

Capacity Leveling (PP-CRP-LVL)



HELP.PPCRP.LVL

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Icons

Icon	Meaning
	Caution
	Example
	Note
	Recommendation
	Syntax

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Capacity Leveling (PP-CRP-LVL)

Purpose

Capacity leveling is used in various areas of a company and at different planning levels with the following objectives:

- High capacity load
- Adherence to dates
- Short lead times
- Low stocks

The objectives of capacity leveling include:

- Leveling overloads and underloads at work centers
- Achieving optimum commitment of machines and production lines
- Selection of appropriate resources

You can carry out capacity leveling in the SAP System in the following application areas: Sales and Distribution (SD), Production Planning and Control (PP), Plant Maintenance (PM) and the Project System (PS).

Sales and distribution

The SD system represents an overall industry-wide solution for dealing with sales, shipping and billing. One function of sales is to create and process sales orders. From within sales order maintenance the system can automatically create an assembly order or a network. From within the sales order you can branch directly to the planning table to display the capacity situation.

There is a description of capacity leveling in sales and distribution in [Capacity Planning in Sales and Distribution \[Ext.\]](#).

Production planning and control

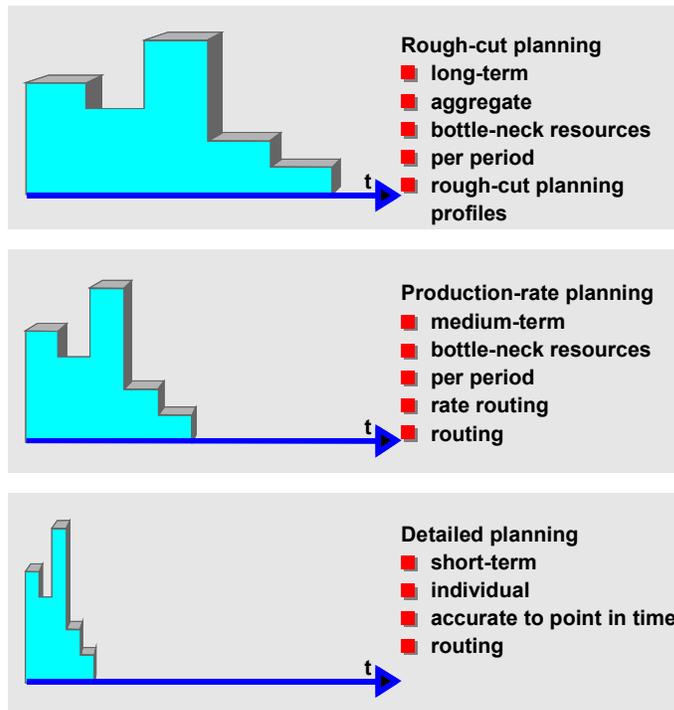
The capacity leveling process in production planning (PP) depends on the planning level at which it is to be carried out.

It is important to distinguish between the following planning levels:

- Sales and operations planning (SOP)
- Long-term planning (LTP)
- Master production scheduling (MPS)
- Material requirements planning (MRP)
- Repetitive manufacturing (REM)
- Shop floor control (SFC)

Whether rough-cut, production rate or detailed planning is used depends on the planning level. You can easily move between the individual planning levels.

Capacity Leveling (PP-CRP-LVL)

**Planning level: SOP**

In Sales and Operations Planning (SOP), you specify sales volumes for the long-term and medium-term and the production activities necessary to realize these sales. The system carries out rough-cut planning to estimate the production levels necessary to support these figures. In capacity leveling, the quantities to be produced should be roughly compared to the productive capacity.

There is a detailed description of capacity leveling in Sales and Operations Planning in [Capacity Leveling in PP-SOP and LO-LIS \[Ext.\]](#).

Planning level: LTP

In long-term planning, you can plan several versions of the demand program using a simulated planning run. You can check the results using special evaluations so as to gain an early overview of future plans for production and procurement.

There is a description of capacity leveling in long-term planning in [Capacity Leveling in Long-Term Planning \[Ext.\]](#) and in [Capacity Planning in Master Production Scheduling and Material Requirements Planning \[Ext.\]](#).

Planning level: MPS

The objective of master production scheduling (MPS) is to carefully plan those parts which have considerable influence on the final product. These are, for example, products that represent a high proportion of total sales or that dominate the entire production process because of how they are manufactured.

MPS uses capacity leveling to reconcile the capacity situation before the planning results affect all BOM levels. Once the master plan for a master schedule item has been created, material requirements planning is started.

There is a detailed description of capacity leveling in master production scheduling in [Capacity Planning in Master Production Scheduling and Material Requirements Planning \[Ext.\]](#).

Planning level: MRP

The objective of material requirements planning (MRP) is to ensure that material is available, that is, to plan the quantities required both by production and by sales and distribution. MRP determines what material is needed at what date and then creates the necessary order proposals. For products made in-house, material requirements planning always generates an order proposal as a planned order.

The planned order contains specifications for the lot to be produced and the resources required for production. The system calculates capacity requirements using the order specifications. These capacity requirements are the basis of capacity leveling.

There is a detailed description of capacity leveling in material requirements planning in [Capacity Planning in Master Production Scheduling and Material Requirements Planning \[Ext.\]](#).

Planning level: REM

Repetitive manufacturing is used for the repeated production of the same product over a long period of time. It is used to create and process master plans for a defined period and a specified quantity.

Repetitive manufacturing uses production versions. You create a run schedule header covering a certain period for a production version of a material. In the material master you specify task list and BOM alternatives as well as a production line for a production version. The task lists are generally rate routings. Capacity leveling is carried out on the basis of a production line.

There is a detailed description of capacity leveling in repetitive manufacturing in [Capacity Planning in Repetitive Manufacturing \[Ext.\]](#).

Planning level: SFC

Shop floor control converts MRP planning data into concrete production orders. A production order specifies what material is to be produced or what activity is to be carried out where and at what time. It also explicitly determines the work centers to be used.

When you create a production order, the system automatically carries out lead time scheduling and writes capacity requirements records. Capacity leveling at the production order level is used for detailed planning.

There is a detailed description of capacity leveling in shop floor control in [Capacity Planning in Shop Floor Control \[Ext.\]](#).

Process industry

PP-PI is an integrated standard solution for logistics tasks in the process industry. This solution covers the whole logistics chain. Several of the PP-PI modules (for example, sales and distribution) have been taken over from logistics, while others, such as master recipe management are independent. PP-PI refers to capacity leveling as “process planning”.

There is a detailed description of capacity leveling in the process industry in [Capacity Planning in the Process Industry \[Ext.\]](#).

Plant maintenance

Plant maintenance aims to maintain the operating efficiency of technical systems such as machines or production plants. You use a maintenance order to carry out a maintenance task.

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The system can carry out capacity leveling and detailed planning in plant maintenance based on the capacity requirements of maintenance orders.

There is a detailed description of capacity leveling in plant maintenance in [Capacity Planning in Customer Service and Plant Maintenance \[Ext.\]](#).

Project system

The project system uses networks for process-oriented planning of a project. Capacity requirements are calculated during network scheduling when there is a work center assigned to the activity in the network. Capacity leveling at the network level is used for project planning.

There is a detailed description of capacity leveling in the Project System in [Capacity Planning in the Project System \(PS\) \[Ext.\]](#).

Functions in Capacity Leveling

[Dispatching of Operations \[Page 12\]](#)

[Date Determination with Dispatching and Rescheduling \[Page 13\]](#)

[Defining the dispatching sequence \[Page 16\]](#)

[Checking dates and work centers \[Page 20\]](#)

[Finite scheduling \[Page 21\]](#)

[Midpoint scheduling \[Page 22\]](#)

[Scheduling dispatched operations in the network \[Page 24\]](#)

[Use operation and order floats for dispatching \[Page 26\]](#)

[Insert operation \[Page 27\]](#)

[Taking into account the whole capacity load \[Page 28\]](#)

[Dispatching at the earliest point in time \[Page 29\]](#)

[Planning in non-work periods \[Page 30\]](#)

[Planning in period splits \[Page 76\]](#)

[Splitting and allocating \[Page 38\]](#)

Dispatching Operations

Dispatching Operations

Dispatching operations is the main function of capacity leveling. Operations are dispatched to the time when there is sufficient capacity for them to be executed. You can also dispatch sub-operations and work elements.

