MRP lists manually	*MRP list →* *Delete*	MRP lists that have not been deleted manually are stored in the system until they are replaced by new lists from a subsequent planning run.

Comparing MRP List and Stock/Requirements List

Use

The **MRP list** displays the **result of the last planning run**. Changes that have occurred between planning runs are ignored in the MRP list.

In contrast to this, the system displays all changes in stock, receipts and issues, which have **currently** occurred, in the **stock/requirements list**.

By using the MRP list and stock/requirements list comparison you can compare these two evaluations with each other. This means that you can compare the situation at the time of the last planning run with the current stock/requirements situation.

Prerequisites

You have accessed the MRP list or the stock/requirements list.

Procedure

- From the **MRP list**, choose *Goto → Stock/requirements list comparison*.

- From the **stock/requirement list**, choose *Goto → MRP list comparison*.

Result

You now branch into the comparison screen for both lists.

The system displays the date of the last planning run in the *Comparison* screen area.

In the *Period totals* screen area, the system shows the planning result in the period totals display. There are two of each column, that is, one for each list type. They can be told apart optically.

By choosing 🔁 *Stock/requirements list,* you branch into the period totals display of the stock/requirements list and by choosing 🔁 *MRP list*, you branch into the MRP list.

By double-clicking on a period, you call up the individual line display for the selected period in the lower part of the screen. The system lists all the MRP elements for this period individually.

Printing Individual Lists

Prerequisites

You are in the overview list, the MRP list, or the stock/requirements list.

Procedure

Standard Print (Only in the Lists)

Choose 🖨 or the menu path *List → Print*, and enter the necessary print settings.

A standard version of the lists is printed. This standard version does not necessarily correspond to the settings that you have made for the screen.

Variable Print

1. Choose 🖨 (overview list) or *List → Variable print* (individual lists).

    The system displays a printable and changeable list, which corresponds exactly to the settings that you have entered on the screen. In this list, you can sort and filter information, define column sequence and column width and, if required, save the settings in display variants. You can find further information on this under *ABAP List Viewer* in the introduction to the SAP System in the SAP Library.

2. Start printing from this list by choosing 🖨.

Printing Several MRP Lists

Printing Online

1. Starting from the MRP or MPS menu, select *Evaluations → Print MRP list*.

    The selection screen for printing MRP lists appears.

2. Enter the required selection parameters (see Using Collective Access for MRP Lists [Page 342]).

3. Choose 🐢.

    You now branch into the print parameters screen.

4. Enter the necessary print parameters.

5. Choose *Continue*.

    The system creates the print request.

Printing in the Background

1. Starting from the SAP Easy Access menu, select *System → Services → Background job → Define job*.

    The initial screen for defining background jobs appears.

2. In the *Job* field enter the program name **RMDLDR00**.

3. Enter a priority in the *Job class* field.

4. Choose 🔧 *Start condition*.

    The *Start date values* screen appears.

5. Enter the required start date.

6. Save your entries on this screen.

7. Choose 🔧 Step.

    You now branch into the *Create step 0* screen.

8. Choose *ABAP program*.

9. In the *Name* field enter the program name **RMDLDR00** again.

10. Choose a program variant in the *Variant* field by using F4.

    The selection parameters for printing MRP lists are defined in the variant.

    If no variant has been created, contact your system administrator.

11. Save your entries on this screen.

12. Choose *Job → Save* to save the whole job.

    The system creates the background job.

Navigation Between Information

Use

There are numerous possibilities for displaying information for a material or for Customizing from the MRP list or stock/requirements list quickly and easily, for calling up other materials or branching into other transactions. You can thus set up your **work station around the MRP list or the stock/requirement list** so that all of your activities can be executed from there and you **do not have to leave the transaction**.

Prerequisites

You have called up the MRP list or the stock/requirements list for a material.

Procedure

Function	Starting the function	What you should know
Access to lists for the same material in different plants/MRP areas.	F4 possible entries help on the *Plant* or *MRP area* field	The system only proposes the plants or MRP areas in which the material is actually available. If the material is not available in any other plant, the fields are not ready for input. The material in the new plant or MRP area is directly added to the overview tree.
Access to lists for other materials	Double-click on a material in the overview tree or overwrite the material number in the list header and confirm with *Enter*	If necessary, the new material is added directly to the overview tree.

Display Customizing settings	Double-click on the fields	Double-click the *Lot size* entry field, for example, in the header details for the material, to branch directly to Customizing for lot sizes. The system displays the appropriate information, but you are not able to make any changes. You must have the corresponding authorization to display tables.
		Further entry fields that branch to Customizing are, for example, *MRP type, Coverage profile, MRP controller, Special procurement,* and *Strategy group*.
		The *Display horizon* and *selection rule* fields also branch to Customizing. You activate these by double-clicking on the field label itself after you have set a display horizon or selection rule.
		Fields that you can double-click are highlighted.
Display data from other applications (material master and so on)	Double-click on the fields	Double-click a material number to branch to the material master without exiting the transaction. Further fields from which you can branch to applications are, for example, *Vendor* (vendor master) and *Customer* (customer master).
		Fields that you can double-click are highlighted.
Use fixed branches to other transactions.	*Environment*	
Use fixed branches for a navigation profile	*Environment →* *Navigation profile →* *Assign*	You assign yourself a company-specific navigation profile that corresponds to your user role and provides you with a fixed record of general transaction calls and transaction calls per MRP element.
		You define navigation profiles in Customizing for MRP in the IMG activity *Define navigation profiles*.
Create user-specific branches to other transactions		See Define User-Specific General Transaction Calls [Page 382] and Define User-Specific Transaction Calls per MRP Element [Page 384]

User-Specific Configuration of the Lists

Use

You have numerous possibilities for **selecting and formatting the data** in the MRP list and the stock/requirements list. Working with the lists is thus **more flexible and simpler**, and system performance is enhanced.

Prerequisites

You have called up the MRP list or the stock/requirements list for a material.

Features

- Definition of settings to access the lists

  You define which settings are activated as standard when you access the MRP list and the stock/requirements list (overview tree, header details, filter, company-specific navigation profile, period totals display, and so on) and select a filter, navigation profile, and period split, as required. You can save the settings (see Configuring Access to the Lists [Page 374]).

- Navigation between materials in the overview tree

  – Double-click on a material in the overview tree to directly access the list for the chosen material.

  – You can switch the overview tree between the worklist tree, the order tree and the product group tree.

  – You select which information is displayed in the overview tree, sort/group the materials displayed as you require, and save the settings (see Overview Tree [Page 375], Select Fields in the Tree [Page 376], Sort/Group Fields in the Tree [Page 378]).

- Definition of user-specific transaction calls

  You enhance the company-specific navigation profiles, which are available to all users, by adding user-specific transaction calls for the transactions to which you want to branch from the lists. As with the company-specific navigation profiles, you can use general transaction calls, which means that they refer to the material, and specific transaction calls, which refer to individual MRP elements (see Flexible Transaction Calls [Page 381], Define User-Specific General Transaction Calls [Page 382], Define User-Specific Transaction Calls per MRP Element [Page 384]).

- Configuration of the columns in the lists

  You adapt the sequence and width of all the columns that are displayed as standard to your needs. You do this with the mouse and save the settings in display variants, using 🗔 in the upper part of the screen, on the right-hand side of the table. This does not include additional columns that the system only displays when they have contents. You can find further information on this under *Table Settings* in the introduction to the SAP System in the SAP Library.

- Saving selection parameters for the collective access to the MRP list

In the collective access to the MRP list, you save the settings for selecting data and limiting the selection (see Using Collective Access for MRP Lists [Page 342]).

- Definition of traffic light values

    The system displays the material with particular traffic light values (red, yellow, green) in the overview lists for the collective access and in the worklist tree. Red traffic lights next to certain materials indicate immediately that these materials are critical and urgently need to be processed. The traffic light display is controlled by ranges of coverage and exception groups. You change the standard settings for traffic light values according to your needs and save them (see Define Traffic Lights [Page 387]).

- Definition of print settings

    Before you print overview lists and individual lists, the system displays a list, which you can print and edit. In this list, you sort and filter information, define column sequence and column width and save the settings in display variants. You can find further information on this under *ABAP List Viewer* in the introduction to the SAP System in the SAP Library.

Settings

Use

You have numerous possibilities to control the **selection and format of data** in the MRP list and the stock/requirements list so that your own work with the lists is supported to an optimum.

> You always want to work with a particular preselected filter, or you always want to display the header details for a material and the overview tree.

Features

In the *Settings* dialog box, you are provided with the following settings on various tab pages:

- Display of *header details* for the material (see Working with List Header and Overview Tree [Page 354])

- Display of the *overview tree* (see Overview Tree [Page 375])

- Sort for the *individual segments* (see Individual Line Display [Page 357])

- Activation of the *individual segments* (see Individual Line Display [Page 357])

- Display of *period totals* (see Display of Period Totals [Page 360])

   You define the activation of the period totals display and select a particular period value, which means *Days*, *Weeks* or *Months*. If you have made corresponding settings in Customizing, you can also select *Posting periods*, *Individual split* or *Planning calendar*. The period value that you select determines which tab page is preferred in the period totals display and is therefore displayed in the foreground.

   If you want to preset the period values *planning calendar* or *individual split*, certain standard settings in Customizing determine which planning calendar or which individual split is activated. You can overwrite these standard settings by selecting different values.

- Definition of *requirement/receipt date* (see Individual Line Display [Page 357])

- Activation of the *safety time* (see Individual Line Display [Page 357])

- Display of *total replenishment lead-time* (see Individual Line Display [Page 357])

- Activation and selection of *display filter* and *selection rule* (see Filtering Information [Page 352])

- Selection of the *unit of measure*

   You define that calculations in the lists are not based on the base unit of measure, but are based on the order unit or the unit of issue, for example. The setting refers to the first of the two possible units in which the receipts or requirements, and the quantity available, can be displayed.

   All materials for which this alternative unit of measure is maintained are then displayed with the selected unit. The system also uses this unit for calculations in the detail dialog boxes for the individual MRP elements.

- Selection of the *checking rule for the ATP display*

You define by which validation rule the availability check (or the missing parts check in inventory management) is carried out (see also Availability Check According to ATP Logic [Page 472], Availability Check for Components in the Planned Order [Page 440]).

If you select a checking rule here, it is copied to the initial screen for the availability overview. If you then choose the menu path *Environment → ATP quantities* and branch to the availability overview, the system skips the initial screen.

- Assignment of company-specific *navigation profiles* (see Flexible Transaction Calls [Page 381]).

Configuring Access to the Lists

Prerequisites

- You have called up the MRP list or the stock/requirements list for a material.

    The settings are valid for both types of list.

- You have defined the required settings in Customizing for MRP for:

    - screen sequence of the header details (IMG activity *Define screen sequence for header details*)

    - individual splits and planning calendar (IMG activity *Define individual period split for period totals*, *Define period display for period totals* and *Maintain planning calendar*)

    - display filter and selection rule (IMG activity *Define display filter* and *Define selection rule*)

    - Navigation profile (IMG activity *Define navigation profile*)

    - Checking rule (IMG activity *Define availability check for components*)

Procedure

1. Choose .

    The system displays the *Settings* dialog box.

    When you access the dialog box, it shows the settings activated in the selected list and not those that you saved last.

2. Select the required settings on the different tab pages.

3. If required, choose a display filter, selection rule, company-specific navigation profile, and period split using F4.

4. Choose to activate the settings for the current display, or to save them permanently.

    Choose *Basic settings* to always return to the standard settings provided by SAP.

Result

The settings are copied to the display and, if you have saved them, are activated every time you access the lists.

Overview Tree

Use

The overview tree is a **structure tree**, which you can display on the left-hand side of the MRP list and the stock/requirements list. The system includes certain materials in the overview tree automatically:

- all the materials that you have selected in the overview list during collective access to the MRP list or the stock/requirements list

- all the materials, for which you call up an MRP list or a stock/requirements list during a working session.

When you leave the transaction, the selection of materials is lost.

Features

You can switch the tree between:

- **worklist tree** (all materials that you have processed in the respective transaction calls, or all materials that you selected in the collective display)

- **order tree** (all assemblies or components for a selected MRP element according to the order report)

- **product group tree** (all materials and sub-product groups of a product group, only for access to the lists via product group)

Double-click a material in the overview tree to branch directly to the corresponding MRP or stock/requirements list.

Select Fields in the Tree

Use

You can define which **fields** are shown in the overview tree and in which **sequence** they are arranged.

➡️

> You can carry out the definition of the fields and their sequence, independently of each other, in the following applications:

- MRP list for operational planning

- MRP list for long-term planning

- Stock/requirements list for operational planning

- Stock/requirements list for long-term planning

Prerequisites

- You have called up the MRP list or the stock/requirements list for a material.

- You have displayed the overview tree.

Procedure

5. In the menu, choose *Settings → Fields in tree*, or in the context menu (right-hand mouse button on a material in the tree), choose *Define display*.

   The system displays the *Define display/field sequence* dialog box.

6. Enter a sequence number next to each field that you want to be displayed in the tree.

   > You want to display the *Processed MRP lists, Traffic light, Material, MRP area*, *Material description* fields in this sequence. Enter:

Processed MRP lists	1
Traffic light	2
Material	3
MRP area	4
Material description	5

   You want to change the defined sequence so that the traffic light is first. Enter the following change:

Traffic light	1

   The remaining fields are resorted automatically when you confirm the entry with *Enter*.

7.   Choose *Copy settings* to activate the settings for the current display, or ![save icon] to save them permanently.

Result

The system displays the selected fields in the defined sequence in the overview tree.

> You can change the sequence of the fields in the current display by moving the relevant column header to a new position using the mouse.

Sort/Group Fields in the Tree

Use

You can define that the materials in the tree are **sorted**.

> You require the system to display materials with red traffic lights or materials for which you have not yet processed the MRP list at the top.

You can also define **grouping**.

> You want to display material with red traffic lights first and to group by traffic light values. You then have a hierarchy in which you can expand and collapse the substructure with the appropriate materials for each of the three traffic light values. The display in the tree is thus clearer and more flexible.

> You can carry out grouping and sorting of the fields independently of each other in the following applications:

- MRP list for operational planning
- MRP list for long-term planning
- Stock/requirements list for operational planning
- Stock/requirements list for long-term planning

Prerequisites

- You have called up the MRP list or the stock/requirements list for a material.
- You have displayed the overview tree.
- You have defined which fields are displayed in the tree.

Procedure

8. In the menu, choose *Settings → Tree sort*, or in the context menu (right-hand mouse button on a material in the tree), choose *Define grouping/sort*.

    The system displays the *Group/sort* dialog box.

9. Enter the sequence number by which you want to sort the materials in the overview tree next to each field.

> You want to sort the *Processed MRP lists, Traffic light, Material, MRP area* and *Material description* fields in this sequence. Enter:

Processed MRP lists	1

Traffic light	2
Material	3
MRP area	4
Material description	5

You want to change the defined sequence so that the traffic light is first. Enter the following change:

Traffic light	1

The remaining fields are resorted automatically when you confirm the entry with *Enter*.

10. Select the *Descending* field if you want to sort in descending order.

A descending sort is only recommended for the following fields:

Traffic light

Materials with red traffic lights, which means those whose processing has priority, are displayed first (red is the highest value, green the lowest).

List created (only stock/requirements lists)

Materials for which a list has been created are displayed first (list created is the highest value, list not created is the lowest value).

Range of coverage

Materials with the highest days' supply, which means those with high stock levels, are displayed first (highest days' supply is the highest value, lowest days' supply the lowest).

Exception group

Materials with the most exception messages in this group are displayed first (the most exception messages per group is the highest value, the least exception messages the lowest).

11. Select the *Group* field when materials in the overview tree that have the same value in a particular field, a red traffic light for example, are to be grouped and arranged in that order.

Group and sort are coactive. Fields that you want to group must be at the top of the sort.

You want to sort as follows:

Field	**Priority (sort)**
Planning plant	1
Material type	2
ABC indicator	3

You want to group by material type within the sort. For this sort, you can not set the group indicator for material type alone. You must either group additionally by

Sort/Group Fields in the Tree

planning plant or change the sort so that the material type has the highest priority within the sort.

The correct setting is:

Field	Group	Priority (sort)
Planning plant	X	1
Material type	X	2
ABC indicator		3

or

Field	Group	Priority (sort)
Material type	X	1
Planning plant		2
ABC indicator		3

12. Choose *Execute sort* to activate the settings for the current display, or 🖫 to save them permanently.

Result

The materials in the overview tree are sorted and grouped by the selected fields.

Flexible Transaction Calls

Use

You can define your own **transaction calls** for the MRP list and stock/requirements list. These transactions are subsequently displayed in the **menu** or as **pushbuttons** with icons and texts, so that you can access them without leaving the list display.

Features

You can use two types of transaction calls:

- **General transaction calls**

- **Transaction calls per MRP element**

You can define an unlimited number of transaction calls. However, the **display** is **limited** to five general transaction calls and two transaction calls per MRP element. The system displays the first five or the first two transaction calls that are valid for the respective context.

> You can also assign yourself a company-specific navigation profile that corresponds to your user role, under the menu path *Environment → Navigation profile → Assign*. You then have direct access to a fixed record of general transaction calls and transaction calls per MRP element without having to define the branches yourself.
>
> You define navigation profiles in Customizing for MRP in the IMG activity *Define navigation profiles*.