Depending on whether finite scheduling is to be carried out, operations can be dispatched based on unlimited available capacity or existing available capacity. Existing available capacity is calculated as the difference between the available capacity maintained in the capacity and the requirements already dispatched. You can specify another work center when dispatching operations, if necessary.

If you set the indicator *Finite scheduling* in the strategy profile, the system searches for remaining available capacity according to the planning direction starting from the dispatching date that either you or the system determines. The operations that were dispatched are given the status "dispatched". If an operation has the status "dispatched", then the capacity requirements for this operation are shown as having been dispatched as well. The operation cannot easily be moved during scheduling once an order has been changed.

The basic procedure for dispatching operations in capacity leveling is as follows:

1. Either the user specifies the dispatch date of the operation or it is determined by scheduling.
2. If there are several operations to be dispatched then a dispatching sequence is specified.
3. The system carries out checks for:
 - the dates to which operations are to be dispatched
 - the work center to which operations are to be dispatched
4. Finite scheduling is carried out.
5. The operation check is carried out:
6. The status "dispatched" is set for the operation.
7. The system carries out midpoint scheduling.

Planning log

A planning log is written for all planning activities. Error messages and relevant points in time in finite scheduling are logged and can be called up after the planning run. Errors in finite scheduling lead to termination of the planning run, if you have set the relevant parameters in the strategy profile in Customizing. You can call up the planning log directly from either of the planning tables.

Date Determination in Dispatching and Rescheduling

The system can automatically dispatch operations, for example, from production orders, plant maintenance orders or networks on both types of planning table. Either you or the system can specify the date when dispatching is to take place.

Manual dispatching

If you only want manual rather than automatic dispatching to take place on one of the planning tables, set the indicator *Date entry when dispatching*. In this case, once you have selected the planning table function *Dispatch* a dialog box appears in which you must enter a target time that depends on the planning direction and a target work center. This entry is then valid for all the operations that you have selected.



You can manually dispatch an operation on the planning table (tabular form) with the function key *Manual dispatching* even if the indicator *Date entry on dispatching* is not set in the strategy profile.

Dispatching

There are five ways to determine the dispatch date. The first distinguishes between internally processed operations, for example within Plant Maintenance (PM) and the Project System (PS) and operations that are divided into operation segments (for example, in the production order). The last four are valid for all operations.

- On one of the planning tables you select the operation to be dispatched and press the function key *Dispatch*. The indicator *Date entry when dispatching* is not set in the strategy profile:
 - Operations that are divided into segments (for example, in the production order): The dispatching date is the latest start date for the operation.
 - Internally-processed operations:** How internally-processed operations are dispatched depends on the settings in the strategy profile in *Customizing for capacity leveling*. You can find more information on the strategy profile in [Strategy profile \[Page 160\]](#). You have the following options for dispatching:
 - Dispatching at the earliest start date for the operation
 - Dispatching at the latest start date for the operation
 - Dispatching depending on the distribution key valid for the scheduling capacity. This setting specifies that operations are to be dispatched the way they are currently displayed.

When dispatching an internally processed operation, the system checks the time constraints you have set for the start and finish of an operation.
- On one of the planning tables you select the operation to be dispatched and press the function key *Dispatch*. The indicator *Date entry when dispatching* is set in the strategy profile:
 - In a dialog box you must enter the date and time when the operation is to start or finish depending on the planning direction, as well as the work center.

Date Determination in Dispatching and Rescheduling

- On the planning table (tabular form) you should select the operation to be dispatched and press the function key *Dispatch manually*:
In the dialog box *Dispatch manually* you can enter the date and the time when the operation is to start or finish as well as the work center.
- On the planning table (tabular form) select the period in which the operation is to be dispatched as well as the operation itself, and press the function key *Dispatch*:
The dispatching date is the first day of the period.
- On the planning table, select the desired operation and dispatch it manually by “dragging and dropping” it at the desired point in time.

Rescheduling

When rescheduling an internally processed operation or activity, for example in the project system, the system checks the time constraints you have set for the start and the finish of an operation or activity.



If you want to dispatch an operation to a different work center from the one to which it has already been dispatched, then the new work center must belong to the selection set of the work centers that were selected when you initially accessed the planning table.

Deallocating

If you want to deallocate an operation that has already been dispatched, select this operation and choose the pushbutton *Deallocate*.

The current dispatching data is cancelled. The status “dispatched” of the operation is reversed. The order is rescheduled.

If further operations exist for an order which has already been dispatched, the system automatically carries out midpoint scheduling. If no other dispatched operations exist, the system carries out lead time scheduling.

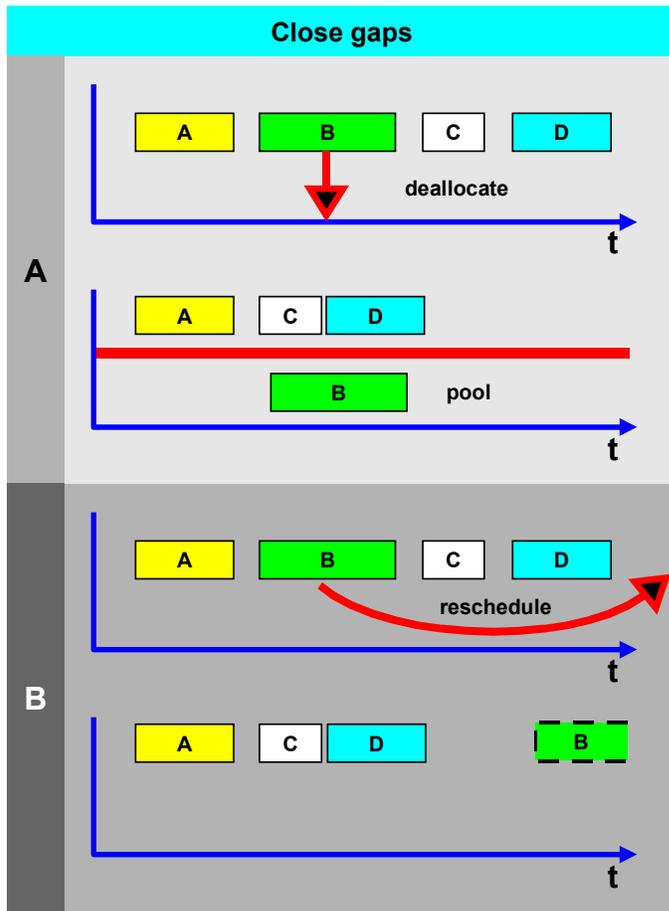


In the project system there is no new scheduling of the operations once a requirement has been deallocated.

The system can close any gaps caused by deallocation and rescheduling in the planning table by shifting operations next to the gap in the planning direction (see next graphic). The sequence of operations remains the same. You should maintain the key *Close gaps* in the strategy profile.

If an error occurs when closing the gaps then it is not carried out, that is, all operations remain where they are.

Date Determination in Dispatching and Rescheduling



Defining the Dispatching Sequence

Defining the Dispatching Sequence

Use

You can define the sequence for the automatic/manual dispatching/rescheduling of a group of selected operations in that the system performs the dispatching/rescheduling of the operations, for example, according to order priority.

Actions

Defining the dispatching sequence in the strategy profile

You can specify a sort key or a sequence and layout key for the *scheduling sequence* in the strategy profile. You use the key to define the fields that the system refers to for the sort. If you want to use this function, you must activate the dispatching function *Forming the dispatching sequence*.



The dispatching sequence enables you to define only the sequence in which the system should “process” the dispatching/rescheduling of the operations using the dispatching sequence. The planned operations for the work centers may subsequently occur in another sequence, depending on the planning situation and the strategies that you have defined.

For more information on dispatching strategies, see [Planning Taking Account of the Sequence \[Page 17\]](#)

Defining the dispatching sequence with the help of sequence numbers

Sequence numbers and a sort key or sequence and layout key that contains the sequence number as a sort criterion enable you to flexibly structure the dispatching sequence in the capacity planning table.

You can assign sequence numbers to the following objects that you have previously selected using the menu bar sequence *Goto → Order → Sequence number*:

- Planned orders
- Production orders
- Production order operation

Defining the sequence with a user exit:

You can define the dispatching sequence with a user exit. You can find more information in the section [User Exits \[Page 149\]](#).

Planning Taking Account of the Sequence

Use

The following functions for structuring the sequence of operations during dispatching and rescheduling are available to you in the strategy profile:

- Forming the dispatching sequence
- Taking account of the operation sequence in the order
- Operation date check

By combining the first two functions with further strategy settings, you can ensure the following under certain conditions

- that operations are dispatched to a work center in the desired sequence
- that the operations for an order retain the chronological sequence defined in the order during dispatching

Features

The functions of the strategy profile are described in detail below. The required settings for selected dispatching strategies are put together in the strategy profile in the section *Actions*.

Forming the dispatching sequence

This function arranges the operations in the desired sequence during dispatching or rescheduling of a group of selected operations. You define this sequence using the sort key which you specify for the *dispatching sequence* in the strategy profile. The system then performs dispatching or rescheduling for each individual operation in this sequence. Note: The dispatching sequence enables you to define only the sequence in which the system should “process” the dispatching/rescheduling of the operations. The planned operations for the work centers may subsequently occur in another sequence, depending on the planning situation and the strategies that you have defined.

For more information on the dispatching sequence, see [Defining the Dispatching Sequence \[Page 16\]](#).

Taking account of the operation sequence in the order

This function is only relevant for orders without (explicitly maintained) relationships, that is, for

- Planned orders
- Production orders
- Maintenance orders for which you do not specify any relationships

The function ensures that an operation can only be dispatched after its immediate dispatched predecessor (forward planning) or before its immediate dispatched successor (backward planning) in the order.

When dispatching or rescheduling an order, the system first determines the immediate dispatched predecessor (forward planning) or immediate dispatched successor (backward planning). Based on the dispatched predecessor (successor), the system performs a forward (backward) lead time scheduling. The system recalculates the dates of *all* operations that have not been dispatched as well as all operations without capacity requirements that either follow this

Planning Taking Account of the Sequence

predecessor (forward planning) or precede this successor (backward planning). It subsequently dispatches the predecessor to be dispatched or rescheduled after its *immediate* predecessor (forward planning) or before its *immediate* successor (backward planning). The immediate predecessor or successor can be a dispatched operation, an operation not yet dispatched or an operation without capacity requirements.



Note:

A dispatched operation is an operation that has capacity requirements and, through dispatching on the planning table, the status *dispatched*. Operations with capacity requirements are relevant operations for planning using the planning table. An order can also contain operations that do not have any capacity requirements. These are

- Operations that, according to the control key, are not relevant for scheduling
- Operations for which the system does not determine any capacity requirements based on the control key
- Operations whose capacity requirements are 0 (standard values and formulas for calculating capacity requirements are not maintained in the operation or in the work center).

Operation date check

This function performs different checks for operation dates. Among other things, the system generates a warning in the planning log if you dispatch or reschedule an operation before a *dispatched* predecessor (forward planning) or after a *dispatched* successor in the order.

Actions

The settings for selected dispatching strategies that you must perform in the strategy profile before you manually or automatically dispatch a group of selected operations are put together in the following table. For *order dispatching*, you should ensure that you select all the operations for each order to be dispatched.

Planning Taking Account of the Sequence

Strategy profile settings for different dispatching strategies

Dispatching strategy	Application area	Strategy profile settings
Generating a particular operation sequence for a work center	<ul style="list-style-type: none"> All order types 	<ul style="list-style-type: none"> Use for the corresponding sort key or sequence and layout key for the <i>dispatching sequence</i> Activate <i>Forming the dispatching sequence</i> Deactivate <i>Insert operation</i> Activate <i>Dispatching at the earliest point in time</i>
Order dispatching observing the operation sequence in the order	<ul style="list-style-type: none"> All order types Orders for which all operations have capacity requirements 	<ul style="list-style-type: none"> Use the corresponding sort key or sequence and layout key with the order and operation number as sort criteria for the <i>dispatching sequence</i> (ascending or descending order depending on the planning direction) Further settings: See above.
	<ul style="list-style-type: none"> Order types without relationships Orders that also contain operations without capacity requirements (the first operation of an order must have capacity requirements). 	<ul style="list-style-type: none"> Use the corresponding sort key or sequence and layout key with the order and operation number as sort criteria for the <i>dispatching sequence</i> (see above) Activate <i>Forming the dispatching sequence</i> Activate <i>Follow operation sequence</i>

Relationships

You define the sort key in the menu option *Define sort key* in the Customizing function *Capacity leveling and extended evaluation*.

Carrying out Checks for Dates and Work Centers

Carrying out Checks for Dates and Work Centers

When dispatching and rescheduling operations you should consider the following points:

- If the new start date for the operation is in the past, the system writes a warning message in the planning log.
- If the operation is partially confirmed and the new start date is before the actual finish date, the system does not dispatch or reschedule the operation. The system writes an error message in the log.

When dispatching internally processed activities in networks, you should consider the following:

- If the operation has a start constraint "must start on", the new start date must be the same as the constraint date.
- If the operation has a start constraint "cannot start before", the new start date must be later than or the same as the constraint date.
- If operation has a start constraint "cannot start later", the new start date must be earlier than or the same as the constraint date.

For the following checks for networks, the system first has to schedule the activity in order to calculate the finish using the new start dates. You should consider the following points:

- If the activity has a finish constraint "must finish on", the new finish date must be the same as the constraint date.
- If the activity has a finish constraint "cannot finish before", the new finish date must be later than or the same as the constraint date.
- If the activity has a finish constraint "cannot finish later", the new finish date must be earlier than or the same as the constraint date.



You cannot dispatch an operation to a work center that is locked or which has been marked for deletion.

Finite Scheduling

In lead time scheduling the system does not take into account the capacity load of the work centers affected. In finite scheduling, by contrast, the system schedules the operations taking into account the current capacity loads generated by operations at work centers. This takes place as follows:

1. For every operation to be scheduled, the system checks whether there is enough remaining available capacity at the date determined. If the operation has sub-operations that are relevant for scheduling, then the system also looks for remaining available capacity for these.

You can also specify an overload factor in capacity maintenance. It determines the extent to which remaining available capacity may be overloaded (above and beyond the normal available capacity).

2. If there is sufficient available capacity then the system dispatches the operation.
3. If there is insufficient capacity available, then the operation is moved to a date when it can be processed without capacity problems. You can specify the search direction in the strategy profile in Customizing. You define the period of time in which the system looks for remaining available capacity (the planning period) in the time profile in Customizing.



Finite scheduling is only possible at the capacity level, which means that it cannot be carried out for individual capacities.

If the system is to carry out finite scheduling then you have to set the following indicators: *Relevant to finite scheduling* in the work center for the relevant capacities, and *Finite scheduling* in the strategy profile in Customizing for capacity leveling. You can use the indicator *Relevant to finite scheduling* to exclude capacities for which there is sufficient available capacity. This helps to improve performance.

Checking results of dispatching

After finite scheduling you can trigger an operation date check. The system checks whether:

- The operation lies within the order dates.
- The operation lies within the floats determined by order scheduling
- Invalid overlaps arise with preceding and following operations in the order
- Mandatory overlaps with preceding and following operations are adhered to

If you want these checks to be carried out you must activate the function *Operation date check* in the strategy profile.