Define General Transaction Calls

Use

General transaction calls are valid **for all materials**. Example: Display BOM, display planning file entries.

Prerequisites

You have called up the MRP list or the stock/requirements list for a material.

Procedure

1. Choose *Environment → Own favorites → Maintain*.

   The system displays an overview of all existing transaction calls.

2. Choose *New entries*.

3. Choose *Examples*.

   The system displays a list of popular transaction calls that are available in the standard SAP System. The examples are defined in Customizing in navigation profile SAP0000000.

4. Select the required transaction call.

   The predefined parameters for the selected transaction call are copied to the screen. The predefined parameters can include the menu text, icon, icon text, quick info text, predefined parameters for fields in the initial screen, restrictions, and the application area. The menu text is displayed in the menu, under *Environment*, and a pushbutton with the icon and the text is shown in the application toolbar.

   You can **test the new branch** by using the menu entry or the pushbutton.

5. Change the navigation number so that it matches your own numbering system.

   The navigation number controls which of the transaction calls that have been created are offered as a branch and in which sequence in the respective transaction.

   If there are more than five valid transaction calls for the material displayed, which means transaction calls for which the material corresponds to the defined conditions, the system displays the five with the lowest sequence number.

6. Save the transaction call.

Result

The transaction call is immediately available in the MRP list and the stock/requirements list. The defined menu text is displayed in the **menu**, under *Environment → Own favorites*. In addition, a **pushbutton** with an icon and text is displayed.

The link is only available when the material whose list is displayed corresponds to the defined conditions. Example: A link that is only valid for in-house produced materials (procurement type E) is not displayed for externally procured materials.

You are not dependent on the examples provided. You can define new transaction calls according to your requirements.

Transaction Calls per MRP Element

Use

Transaction calls per MRP element are valid, for example, **for production orders only, or for purchase requisitions only**. Example of transaction call for purchase requirement: Release purchase requirement.

Prerequisites

- You have called up the MRP list or the stock/requirements list for a material.

- You have accessed the *Details* dialog box for an MRP element, by double-clicking on the MRP element.

Procedure

7. Choose ⬛.

   The system displays an overview of all the transaction calls for this MRP element.

8. Choose *New entries*.

9. Choose *Examples*.

   The system displays a list of popular transaction calls that are available in the standard SAP System.

   Examples are available for the MRP elements purchase requisition, purchase order, production order, process order, sales order stock, and project stock.

10. Select the required transaction call.

    The system displays the predefined parameters for the selected transaction call (pushbutton text, icon, icon text, quick info text, predefined parameters for fields in the initial screen, restrictions, application area). A pushbutton with icon and text is displayed on the screen.

    You can use this pushbutton to **test the new link**.

11. Change the navigation number so that it matches your own numbering system.

    The navigation number controls which of the transaction calls that have been created are offered as a branch and in which sequence in the respective transaction.

    If there are more than two transaction calls for the MRP element in the defined application area (operational planning or long-term planning), the system displays the two with the lowest sequence numbers.

12. Save the transaction call.

Result

The transaction call is immediately available as a **pushbutton** in the detail dialog box for this MRP element.

➡

You are not dependent on the examples provided. You can define new transaction calls according to your requirements.

Traffic Lights

Use

Materials are indicated with red, yellow, and green traffic lights in the overview tree and overview list for the MRP list and for the stock/requirements list.

The traffic light values (red, yellow, green) indicate how urgently materials need to be processed. **Red traffic lights** immediately indicate that the appropriate materials are critical and urgently need to be processed.

Integration

The traffic light display is controlled by ranges of coverage and exception groups. As standard, a red traffic light is displayed when the days' supply, receipt days' supply 1, or receipt days' supply 2 are less than or equal to zero, or when an exception message for group 8 is displayed. You can change and save these settings on a user-specific basis under the menu path *Settings → Define traffic light*.

For more information on these ranges of coverage, see Days' Supply and Receipt Days' Supply [Page 190].

Do not mistake traffic lights for the processing indicator!

Define Traffic Lights

Use

Use the exception groups to define under which **conditions** materials are indicated by red, yellow, or green traffic lights. Example: You want all materials, whose dates lie in the past, to be indicated by a red traffic light.

The definition of traffic lights applies to both types of list.

Prerequisites

- You have accessed the overview list in collective access, or the MRP list or stock/requirements list for a material.

- In case of **individual lists**: you have displayed the overview tree.

Procedure

1. In the menu, choose *Settings → Define traffic light*, or in the context menu (right-hand mouse button on a material in the tree), choose *Define traffic light*.

   The system displays the *Define traffic light* dialog box.

2. Enter the number of workdays for the parameters *Days' supply*, *1st receipt days' supply* and *2nd receipt days' supply*, and under which circumstances the materials are to be displayed with red, yellow, and green traffic lights.

   You want the traffic light to be red when the days' supply for a material is <= 0, yellow when the days' supply is > 0 and <= 10 days, and green when the days' supply is > 10 days.

   Enter:

	Red	**Yellow**	**Green**
Days' supply	0	10	999,9

3. Use the exception groups to define under which conditions materials are indicated by red, yellow, or green traffic lights.

   You want materials with exception messages in exception group 4 to be indicated by a yellow traffic light and materials with exception messages in exception group 5 to be indicated by a red traffic light.

   Choose:

	Red	**Yellow**	**Green**
Exception group 4		X	
Exception group 5	X		

Define Traffic Lights

4.　Choose ✔ to activate the settings for the current display, or 🖫 to save them permanently.

Result

The system sets the traffic light for the material after taking the settings for all the ranges of coverage and all the exception groups into consideration.

> A material with a days' supply of 12 days would be indicated by a green traffic light if the settings above were entered. However, if there was an exception in exception group 5 and exception group 5 was indicated by red, the material would be indicated by a red traffic light.

Planning Situation

From the MPS main menu, planning can either be evaluated by means of the MRP list or the stock/requirements list, or it can be evaluated by means of a user-defined layout (which is defined in Customizing). Here, the data material in the MRP list corresponds to the **planning result** evaluation and the data material in the stock/requirements list corresponds to the **planning situation** evaluation.

You also have two choices for displaying the planning result and the planning situation. You can either use the SAP System's standard evaluation layout or you can define your own layout in the setting menu by specifying which receipt elements and issue elements are to be represented to and at what level of aggregation, for example.

Planning Situation for a Material

If you want to display the planning situation for a material and make changes, if necessary, proceed as follows:

1. Starting from the main menu of MRP or MPS, select *Evaluations → Plng situation mat.*

   The initial screen of the planning situation evaluation now appears.

2. Enter the material number of the material for which you want to display the planning situation and the plant.

3. Type in the name of the evaluation layout and press ENTER.

   You get a second chance to check your entries. Make sure your entries are correct and press ENTER again.

   The overview screen of the selected evaluation layout now appears.

   The overview screen is divided into a header and the evaluation matrix.

   In the evaluation header is a list of material data (for example material number, material description, plant, unit of measure).

   To display additional material data, select *View → Header → Detailed header*.

   The evaluation matrix contains the individual hierarchy and MRP elements, classified consecutively. The hierarchy elements determine the structure of the evaluation. They specify under which heading and in which order the MRP elements are grouped together. This means, for example, that receipts can be subdivided into receipts produced in-house and receipts procured externally. In this example, "Receipts" represents the top level of the hierarchy and "receipts produced in-house" and "receipts procured externally" represent subordinate levels.

   The display is carried out as a matrix: the columns represent the hierarchy and MRP elements and the lines represent the periods of the display.
   The points of intersection represent the (cumulated) receipts or issues in the corresponding periods.

Accessing and Exiting Line Details

Depending on how many levels were defined for the evaluation layout, you can access more detailed information. In the example above, the "receipts" can be subdivided into planned receipts, receipts produced in-house, and receipts procured externally, and "receipts produced in-house" can, in turn, be subdivided into production orders, material reservations, and so on.

- To access more detailed information on hierarchy elements or MRP elements, click the mouse on the appropriate element.

  The system access the next lower level for the selected hierarchy element or the MRP element.

- To close the hierarchy element or the MRP element, click the mouse on the next higher element of the hierarchy.

  The level below the selected hierarchy element or MRP element is closed.

Please also refer to Hierarchy Element [Page 422] for more information.

Moving the Time Axis

You can scroll along the time axis in any direction - either into the past or into the future.

- If you want to move the time axis into the past, select either ˂ or ˂˂.

- If you want to move the time axis into the future, select either ˃ or ˃˃.

Changing the Period Display

The planning result is immediately displayed in monthly periods. The following periods are available for display:

- daily

- weekly

- monthly

- per accounting periods

- planning periods in the planning calendar

If you want to change the period display, select *View → Time axis* and then select the appropriate period.

Changing Unit of Measure

In the SAP Standard System, the quantities of the MRP elements in the display are displayed in the base unit of measure. If you have maintained further alternative units of measure in the material master (for example output or order unit) or if the unit of measure can be converted into another unit (for example kilo into tons), the elements can also be displayed in these alternative units of measure.

1. Select *View → Unit → Unit of measure*.

   You receive the dialog box entitled *Unit of Measure Display*.

2. Position the cursor on one of the units of measure and then select, Choose.

   The elements are now displayed in the selected unit of measure.

Value Display of the Elements

Instead of a display based on quantities, you can also select a display which is based on values.

The elements can be either be displayed according to the valuation price.

To do this, select *View → Unit → Valuation price*.

Or the elements can also be displayed according to other price units.

1. Select *View → Unit → Price unit*.

   The dialog box, "Valuation of the Planned Quantities" now appears.

2. Select the required price and enter the currency in the Currency field.

3. Select, Continue.

   The elements are now displayed in the selected price unit. In the header, you see the price per unit of measure and the corresponding conversion factor.

Planning Situation for a Material

Displaying MRP Segments

The planning result can be divided into individual MRP segments according to the planning types. This includes; the segment for net requirements planning, the individual customer segments, and the planning without assembly segment. If several segments exist in a planning result, you can display them directly.

1. Select *Edit* → *Choose segment*.

   The dialog box "*Selection of Planning Segments*" now appears.

2. Select the segments you want to display. If you want to see a specific segment from several individual customer segments, enter the number of the corresponding sales order.

3. Press `Continue`.

   The selected segments are displayed. The segment types are listed in the evaluation header.

Displaying, Changing, and Converting MRP Elements

You can display and change the detailed data on the element at every hierarchy level.

Position the cursor on the hierarchy element or on the item and select, `MRP elements`.

A dialog box with a list of the individual MRP elements then appears. If you select the function on a hierarchy element, you receive a list of all the MRP elements in the complete period of examination. If you select the function on an item, you receive a list of all the MRP elements for the selected period.

From this dialog box, you have the following possibilities:

- You can access data on individual MRP elements. To do this, position the cursor on the MRP element for which you require additional information and select, `Display`.

- You can change an MRP element. To do this, position the cursor on the MRP element that you want to change and select, `Change`.

- For receipts, you can also convert planned orders into production orders, or into purchase requisitions, and purchase requisitions into purchase orders. To do this, position the cursor on the MRP element that you want to convert and select, `Plnd ord -> prod.ord.` to convert the planned order into a production order, or `Plnd ord.->pur.req.` to convert the planned order into a purchase requisition and the key `Pur.req->Pur.order` to convert the purchase requisition into a purchase order.

Accessing Pegged Requirements

You can also access the pegged requirements for each of the MRP element displayed in the list (except sales orders and customer requirements).

1. To do this, start from the dialog box displaying the detailed information on the hierarchy element or the MRP element for which you want to access the pegged requirements and select the pushbutton entitled, `Pegging` to branch into the pegged requirements screen.

   The system now accesses the pegged requirements function. The display is in the form of a split screen: detailed information on the MRP element is in the upper part of the screen and the pegged requirements at the highest BOM level are displayed in the lower half of the screen.

   You have the following processing options:

- To retrace the precise path of the pegged requirement to the MRP element through all BOM levels, select the pushbutton, `Order route`.

  The system displays a list of all the source MRP elements.

- To display more detailed information on the MRP elements or to change the MRP elements, select, *Details → Display element* or *Details → Change element*.

- If the MRP element contains a quantity that does not result from a requirement at a higher level, you can display this quantity. To do so, select, `Without pegging`.

- You can also display the route in graphic form by selecting, `Graphics`.

Displaying Warehouse Stock

If you want to display the warehouse stock of a material in detail, starting from the screen entitled, *Evaluation of the Planning* Situation, select *Goto → Warehouse stock*.

The dialog box, *Stocks From <Material>* now appears with detailed information on the material's stocks.

Accessing Graphics

Starting from the planning situation, you can display the evaluation in the form of a time series graphic.

1. Position the cursor on the element to be displayed and select `Select for graphic`.

2. Repeat step one until you have selected all elements to be included in the graphic.

3. Select *Planning situation → Time series graphic*.

Saving the Evaluation Layout

If you want to display the current settings for the hierarchy elements, periods, and so on, the next time you access the MPS evaluation, you can save the current layout. To do this, proceed as follows.

1. Select *Planning situation → Save layout*.

   The dialog box, "*Description of the Layout*" appears.

2. Enter the following data:

   Layout
   Enter a name for the layout in this field

   Description
   Enter a short description in this field

   Period split
   If you defined an individual period split in Customizing, you can specify this period split here.

3. Select, `Continue`.

   The message, "*The layout was saved*" appears.

   You can access this evaluation layout under the name you used.

Printing Planning Situation

To print the planning result from the overview screen, proceed as follows:

Planning Situation for a Material

1. Select *Planning situation* $\rightarrow$ *Print*.

    The print selection screen appears.

2. Maintain the specifications concerning the printer and the output.

3. Send the list to the printer with *Output* $\rightarrow$ *Print*.

Planning Situation for a Product Group

Proceed as follows to access the evaluation of the planning situation of a product group:

1. Starting from the main menu of MRP or MPS, select *Evaluations → Situation prod.grp*.

   The initial screen of the product group evaluation now appears.

2. Enter the name of the product group, the plant and the required layout.

   The layout SAPSOP is available in the SAP Standard System for rough-cut planning. In this layout, the hierarchy elements for displaying the planning results from SOP are already preset.

   You can also use any other already existing layout to evaluate the product group, or you can define an evaluation profile according to your own requirements in Customizing.

3. Press ENTER.

   The planning situation for the chosen product group now appears.

Evaluation Functions in the Planning Situation

The following functions are also available for the evaluation of the product group:

- To display the values of the individual product group members for a hierarchy element, proceed as follows:

  Position the cursor on the hierarchy element and select *View → Hierarchy → Details: prod.group*.

- To change the data of the individual product group members, choose *Goto → Product group.*

  A dialog box appears displaying the product group members. In this dialog box, the following functions are available:

  – If the members are product groups themselves, you can access more details for the product group.

    To do this, position the cursor on the product group and press Line details.

  – To call up the planning situation for an individual product group member (material), position the cursor on the member and press Display.

    A dialog box appears with the evaluation data of the individual product group member. From this dialog box, you can display the individual MRP elements. To do this, position the cursor on the required period and press MRP elements.

- To display the composition of a hierarchy element, choose *Goto → Evaluation profile*.

  The system displays a list of the hierarchy elements that lie one level below the current hierarchy level.

- To display the short texts of the product group members, choose *View → Product grp members → Material description*.

Planning Situation According to DRP

In release 3.0, the planning situation can also be accessed in the form of a DRP evaluation. In the DRP evaluation, the system checks per plant which receipts and requirements have been scheduled in this plant and which receipts and requirements go from this plant to other plants. Here, receipts and requirements from/into other plants are recorded as external or internal receipts and issues.

1. To access the DRP evaluation, select *Evaluations → Plng situation material.*

    The system branches into the initial screen of the evaluation.

2. Select the field, DRP evaluation and press ENTER.

    The system branches into the DRP evaluation.

3. First, the system only displays the receipts and the issues that have been scheduled for the plant that you used to access the evaluation.

4. To display the receipts and issues to or from other plants, click the mouse on the appropriate hierarchy element.

    The system displays the internal or external receipts and issues:

    – External means issues to the customers or receipts from vendors

    – For stock transfers from/to in-house plants, the system displays the transfer quantity from each plant individually.

    – For in-house production (that is, the plant with which the evaluation was accessed), the production quantities are displayed as receipts with this plant key.

    ⇨

    Demand management can be carried out for external requirements, that is, customer requirements, and for internal requirements (strategy, planning at assembly level). Depending on the strategy, a planned independent requirement is valid as an external requirement or as a requirement in the in-house plant. Unplanned requirements are always considered as requirements from the in-house plant.

Multi-Plant (Site) Planning Situation

You can compare and check the planning situation for materials whose material master record is created in different plants using the evaluation at multi-plant level.

To do this, proceed as follows:

1. Starting from the main menu of MRP or MPS, select *Evaluations* → *Situat. - all plants*.

   The initial screen of the evaluation at multi-plant level now appears.

2. Enter the name of the material and the required layout and press ENTER.

   The system calls up the planning situation for the chosen material.

Evaluation Functions for Evaluation at Multi-Plant Level

In the evaluations at multi-plant level, the following functions are also available:

- To display the data of the individual plants for a hierarchy element, position the cursor on the hierarchy element and select *View* → *Hierarchy* → *Details: plants*.

- To check the planning situation of an individual plant separately and to change it, if necessary, choose *Goto* → *Plants*.... The dialog box "*Plant*" appears. Select the required plant.