If the checks for the results of dispatching are successful then the operation is given the status "dispatched". If errors arise during the check and if the indicator *Cancel dispatching due to error* is not set in the strategy profile in Customizing then the operation still receives the status "dispatched". The system writes error messages in the error log.

Midpoint Scheduling

Midpoint Scheduling

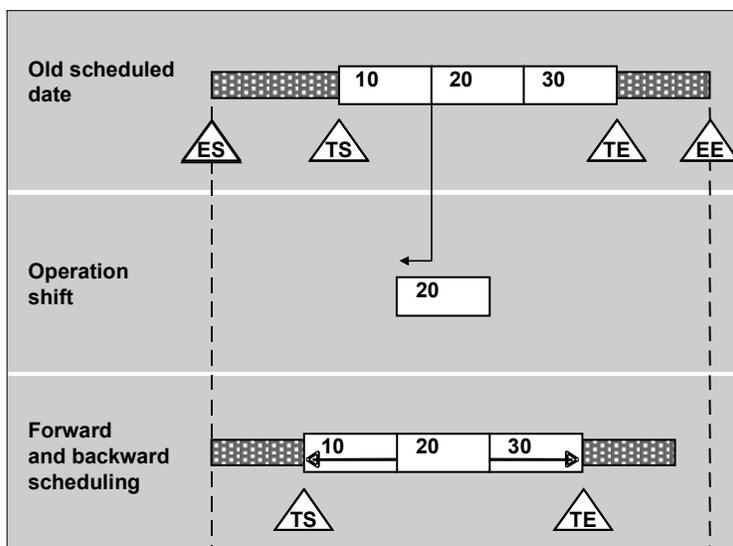
Use

Midpoint scheduling is used for orders without relationships (such as production orders). The system schedules them again on dispatching. Midpoint scheduling is a special form of lead time scheduling.

Midpoint scheduling is always required if, for example, an operation is moved from its original scheduled date during capacity leveling because of an overload situation at the work center. As a result, the dates for the operations that precede or follow this operation have to be adjusted to the new date.

In midpoint scheduling, unlike lead time scheduling, an order is not scheduled using the order start date or order finish date.

Operations which already have the status *dispatched* are fixed for midpoint scheduling. Scheduling selects any dispatched operation for the order and, starting from this operation, carries out backward and forward scheduling.



If several operations already have the status *dispatched*, then operations that are situated between these “fixed” operations are moved during midpoint scheduling in the direction that is set for order scheduling. If they overlap with operations that are already dispatched, then this is displayed in the scheduling log.

If scheduling conflicts arise during midpoint scheduling, then the appropriate system messages are written into the scheduling log. You can call up the log directly from both of the planning tables.

If you activate the function *Midpoint scheduling* in the strategy profile in Customizing, then the system carries out midpoint scheduling when the status *dispatched* is set. If the function *Midpoint scheduling* is not activated in the strategy profile in Customizing, then the system carries out midpoint scheduling for the order when you save the planning table.

Midpoint Scheduling

You can find more information on lead time scheduling in [Scheduling \[Ext.\]](#) or in the guides *PP - Material requirements planning* or *PP - Production orders*.

Scheduling Dispatched Activities in the Network

Scheduling Dispatched Activities in the Network

Activities in networks that have the status "dispatched" have a predefined date from dispatching. The system treats this date as the constraint "must start on".

If the system schedules the network again, then it takes the time constraints in the network into account. Midpoint scheduling is not used for networks.

Please refer to the guide *PS - Project System* for more information on scheduling networks.

Display Strategy, Changing

You can display/change the current strategy profile that is the basis of the dispatching at any time. This is useful, for example, if, during dispatching, you want to work with different layout keys for the dispatching sequence. You can also change the settings in the current strategy profile:

1. Select *Settings* → *Strategy*.

You reach the dialog box *Strategy profile* on which the current valid strategy profile is displayed with its settings.

2. Change the current strategy profile or change the settings of the current strategy profile.

Using the function key *Transfer* on the dialog box *Strategy profile* you copy changes to the settings in the current strategy profile in the current capacity leveling. On leaving the planning table the changes are reversed.

Using the function key *Reset* on the dialog box *Strategy profile* you can change settings you have changed in the current strategy profile during planning back to the original state.

Use Operation and Order Floats for Dispatching

Use Operation and Order Floats for Dispatching

Usage

You can specify that the operation float and also the floats before/after production for the order can be used when dispatching an operation.

The operation can then be dispatched within the float that was assigned to it in order scheduling.

Prerequisites

If you want to use the additional times for dispatching, activate the dispatching function *Operation date check* in the strategy profile and set the appropriate indicators.

If you want to use...	set the indicators
operation float	<i>Use operation float</i>
operation float + float after production	<i>Use operation float</i>
	<i>Use float aft. prod.</i>
operation float +float before production	<i>Use operation float</i>
	<i>Use float bef. prod.</i>

If you set the indicator *Terminate dispatching on error* then dispatching of the operation is terminated if the times are exceeded.

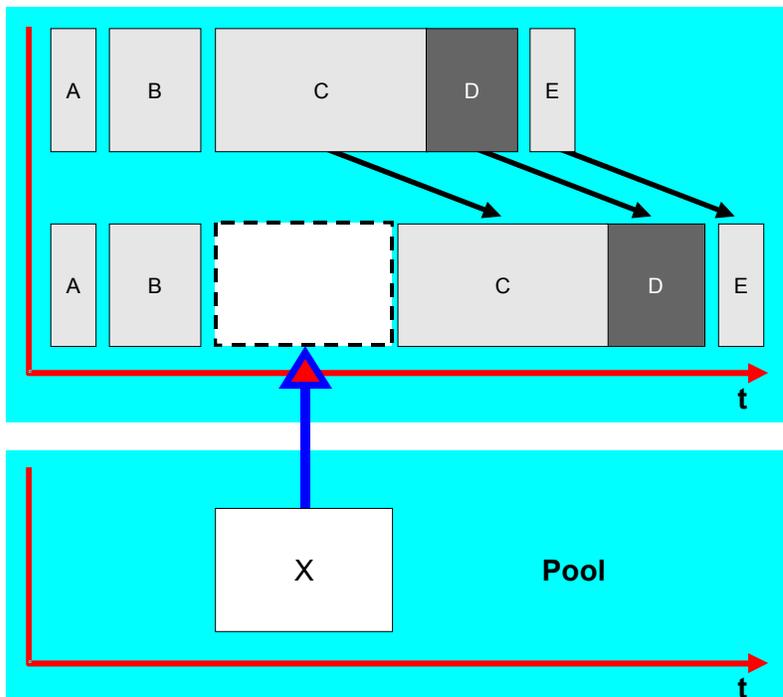
Insert Operation

Usage

You can insert operations into an already existing capacity commitment. The operations that have already been dispatched are moved according to the planning direction but their sequence remains the same (see following graphic)

For example, with planning direction “forwards” if the operation to be dispatched has a start date that is earlier than or the same as that of an operation that has already been dispatched then the operation to be dispatched is dispatched **before** the operation that has already been dispatched. If the operation to be dispatched has a later date than the operation that has already been dispatched then it is dispatched **after** the operation that has already been dispatched.

If an error arises when moving operations then the operation is not inserted.



Prerequisites

If you want to use this function, set the indicator *Insert operation* in the strategy profile.

Taking the Whole Capacity Load into Account

Taking the Whole Capacity Load into Account

Usage

In the planning table (tabular form), that is, where the capacity data is displayed per period, the overall capacity load for the planning period can be taken into account when dispatching.

That means, among other things, that when looking for remaining available capacity for an operation overloads from past periods are transferred to later periods.



In a planning period with two periods if the first period has a load of 200% then that has the consequence that you cannot dispatch a capacity requirement to the following period.

Prerequisites

If you want to use this function, set the indicator *Overall capacity load* in the strategy profile.

Dispatch at Earliest Point in Time

Usage

An operation can be dispatched as early as possible in the planning period without taking the dates of preceding operations in the order into account.

Prerequisites

If you want to use this function you can set the indicator *Dispatching at earliest point in time* in the strategy profile.