   The dialog box "*Evaluation of the Planning Situation*" appears for the chosen plant. From this dialog box, you can display the individual MRP elements. Position the cursor on the required period and press MRP elements.

- The plant name can be called up for each plant by choosing *View* → *Plants* → *Plant description*.

Cross-System Planning Situation

Use

You can use this business process when you have maintained a material in several systems, that is to say cross-client, and want to evaluate the planning for this material on a cross-system basis.

The evaluation shows the planning situation based on the data in the stock/requirements lists in the systems involved. You can design the display of the planning situation using an individual user layout and, for example, display information on MRP elements, production order, purchase orders, sales orders, reservations, and warehouse stocks.

You can process an MRP element only in the system in which it is available as original. Processing directly from the planning situation is not possible.

If necessary, the business process can used in the enterprise in combination with distributed Sales & Operations Planning (SOP).

Integration

Functions in the central SAP system:

- Creation and maintenance of master data for the relevant material

- Definition of the logical system and the required layout of the evaluation in Customizing

- Creation of planned independent requirements and customer requirements for the material

- Start of the evaluation

Functions in the decentralized SAP systems:

- Creation and maintenance of master data for the relevant material

- Creation of planned independent requirements and customer requirements for the material

- Start of the evaluation

Data flow
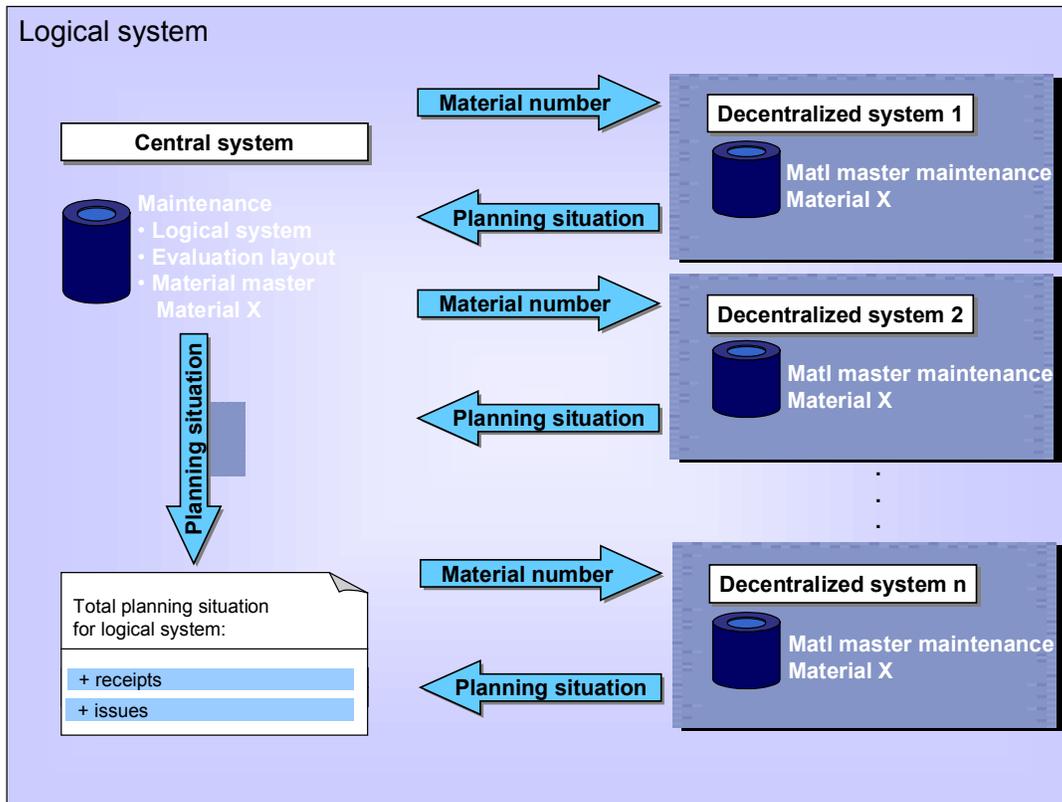
All system involved must be maintained within a logical system by the user. The user can then start the evaluation from the SAP system in which the logical system is maintained (central system). The system sequentially checks whether the data for the specified material exists in another plant in the logical system. If this is the case, the data from the last MRP run is sent to the calling SAP System by a Remote Function Call (RFC), and this system then displays the cross-system planning situation in the user-defined layout.

Procedure: Cross-System Planning Situation

Purpose

This process describes how you evaluate the MRP run for a material that is maintained in several systems, which means cross-group.

Prerequisites

- You have given your plants unique descriptions across all systems

- It is known which plant is managed in which system in your customer model

- You have set the authorization to display MRP in all the systems involved

Customizing

- In Customizing, you have created a layout that defines which information is displayed in which hierarchy. You create the layout using the Customizing menu path Production → Master Planning → Master Production Scheduling → Evaluation → Define Layout

- You have set up a logical system in Customizing and assigned the dummy message type PRODPL to the logical partner system in the partner profile. This assignment is used to determine the target system and to transfer the data by means of synchronized RFC.

  - You define the logical system under *Basic Components → Distribution (ALE) → Sending and Receiving Systems → Define Logical System*.

  - You define the partner profile under *Basic Components → Distribution (ALE) → Modelling and Implementing Business Processes → Partner Profiles and Time of Processing*.

Process flow

1. When you start the evaluation, the system uses the customer distribution model to check which plants are in which logical SAP System.

2. The system checks in each plant whether the material involved exists. When this is the case, the MRP data required is requested by means of synchronized Remote Function Calls (RFCs).

3. If the system that is calling cannot access the required information (when no access authorization exists, for example), it logs an error, which you can display.

4. The planning situation is displayed on the screen. The report contains all MRP elements that are defined in the specified evaluation layout, for example production orders, purchase orders, sales orders, reservations, and warehouse stocks.

Logical system

Time

Central system

Evaluation of logical system ●

Determine plants in logical system →

Evaluation of logical system ●

Check whether matl maintained in plant

Evaluation of logical system ●

Access the requirements

Evaluation of logical system ●

Send date for planning situation

Decentralized systems 1..n

● Customer distribution model

● Customer distribution model

● Stock/requirements list or planning situation
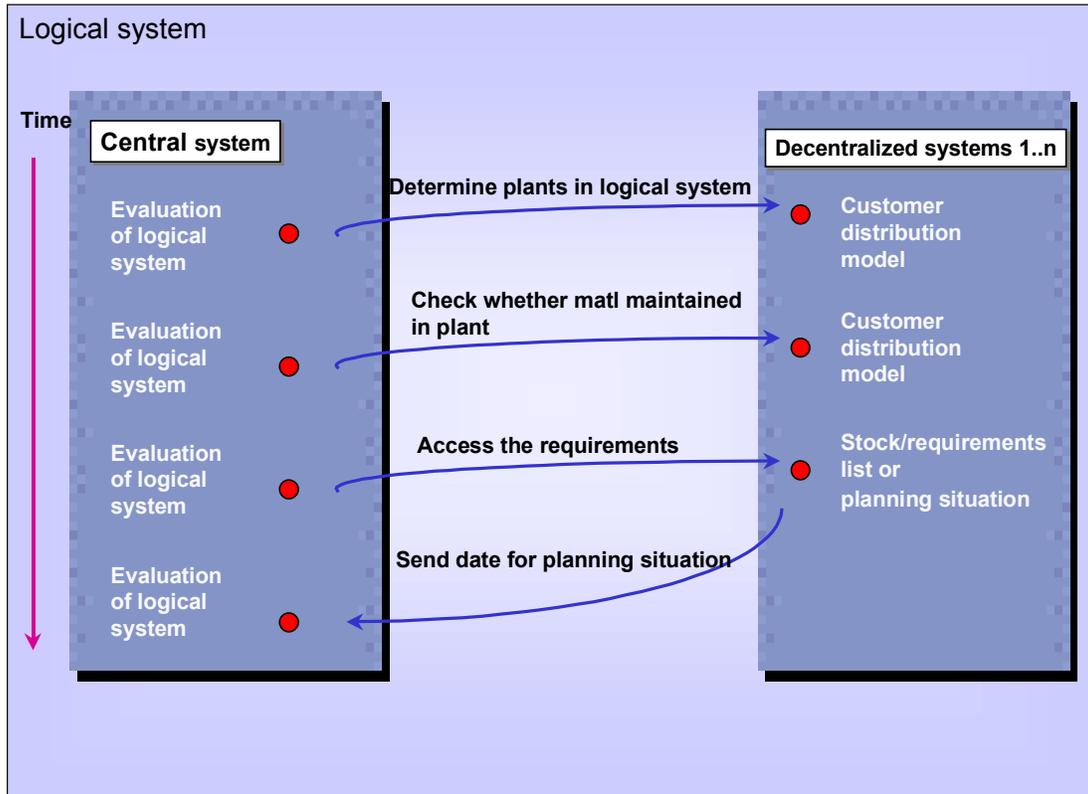
Evaluate the Cross-System Planning Situation

1. To carry out the evaluation for a master schedule item, from the MPS menu, choose
   Evaluations → *Situat. - all plants*.

   To carry out the evaluation for a different material, from the Material Requirements
   Planning menu, choose *Evaluations* → *Situat. - all plants*.

   The *Cross-Plant Evaluation* initial screen appears.

2. Enter the name of the material that you wish to display the planning situation for.

3. Choose an evaluation layout.

4. Select the *Distributed systems* indicator and choose *Enter* twice.

5. The system carries out the cross-system evaluation for all plants and then displays the
   overview screen of the chosen evaluation layout. The overview screen consists of a
   header and the evaluation matrix.

6. Click the desired MRP element to expand or collapse the display of the aggregation
   level.

7. Choose *Back* to exit the evaluation.

Planning Result

From the main menus of MRP or MPS, planning can either be evaluated by means of the MRP list or the stock/requirements list, or it can be evaluated by means of the evaluation according to a user-defined layout (which is defined in Customizing). Here, the material data of the MRP list corresponds to the evaluation of the **planning result** and the material data of the stock/requirements list corresponds to the evaluation of the **planning situation**.

You also have two choices for displaying the planning result and the planning situation. You can either use the SAP System's standard evaluation layout or you can define your own layout in Customizing by specifying which receipt elements and issue elements are to be represented, for example.

Planning Result for Material [Page 404]

Planning Result for MRP Controller [Page 409]

Planning Result for Material

If you want to display the planning situation for a material and make changes, if necessary, proceed as follows:

1. Starting from the main menu of MRP or MPS, select *Evaluations → Plng result material*.

   The system displays the initial screen of the evaluation, *"Planning result"*.

2. Enter the material number of the material for which you want to display the planning result and the plant.

3. Type in the name of the evaluation layout and press ENTER.

   You get a second chance to check your entries. Make sure your entries are correct and press ENTER again.

   The overview screen of the selected evaluation layout now appears.

   The overview screen is divided into a header and the evaluation matrix.

   In the evaluation header is a list of material data (for example material number, material description, plant, unit of measure).

   To display additional material data, select *View → Header → Detailed header*.

   The evaluation matrix contains the individual hierarchy and MRP elements, classified consecutively. The hierarchy elements determine the structure of the evaluation. They specify under which heading and in which order the MRP elements are grouped together. This means, for example, that receipts can be subdivided into receipts produced in-house and receipts procured externally. In this example, "Receipts" represents the top level of the hierarchy and "receipts produced in-house" and "receipts procured externally" represent subordinate levels.

   The display is carried out as a matrix: the columns represent the hierarchy and MRP elements and the lines represent the periods of the display.
   The points of intersection represent the (cumulated) receipts or issues in the corresponding periods.

Accessing and Exiting Line Details

Depending on how many levels were defined for the evaluation layout, you can access more detailed information. In the example above, the "receipts" can be subdivided into planned receipts, receipts produced in-house, and receipts procured externally, and "receipts produced in-house" can, in turn, be subdivided into production orders, reservations, and so on.

To access the line details for the hierarchy element or the MRP element, click the mouse on the appropriate element.

   The system accesses and displays the next subordinate level of information for the hierarchy element or for the MRP element.

To close the subordinate levels of information again for the hierarchy elements, click the mouse on the element in the next higher level of the hierarchy.

The system exists the subordinate level of the hierarchy/MRP element chosen.

Moving the Time Axis

You can scroll along the time axis in any direction - either into the past or into the future.

- If you want to move the time axis into the past, select either < or <<.

- If you want to move the time axis into the future, select either > or >>.

Changing the Period Display

The planning result is immediately displayed in monthly periods. The following periods are available for display:

- daily

- weekly

- monthly

- per accounting periods

- planning periods in the planning calendar

If you want to change the period display, select *View → Time axis* and then select the appropriate period.

Changing Unit of Measure

In the SAP Standard System, the quantities of the MRP elements in the display are displayed in the base unit of measure. If you have maintained further alternative units of measure in the material master (for example output or order unit) or if the unit of measure can be converted into another unit (for example kilo into tons), the elements can also be displayed in these alternative units of measure.

1. Select *View → Unit → Unit of measure*.

   The system displays the dialog box "*Display Unit of Measure*".

2. Position the cursor on one of the units of measure and then select, Choose.

   The elements are now displayed in the selected unit of measure.

Value Display of the Elements

Instead of a display based on quantities, you can also select a display which is based on values.

The elements can be either be displayed according to the valuation price.

To do this, select *View → Unit → Valuation price*.

Or the elements can also be displayed according to other price units.

1. Select *View → Unit → Price unit*.

   The dialog box, "*Valuation of the Planned Quantities*" now appears.

2. Select the required price and enter the currency in the Currency field.

3. Select, Continue.

   The elements are now displayed in the selected price unit. In the header, you see the price per unit of measure and the corresponding conversion factor.

Planning Result for Material

Displaying MRP Segments

The planning result can be divided into individual MRP segments according to the planning types. This includes; the segment for net requirements planning, the individual customer segments, and the planning without assembly segment. If several segments exist in a planning result, you can display them directly.

1. Select *Edit → Choose segment.*

   The dialog box "*Selection of Planning Segments*" now appears.

2. Select the segments you want to display. If you want to see a specific segment from several individual customer segments, enter the number of the corresponding sales order.

3. Press `Continue`.

   The selected segments are displayed. The segment types are listed in the evaluation header.

Displaying, Changing, and Converting MRP Elements

You can display and change the detailed data on the element at every hierarchy level.

Position the cursor on the hierarchy element or on the item and select, `MRP elements`.

A dialog box with a list of the individual MRP elements then appears. If you select the function on a hierarchy element, you receive a list of all the MRP elements in the complete period of examination. If you select the function on an item, you receive a list of all the MRP elements for the selected period.

From this screen, you have the following possibilities:

You can access data on individual MRP elements. To do this, position the cursor on the MRP element for which you require additional information and select, `Display`.

- You can access data on individual MRP elements. To do this, position the cursor on the MRP element for which you require additional information and select, `Display`.

- You can change an MRP element. To do this, position the cursor on the MRP element that you want to change and select, `Change`.

- For receipts, you can also convert planned orders into production orders, or into purchase requisitions, and purchase requisitions into purchase orders. To do this, position the cursor on the MRP element that you want to convert and select, `Plnd ord -> prod.ord.` to convert the planned order into a production order, or `Plnd ord.->pur.req.` to convert the planned order into a purchase requisition and the key `Pur.req->pur.ord.` to convert the purchase requisition into a purchase order.

Accessing Pegged Requirements

You can also access the pegged requirements for each of the MRP element displayed in the list (except sales orders and customer requirements).

1. To do this, position the cursor on the element for which you want to access the pegged requirements and select, `Pegged` requirements to branch into the pegged requirements screen.

   The system now accesses the pegged requirements function. The display is in the form of a split screen: detailed information on the MRP element is in the upper part of the

screen and the pegged requirements at the highest BOM level are displayed in the lower half of the screen.

You have the following processing options:

–   To retrace the precise path of the pegged requirement to the MRP element through all BOM levels, select the pushbutton, `Order route`.

    The system displays a list of all the source MRP elements.

–   To display more detailed information on the MRP elements or to change the MRP elements, select, *Details → Display element* or *Details → Change element*.

–   If the MRP element contains a quantity that does not result from a requirement at a higher level, you can display this quantity. To do so, select, `Without pegging`.

–   You can also display the route in graphic form by selecting, `Graphics`.

Displaying Warehouse Stock

If you want to display the warehouse stock of a material in detail, select *Goto → Stock levels*.

The dialog box, "*Stock levels*" now appears with detailed information on the material's stocks.

Accessing Graphics

Starting from the main screen of the planning result, you can display the evaluation in the form of a time series graphic.

1.   Position the cursor on the element to be displayed and select `Select for graphic`.

2.   Repeat step one until you have selected all elements to be included in the graphic.

3.   Select *Planning result → Time series graphic*.

Marking Planning Result as Processed

If you have processed the planning result and would like to mark it as such, select *Edit → Mark as processed*.

You can use the processing indicator later as a selection criterion when displaying the planning result for the MRP controller.

Saving the Evaluation Layout

If you want to display the current settings for the hierarchy elements, periods, and so on, the next time you access the MPS evaluation, you can save the current layout. To do this, proceed as follows.

1.   Select *Planning result → Save layout*.

    The dialog box, "*Description of the Layout*" appears.