Planning in Non-Work Periods

Planning in Non-Work Periods

Use

You can use this function in the capacity planning table to dispatch operations in non-work periods (for example, breaks, weekends, holidays) without first having to change the available capacity at the work centers.

During dispatching the system ignores the calendar, operating times and available capacities in the work centers and instead uses the following data:

Operating time	00:00 - 24:00
Efficiency rate	100%

Prerequisites

If you want to use this function, set the indicator *Planning in non-work periods* in the strategy profile.



You should not use *Planning in non-work periods* for planning with the capacity planning table: If you, for example, activate planning for the capacity planning table with periodic-continuous layout in non-working times, operations can be dispatched in non-working times. By using this layout, only the available capacities that correspond to regular working times are displayed. In addition, the system can only distribute the capacity requirements of an operation over the regular working times when it uses a [distribution on the basis of operating time \[Ext.\]](#).

Activities

You have to fix dispatched operations in non-work periods by using the appropriate user status if you want to use the functions *Insert operation* or *Close gaps*. Otherwise these functions will take the operations dispatched to non-work periods and move them to normal work periods.



You can define a user status in *Define user profile* in Customizing for production orders or in *Maintain user status* in Customizing for plant maintenance.

Fixing Time Periods

Prerequisites

You can fix time periods on the planning tables. You cannot then change the planning in these time periods:

- Operations in fixed time periods can no longer be deallocated or rescheduled.
This also holds for operations that are only partly in a fixed time period.
- No new operations can be dispatched to fixed time periods.
During dispatching the system checks the operation and sub-operation dates and dispatches an operation with all the sub-operations either before or after the fixed time period.

You can reverse the fixing of the time period and then carry out planning as usual.

Planning periods can be fixed automatically when generating the capacity planning table using the user exit CY040001 as well as online.

Procedure

1. On the capacity planning table choose *Edit* → *Fix time period*.
The dialog box *Fix time period* appears.
2. Enter the desired time intervals.
3. Specify whether these time periods are to be fixed or whether planning should **only** be allowed in these periods.

If you want to delete an entry select it and choose *Delete*. You can then carry out planning in this time period again.

Result

The time intervals are locked for planning. The locked periods are highlighted on the capacity planning table. The locked periods are not marked on the capacity planning table (tabular form).

Dispatching with Automatic Change of Planning Direction

Dispatching with Automatic Change of Planning Direction

Usage

With this dispatching function the system searches for remaining available capacity in the whole planning period on the capacity planning tables for the operations that you dispatch either manually or automatically.

Prerequisites

- This function is activated for dispatching if you set the indicator *Change planning direction* in the strategy profile.
If you do not set the indicator *Change planning direction* then the system only searches for remaining available capacity in the *strategy profile*.
- The indicator *Insert operation* should not be set in the *strategy profile*.
If it is set then the indicator *Change planning direction* is ignored and the system only looks for remaining available capacity in the planning direction set in the strategy profile.

Range of functions

The system first looks for remaining available capacity in the direction that you have specified in the *strategy profile*. If it does not find any then it searches in the other direction.

Rescheduling Planned Orders Taking Production Versions into Account

Use

If you reschedule a planned order to another work center the planned order is automatically scheduled and dispatched using the appropriate production version of the material. The planned order takes over the production version in which the new work center is entered as the production line.

This function is available in both types of planning table. It is of interest for all areas that use planned orders, for example in repetitive manufacturing or in MRP/MPS. It can also be used in production control when later converting planned orders to production orders.

Prerequisites

If you want to implement this function the following conditions must be met:

- The indicator Reschedule with production version must be set in the strategy profile.
- The original work center
 - must be entered in the production version of the material as the production line (not necessarily in the current production version).
 - can only be assigned to one operation in the routing for this production version
- The target work center to which the operation is to be rescheduled
 - must be entered in another production version of the material as the production line
 - can only be assigned to one operation in the routing for this production version

Scope of functions

You can only reschedule main operations with this function but not suboperations.

Actions

If one of the conditions is not fulfilled then no new production version is copied to the planned order when it is rescheduled. In this case the system uses the formulas from the new work center and the original standard values for scheduling. If you want rescheduling to be terminated if one of the conditions is not fulfilled set the indicator *Term. resched. with prod. version* as well as the indicator *Reschedule with prod. version* in the *strategy profile*.

Automatic Dispatching of Planned Orders Taking Production Versions into Account

Automatic Dispatching of Planned Orders Taking Production Versions into Account

Use

If an error arises when automatically dispatching planned orders (for example, a capacity overload at a work center) then the system schedules the affected planned orders to another production line.

This function is available in both types of planning table. It is of interest for all areas that use planned orders, for example in repetitive manufacturing or in MRP/MPS. It can also be used in production control when later converting planned orders to production orders.

Prerequisites

If you want to implement this function the following conditions must be met:

- The dispatching function *Change production version on error* must be set in the strategy profile.
- The original work center
 - must be entered in the production version of the material as the production line (not necessarily in the current production version).
 - can only be assigned to one operation in the routing for this production version
- The alternative work center can only be assigned to one operation in the routing for the alternative production version

Scope of functions

If an error arises the system copies the production version with the version key that is next alphanumerically into the planned order. The planned order is rescheduled with this production version. However, it is not dispatched to the new production line but remains in the pool. In this way you can dispatch the rescheduled planned orders together with other planned orders in the pool to the new production line.



To give you a better overview and to improve handling you should choose a sort key with which the planned orders in the pool are sorted according to work center and, for example, latest start date. All orders that are to be dispatched to a production line are then placed next to one another in the pool.

If an error arises during automatic dispatching to the new line every planned order affected is rescheduled with the next production version.

If the conditions are not met then the following occurs depending on your settings in the strategy profile:

- Dispatching is terminated
- Dispatching to the same work center is continued and error messages are written to the planning log

Automatic Dispatching of Planned Orders Taking Production Versions into Account

You can only dispatch main operations with this function, but not sub-operations. Operations are always dispatched with the full quantity to the new work center.

Changing Production Versions of Planned Orders

Changing Production Versions of Planned Orders

Prerequisites

You can change the production version of planned orders in both of the planning tables.

Procedure

1. Select the planned orders whose production version you want to change.
2. Choose *Functions* → *Extended planning* → *Change prod.version*
You reach the dialog box *Production versions for planned orders*.
3. Change the production versions of the previously selected planned orders.

Result

The planned orders are scheduled based on the new production version. Operations that have already been dispatched are deallocated.



If the new production version refers to work centers that are not contained in the current selection for capacity leveling then the planned orders are not displayed.

Displaying Information on the Capacity Commitment

Prerequisites

You can display the following data on the capacity commitment in the evaluation period in the planning tables:

- The total capacity requirements for the dispatched operations
- The available capacity of the capacity in the period when the capacity requirements arise (at the earliest today's date)
- The setup time as a proportion of the total processing time of the dispatched operations

Procedure

1. Select capacities, orders or operations.
If you select an operation, information is displayed on the allocated capacity.
2. Choose *Extras* → *Planning info system*.

Splitting and Allocating

Splitting and Allocating

Any number of people from personnel planning and development (PD) or individual capacities within work center maintenance or pooled capacities can be allocated to each capacity (depending on the capacity category).

You maintain the available capacity of people in personnel planning and development (PD), and you maintain the available capacity of the individual capacities in the work center or in the pooled capacity. If you have not maintained an available capacity in an individual capacity, then its available capacity is calculated from the operating time of the capacity.

You can derive the available capacity of the capacity for leveling purposes by dynamically cumulating the available capacity of individual capacities. To do this, you must set the indicator *Cumul. indiv. cap.* in the evaluation profile in Customizing.

You can assign the split capacity requirements to individual capacities or people. You cannot allocate a capacity requirement that has not been split to an individual capacity or to a person. If a capacity requirement that is to be dispatched not yet split then the system generates an individual split and allocates it to the individual capacity or to the person.