2.   Enter the following data:

    Layout
    Enter a name for the layout in this field

    Description
    Enter a short description in this field

Planning Result for Material

> **Period split**
> If you defined an individual period split in Customizing, you can specify this period split here.

3. Select, `Continue`.

   The message, "*The layout was saved*" appears.

   You can access this evaluation layout under the name you used.

Printing Planning Results

To print the planning result from the overview screen, proceed as follows:

1. Select *Planning result* → *Print*.

   The print selection screen appears.

2. Maintain the specifications concerning the printer and the output.

3. Send the list to the printer with *Output* → *Print*.

Deleting Planning Results

If you no longer need the planning result, you can delete it manually by selecting *Planning result* → *Delete document*. The system deletes the planning result.

If you do not delete the planning result manually, it remains in the system until a new planning result is created by a subsequent planning run.

Planning Result for MRP Controller

With the display "*Planning result for MRP controller*", it is possible to select several planning results for a plant and for an MRP controller To do this, proceed as follows:

1. Starting from the menu of MRP or MPS, select, *Evaluations → PlgResult coll.displ.*

    The initial screen for selection by MRP controller now appears.

2. Enter the plant and the MRP controller.

    In addition to this data, you can enter further selection criteria. If, however, you do not specify any further selection criteria, then the system will select all the planning results for this particular plant and MRP controller. The selection criteria includes the following:

Planning date

> If you want to select planning results which lie either before or after a certain date or if you want to select planning results in a particular period, enter the appropriate dates in the fields Planning date from and to.

Procurement type

> If you want to select the planning results for materials that can only be acquired via in-house production or, alternatively, via external procurement or if you want to select the planning results for materials that can be acquired via both methods, then you must enter the appropriate indicator in the Procurement type field. Then the system will only display the planning results of the materials whose material master record contains the procurement type that you entered here.

Special procurement type

> By entering a special procurement type in the Special procurement field, you can select the planning results of those materials whose special procurement type in the material master record matches the special procurement type you entered here.

Exception groups

> Exception messages which occur during a planning run can be assigned to an exception group. You can specify which exception message is assigned to which group in Customizing. If you select one or more exception groups, the system will then only display the planning results of those materials that received exception messages which belong to the exception group/groups you selected here.

Exception groups and meanings

Exception message	Exception group
MRP element newly planned, opening date lies in the past	1
MRP element newly planned, start date lies in the past	2
MRP element newly planned. finish date lies in the past	3

Planning Result for MRP Controller

General messages	4
BOM explosion	5
Availability	6
Rescheduling	7
Terminations	8

> Terminations during planning are assigned to exception group 8 by the system. You cannot change this in Customizing.

Processing indicator

> By selecting the appropriate line in the Processing indicator column, you can control whether you want to select only processed lists, only unprocessed lists, or only planning results with new exceptions.

3. Once you have filled in all the appropriate fields, press ENTER.

   A warning appears and you can check your entries.

4. Press ENTER again.

   A list of all the materials that fulfilled you selection criteria now appears.

5. Select a particular material and press, Continue.

You now branch into the overview screen of the selected planning result. From here, you can have all the same options that were available when displaying the planning result for the material.

Compare: Planning Situation and Planning Result

The planning result displays the result of the last planning run (as in the MRP list). The planning situation takes all changes in stock, receipts and issues that occur between planning runs into account (as in the stock/requirements list).

It is possible to compare these two evaluations with each other. In so doing, you receive a display of the changes that have occurred since the last planning run.

You can only access the comparison from the initial screen of the planning situation for a material:

Select the field, *Compare with planning result*.
You branch into the *Operative Planning Situation - Operative Planning Result*.
The system highlights the operative planning result.

- If you only want to display the planning situation, select, *Edit → Only original*.

- If you only want to display the planning result, select, *Edit → Only compare values*.

- display both the planning situation and the planning result, select, *Edit → Original and compare*.

- To check the differences between the planning situation and the planning result, select, *Edit → Differences*.

Pegged Requirements

With the evaluation, "Pegged requirements" you can retrace which requirements are the source of which order proposals and which independent requirements (especially sales orders) will be affected if an order proposal is cancelled or if its date or quantity is changed.

Accessing Pegged Requirements [Page 413]

Functions Available for Pegged Requirements [Page 416]

Accessing Pegged Requirements

You can access the *Pegged requirements* evaluation either directly from the stock/requirements list (see the paragraph *Pegged Requirements* in *Evaluate the Stock/Requirements List*) or from the MRP menu. From the MRP menu, proceed as follows:

1. Select *Evaluations* → *Pegged requirements*.

2. In the initial screen for the evaluation, enter the number of the MRP element (planned order, for example) for which you want to see the source.

3. Choose *Enter*.

   A list of the pegged requirements is displayed. In the top half of the screen, the system displays detailed information on the MRP element:

   − Material number and material short text

   − Plant

   − Number of the MRP element

   − Date of the MRP element

   − Quantity of the MRP element

   − Quantity of the MRP element without pegged requirements

   In the lower half of the screen, the system displays the source requirements at the highest BOM level. The following is displayed for each source requirement:

   − Requirements date

   − Requirement type (independent requirement, customer requirement, and so on)

   − Material number

   − Plant

   − Requirement quantity

   − Input quantity

   The requirement quantity is displayed in the base unit of measure for the corresponding finished product.

   The **input quantity** is the portion of the order proposal quantity that is required to cover the displayed requirement. The input quantity is displayed in the base unit of measure of the material from the MRP element.

The logic of this evaluation is explained in the following example:

Example of Pegged Requirements [Page 414]

Example of Pegged Requirements

The quantities displayed in italics represent the quantities that flow from the order proposal to the source requirements.

Initial Situation:	Product with 3 BOM levels.
	Each material is planned using the exact lot-sizing procedure.
	3 requirements (sales orders or planned independent requirements) are created for the finished product, each one for 1000 pieces (1), (2), (3).
	Planning creates 3 order proposals for the semi-finished product and the raw material each for 1000 pieces or kg
	Displacements occur due to the receipts of 500 pieces for the semi-finished product and the raw material.
MRP Element Subject to Investigation:	The order proposal (17) is to be examined.
Source:	The three requirements (1), (2), (3) are the sources.

Order Route:	For sales order (1), the route to the order is as follows: (1) → (4) → (7) → (12) → (14) → (17) For sales order (2), there are two routes to the order: (2) → (5) → (8) → (12) → (14) → (17) and (2) → (5) → (9) → (13) → (15) → (17)
Requirements Quantities:	The requirements quantities for requirements (1), (2), (3) are all 1000 pieces.
Input Quantities:	How much of the material is needed for the finished product? In this example, 250, 500 and 250 kg.

Functions Available for Pegged Requirements

The following functions are available for evaluating pegged requirements:

Order Route

To display the exact route from the requirements to the MRP element over all BOM levels, select the "Order route" function.

To do this, place the cursor on the requirement for which you want to trace the route and select `Order route`.

You then receive a list of several source MRP elements.

Displaying and Changing MRP Elements

You can call up more detailed information for the MRP elements displayed in the screen, or you can also change the MRP elements.

If you want to display more detailed information, select, *Details* → *Display element*

If you want to change the MRP element, select, *Details* → *Change element*.

You then receive the corresponding display function or processing function of the receipt or issue.

Quantity Without Pegging

If an MRP element contains a quantity which was not caused by a requirement from a higher level, then you can display this quantity. Quantities without pegging can occur, if more was produced than was required because of a lot size rounding value, or for the lot-sizing procedure "fixed lot size", or if manual order proposals were scheduled.

1. Select, *Goto* → *Without pegging*

   You receive a display of the order quantities that were planned without pegging.

2. To return to the source requirements screen, select, *Goto* → *Pegged requirements*.

Further Functions

It is also possible to display the short text of the pegged requirement instead of the material number.

To do this, select, *View* → *Material number/text*.

In the pegged requirements line, the short text of the source material is displayed. You can return to the original display by selecting, *View* → *Material number/text again*.

It is also possible to branch into the stock/requirements list from pegged requirements.

Position the cursor on the pegged requirement you are interested in and select, *Details* → *Stock/requirements*.

You then branch into the stock/requirements list. If you want to return to the pegged requirements screen, press `F3`.

Pegged Requirements Graphic

Another possibility for tracing the route from the pegged requirements to the selected MRP element is by means of a graphic display.

You call up the graphic by selecting `Graphic`, or by selecting, *Pegged requirements* → Graphic.

You now receive the graphic display of the selected route.

The graphic can be processed in the following way:

1. The display can be made smaller or larger by selecting either the `Zoom in` or the `Zoom out` buttons.

2. If you want to see the complete route, select, *View* → *Complete view*.

3. In the lower part of the graphic is the "Navigation area". Here the complete route is displayed.

    In order to display different parts of the route, you can slide the navigation area backwards and forwards to the section that you want to see.

Printing Pegged Requirements

To print the pegged requirements, select, *Pegged requirements* → *Print*.

Status Report

The status report is an evaluation that provides an overview of the current status of various BOM levels so that any problems that have may have arisen in the production and procurement of assemblies and components can be detected quickly. (The status report uses the information from the following MRP elements; sales order, production order (as well as collective order and process order) and the planned order.) For every requirement element, the system determines which receipt elements have been scheduled. Thus, the MRP controller can check how far on production is for a certain sales order, for example. He can also see whether either a shortage exists for certain components or whether there are problems meeting deadlines for specific components on a particular BOM level. The following elements are checked for the order for which the evaluation is carried out:

- the lower-level dependent requirements are determined for the planned orders

- the reservations are determined for the production orders/collective orders/process orders

- the system searches for the reservations for the subcontract orders and requisitions

- the release orders in the other plant are determined for stock transfer orders and requisitions

- the issue reservations are determined in the other plant for stock transport reservations

Procedure:

You can access the evaluation for either;

- a sales order

- a production order, process order, collective order

- a planned order

When you call up the evaluation, you determined how the availability calculation is to be carried out and whether the safety stock is to be included in the availability calculation or not. The availability check can be carried out;

- **using the receipts date**

  In the availability check according to the receipts date, receipt elements are sorted according to the MRP availability date. The first requirement is covered by the first receipt, irrespective of whether it is a planned or a firmed receipt. This logic corresponds to the calculation of the available quantity in the stock/requirements list.

- **according to ATP logic**

  In the availability check according to ATP logic, only the receipt elements that lie before the requirements date are included in the calculation. That is, firmed receipts with a rescheduling proposal that lie after the requirement are not included in the calculation.

Various possibilities exist for accessing the evaluation:

- a sales order has exactly one item, enter only the number of the sales order

- a sales order has several schedule lines, enter the sales order number with item number

- you can enter the number of the production order (collective order, process order)

- you can enter the number of a planned order

- from the data that you entered, the system now branches into the display of the BOM level for which the order was created.

- If a sales order has several items, enter the sales order number without the item number. Press *Continue*.

  A dialog box appears in which the sales order items are displayed for selection.

Direct access without dialog box

In the sales order, the sales order number and the accompanying order proposals are displayed. In the planned order and in the production order the corresponding order number. The receipt elements are highlighted. Thus, the MRP controller can recognize whether problem situation exist for the lower BOM levels.

By selecting, *Goto* → *Color legend*, the meaning of the colors is explained:

- **red** means that exceptional situations exist on lower BOM levels

- **white** means that the requirement is covered by warehouse stock at highest level - which can be withdrawn immediately for the order

- **green** means that receipt elements were created for lower BOM levels, however, no exceptional situation exists

- **no** highlight means that the receipt element cannot be exploded further

The following options are available for processing:

- If you only want to see receipt elements which have exceptional situations, select *Edit* → *Details to error*. The system then displays an overview of all BOM levels for which problems exist either concerning the date or quantities.

- If you want to see all receipts including the exceptional situations, select *Edit* → *Details to receipt* or select the pushbutton, *All lines in detail*. The system then displays a list of all the BOM levels on which receipt elements exist.

- If you only want to see the next BOM level, that lies directly below the order, double click the mouse on the particular receipt element. Here, there is a difference if a BOM has many or few components under the order.

    – If you have a particularly large BOM, you can select the command, *Mode for opening* → *Double-line*, so that when you place the cursor on the receipt element, the system displays a list of the components in a dialog box. The material numbers are in color so that you can recognize the problem components immediately.
    You can also sort the components. To do this, position the cursor on the criteria that you want to use to sort your data, (for example date), and select the pushbutton, *Sort*. If you want to sort according to priority, that is, you want the system to display the problem components first, position the cursor on the item column and select, the pushbutton, *F18 Sort*.

    – If your BOM only has a few components, you can select the command, *Mode for opening -> Single-line* so that when you place the cursor on the receipt element and double click with the mouse, the system displays all components with receipt elements immediately.

Status Report

The lines of the status report are provided with exception messages as in the MRP list which can be displayed by a double click of the mouse on the appropriate long text. Rescheduling proposals are also displayed if they exist and if the window is large enough. You can display and change the MRP elements.

A graphic is also available which you can use to check the individual BOM levels.

In the receipt elements display, you can select whether for the lower BOM levels, the system is to display the total receipt quantities or only the required quantity. At the lowest BOM levels the receipt quantities can be scheduled for greater quantities if a component is frequently used meaning that more dependent requirements are required, or if a component has a fixed lot size. The display differentiates:

- whether the receipt quantities for the components are only checked for the amount required to cover the dependent requirements for the production of the order,

- or whether the system checks the total quantity of dependent requirements that was created for a BOM level

> The order is scheduled for 50 pieces. As the components are frequently used, a dependent requirement from another material for 50 pieces is added. This means that for this BOM level, 100 pieces in total must be available.
> If the system only checks for the amount required to satisfy the order, a warehouse stock of 50 pieces would suffice. The system would indicate that there are no problems on this particular BOM level. If the system checks the total receipt quantity, the total quantity that is required to cover the dependent requirements must either be in stock or scheduled so that the system can indicate that there are no problems on this particular BOM level.

Access with dialog box for the selection of sales order items

The items are highlighted. Select the function key *F19 Color legend*, to find out what the colors stand for. You can also sort the items. To do this, position the cursor on the criteria that you want to use to sort your data, (for example date), and select the pushbutton, *Sort*. If you want to sort according to priority, that is, you want the system to display the problem components first, position the cursor on the selection column and select the function key *F18 Sort*.

On this dialog box, the following processing options are available:

Position the cursor on an order item.

- if you only want to see the receipt elements that have problem situations, select *Open lines to error*. The system displays an overview of all the BOM levels where problems occurred either for dates or quantities.

- If you want to see all the receipts including the exceptional situations, select *Open to receipt*. The system then displays an overview of all the BOM levels for which receipt elements have been scheduled.

- If you want to see the receipts for all the order items in the dialog box, select, *All lines in detail*. Then, for all order items, the system opens all the BOM levels for which receipts have been scheduled, irrespective of whether the receipt has a problem or not.

- If you first want to see the order item level, select the item and then select, *Continue*.

Here, the processing and display functions described above are available.

Hierarchy Element

A hierarchy element is a term under which several other terms are grouped. This is used to structure the layout of the evaluation.

At the lowest level in the evaluation layout are the MRP elements which are grouped together using various terms (the hierarchy elements).

You define the hierarchy elements and the evaluation layout in Customizing for master production scheduling.

Planning Table

Implementation Options

You can use the planning table for Repetitive Manufacturing as an evaluation and planning instrument for planned and production orders. A production version is the only prerequisite for materials that you want to process in the planning table.

Planning and controlling for repetitive and continuous manufacturing is usually period and quantity oriented. The planning table is therefore based on periods and provides an overview of materials and production lines by period and quantity.

Implementation considerations

It is recommended to use the planning table as additional evaluation and planning instrument for your planning results if your production is organized as repetitive or continuous manufacturing.

Integration

You can use the planning table in addition to MRP. In the planning table the system displays all the planned orders and production orders that are generated in MRP, and you can process them in the planning table.

Features

A planner uses the planning table to schedule production quantities. The planner can check the production quantities at a glance, and ascertain the current capacity load utilization for the production line and the product availability situation.

Flexible strategies for automatic scheduling assist the creation of production plans that are tuned to capacity.

As planning is often related to shifts, the planning table includes functions that enable the distribution of production quantities to shifts.

You can find further information about the planning table in the SAP documentation for Repetitive Manufacturing.

Processing Planned Orders

A planned order represents a planned receipt of a material in a plant. It specifies when the inward stock movement should be made and the quantity of stock that is expected.

As a rule, planned orders are created automatically during the planning run, however, they can also be created manually in the system by the MRP controller.

During the planning run, the system executes a BOM explosion for materials that are produced in-house and uses the BOM components as material components for the planned order. The system creates a corresponding dependent requirement for these components. If the quantity or the date of the planned order changes or if the bill of material changes, the bill of material is re-exploded in the next planning run and the dependent requirements of the material components are adjusted accordingly.

During the planning run, the system normally executes a BOM explosion and passes on changes to the planned order material to subordinate BOM levels.

However, if you create or change a planned order manually, you must also explode the BOM manually to adjust the material components.

> Planned orders are converted into production orders for in-house production and into purchase requisitions for external procurement.

Characteristics of Planned Orders

A planned order has the following characteristics:

- It is an order proposal, created during materials planning and is used within the company for planning production and procurement. The planned order is used for covering requirements and can be changed at any time.

- For materials produced in-house, it represents the pegged requirement for dependent requirements and can be used in the capacity calculation.