Dispatching splits (partial capacity requirements) takes place either *manually* on planning tables or else by setting the indicator *Split dispatched* for a split on the planning tables/in the order (see, for example, [Split capacity requirements \[Ext.\]](#)). Finite scheduling does not take place.

Any number of people from personnel planning and development (PD) or individual capacities within work center maintenance or pooled capacities can be allocated to each capacity (depending on the capacity category).



Splits that were not allocated to individual capacities or people cannot be dispatched.

Capacity requirements can be split, which means they can be divided up according to quantity, work or duration and they can be allocated to individual capacities or people. There are special screens and dialog boxes available both in order maintenance and in the planning tables for this purpose. You define a split by entering the following data:

- **Internally processed operations:**
 - Latest start date
 - Duration
 - Work
- **Operations that are divided into operation segments:**
 - Latest start date
 - Split quantity
 - Standard values for the split

If the standard values in operations that have segments are copied from the operation and the split value is changed then this is called a **quantity split**. If the quantity is copied from the operation and the standard values are changed then it is a **standard value split**. The same is true for internally processed operations.



In the case of operations with operation segments you press a pushbutton to branch to a second screen or dialog box on which you can make entries for standard values.

A split is saved as a single capacity requirement that is identified by a split number. This split number can be used to make confirmations at split level (see also [Reduce capacity requirements of splits \[Ext.\]](#)).

A **remaining split record** is always generated on splitting a capacity requirement if either a remaining quantity (in quantity-related operations) or remaining work (for internally processed operations) remains. The remaining split then contains the remaining quantity or remaining work as well as the dates of the corresponding capacity requirement or operation.

A remaining split record can be treated (for example, dispatched) like any other split. However, it cannot be deleted. The deletion of the remaining split record is carried out by the system if no remaining quantity or remaining work exists.

Planning Tables

Planning Tables

Capacity Planning Table

The planning table enables you to carry out detailed planning of capacity requirements **continuously over time**. Thus the system dispatches the requirements at specific points in time and in the sequence in which they are to be processed. They are dispatched to individual capacities (for example, machine groups, individual machines, individual people).

You can start the planning table from several R/3 applications (for example, production order, MPS planning, process planning). The data is formatted according to different views depending on requirements (for example, the capacity situation of a work center, the capacity situation of all the work centers involved with an order).

Layout of the capacity planning table

The capacity planning table consists of charts in which the available capacity (operating time) and the capacity requirements (operation duration) are grouped according to various criteria and displayed on the same axis. For example, all the capacity requirements for one order or all the capacity requirements that are dispatched to one capacity can be grouped together.

Each chart can have its own title bar and consists of a table section and a diagram section:

- The **table section** contains information for identifying and describing the objects displayed in the diagram section.
- The **diagram section** is a window on the virtual time axis in which the available capacity and the capacity requirements are displayed with their start and finish dates. This window displays the same segment for all the charts. You can change this segment as much as you wish by changing the scale.

You can display a time scale and the calendar for the object in the diagram section of every chart.

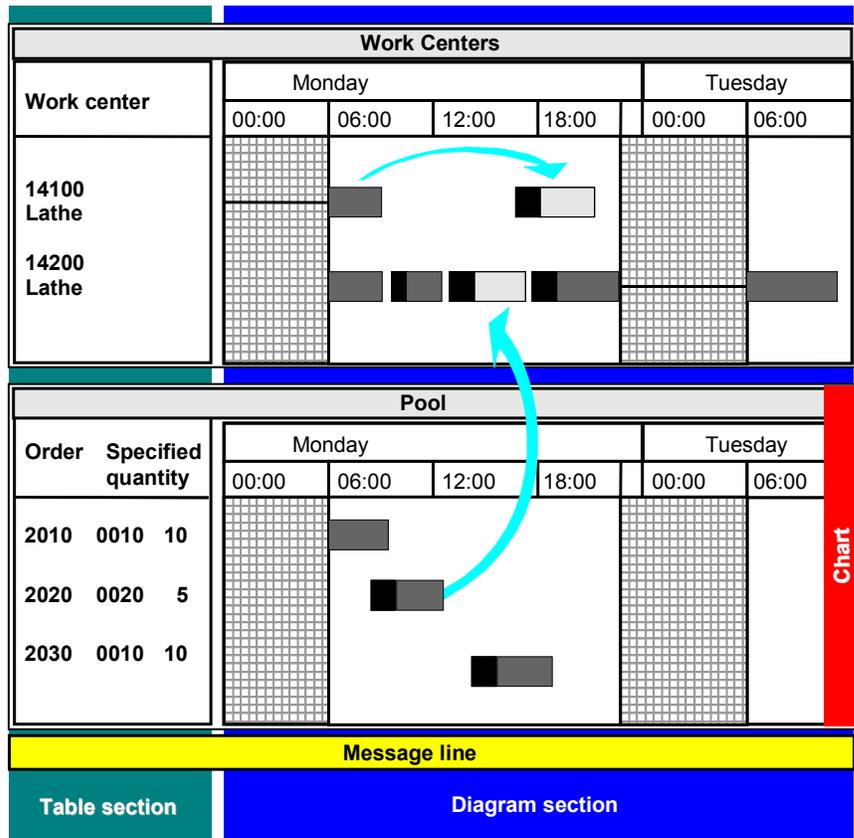
The following graphic shows the capacity planning table as a schematic display.

The following graphic shows the work centers with the operations dispatched to them in the upper chart. The operations (requirements) are displayed as bars; the setup times and processing times are distinguished using shading/highlighting in different colors. The shaded areas are break times saved in the shift sequence.

The lower chart contains the work list for the various orders and their operations, that is, the requirements that have not yet been dispatched.

A vertical line indicates the current time (time now line).

Capacity Planning Table



You can adjust the capacity planning table to your precise needs in Customizing. You can make the following settings, among others:

- Scale and heading of time axis
- Number, height and title of charts
- Definition of descriptive fields shown in the table section
- Sorting within a chart
- Specification of which field contents are displayed in which color and shape in the diagram section
- Definition of the time window for automatic/manual dispatching/rescheduling of requirements (planning period) as well as the pre-evaluation period (time between the start of the evaluation period and the start of the planning period) and the post-evaluation period (time between the end of the planning period and the end of the evaluation period).

Working with the Capacity Planning Table

You can make the following settings on the capacity planning table:

- **Setting in the diagram section**

- [Changing the scale on the time axis \[Page 51\]](#)
- [Positioning on the time axis \[Page 52\]](#)
- [Changing the size of the planning table \[Page 47\]](#)
- [Changing the relative size of the screen sections \[Page 48\]](#)
- [Hiding non-work periods \[Page 55\]](#)
- [Zooming \[Page 56\]](#)

To find your orientation you can [Insert date markers \[Page 53\]](#) and [Displaying the shift calendar \[Page 54\]](#).

- [Changing the sort sequence of objects in the table section \[Page 49\]](#)
- [Changing intervals for time display \[Page 50\]](#)
- [Selecting objects \[Page 44\]](#)
- [Selecting or highlighting operations that belong together \[Page 45\]](#)

If you place the cursor on an object, information on the object is displayed in the message line. In Customizing you specify what information should be displayed.

Selecting Objects

Selecting Objects

Prerequisites

If you want to carry out a function for objects on the capacity planning table (for example, dispatch operations, display work centers) you must first select the objects. You can do the following:

- Manually select objects
- Select all the objects on a line or in a chart
- Select all the objects that belong together

This method is described in [Selecting or highlighting operations that belong together \[Page 45\]](#).

You define how objects are displayed in the *Options profile*. You should also read [Profile for the capacity planning table \(tabular form\) \[Page 166\]](#). You can choose online between the various selection options that are specified in the options profile (for example, color selection or pick marks) in the capacity planning table with *Settings -> Select*.

Procedure

Selecting by clicking

Place the cursor on the desired object and press the left mouse button.

If you also want to select other objects keep the shift button depressed and click on these objects with the cursor.

Selecting by making a frame

1. Keep the left mouse button pressed down and pull a frame around the graphical objects to be selected.
2. Release the mouse button.

Selecting all objects in a line or in a chart

Select an object in the line or in the chart and choose *Edit -> Select -> For line or Chart*.

Reversing selection of objects

If you want to reverse the selection of one object among several selected objects, click on it while keeping the shift key pressed down.

If you want to reverse the selection of all objects choose *Edit -> Select -> Deselect all* or click somewhere on the planning table.

Selecting or Highlighting Ops. Belonging Together

Prerequisites

Operations that belong together are operations that have those properties that you specify. For example, they have the same material number or the same latest start date.

You can do the following online on the planning table with operations that belong together:

- Highlight them for a better overview
- Select them, for example to dispatch them together

You use a *selection key* to define the selection criteria that the system is to use to group operations together. You can read about how to create a selection key and specify selection criteria in [Defining Operations that Belong Together \[Page 46\]](#).

You determine the display of the selected operations using the *options profile*. You should also read [Profile for the Capacity Planning Table \[Page 167\]](#).

Procedures

1. Choose a [Selection key \[Page 46\]](#) and specify the selection fields.
2. Select an operation on the capacity planning table by clicking on it.
3. Choose
 - *Edit* → *Highlight* → *Objects belonging together* or
 - *Edit* → *Select* → *Objects belonging together*

The system selects and marks all operations that, like the selected operations, have the properties specified in the *selection key*.



If you have selected the material number and the latest start date in the *selection key* as selection fields, then all operations are selected/highlighted that have the same material number and the same latest start date as the selected operation.

You can delete the selection/highlighting of the operations using *Edit* → *Select* → *Deselect all* or *Edit* → *Highlight* → *Deselect*.



Note the difference between *Select* and *Highlight*: Functions such as dispatching can only be carried out on [selected objects \[Page 44\]](#).

Defining How Operations Belong Together

Defining How Operations Belong Together

Prerequisites

In the capacity planning table you can select or highlight operations that belong together.

The system defines how operations belong together using the chosen selection fields in the *Selection key*. You create the *Selection key* like a *Sort key* in Customizing for capacity leveling under *Define sort keys*.

You have two ways of defining the *Selection key* and the selection fields in the *Selection key* that control the selection of operations belonging together on the capacity planning table.

- You can select a *Selection key* online on the capacity planning table and select the desired selection fields.
- You can enter a *Selection key* in the *selection profile* in Customizing for capacity leveling. The system uses this *Selection key* so long as you do not select another. In the SAP Standard the first field of this *Selection key* is automatically the selection field. But you can also define other selection fields.

Procedure

1. Choose the following on the capacity planning table *Edit* → *Select* → *Selection* or *Edit* → *Highlight* → *Selection*.
2. You reach the dialog box *Selection of criteria for marking orders*.
3. Choose a *Selection key*.
If the selection fields are not yet displayed choose *Enter*.
4. Select the desired selection fields.
If you enter values for the selected fields then the appropriate operations are selected automatically if you return to the capacity planning table.
5. Choose *Enter*.

Changing Size of Planning Table

To display more information in the charts you can expand the whole planning table window - to the size of the whole screen. To do this use the functions valid for your operating system or for the graphical interface (GUI) you use (for example, with Windows the maximization symbol at the top right in the window).



The number of lines displayed in the charts also depends on the height of the graphical elements as well as on the font size in the chart section. You make the relevant settings in Customizing.

Changing the Relative Sizes of Screen Sections

Changing the Relative Sizes of Screen Sections

Prerequisites

You can change the relative size of the charts and the relative sizes of the diagram sections and the table sections. You can reach sections that are no longer visible by paging horizontally or vertically.

Procedure

1. Place the cursor on the “border line” between two sections of the screen. The cursor changes into a double arrow.
2. Press the left mouse button and shift this borderline left to the desired position while keeping the mouse button pressed.
3. Release the mouse button.

Changing the Sort Sequence

If you want to change how items are sorted in a chart, proceed as follows:

1. Choose *Edit* → *Change sort*.
2. Select the desired sort sequence.

First you must have created the sort keys and sort layout keys that are available here. You do this in Customizing.

Changing Increment for Time Display

Changing Increment for Time Display

Prerequisites

The time corresponding to the position of the cursor in the diagram section of the capacity planning table is displayed in the message line. You can define the increment for this time display.

This increment also determines the exact position for manual dispatching (“Drag and Drop”).

Procedure

Specify the increment with *Settings* → *Increment*.

Changing Time Scale

Prerequisites

You can change the scale of the time axis on the capacity planning table online. You can thus choose between several firmly defines scales and a variable scale.

The following SAP standard profiles are used for firmly-defined scales:

- *SAP_M011: Standard hourly period split*
- *SAP_M022: Standard daily period split*
- *SAP_M032: Standard weekly period split*
- *SAP_M041: Standard monthly period split*
- *SAP_M051: Standard yearly period split*

These must therefore exist in the client.

In the variable scale you can change the following: the scale and the scaling for the planning period, the scale relationships and the scalings for the pre-evaluation period and for the post-evaluation period.

Procedure

In the capacity planning table choose the desired scale with *Settings* → *Scale*.

Positioning on the Time Scale

Positioning on the Time Scale

To select the start time for the time scale choose *Edit* → *Position on Time Axis*.

With *First graphical object* the time axis is positioned in such a way that the first graphical object on a selected line appears on the left-hand edge of the diagram.

Inserting Date Markers

Prerequisites

For orientation you can add date markers in the diagram section of the capacity planning table and delete them again. A date marker is a vertical line that marks a date on the time scale.

To insert date markers, go to Customizing and choose: *Technical settings* → *Capacity planning table* and enter a *color category* in the *chart position*.

Procedure

Creating a date marker

1. In the capacity planning table choose *Edit* → *Insert date marker*.
You branch to the dialog box *Create date markers*.
2. Enter the dates that are to be marked and choose *Enter*.

Deleting date marker

Select the date in the screen *Create date markers* and choose *Delete*.

Displaying the Shift Calendar

Displaying the Shift Calendar

Prerequisites

You can show the shift calendar for a capacity in the capacity planning table. You can define the properties of the shift split and of the time fence that belongs to it in Customizing for *capacity leveling* under time scale profile.

You can also define there that when you call up the capacity planning table the shift calendar of the first capacity is automatically displayed.

Procedure

1. In the capacity planning table select the capacity for which you want to show the shift calendar.
2. Choose *Settings* → *Shift calendar* → *Show*.

Hiding Non-work Periods

Prerequisites

On the capacity planning table you can hide the non-work periods that are the same for all capacities. You have the following options:

- **Automatically hiding non-work periods**
You can specify in Customizing that non-work periods are to be automatically hidden when you call up the capacity planning table.
- **Showing and hiding non-work periods online**
You can hide and show break times online on the capacity planning table.

Procedure

Automatically hiding non-work periods

Setting the indicator *Hide non-work periods* in Customizing for capacity leveling in *Define time scale*.

Hide and show non-work periods online

Choose *Settings* → *Break times* → *Hide* or *Show*.

Zooming

Zooming

Prerequisites

To change the size of the visible section of the capacity planning table you can:

- **Zoom**
Here you can expand or contract the whole display (all table sections and all diagram sections) step by step.
- **Switch between the current view and the overall view**
In the overall view the whole evaluation period is displayed in the diagram section

Procedure

Choose *Settings* → *View* and then:

- *Zoom in*
- *Zoom out*
- *Adjust diagram section*

Hiding and Showing the Time-Now Line

Prerequisites

The time-now line is a vertical line in the diagram section of the capacity planning table that is fixed to the end of the cursor and moves with it.

Procedure

Hide or show the time-now line using *Settings* → *Time line*.