- For materials produced in-house, it specifies the basic dates for production.

Processing Planned Orders

There are two methods of creating planned orders:

Manually

The MRP controller enters a planned order manually. He determines which material should be procured, the quantity of material to be procured, the date it should be available and whether it is to be procured externally or internally.

When manually processing the planned order, you can initiate BOM explosion and you can process the materials.

Automatically

During the planning run, the system automatically calculates the materials to be procured as well as the requirements quantity and date.

Create a Planned Order

As a rule, planned orders are generated automatically during a planning run. However, it may be necessary to manually enter planned orders in the system. An example is when the MRP controller wants to procure materials irrespective of actual requirement quantities.

To manually create a planned order in the system, proceed as follows:

1. From the menu screen for Material Requirements Planning, choose *Planned order* → *Create*.

   The initial screen for creating a planned order appears.

2. Enter an order profile. The order profile determines the order type, the procurement type, and the special procurement type of the planned order.

   If you want to use an existing planned order as a template to create a new planned order, enter the number of the planned order you want to copy in the section of the screen entitled *Reference*. All the data from the planned order that you copy are proposed on the detail screen. You can overwrite this data.

3. Choose *Enter*.

   The detail screen of the planned order appears where you can maintain the order data.

4. Enter the following information:

   – If the numbers are assigned externally, enter a number in the *Planned order* field. If the numbers are assigned internally, leave the field blank.

   – Enter the *Planning plant*, a *Material number* and the *Order quantity*.

   – Enter either the order finish date or the order start date. The date which you do not enter is calculated automatically by the system using the scheduling data.

   – If the planned order is not to be produced in one lot but in several partial lots, enter the partial lot quantity and the number of partial lots. When you enter a partial lot quantity, the system recalculates the order quantity using the partial lot quantity and the number of partial lots.

   – If you know a fixed scrap quantity for the entire production of the planned order quantity, enter the appropriate scrap quantity.

   – If a goods receipt processing time has been entered in the material master record for this material, it is set as the default value in the *GR processing time* field. You can change this value or, if the field is blank, enter a value. This entry has no effect on the value in the material master record.

   – The *Order type*, *Procurement type*, and *Special procurement type* are set automatically based on the order profile, which you entered in the initial screen. You cannot change these fields.

5. Choose *Enter*.

   The corresponding texts are displayed for the data entered and the system calculates the missing dates. The planning plant was transferred automatically as the production plant. In addition, the following indicators are set as default values:

Create a Planned Order

- – The planned order is automatically flagged as convertible in the *Conversion indicator* field. This enables the later conversion to a production order for in-house production, or to a purchase requisition for external procurement.

- – As you are manually creating the planned order, it is automatically flagged as firmed in the *Firming* section. Firmed planned orders are not changed by the system in a subsequent planning run.

6. For planned orders that are assigned to the sales order account or to the project account, you can enter the appropriate sales order or project. To do so, select *Edit → Customer data*.

7. You can assign a BOM explosion number to the planned order. Enter the required BOM explosion number in the *BOM expl.number* field.

8. You can assign a production version to the planned order. There are two ways of doing this:

- – Enter the production version in the *Production version* field.

- – If you use the quota arrangement system for the production versions, you can display which production version is to be used next according to the quota arrangement. To do this, select *Edit → Assign version*.

9. Save the planned order.

Changing and Displaying Planned Orders

It may be necessary to change an existing planned order. For example, this may be necessary if the planned order in question is firmed, but then received a rescheduling proposal during the planning run.

To change a planned order, proceed as follows:

1. Starting from the menu screen of Material Requirements Planning, select *Planned order* → *Change*.

   The initial screen for changing a planned order now appears.

2. Enter the number of the planned order to be changed and select, ENTER.

   The details screen now appears.

3. Make the changes necessary.

4. Save the changes.

   If you change a planned order, it is then regarded as firmed for the planning run, (as is a planned order that is created manually). Thus, it will not be changed automatically during subsequent planning runs.

Processing Components in Planned Orders

When maintaining planned orders, you can either change or delete the existing material components of the planned order material. You can also create new components.

Changing Components

To process the components, proceed as follows:

1. Choose *Edit* → *Explode BOM*.

    The screen for processing the components of the planned order material now appears.

    In the lower part of the screen, the system displays an area where you can process the individual components in detail. The data of the first item is automatically displayed first. In the header line, the material number and the item category of this component are displayed.

    The item category is displayed in the *It* column.

2. In the *Component* area, the material number, plant and item number are displayed. In addition, the following fields and keys for processing the component are set, depending on the item category:

- **For a storage location item:**

    You can change or enter the following data in the section of the screen entitled, *Requirements data*:

    Requirements quantity and **quantity unit**

    Requirements date

    Firming indicator

    If you set the firming indicator for a component, the quantity of the component is firmed and, thus, will not be changed during the planning run. It can only be changed manually.

    You can change or enter the following data in the section of the screen entitled, *Distribution:*

    Input distribution key

    The distribution key specifies how the quantities which are included in production are divided up into partial quantities.

    Latest requirements date

    The latest requirements date marks the end of the requirements period for distribution.

    By choosing `Add. data,` you can access additional data for the component (long text, scrap data, follow-up time, and so on).

    By choosing `Avail.check,` you can start the availability check for the component.

    If a long text was entered for a component, you can access it by choosing `Long text.`

- **For a non-stock item:**

You can change or enter the following data in the section of the screen entitled, *Requirements dates*:

Requirements quantity and **quantity unit**

Requirements date

Firming indicator

If you set the firming indicator for a component, the quantity of the component is firmed and, thus, will not be changed during the planning run. It can only be changed manually.

By choosing `Procurmt,` you receive additional data for direct procurement.

If a purchase requisition for direct procurement has not yet been created by the planning run for the non-stock item, you receive a corresponding message in the message area.

- **For a variable-sized item:**

    You can change or enter the following data in the section of the screen entitled, *Requirements dates*:

    Requirement quantity and **quantity unit**

    Requirements date

    Firming indicator

    If you set the firming indicator for a component, the quantity of the component is firmed and, thus, will not be changed during the planning run. It can only be changed manually.

    You can change or enter the following data in the section of the screen entitled, *Distribution*:

    Input distribution key

    The distribution key specifies how the quantities which are included in production are divided up into partial quantities.

    Latest requirements date

    The latest requirements date marks the end of the requirements period for distribution.

By choosing `Add. data,` you can access additional data for the component (long text, scrap data, follow-up time, and so on).

By choosing `Sized data,` you can access additional data for the variable-size item in a dialog box where you can also make changes, if necessary.

- **For a text item**

    In the section of the screen entitled, *Texts,* the system displays the long texts which were entered for the text items.

- **For a phantom assembly**

    The requirements for a phantom assembly are passed on to the components as dependent requirements. Therefore, in the upper part of the screen, the system displays the components of the phantom assembly as well as the phantom assembly.

Processing Components in Planned Orders

You can change or enter the following data in the section of the screen entitled, *Requirements dates*:

Requirements quantity and **quantity unit**

Requirements date

Firming indicator

If you set the firming indicator for a component, the quantity of the component is firmed and, thus, will not be changed during the planning run. It can only be changed manually.

You can change or enter the following data in the section of the screen entitled, *Distribution*:

Input distribution key

The distribution key specifies how the quantities which are included in production are divided up into partial quantities.

Latest requirements date

The latest requirements date marks the end of the requirements period for distribution.

By selecting `Add. data`, you can access the additional data of the component (long text, scrap data, follow-up time, and so on).

By selecting `Frm stock`, for a phantom assembly kept in stock, the system will create dependent requirements for the phantom assembly, but not for the components (that is, you deactivate the special procurement "Phantom assembly" for this planned order). A dialog box appears where you can enter the issue quantity. If you withdraw the complete quantity the system will only display the material number of the phantom assembly in the component display. If you only withdraw a partial quantity, the system will display a quantity in proportion to the total quantity.

3. You call up the next item with the `Item+` key.

    You call up the preceding item with the `Item-` key.

Creating Components

You can create a storage location item or a variable-sized item.

To create components, you have two possibilities:

- collective entry

  Using the collective entry option, you can create several new components at the same time. For each component, a line exists in which you can enter the material number, the requirement quantity and the requirements date. To make a collective entry, choose `Collective entry`.

- detailed entry screen

  In the detailed entry screen, you can enter detailed data for the individual component. To do this select, `Detailed entry`.

  In the lower part of the screen, an section is displayed where you can enter the following data for the component:

- **Material number**

- **Requirement quantity and quantity unit**

- **Requirements date**

- **Firming indicator**

    If you set the firming indicator for a component, the quantity of the component is firmed and, thus, will not be changed during the planning run. It can only be changed manually.

You can enter the **following data in the section of the screen entitled,** *Distribution***:**

- **Input distribution key**

    The distribution key specifies how the quantities which are included in production are divided up into partial quantities.

- **Latest requirements date**

    The latest requirements date marks the end of the requirements period for distribution.

If you want to create a variable-sized item, select, `Size data`. The system then displays a dialog box containing information on variable-sized items which you can use for maintenance purposes.

Deleting Components

To delete a component, position the cursor on the item and select *Edit* → *Delete*.

The selected component is deleted.

Retrieving Deleted Components

To retrieve deleted components, select *Edit* → *Entry* → *Display del. entries*.

> Select the components you want to retrieve and press, `Retrieve`.
>
> The deleted component is retrieved.

> ➡
>
> If you create components in the components processing screen manually, these new components will be overwritten when you then manually explode the BOM. In other words, the newly created components are deleted again.
> You can retrieve these deleted components by following the steps described above.

Displaying BOM Explosion Details

You can display additional data for the BOM explosion.

Select *Details* → *For explosion*.

A dialog box appears with the planning data of the planned order as well as data on the BOM explosion (explosion date, BOM usage, BOM alternative) and on scheduling.

Component Summary

You have the option to view a summary of components and item categories.

Processing Components in Planned Orders

To do this, choose *Extras* → *Item overview* from the Component Processing screen.

A dialog box appears that contains the total of all components and the total per item category, such as the total stock items, total non-stock items, and total variable-size items.

Capacity Leveling in the Planned Order

To carry out capacity leveling for a planned order, proceed as follows:

1. Starting from the MRP or MPS menu, select *Planned order* → *Create* or *Change Planned order* → *Display.*

   The system accesses the header of the planned order. From here you can carry out a capacity check or, if necessary, capacity leveling. Note that in display mode, it is also possible to carry out a capacity check. If there is an overload the system branches to the capacity situation meaning that you cannot make any changes.

2. In the screen displaying the results of single-item planning or interactive single-item planning, select *Goto* → *Capacity leveling*.

   The system displays the dialog box *Settings for Capacity Planning* if you have not already set parameters for capacity planning.

3. Select the required planning type and the period type for capacity planning. You can choose a period of examination, if necessary. Press the function key `Continue`.

   The system carries out scheduling using the parameters set in Customizing.

4. If errors occurred during scheduling, the system displays an overview of the scheduling errors relating to the planned order in the dialog box entitled, *Scheduling error*s. From here you can directly check the details of the scheduling errors in the scheduling log. Press the function key `Log` to do this.

5. Press the function key `Continue` to access capacity leveling.

   The capacity situation relates to one work center and one capacity category as well as the capacity unit from the work center. If a planning work center (header of the routing) is entered in the routing then this work center is displayed first of all with the relevant capacity category, otherwise the selection takes place at random. The system also displays the following data:

   – material number, short text and plant of the material to be processed

   – available capacity

   – overall capacity requirements at the selected work center

   – capacity requirements for the material

   Periods with overload are highlighted.

Functions in Capacity Leveling [Page 436]

Functions in Capacity Leveling

The following functions are available in capacity leveling:

- selection of capacities

- overload check

- display of the maximum load and selection of the overload periods

- display of the scheduling data

- detailed display of pegged (capacity) requirements

- display of all planned orders for a material

- capacity planning for material view

- capacity planning for order view

- branch to graphic planning table

These functions are described in the following sections:

Selection of Capacities (Work Centers and Capacity Categories)

You can check the capacity situation for all work centers and the capacity categories maintained in each work center.

If you want to display another capacity, that is, another work center or another capacity category, press the function key `Capacity`.

The dialog box entitled, *Capacities* appears. The system lists all work centers along with the capacity categories maintained in the work centers where capacity requirements have arisen for the material. The system displays the maximum load for every capacity category.

To select another work center or another capacity category, place the cursor on the desired capacity category and press the function key `Select`.

Overload Check

To display the overload for individual work centers (capacity categories), proceed as follows:

1. Press the function key `Capacities`.

   The system displays a dialog box entitled, *Capacities* with a list of the work centers and capacity categories for the material selected.

   It shows the maximum load for every capacity category, that is, the absolute value of the maximum load. If the value exceeds available capacity, it is highlighted.

2. To check the overload(s) in detail for the capacity categories, press the function key overload. The system displays the dialog box entitled, *Capacities with overload* listing all the periods in which too many operations were dispatched for the capacity categories.

The overload, that is, the value from which availability is exceeded, is set at 100% in the standard system. A capacity is overloaded on a particular date if the requirement is greater than available capacity. You can set the overload value to another percentage of your choice. To do this, proceed as follows:

1. Press the function key `Settings` in the dialog box, *Capacities with overload*.

The system displays the dialog box *Settings for overload display*.

2. In the field entitled, *Max. load* enter the desired percentage for the overload check. You can limit the time period for which the overload check takes place in the section *Limit periods*.

3. Press the function key *"Copy".*

The system carries out the overload check using the changed values.

Displaying the Maximum Load and Selecting the Overload Periods

To check the periods which can be seen to have maximum load on inspection and to target them for processing, proceed as follows:

1. Press the function key `Capacities`.

The system displays the dialog box entitled, *Capacities* listing the work centers and capacity categories for the material selected.

It shows the maximum load for every capacity category, that means the absolute value for the maximum load. If the value exceeds the available capacity then it is highlighted.

2. To select the precise period(s) where the maximum load was dispatched, place the cursor on the capacity category that is highlighted and press the function key Select.

You branch to the overview for the selected resource; the system highlights the period with the maximum load.

To check the periods which can be seen to have maximum load on inspection and to target them for processing, proceed as follows:

1. Press the function key *Capacities.*

The system displays the dialog box entitled, *Capacities* listing the work centers and capacity categories for the material selected.

2. Press the function key `Overload`. The dialog box *Capacities with overload* appears.

3. Place the cursor on a period and press the function key `Select`.

You branch to the overview for the capacity selected and the system highlights the selected period.

Displaying Scheduling Data

You can display scheduling data for individual orders. The following options are available to do this:

- Call up the pegged requirements in the material view. Place the cursor on the order and press the function key Display `scheduling data`.

- Once in the order view place the cursor in the column *Planned order* on any period you wish for the planned order selected and select *Edit → Scheduling data.*.

The screen entitled, *Scheduling data* appears where you can check the basic dates and production dates as well as any scheduling errors.

Detailed Display of Pegged (Capacity) Requirements

You can instruct the system to display which orders have generated the overall capacity requirements for a period. To do this, place the cursor in the column *Overall* on the appropriate period and press the function key `Display pegged requirements`.

If you only want to display the orders generating the requirements, place the cursor in the column *Material* on the appropriate period and press the function key Display pegged rqmts.

The system displays the orders generating the requirements in the lower section of the screen. The following data is displayed:

- order group
- order number
- material number
- order quantity
- base unit of measure
- finish date for the order
- capacity requirements for the order

If you have maintained several operations in the routing for an order then the individual operations are listed under the same order number.

Displaying all Planned Orders for a Material

To display all the planned orders for a material, press the function key `Planned orders`.

The system displays the dialog box entitled, *Planned orders for material* listing all the planned orders and the following data:

- planned order number
- planning plant
- material number
- order quantity
- unit of measure
- order start date
- order finish date

Capacity Planning for Material View

In the material view you can change the quantity or date of all planned orders.

To do this, press the key `Planned orders`. The dialog box, *Planned orders for material* appears listing all the planned orders.

Place the cursor on the desired planned order and press the function key `Select`.

The system displays the selected planned order in the section of the screen entitled, *Planned order* with the following fields:

- planned order number

- material number

- planning plant

- order quantity

- production version

- order start date

- order finish date.

You can change the order quantity as well as the dates.

Capacity Planning for Order View

In the order view, you can only change the dates or quantities of the selected planned order.

The system displays the selected planned order in the section of the screen entitled, *Planned order* along with the following fields:

- planned order number

- material number

- planning plant

- order quantity

- production version

- order start date

- order finish date.

The order quantity as well as the dates can be changed.

Branching to Capacity (Graphic) Planning Table

The capacity planning table allows operation-oriented dispatching.

To call up the capacity planning table select *Goto* → *Dispatching (graph).*

The system displays the capacity planning table.

You make changes starting from the current stock/requirements list and they are copied to the capacity planning table in the evaluation.

The changes you make starting from the planning result in the material view only take effect once you save the planning result.

Availability Check for Components in the Planned Order

Use

You can check whether the quantity available for components in the planned order is sufficient to produce the planned order quantity on time.

Features

The system checks availability for planned orders only on request, that is, the planning run does not automatically check availability.

You can carry out the availability check

- for a single planned order

- as a Collective Availability Check [Page 448] for a selection of planned orders.

You can choose between two types of availability check:

- Availability Check According to ATP Logic [Page 441]

- Availability Check Against Planned Independent Requirements [Page 442].

You can see the type of availability check that was last carried out in the header of the planned order in the field entitled, *Type of AvC.*

You can carry out the availability check as often as you want with the following limitations:

- If you check according to ATP logic, you can repeat this check as often as you want. However, you cannot then check against planned independent requirements immediately afterwards. If you want to check against planned independent requirements after having first checked with ATP logic, you must first reset the check with ATP logic.

- If you check against planned independent requirements, you can repeat this check as often as you want. In this case, you can also directly change to the check according to ATP logic. Therefore, you do not have to reset the results of the availability check first.

> You can switch off the availability check for certain materials. This is especially useful for materials that you know are always available in stock, such as screws. To make sure that these materials are not included in the check, you can set the indicator *No check* in the material master (view *MRP 3*) in the field *Availability check*.

Availability Check According to ATP Logic

Use

In the check according to ATP logic, the system checks whether the dependent requirements of each component are covered by specific receipt and issue elements or by stock.

Prerequisites

- **Checking group**

  You have assigned a checking group to the materials to be checked in the material master (*MRP 3* view, *Availability check* field).

- **Checking rule**

  You have set a checking rule for the plant in Customizing for MRP in *Maintain all plant parameters*. You can also assign a checking rule directly to the material using the MRP group.

  The system determines the Scope of the Availability Check [Page 476], that is, the receipts, issues and stocks that are to be included in the availability check depending on the combination of the checking group and the checking rule.

- In Customizing for MRP under *Define availability check for components → MRP group,* you have determined whether the ATP check is to per MRP group following the logic of full or partial confirmation.

Features

The availability check is dynamic and uses the ATP logic, that is, each time you carry out the check, the system recalculates the current situation. If a quantity can be confirmed for the requirement date, the system enters precisely this quantity as the confirmed quantity in the dependent requirements and the ATP quantity for the components is reduced by the confirmed quantity. Therefore, in the next availability check, dependent requirements can only be confirmed for the amount of the remaining ATP quantity.

The result of the availability check for the components is displayed in the planned order header in the fields *Confirmed quantity* and *Order confirmation date*.

Activities

To check availability according to the ATP logic, select 🗗 *Components ATP* in the header data screen of the planned order.

The Availability Overview of the Components [Page 444] appears.

Availability Check Against Planned Independent Requirements

Use

In the check against planned independent requirements, the system only checks the dependent requirement quantities against the open planned independent requirements created for the components. Therefore, neither the ATP quantity nor the receipts or stocks are included in this availability check.

This type of availability check is most useful:

- if **assembly planning** (in the standard system, planning strategy 70) or **phantom assembly planning** (in the standard system, planning strategy 59) is used to plan the components

- if the availability situation is required at short notice and the results from this check are precise enough.

Prerequisites

- **Checking group**

    You have assigned a checking group to the materials to be checked in the material master (*MRP 3* view, Availability check field). With this checking group, the check can be made against planned independent requirements.

    These settings for the checking groups are made in Customizing for Sales/Distribution or Production control under *Define checking group*, in the field *Relevancy of check against planned independent requirements.*

    The following options are available for setting the checking group:

    – *No check against planned independent requirements*

        You cannot check against planned independent requirements. However, the material can still be included in the availability check according to ATP logic.

    – *Always check the material against planned independent requirements*

        You can check against planned independent requirements. Simultaneously, the material can still be included in the availability check according to ATP logic.

    – *Only check the material against planned independent requirements if the material is a phantom assembly*

        The system can only check against planned independent requirements when dealing with phantom assemblies (special procurement key, *Phantom assembly*). Simultaneously, the material can still be included in the availability check according to ATP logic.

        ➡

        In the availability check against planned independent requirements, the checking group does **not** control the scope of the check as it is only carried out against planned independent requirements.

- **Consumption mode/Consumption period**

You must maintain the following indicators in the material master record to determine the period in which planned independent requirements are allowed to be consumed by dependent requirements.

−   Consumption mode, that is, the direction of the consumption. You can determine whether planned independent requirements can be consumed in the past and/or in the future.

−   Consumption period, that is, the length of the period (either in the past or in the future) during which planned independent requirements are allowed to be consumed.

Features

The system uses the open planned independent requirements quantity at component level to determine a confirmed quantity and this quantity is copied to the planned order header in the *Confirmed quantity* field. As opposed to the availability check according to ATP logic, however, the confirmed quantity is not recorded in the dependent requirements. The planned independent requirements of the components are not consumed by the confirmed quantity but by the complete dependent requirements quantity. In following availability checks, the system can confirm quantities only for the amount of planned independent requirements that have not yet been consumed.

In the availability check against planned independent requirements, the following dates/quantities are **not** calculated:

*   partial confirmation date

*   partial confirmation date/quantity

Activities

To check availability against planned independent requirements, select *Edit → Components ATP* in the header data screen of the planned order.

The Availability Overview of the Components [Page 444] appears.

Availability Overview of the Components

Definition

The availability overview of the components shows the availability situation of all components of a planned order. It is the result of the availability check.

Integration

You can view the availability of the components for both types of availability check.

- the availability check according to ATP logic

- the availability check against planned independent requirements

Each type of availability check is displayed in a different color.

Structure

Individual Component Data

The components checked are categorized in three groups:

- available components

- missing parts and

- components with faulty check.

Each group is displayed in a different color. You can check the significance of the colors by selecting *View → Color legend*. If you only want to see the missing parts, select *View → Check result → Only missing parts*.

A number of fields (which you can change as necessary) are displayed per component, for example, material number, material short text, plant, storage location, requirements quantity, confirmed quantity and so on. You can add or remove fields and change the display sequence. To do so, choose *View → Select fields*.

The most important fields for the availability check are listed below:

- **Requirement quantity**

    The dependent requirements quantity resulting from the explosion of the BOM.

- **Requirements date**

    The date on which the components have to be available - this is usually the order start date of the planned order.

- **Confirmed quantity**

    Maximum quantity available on the requirement date according to the check of all components. Depending on the Customizing settings (*Availability check for components → MRP group*) it is calculated according to the logic of partial confirmation. With the logic of partial confirmation, the component with the lowest degree of availability determines the confirmed quantity of all components. With the logic of full confirmation the total available quantity is confirmed for all components.

When you save the result of the check, this quantity is copied to the planned order as the confirmed quantity.

- **Confirmation date**

    Earliest date, on which the total requirement quantity is available per component. If the requirement component is not fully available at any time, it is given the number sequence *99.99.9999* as confirmed date.

- **ATP quantity** (only calculated in the check according to ATP logic)

    Receipt quantity of the receipt quantity of component available on the requirements date. This quantity may be greater than the confirmed quantity as it is often the case that some components are completely available on the requirements date but others are only partially available.

General Data

In the header of the availability overview, the system displays the following general data:

- **Number of checked components**

- **Number of missing parts**

- **Total confirmation date** (only calculated in the check according to ATP logic)

    This is the date on which the complete requirement quantity is available including the in-house production time of the header material. This date is copied to the planned order as the order confirmation date on saving the results of the availability check. The total confirmation date depends on the following:

    − If the quantity required can be completely confirmed for the requirement date, the total confirmation date corresponds to the order finish date of the planned order.

    − If the quantity required cannot be completely confirmed for the requirement date, as not every component can be available in sufficient quantity by this date, then the total confirmation date corresponds to the date of the last material to be completely available plus the in-house production time of the header material.

    − If one of the components is not available in sufficient quantity by the requirement date and if this component cannot be made completely available for any later date, then the system cannot calculate a total confirmation date.

- **Partial confirmation date/quantity** (only calculated in the check according to ATP logic)

    The 'partial confirmation date' is displayed along with the partial confirmation quantity when the components are not completely available by the requirement date, however, a partial quantity is available on a later date (before the total confirmation date). Thus, this partial confirmation date represents the next point in time when a partial delivery can be made. Dates and quantities are based on the component with the least partial available quantity.

Activities

For information purposes, you can check the **detailed date proposals per component**. To do so, select the required component and choose ▦. Depending on the type of check you have carried out (ATP logic or check against planned independent requirements), you receive the following data:

Availability Overview of the Components

Check According to ATP Logic

A dialog box with a list of the individual confirmation dates and quantities appears. From here you can:

- Check the scope of the availability check, that is, check which stock, goods receipts and issues are included in the check (see also Scope of the Availability Check [Page 476]).

- Access the availability overview for the material, with ATP quantities (see also Availability Overview [Page 480]).

    In the availability overview the currently checked dependent requirement is displayed as a simulative dependent requirement, as it has not yet been saved in the database.

Check Against Planned Independent Requirements

The system displays the total requirements.

The system displays the planned independent requirements as well as the dependent requirements that were assigned (that is, consumed) for the components selected. As the dependent requirements have not yet been saved in the database, they are displayed as simulative dependent requirements.

Resetting the Availability Check

To reset the results of the availability check and thus the confirmation on dependent requirements level, proceed as follows:

In the header of the planned order, select, *Edit → Reset component availability.*

The system then resets the *Confirmed quantity* and the *Order confirmation date* for the dependent requirements.

Collective Availability Check for Components in Planned Orders

Use

In the collective availability check you can check whether the components required are available for **several planned orders simultaneously**. This is particularly useful if you want to convert several planned orders simultaneously, for example, and you want to check beforehand if and by when the components are available.

Integration

Just like the individual check in the planned order, you can carry out the collective availability check according to ATP logic or against planned independent requirements.

> In assembly orders the availability check does not update the sales order.

You can find further information on the availability check under <u>Availability Check for the Components in Planned Order. [Page 440]</u>.

Prerequisites

- To be able to carry out the collective availability check, you need a **profile order view.** In the standard system the profile order view 000001 is used. The profile controls the formatting of the overview list with the planned orders selected (field selection, field sequence).

- For the missing parts/component list, a profile is also used in the standard system: **profile component view** 000001. The profile component view controls the formatting of the component list (field selection, field sequence).

You can create your own profile in Customizing for MRP, under *Carry out collective availability check*, or you can copy and change the profile 000001.

Features

You can carry out the collective availability check in two ways:

- in the foreground
- in the background

Check the Collective Availability in the Foreground

Procedure

1. Starting from the node in Material Requirements Planning choose *Planned order* →
   Collective avail. check.

   The system displays the initial screen for the collective availability check.

   The system proposes standard profiles for the order lists and component lists.

2. Enter a user profile if you do not want to create the order list or component list as a standard
   list.

3. Enter the selection criteria for the planned orders and choose 🕒.

   If you enter an MRP controller, for example, the system selects all planned orders for this
   MRP controller.

   The overview of the selected planned orders appears.

4. Select the planned orders for which you want to check the availability of the components and
   choose 📑 .

   The system displays the dialog box for the *collective availability check*.

   The parameters for the availability check have already been selected. If you want to
   change these, choose 📑 and select the relevant parameters in the dialog box (see
   Check Mode for Collective Availability Check [Page 451])

5. Choose 📑 to start the check.

   The system displays the results in the planned order overview list.

6. To display the components of a planned order, select the planned orders and choose 🏢
   Missing parts. The missing parts view of the selected planned orders now appears.

   With *All components* or *Only missing parts* you can change between different views.

7. Choose 🕒.

   The overview of the selected planned orders appears again.

8. If necessary, change the dates of the planned orders for which components are not available
   until a later date. To do so, access the planned orders individually from the overview list and
   change them. Check the availability for the changed planned orders.

Result

The data calculated in the availability check is automatically saved to the database.

Check the Collective Availability in the Background

Use

You use the collective availability check in the background if you have large amounts of data to process and do not want to impair system performance. You can run the check over night and see the results the following morning in printed form.

Procedure

1. Starting from the node in Material Requirements Planning choose *Planned order* → *Collective avail. check.*

    The system displays the initial screen for the collective availability check.

    The system proposes standard profiles for the order lists and component lists.

2. Enter a user profile if you do not what to create the order list or component list as a standard list.

3. Enter your selection criteria for the planned orders.

    If you enter an MRP controller, for example, the system selects all planned orders for this MRP controller.

4. To do this, select *Show check mode.*

    The system displays the field for defining the check mode in the lower section of the screen.

5. Make the desired settings for the check mode (see Check Mode for the Collective Availability Check. [Page 451]).

6. Select *Program* → *Execute in background*.

    The dialog box for entering the background print parameters appears.

7. Enter the printer parameters if the system does not propose them and choose 🗸 .

    The system displays the dialog box *Start date values.*

8. Plan the print request and choose 🖫.

    The system saves the background job. You return to the initial screen for the collective availability check.

Result

The list is printed at the time chosen.

Check Mode for Collective Availability Check

Use

You can define how the collective availability check for the components is to be carried out. To do so, choose *Check mode* on the collective availability check screen.

Features

The necessary selections are already set by the system when you call the transaction. However, you can change these. The following options are available:

- **Resetting the availability data**

     The following data of all selected planned orders can be deleted before the check is carried out:

  − confirmed quantity in the material components

  − the total confirmation date in the planned order header

  − the confirmed quantity in the planned order header

- **Checking availability**

     You have three options for carrying out the collective availability check:

  − If you select *Individual*, the availability is checked for each material, depending on the settings in the check group. If the check group is set, for example, so that the material is always checked against planned independent requirements, then this check is carried out.

  − If you select ATP, the availability check is an ATP check for all materials, independent of the settings in the check group.

  − If you select *Forecast check*, the availability check is against planned independent requirements for all materials. However, you cannot use this check if you have defined *No check against planned independent requirements.*

- **Firming planned orders**

     You can define that the planned orders, for which there are components available, are firmed after the availability check. This is also possible if the planned orders cannot be fully confirmed.

     Firmed planned orders can no longer be changed by the planning run. In addition, the components are also firmed, that is the BOM is not exploded again in the next planning run.

Results of the Collective Availability Check

Use

The results of the availability check are displayed in the **planned orders overview list**. You can change to the **missing parts list** to display the missing parts for each planned order.

Features

Planned Orders Overview List

The following data is used as the result of the collective availability check when using the standard profile:

- **Result key**

    Total result of availability check for the planned order:

    − 01: order can be fully confirmed

    − 02: order cannot be fully confirmed

    − 08: order was locked by another user and has not been checked

    − 09: order could not be checked

- **Confirmation factor**

    Relationship between the confirmed order quantity and the order quantity.

- **Confirmation difference**

    Difference in workdays between the planned order finish date and the confirmed order finish date of the order.

- **Confirmed quantity** of the order

- **Total confirmation date** of the order

    Date on which the full quantity can be delivered. The date is only calculated in the ATP check.

In the planned orders overview list you have the following processing options:

- Changing the planned orders

- User-specific sorting of the planned orders

- Changing the field selection in the list

- Displaying all fields for a planned order

- Saving the list as a PC file.

Missing Parts/Component List

You can display the missing components in a list, for the planned orders that you have selected. To do so, select *Missing parts* in the planned orders overview list. The missing parts view of the selected planned orders appears.

You can change between different views by using *All components* or *Only missing parts*.

If you work with the standard profile, the missing parts/components list contains the following fields:

- item number

- material number

- material short text

- plant

- storage location

- batch

- requirement quantity

- confirmed quantity

- requirements date

Selection of Other Fields in the Component List

In the missing parts/components list you have the following **processing options**:

- Changing the field selection in the list

- Displaying all fields for a component.

Collective Display of Planned Orders

You have two options for displaying planned orders:

- Individual display
- Collective display

Individual Display

To display an individual planned order, proceed as follows:

1. Starting from the menu screen of Material Requirements Planning, choose *Planned order* → *Display* → *Individual display*.

   The initial screen for displaying individual planned orders now appears.

2. Enter the number of the appropriate planned order and choose ENTER.

   The planned order details screen now appears.

Collective Display

To display all the planned orders corresponding to your selection criteria collectively such as all the planned orders of a particular MRP controller, proceed as follows:

1. Starting from the menu screen of Material Requirements Planning, choose *Planned order* → *Display* → *Collective display*.

   The initial screen for the collective display of planned orders now appears.

   You can search for planned orders by MRP controller, material, run schedule header, version or production line.

   The following example uses a search by MRP controller:

2. Select the MRP controller and choose Search

   A dialog box appears.

3. Enter the plant and the MRP controller number.

   If you want to narrow the selection down further, enter a date until which planned orders are to be displayed.

4. Press ENTER.

   The system displays an overview of the all planned orders which correspond to your selection criteria.

   From this overview, you have various options for processing the planned orders:

   – To display additional data for a particular planned order, select the appropriate planned order and choose Display planned ord.

   A dialog box with additional data now appears.

   – If you want to change a particular planned order, select the appropriate planned order and choose Change planned order.

   The details screen now appears in the change mode.

–   If you want to delete a particular planned order or planned orders, select the appropriate planned order or planned orders and choose `Delete`.

A dialog box appears in which you confirm that the system is to delete the planned orders.

–   If you want to display a pegged requirement for a particular planned order, select the appropriate planned order and choose `Pegged requirements`.

The pegged requirement screen now appears.

–   If you want to display an order report for a particular planned order, select the appropriate planned order and choose `Order report`.

The order report screen appears.

–   If you want to sort the planned orders differently, position the cursor in the column with the criteria by which you want to sort, such as the order start date, and choose `Sort`.

The system sorts the planned orders according to the sorting criteria chosen, according to the order start date, for example.

–   If you want to convert a certain planned order into a purchase requisition, select the appropriate planned order and choose `Convert -> planned ordpur. req.`

For more information on converting planned orders, refer to Converting Planned Orders into Purchase Requisitions [Page 456] or Converting Planned Orders into Production Orders [Page 460].

If you change or convert a planned order from this overview, it is then automatically indicated as firmed (X appears in the *Firming* column).

Converting Planned Orders into Purchase Requisitions

If the start date of a planned order lies in the opening period, this is an indicator for the MRP controller that procurement must be initiated. For materials procured externally, this means that the planned order should be converted into a purchase requisition.

Three options are available for converting planned orders into purchase requisitions:

- individual conversion

- partial conversion

- collective conversion

Individual Conversion

By using the individual conversion function, you can convert a single planned order into a purchase requisition. To do this, proceed as follows:

1. Starting from the menu screen of Material Requirements Planning, select *Planned order* → *Convert* → *pur.req.* → *Individ*. *conversion*.

   The initial screen for individually converting planned orders now appears.

2. Enter the number of the planned order you would like to convert into a purchase requisition and press ENTER.

   The details screen appears for individually converting a planned order into a purchase requisition.

   The upper part of the screen displays the data of the planned order and the lower part of the screen shows the data of the purchase requisition. This data is partly drawn from the planned order and partly from the material master record. It is proposed here as default values and can be overwritten, if necessary.

- You can enter a purchase requisition number in the purchase requisition field (external number assignment). Otherwise, the system automatically assigns a sequential number (internal number assignment) when saving.

- Enter the delivering plant if it is a transport requisition.

- Additionally, you can specify a storage location here in which goods receipt should be carried out.

- Specify whether a goods receipt and an invoice receipt should be carried out for the material by selecting the corresponding fields.

    From this details screen, you can also specify vendor data for the purchase requisition. To do this, proceed as follows:

  a) Select Vendor data.
     A dialog box for entering vendor data now appears.

  b) Enter the vendor data.

  c) Press ENTER.
     You now return to the details screen.

3. To convert the planned order into a purchase requisition, save your entries.

You return to the initial screen and receive the message:
Planned order was converted into a purchase requisition.

Partial Conversion

If you do not want to convert the entire planned order quantity into a purchase requisition - as the requirements situation has changed, for example, or if you want to produce a part of the quantity in-house - then you can partially convert the order quantity.

When partially converting the planned order, you only transfer a portion of the complete quantity recorded in the planned order to the purchase requisition. Partial conversion is not a separate function and is carried out in a similar way to individual conversion. To partially convert the planned order, proceed as follows:

1. Starting from the menu screen of Material Requirements Planning, select *Planned order* → *Convert* → *pur.req.* → *Individ. conversion*.

   The initial screen for individually converting planned orders now appears.

2. Enter the number of the planned order that you want to partially convert into a purchase requisition and press ENTER.

   The details screen now appears.

3. In the field entitled, *Converted quantity*, the system automatically proposes the planned order quantity. Overwrite this value with the quantity which is actually to be converted and transferred to the purchase requisition.

4. Press ENTER.

   The system displays the following message:
   Planned order only partially converted.

   In the field entitled, *Planned order qty*, the planned order quantity is automatically reduced to the remaining quantity. You now have the opportunity to correct the planned order quantity or you can delete it completely. If you set the planned order quantity to zero, the system automatically deletes the planned order during conversion.

5. Save your entries.

   The planned order is converted and you receive a corresponding message in the message area.

Collective Conversion

In collective conversion, several planned orders can be converted into purchase requisitions at once. To do this, proceed as follows:

1. Starting from the menu screen of Material Requirements Planning, select *Planned order* → *Convert* → *pur.req.* → *Collect. conversion*.

   The initial screen for collectively converting planned orders now appears.

2. Enter the MRP controller number and the plant.

   If you want to narrow down the selection further, you can enter a planned opening date in the field entitled, *Planned opening* and/or the procurement type in the field entitled, *Procurement type*.

3. Press ENTER.

Converting Planned Orders into Purchase Requisitions

The system displays a list of all the planned orders that correspond to your selection criteria.

4. Select the planned orders you want to convert.

5. To convert the selected planned orders into purchase requisitions, save your entries.

If necessary information is missing for creating a purchase requisition, the system interrupts the conversion procedure and branches to the details screen of the individual conversion. You can then add the missing data here. Press `ENTER` to continue the conversion process for the remaining planned orders.

To avoid the interruption of the conversion procedure, you can predefine default data for the purchase requisition. To do this, proceed as follows:

- Select a planned order and press the key `Pur.req.default data`.

  A dialog box appears where you can enter the necessary default data.

- Enter the data which should be transferred to the purchase requisitions. This data applies to all purchase requisitions created in the conversion.

- Press `ENTER`.

  The data entered is transferred and you return to the list of planned orders.

- To convert the planned orders, save your entries.

From the list of all planned orders selected, it is also possible to access individual planned orders one after the other and to convert them individually by positioning the cursor on the planned order you want to convert and selecting `Indiv.processing`.

In exceptional cases, you can also convert planned orders into purchase requisitions for materials produced in-house. Here, after saving, you receive a dialog box where you enter the order profile to be used for creating the purchase requisition.

All purchase requisitions which were created as described above are firmed for the planning run. They are no longer changed automatically by the system in subsequent planning runs.

Collective Conversion in the Background

As of release 4.0, you can also convert planned orders into purchase requisitions in the background.
This is particularly useful if you use the creation indicator (2) *Purchase requisitions in opening period* in the planning run. The system creates purchase requisitions in the opening period but outside the opening period, the system creates planned orders. The planned orders must be converted into purchase requisitions in time so that purchasing receives the purchase requisitions in time. To ensure that this occurs you can use conversion in background.

To do this proceed as follows:

1. To access the screen, Convert Planned Orders into Pur. Reqs in Background, choose *Planned order → Convert -> pur. req. → In background* from the MRP screen.

   The screen, *Convert Planned Orders into Pur. Reqs in Background: Variations*, appears.

2. Choose `Create variant` and create a variant.

In the variant, you define the plant, MRP controller and until which opening date conversion is to occur.

3. Complete the necessary attributes for the variant.

4. Choose `Schedule job`. Set whether scheduling is to be carried out once or periodically and enter the dates.
   Scheduling once means the scheduling is carried out once on a certain date.
   Periodic scheduling means the scheduling is carried out regularly on set dates.

5. The system automatically converts planned orders into purchase requisitions on the set dates.

Converting Planned Orders into Production Orders

For in-house production, the planned order is converted into a production order. The components required for production are contained as items in the planned order and are transferred directly to the production order when the planned order is converted.

When planned orders are converted into production orders, the dependent requirements of the components are automatically converted into reservations.

Operation data and production resources and tools data is taken as usual from the routing of the material to be produced. The selection of the routing is described in more detail in the SAP Documentation entitled, *PP Production Orders*.

If, when converting the planned order, you change the requirements quantity, or the order finish date, a planning file entry is automatically created which causes the material and its components to be planned with the regenerative planning procedure in the next planning run.

Two possibilities exist for converting planned orders into production orders:

- individual conversion
- collective conversion

Individual Conversion

Here, a single planned order is converted into a production order. To do this, proceed as follows:

1. Starting from the menu screen of Material Requirements Planning, select *Planned order → Convert -> prod.order. → Individual conversion*.

   The initial screen for creating the production order now appears.

2. You enter the number of the planned order to be converted into a production order and the order type.

3. Press ENTER.

   The details screen for maintaining the header data of the production order now appears.

On the order header screen, default values are preset in the following fields:

- Total quantity

  The total quantity of the planned order is preset here. The quantity unit is transferred from the material master.

  If a fixed lot size is predefined in the material master record of the material to be produced (MRP 1 data screen), the lot size is set as a default value in this field.

- Order start date or order finish date

  In these fields, the system displays the planned order dates using the results of the basic dates calculation.

- Scheduled start or scheduled finish

  If lead time scheduling was carried out for the planned order, the production start date and the production end date are displayed in these fields.

- Scheduling type

  Here, the system proposes the scheduling type which was found on the basis of the defaults in Customizing.

- Scheduling margin key OR
  float before production, float after production and release period

  The release period, the float before production and the float after production of the order are defined by the scheduling margin key:

  - If you maintained a scheduling margin key with floats in the material master, the system enters these fields automatically.

  - If no scheduling margin key or no floats in the scheduling margin key are specified, you can enter the appropriate number of days for the float before production, the float after production and the release period here.

You can also maintain the following fields:

- Scrap portion

  You can specify the scrap quantity you expect for this order here.

  - If you make an entry here, the system calculates the portion of scrap as a percentage and displays it in the *Percent* column.

  - If you make no entry here, the system checks whether an assembly scrap percentage has been specified in the material master record of the material to be produced. If an entry has been made, the system increases the order quantity by the percentage rate specified here.

- Priority

  You can define a priority for the order here. This field has no influence on the processing of the order.

  After you have made all the required entries on the header screen, you can enter a long text for the production order by selecting the menu options, *Goto* → *Long text*. The system automatically branches to the SAP editor after routing and BOM selection.

Save your entries. The planned order is converted into a production order. The system makes an automatic search for a routing and a BOM. For more detailed information on this topic, please refer to the SAP Documentation entitled, *PP Production Orders*.

Collective Conversion

By using the collective conversion function, you can convert several planned orders into production orders at once. To do this, proceed as follows:

1. Starting from the menu screen of Material Requirements Planning, select *Planned order* → *Convert* → *prod.order.* → *Collective conversion*.

   The initial screen for collectively converting planned orders into production orders now appears.

2. Enter the plant and the MRP controller.

Converting Planned Orders into Production Orders

3. You can limit the selection of planned orders using the *From opening date* and *To opening date* parameters.

    If an opening period has already been proposed in your user master record, these values are automatically copied to the fields entitled, *From opening date* and *To opening date*.

4. Enter the order type.

5. Press ENTER.

    The list of planned orders corresponding to your selection criteria appears.

6. Select the planned orders you want to convert and save your entries.

    The selected planned orders are converted.

Creating Planned Orders for Customer Requirements Only

You can use the period of adjustment and the adjustment indicator to define a period, starting from the current date in which the system only includes customer requirements in the planning run and not planned independent requirements.

- In the planning run, no new order proposals are created for planned independent requirements for which no firmed receipts or order proposals exist and which lie within the period of adjustment.

The system starts from the current date and calculates the period entered here into the past or future, depending on how the adjustment indicator is set.

You can set the period of adjustment and the adjustment indicator (*Adjust.per.for ind.*) in Customizing for MRP for each plant and MRP group.

You enter the appropriate MRP group in the material master record for the material.

Firming Planned Orders and Components

Planned orders created automatically by the planning run are continually adapted to suit changed requirements situations. If you want to prevent the planned orders from these automatic changes, you can firm them. Firmed planned orders are no longer changed by the planning run, that is, the order quantities and order dates are not changed. You can only change firmed planned orders manually.

Firming Planned Orders

When manually creating or changing a planned order, the system automatically proposes the firming indicator. If you do not want to firm the planned order, you can cancel this indicator.

If the planned order has been firmed, the system will no longer make any automatic changes to either quantities or dates in the planned order at material level. However, the components of the planned order material may be adapted if the bill of material has changed.

Firming Components

Any manual changes which you make to the date or the quantity in the planned order are automatically passed on to the components by the system. If you want to ensure that no further automatic changes can be made to the components of the planned order material, you can set the firming indicator for components when processing the planned order. If the firming indicator is set for the components, the planning run will not re-explode the BOM.

The firming indicator is automatically proposed by the system when you manually change or create material components in the processing function of planned orders. The indicator for firming the components can only be set if the planned order is also firmed.

You can also firm individual components to prevent automatic changes to quantities and dates. You set the firming indicator for individual components in the screen for processing components.

Firming Order Proposals Using a Manual Firming Date

Prerequisites

You can set the manual firming date in the planning results by choosing *Planning → Set firming date* in single-item, interactive planning or in the current stock/requirements list.

The following procedure uses the stock/requirements list.

Procedure

1. From the stock/requirements list for a material, choose *Environment → Set firming date.*

   The dialog screen, *Current Stock/Requirements List: Individual Lines*, appears where you can enter, change or delete the manual firming date.

2. Enter the date and choose Continue Enter.

3. Choose *List → Refresh.*

Result

The system automatically firms all planned orders that lie before the manual firming date.

The system displays the firming date entered as an entire line in the stock/requirements list.

Firming Transmitted Delivery Schedules Only

Use

To avoid firming all delivery schedules (schedule lines) within a Planning Time Fence [Page 469] , you can define that only the delivery schedules are to be firmed that were sent via message transmission to the vendor.

Prerequisites

- You have set the *Firm, printed lines indicator* in the IMG activity *'Indicator: Only firm transmitted schedule lines'* in Customizing for MRP.

- You have maintained a planning time fence.

Features

If the indicator is set, only the transmitted delivery schedules (schedule lines) in the planning time fence are firmed. This is useful as without this indicator, all schedule lines within the planning time fence are firmed together with the planned orders and purchase requisitions also within the planning time fence, according to the firming logic of master schedule items. The planning time fence represents a number of days that always extends from today's date into the future. Thus, the end date of the planning time fence moves a day further into the future every day. According to the firming logic, existing schedule lines are firmed as soon as they fall into the planning time fence.

Schedule lines that lie outside the planning time fence at the moment and whose quantity has been changed in the planning run due to a change in requirements are also firmed (for the changed quantity) as soon as they move into the planning time fence.

The schedule lines are transmitted to the vendors via the messages in purchasing for the quantity that is recorded in the stock/requirements list at the time of transmission.

The following situation arises for the schedule lines that, simply due to the passing of time, eventually fall within the planning time fence: If the MRP controller/purchaser does not confirm the procurement plan by sending the current quantity per message transmission to the vendor, then the system firms the quantity in the planning time fence that went to the vendor in the last message transmission. If no message has been sent to the vendor at all, no schedule lines are firmed in the planning time fence and instead, they are displaced to the end of the planning time fence.
This ensures that no unchecked quantities are firmed. Moreover, the vendor can also be sure that all schedule lines are checked before they come to him/her.

If a requirement is increased, the system automatically adjusts the schedule lines outside the planning time fence during the planning run. If you have set the indicator, *Firm, printed lines* and the new quantity was not sent to the vendor, then when this schedule line falls into the planning time fence, the system firms the smaller quantity that has already been sent to the vendor. For the shortage quantity, a further schedule line is created and displaced to the end of the planning time fence.

If a requirement is reduced, the system also reduces the schedule line quantity automatically in the planning run. If the new quantity is not sent to the vendor, then the system firms the old, larger quantity.

Example:

Planning run, week 1	Planning run, week 2	Planning run, week 3
100	120	80
120	80	50
80	50	**100**
50	**80**	70
100	50	60

The example is based on the following facts: The planning run is carried out weekly. The first three schedule lines lie in the planning time fence and are therefore firmed automatically. Outside the planning time fence, new schedule lines are created or existing ones are changed. The schedule lines that were determined in the planning run in the first week were confirmed by the MRP controller and were also sent to the vendor. The planning run in the second week was not checked by the MRP controller. If the indicator, "Firm, printed lines" is set for the material, then in the third week, when the next non-firmed schedule lines fall into the planning time fence, they are not firmed for the current quantity, but for the old quantity that was last sent to the vendor. In the example, the fifth schedule line in the first week is for 100 pieces. In the second week, it is changed to 80 pieces. However, as this change was not transmitted to the vendor, in the third week, the old quantity of 100 pieces is firmed.

The transmission of messages is a purchasing function which can be found in the Purchasing menu under: *Outline agreement → Scheduling agreement → Messages → Print/transmit.*

Firming Type

The firming type determines how order proposals are to be firmed and scheduled within the planning time fence during the planning run.

The following firming types exist:

Firming type 0:

- Order proposals are not firmed automatically. With this firming type, no firming is carried out, instead, the materials are only provided with the indicator for MPS. Thus, they can be planned in the special planning run for MPS.

Firming type 1:

- Order proposals that move into the planning time fence are firmed automatically as soon as their date lies at least one day before the end date of the planning time fence. The date of new order proposals that are created in the planning time fence is rescheduled out to the end of the planning time fence. Therefore, these new order proposals are not firmed.

Firming type 2:

- Order proposals that move into the planned time fence are firmed automatically so soon as their date lies at least one day before the end date of the planning time fence. Within the planning time fence no order proposals are created by the system.

Firming type 3:

- Order proposals that move into the planning time fence are **not** firmed automatically. The date of new order proposals, created within the planning time fence is rescheduled out to the end of the planning time fence.

Firming type 4:

- Within the planning time fence, no order proposals are created automatically by the system, that is, the system does not solve the shortage.

Planning Time Fence

Use

You can protect the master plan from any automatic changes to master schedule items in the near future by using a planning time fence. During the planning run, the system makes no automatic changes to order proposals within the planning time fence (which is specifically determined for every master schedule item). The system always dynamically calculates the end date of the planning time fence starting from the planning date.

Integration

You can use the planning time fence for materials in MRP, master production scheduling or long-term planning. The system only creates planned orders in long-term planning.

Prerequisites

You must maintain MRP types with Firming Types [Page 468] in Customizing for long-term planning or MRP. The firming type defines how the system firms order proposals and how it schedules them. You must enter an MRP type with a firming type in the material master record for planning time fence to have an effect.

Features

When specifying the planning time fence, you should bear in mind the maximum lead time of the master schedule items.

In the planning time fence, all order proposals are firmed:

- Planned orders
- Purchase requisitions
- Delivery schedules

Outside the planning time fence, the system creates order proposals based on the shortage quantity and the lot-sizing procedure as usual. When these order proposals move into the planning time fence, they are firmed automatically depending on the setting of the firming type.

You can define the planning time fence either individually per material in the material master record or via the MRP group.

Manual Firming Date

Use

You can use the manual firming date to prevent changes from occurring to order proposals (planned orders, purchase requisitions, schedule lines) in the time period before automatic changes occur in the planning run. Order proposals are no longer changed automatically up until this date that is set according to materials.

You can enter a manual firming date in the stock/requirements list, in the planning results or in single-item, interactive planning. You can select any date. If a planning time fence has been created for a material then the following applies:

If the manual firming date lies before the end of the planning time fence, the planning time fence is still valid.
If the manual firming date lies after the end of the planning time fence, the planning time fence is extended until this date.

Integration

You can use the manual firming date in MRP, master production scheduling and long-term planning. In long-term planning, however, the system only firms planned orders.

Features

If you set a manual firming date, the system firms all order proposals (planned orders, purchase requisitions, schedule lines) with order finish dates before this date if the materials have an MRP type which contains no firming type or *firming type* 1 or 2.

The system does **not** automatically firm order proposals for materials that have an MRP type with *firming type* 3 or 4, even if their order finish dates lie before the manual firming date.

Materials with an *MRP type without a firming type* are treated as materials with firming type 1 in relation to the manual firming date.

For additional information, see <u>Firming Order Proposals Using a Manual Firming Date [Page 465]</u>

Reorganizing Out-of-Date Planned Orders

Firmed planned orders are automatically deleted in the planning run if you have set the roll forward period in Customizing for MRP. The system deletes all firmed planned orders that lie before the roll forward period and thereby updates the master production schedule.

You create the roll forward period together with the planning time fence per plant and MRP group. The roll forward period It is assigned to the material vial the MRP group in the material master record and can assign the material with the appropriate MRP group..

Availability Check According to ATP Logic

Implementation Options

During the material availability check, the system **makes sure that requirements are covered by stock or by planned receipts**. You can therefore recognize at an early date, for example, when creating the sales order, whether a material will be available for the requirements date or whether you have to make extra planning arrangements to guarantee material availability. Using the material availability check contributes towards increasing the **accuracy of planning** and the **service level** for creating sales orders as well as for the internal production process.

Integration

The availability check using ATP logic is a cross-application component. It can be accessed from the business application areas listed below:

- **Sales and distribution (SD-SLS)**
  You can check whether the material is available on the desired delivery date when creating sales orders and also when creating delivery notes.

- **Planned order processing**
  You can execute the availability check for the components of a planned order. This may be necessary when converting the planned order into a production order or beforehand, if you want to make sure that the necessary material components are available for the production of the finished product.

- **Production order processing (PP-SFC)**
  When processing production orders, you can check whether the necessary material components are available for production of the finished product.

- **Inventory management (MM-IM)**
  When creating or changing reservations as well as at goods issue, you can use the availability check to ensure that a goods movement will not jeopardize the availability situation of other issue elements already created and checked in the system. A missing parts check can be run at goods receipt.

Features

During the ATP quantity calculation, the system checks that all issues are covered by existing receipts and whether quantities are left over to cover new issues. These quantities that have not yet been assigned constitute the **ATP quantity**.

The calculation proceeds as follows:

- The receipts (warehouse stock, planned orders, purchase requisitions) are dynamically allocated to the issues (customer requirements, planned independent requirements, reservations), which **lie directly after them on the time axis**. The calculation is carried out in such a way that the issue is allocated to the receipt that lies nearest to it and that still has a positive ATP quantity.

- If the ATP quantity of this receipt does not cover the issue then the system will search for and check the **next nearest receipt** (always in a backwards direction) for a positive ATP quantity, which will then also be allocated to the issue.

- If receipts do not cover the issue, you must then decide whether you reduce the requirements quantity as necessary or whether you move the requirements date so that requirements coverage can be reached again.

     ➡️

    As well as the availability check according to ATP logic there is also:

- the availability check against planned independent requirements

- [Availability Check Against Allocations \[Ext.\]](#)

Availability Check: Organizational Levels

Features

The availability is checked at **different levels** depending on the issue element. If, for example, an issue only involves one **plant**, you can limit the stocks, receipts and issues to be included in the check to plant level. If, however, the issue refers to a **batch** or a **storage location**, then the storage location or batch stocks must also be taken into account.

Availability Check at Plant Level

Example:

	Quantity Received	Issue Quantity	ATP Quantity
Plant Stock	1000 pc.		300 pc.
Receipt 1	500 pc.		0 pc.
Issue 1		1200 pc.	

The ATP quantity calculation results in the following:

Requirement 1 amounting to 1200 pieces can be completely covered. Receipt 1, 500 pieces, is used up completely and the remaining 700 pieces are issued by plant stock, leaving the plant stock quantity at 300 pieces. The plant stock can provide an ATP quantity of 300 pieces for future requirements.

Availability Check at Storage Location Level

Example:

	Quantity Received	Issue Quantity	ATP Quantity
Plant stock	1000 pc.		300 pc.
Receipt 1	500 pc.		0 pc.
Issue 1		1200 pc.	
Storage 1	800 pc.		
Issue 2		500 pc.	
Storage 2	200 pc.		

Plant stock (1000 pieces) is made up of the stock from storage location 1 (800 pieces) and the stock from storage location 2 (200 pieces). Requirement 2 in amounting to 500 pieces is to be

withdrawn from storage location 1. This storage location currently contains 800 pieces. However, requirement 2 cannot be completely confirmed at plant level as only 300 pieces are available. Therefore only 300 pieces are confirmed for requirement 2. If the system confirmed the full requirement quantity, the availability of the confirmed issue 1, for which the issue storage location has not been specified and which draws on plant stock, would be jeopardized as it would be short of 200 pieces.

> If the storage location is excluded from planning or if it is planned separately, then there is no longer the need for an additional check at plant level since stock from this storage location is not contained in plant stock.

> If a storage location is excluded from planning or if it is planned separately, the check cannot be activated without a storage location (see).

Availability Check at Batch Level

If **only one batch** is entered, the check is carried out on two levels, first against the batch and then against the plant stock.

If **a batch and a storage location** are entered, the check is carried out on four levels, first against the batch storage location, then against the batch, the storage location and the plant stock.

Just as with the check on storage location level, the organization level with the lowest ATP quantity determines the result of the check.

Availability Check for Individual Customer Stocks and Project Stocks

Individual customer stocks and project stocks are maintained separately in the system and are not contained in plant stock. If an issue is made from individual customer stock or project stock, the availability is checked only for this particular customer stock. A two-level check does not take place.

Scope of the Availability Check

Use

It may be necessary for each individual application area to include different stocks, receipts and issues in the availability check. This is possible as each application area can define its own **scope for the availability check** independently of each other. The scope of the availability check determines the **stocks** included in the availability check on the one hand and the various **receipt and issue elements** to be used to calculate the available quantity on the other.

The scope of the availability check is defined in Customizing.

Features

Scope of Check

- The **stocks** that can be potentially included in the availability check are:
    - safety stock
    - stock in transfer
    - inspection stock
    - blocked stock
    - restricted-use stock
    - subcontracting stock

- The **receipt and issue elements** that can be potentially included in the availability check are:
    - purchase orders
    - purchase requisitions
    - dependent requirements
    - reservations
    - purchasing requirements, such as sales orders
    - delivery notes
    - shipping notifications
    - dependent reservations
    - call requirements
    - planned orders
    - production orders

- You can also set the following for the scope of the check:
    - that the replenishment lead time is not included (see Availability Check With or Without Replenishment Lead Time [Page 478]).
    - that the **availability check** is not carried out on **storage location level**

    − whether **requirements with receipts from the past** and/or future are confirmed

    − that the missing parts check on goods receipt is carried out within a specific checking period.

Scope of Availability Check:

The scope of the availability check is defined by the following parameters:

- **Checking group**

- **Checking rule**

A checking group can contain several checking rules. The combination of checking group and checking rule determines the scope (such as the stocks, receipts and issues to be included) of the availability check for each business operation.

In Customizing, each application area defines a checking rule for each business operation for which the check is to be carried out and assigns the appropriate checking groups to the individual checking rules. The scope of the availability check is determined by each combination of checking group and checking rule.

The checking group collects all the checking rules for each material for all application areas. If different checking rules are required for each business operation, several checking groups can be defined each containing different checking rules.

The checking group is assigned to the material in the material master record. Thus, the system automatically finds the checking rule valid for each operation and thus the scope of the availability check to be used for the check.

Using different combinations of checking rule and checking group means on the one hand that you can define the scope of the availability check differently for different business application areas or for different business operations. On the other hand, one indicator in the material master record (checking group) is all that is required to determine all the individual checking rules of the application areas for the material.

        ➡️

        You achieve maximum safety for material availability if each of the individual application areas uses the same checking rule.

Availability Check With or Without Replenishment Lead Time

Use

In Customizing, you define whether the availability for a combination of checking group and checking rule is checked **with or without the replenishment lead time**.

The replenishment lead time is the time necessary to provide a material either by in-house production or by external procurement:

- For **external procurement**, the replenishment lead time consists of the purchasing department processing time, planned delivery time, and goods receipt processing time - in the same way as for forward scheduling in MRP. The **ATP check** only includes the **planned delivery time**.

- For **in-house production**, the system checks whether the total lead time is maintained in the material master (*MRP 2* view). This is the estimated production time for a material, including all production levels from raw material procurement to final assembly.

  - If the total replenishment time is maintained then this is included in the ATP check.

  - If only the in-house production time is maintained and not this total replenishment time, then the in-house production time is included in the ATP check.

  - If the total replenishment time and the in-house production time are maintained, then the total replenishment lead time is included in the ATP check.

    ➡

    All times are specified in number of days. The only exception is the planned delivery time; this is specified in calendar days.

Features

You can choose whether or not the replenishment lead time is taken into consideration in the availability check:

- If the **replenishment lead time** is taken into consideration, it has the following consequences:

  - The availability is checked only for requirements within the replenishment lead time. Requirements outside the replenishment lead time are considered to be available as the system assumes that these materials can be provided by planning within the replenishment lead time.

    ➡

    If you do not want to work with infinite quantities, you can use the Availability Check Against Allocations [Ext.].

  - If a requirement cannot be covered by receipts, the end of the replenishment lead time is the earliest date that the material can be confirmed.

- If the **replenishment lead time** is not taken into consideration, the availability is checked for each requirement time without taking the replenishment lead time into consideration.

Availability Overview

Use

The availability overview enables you to see the **ATP situation for a particular material in a defined plant**. The availability check is run using a selected checking rule.

You cannot change the displayed data.

Integration

You can call up the availability overview using the transaction CO09 or from the relevant application component. Starting from the *MRP* menu you find the availability overview by choosing *Environment → Availability overview.*

Prerequisites

You have maintained the checking group in the material master and the application-specific checking rule in Customizing.

Features

Starting the Function

If MRP areas are active, you can enter an MRP area and thereby restrict the availability check to this MRP area.

By entering a sales order item, a WBS element or a customer, you can display the availability overview on the level of sales order stock, project stock, customer consignment or returnable packaging stock.

If you have set the *With requirements quantities* indicator in the initial screen, the check does not take into account the confirmed quantities, but it does take into account the requirements quantities. This enables you to simulate the creation mode whilst checking requirements, which have ATP groups with the cumulation type 2 or 3.

Availability Overview Screen

The *Availability Overview* screen is divided into three sections:

- In the upper section, the system displays information about the check.

- In the middle section, there is an aggregated display of product availability on a plant level. By using this, you can determine quickly whether there is a material shortage.

- In the lower section, the system displays the daily availability situation of the selected material in a plant according to the scope of check. For each date and MRP element, the system displays a totals requirement with a receipt quantity (for stocks and receipts) or a requirement quantity, a committed quantity (only for requirements) and a cumulated ATP quantity. The system uses negative indicators to display the requirements. The data is sorted chronologically and starts with the plant section (if no special stocks are displayed). If necessary, the storage location section, batch section and batch storage location section follow.

Working with the Availability Overview

Aggregation and Disaggregation Functions

Choose ...	if you ...
🔄	want to call up the display again
Σ	want to use the daily, weekly, or monthly display for totals
📋	want to display all single records (with document information)
🗻 *Stock*	want to display just one availability situation on a stock management level
🖥 *Stock*	do not want to display just one availability situation on a stock management level
🗻 *Totals records*	want to display totals records that are aggregated on a daily basis
🖥 *Totals records*	want to display the document files as single records. For each date and MRP element, the system divides a totals requirement up into single records with a receipt quantity (for stocks and receipts) or a requirement quantity, a committed quantity (only for requirements) and a cumulated ATP quantity and displays them.
🔧 Scope of check	want to display details for the settings that you have made in the scope of check.

The aggregation and disaggregation functions have an affect on all displayed elements. If you select individual lines in the display, the corresponding function only has an affect on these.

Additional Filtering Functions

Choose ...	if you ...
Settings → Only SD requirements	only want to display sales requirements
Settings → Reservations for production orders	want to display only reservations for production orders (dependent reservations)
Settings → Total display	want to reset the display filter

➡

These filter functions only restrict the scope of the displayed documents and not the scope of the check.

Functions for Single Records

Choose ...	if you ...
Environment → MRP element	want to display further details for a document

Working with the Availability Overview

Environment → Pegged requirements	want to display the pegged requirements
Environment → Order report	want to display the order report
	want to display all single records (with document information)
Stock	want to display just one availability situation on a stock management level

Backorder Processing

Use

In the backorder processing function, you are given a list of receipts and issues for a particular material that are relevant for the availability check. Missing parts occur if a requirement (sales order, reservation, and so on) could not be confirmed or could only be partially confirmed in the availability check according to ATP logic; the confirmed quantity is less than the requirements quantity.

Material shortages may occur for one of the following reasons:

- The quantity of a sales order cannot or can only partially be delivered on the required date. Therefore, the sales order has not been confirmed.

- The desired delivery date of a sales order lies outside the replenishment lead time. Therefore it is confirmed, but the quantities have not yet been procured.

- A dependent reservation has not yet been confirmed.

Prerequisites

You are recommended to set a missing-parts checking rule in Customizing for MRP in *Maintain all plant parameters → Checking rule backorder updating.*

Features

- Open requirements can be reconfirmed, for example, if stock has increased since the last availability check, if a new receipt has been made, and so on.

- Quantities that have **already been confirmed** can be **redistributed** whereby the quantities of confirmed requirements may be either partially or completely reduced and then allocated to an alternative more urgent requirement.

You can define the following replenishment elements:

- Sales orders

- Dependent reservations

- Stock transport purchase requisition

- Stock transport order

Process Backorders

Procedure

Access Backorder Processing

1. Call up the backorder processing.

   You can call up the backorder processing using the transaction CO06 or from the relevant application component. Starting from the *MRP* menu you find the backorder processing by choosing *Environment → Backorder processing→ Material.*

   The system calls up the initial screen for processing backorders.

2. Enter the material number of the material to be processed as well as the plant and choose ✔ .

   The system checks availability according to ATP logic. Use the ✿ *Scope of the check* to display the control parameters of the availability check.

   The system calls the overview of backorder processing. In this screen, the system displays the plant stock or the storage location stock, the open sales orders or the dependent reservations and the scheduled receipt elements.

   The texts for the receipt and issue elements correspond to the texts that appear in the MRP list. The various stocks (individual customer stock, and so on) and the storage locations are displayed and managed in separate segments.

Processing Sales Orders

The system highlights sales orders or customer requirements that have not yet been completely confirmed or for which no receipt has yet been scheduled. The missing parts are displayed in the column *Requirement/receipt*.

1. Double-click the sales order or customer requirement, which is to be confirmed.

   In the lower part of the screen, the system displays the detailed data of the selected sales order for the selected date.

   The following data is displayed in detail:

   – **Open quantity**

       Total requirement quantity of the sales order or the customer requirement.

   – **Material availability date**

       Date by which sufficient quantities of the item must be available.

   – **Total confirmed quantity**

       Quantity that has been confirmed (in sales order management when creating the sales order or in backorder processing).

   – **Confirmed quantity**

       In this field you can enter the quantity that is to be allocated (that is, confirmed) in backorder processing.

   – **ATP quantity**

Quantity which can be used when planning open requirement quantities.

2. Enter the quantity which, according to the ATP quantity, you can allocate to the requirements in the *Confirmed quantity* field.

Use 🔍 to display the detailed data of the sales order.

3. Choose ✔ to transfer the quantity confirmed.

4. Save your entries.

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You can process backorders for sales orders only for materials for which you have set the indicator *Individual requirements* in the material master record (*MRP 3* view, *Availability check* field).

Dependent reservations, stock transfer requisitions and stock transfer orders are processed at the same time.

➡️

To do this, choose *Settings → Only SD requirements*. From the sales and distribution point of view, backorder processing can also be set in such a way that only the requirements necessary for SD are displayed as missing parts. From the sales and distribution point of view, backorder processing can also be set in such a way that only the requirements necessary for SD are displayed as missing parts. To do this, choose *Settings → Only order reservations*.