Functions in the Capacity Planning Table

Functions in the Capacity Planning Table

Scope of Functions

You have the following options in the capacity planning table:

- [Planning capacity requirements \[Page 62\]](#)
- [Splitting and allocating capacity requirements \[Page 68\]](#)
- [Changing capacity requirements \[Page 69\]](#)
- [Changing available capacity \[Page 70\]](#)
- [Displaying objects \(order, work center...\) \[Page 59\]](#)
- [Displaying information on the capacity commitment \[Page 37\]](#)
- [Displaying material stock curves \[Page 88\]](#)
- [Rescheduling planned orders taking production versions into account \[Page 33\]](#)
- [Automatic dispatching of planned orders taking production versions into account \[Page 34\]](#)
- [Changing production versions of planned orders \[Page 36\]](#)
- [Dispatching with automatic change of planning direction \[Page 32\]](#)
- [Manually dispatching, rescheduling and deallocating groups of operations \[Page 64\]](#)
- [Creating an order \[Page 113\]](#)
- [Fixing time periods \[Page 31\]](#)
- [Printing \[Page 71\]](#)
- [Displaying material stock curves \[Page 72\]](#)
- [Displaying/changing the strategy \[Page 25\]](#)
- [Displaying profiles \[Page 73\]](#)
- [Displaying logs \[Page 115\]](#)
- [Saving planning \[Page 116\]](#)

Displaying Objects (order, work center...)

Prerequisites

For the selected objects (lines or graphical objects) you can display all the screens for object maintenance (order, operation, work center, capacity, inspection lot and so on) that are assigned to the object.



For a selected operation you can display the work center, capacity, order, operation and components.

You can also change certain objects directly from the planning table (for example, order, operation, capacity).

Procedure

1. Select the desired graphical object or the desired table line.
2. Then choose *Goto* → *<Object>* → *<Function>*.
3. Choose *Exit* to return to the planning table. Alternatively, you can choose *Back* several times.

Creating an Order

Creating an Order

Prerequisites

You can create orders in the planning tables.

Procedure

1. Choose *Goto* → *Order* → *Create*.
A dialog box *Create order* is displayed.
2. Enter the order data.
3. Choose *Enter*.



In the case of missing or inconsistent order data you automatically branch to order maintenance and can maintain/correct the order data.

Result

The order is automatically scheduled and you return to the capacity planning table. You can now dispatch the order.

Changing an Order

Prerequisites

You can change orders in the planning tables, for example to adjust capacity requirements. Order data that can be changed includes the following:

- Order quantity
- Work center where the operation is to be carried out
- Order dates

Procedure

1. Select the requirements that you want to change as a result of changing the order data. The order is determined using this selection.
2. Choose the following menu options on the planning table: *Goto* → *Order* → *Change order*.



To call up a planning table with the work center view you specify one or more work centers. From within the planning table you can branch to the operations in an order and change the work center where an operation is to be processed. However, if the new work center was not one of those originally specified when calling up the planning table then the work center is not displayed in the planning table.

Planning Capacity Requirements

Planning Capacity Requirements

In the planning table you create your plan for work center/capacity commitment by dispatching operations from the pool. You plan on the basis of the planning strategy selected in the strategy profile. You can change the planning strategy during planning. That ensures a high degree of flexibility when dispatching operations.

The following dispatching functions are available:

- [Manually dispatching an operation \[Page 63\]](#)
- [Manually dispatching, rescheduling and deallocating groups of operations \[Page 64\]](#)
- [Automatically dispatching operations \[Page 65\]](#)
- [Rescheduling an operation \[Page 66\]](#)
- [Deallocating operations \[Page 67\]](#)

If the indicator *Finite scheduling* is set in the strategy profile, then whenever an operation is dispatched finite scheduling is carried out for that operation. Afterwards, a type of lead time scheduling takes place during which the operations previously dispatched serve as a midpoint. This is called midpoint scheduling.



If the order data is always to be current, that is, the earliest and latest dates of the operations not dispatched adjusted to correspond to the operations just dispatched, then midpoint scheduling should be active in the current strategy. Otherwise midpoint scheduling is only carried out when you leave the planning table.

The system generates a log for every planning run.

In addition to the dispatching functions you can make changes to operations in the order using a user exit in capacity planning. You call up the user exit using *Functions* → *User*. You can find more information about user exits in [User Exits \[Page 149\]](#).

Dispatching Operations Manually

Using “drag and drop” you can dispatch individual operations manually (more precisely: by dragging the operation from the pool and dropping it onto the desired line in the work center chart). Proceed as follows:

1. Place the cursor on the desired operation in the pool.
2. Press the left mouse button and, while pressing the mouse button, drag the object surrounded by an outline to the desired work center in the appropriate chart (“work centers”).



In forward planning the system displays the left edge as the planning point in time, in backward planning, the right edge. You determine how exactly the system drops operations by means of the increment set.

3. Release the mouse button.

Manually Dispatch, Deallocate and Reschedule Operation Groups

Manually Dispatch, Deallocate and Reschedule Operation Groups

Use

For a group of selected operations in the capacity planning table you can manually do the following using drag and drop:

- Dispatch to *one* work center
- Reschedule to *one* other work center
- Deallocate

Procedure

1. Select the desired operations.
2. Press the SHIFT key and the right mouse button and drag the group of operations to the desired place using the cursor, that is:
 - Onto the target work center and desired dispatching date, when dispatching and rescheduling
 - The dispatching date is the date that corresponds to the position of the cursor.
 - Into the pool chart, when deallocating

Result

When dispatching and rescheduling, the system dispatches all operations from the operations group to the target work center. In doing so, the system considers the strategy settings and the dispatching sequence that you entered in the strategy profile. Thus, when you reschedule a group of operations that has already been dispatched, the sequence of the operations can change.

Dispatching Operations Automatically

To dispatch several operations automatically, proceed as follows:

1. Select the desired operations in the pool.
2. Choose *Functions* → *Dispatch*.

If the indicator *Finite scheduling* is set in the strategy profile, then the operations are dispatched to where there is sufficient capacity.



You use the indicator *Date entry when dispatching* in the strategy profile to determine whether planning is to be carried out automatically or whether, for every operation, you have to enter the date and work center for dispatching in a dialog box.

Rescheduling Operations

Rescheduling Operations

When an operation is rescheduled, a dispatched operation is moved to a new date and/or to a new work center. When this happens the system takes the capacity commitment at the target point into consideration. By dragging and dropping you manually reschedule operations (more precisely: by dragging an operation from the line in the work center chart and dropping it onto the desired point in time on the same or on another line in the work center chart). Proceed as follows:

1. Place the cursor on the desired operation which has already been dispatched.
2. Press the left mouse button and drag - by keeping the mouse button pressed down - the object surrounded by an outline to the new position (work center and point in time) in the same chart ("work centers").



In forward planning the system displays the left edge as the planning point in time, in backward planning, the right edge.

3. Release the mouse button.



To reschedule several operations, you first have to deallocate them and then dispatch them again.

Deallocating Operations

By dragging and dropping an operation from the work center chart onto any line in the pool you can deallocate **individual operations**.

To deallocate one or more operations, proceed as follows:

1. Select the desired operations.
2. Choose *Functions* → *Deallocate*.

The system deallocates the operations. That means that they are put back into the pool.



If you want to close the gaps that have arisen in the commitment because of deallocating operations then you must set the indicator *Close gaps* in the strategy profile. The system then tries to close the gap by rescheduling operations in the planning direction.

Splitting and Allocating Capacity Requirements

Splitting and Allocating Capacity Requirements

You can split capacity requirements and allocate these capacity requirements splits to individual capacities (in particular to people from human resources). To do this proceed as follows:

1. Select an operation (requirements).
2. Choose *Functions* → *Split/Allocate...*
3. In the dialog box *Define Splits* enter the number of splits, the quantities/standard values or work/duration that you want.

In the case of operations with operation segments, by pressing a function key you reach the second dialog box in which you can make entries for the standard values (for example, various setup or processing times for the individual splits).

4. If you want a split to be dispatched and receive the status “dispatched”, then you should set the indicator “*Split dispatched*”. The system only gives splits the status “dispatched” if they are assigned to people or individual capacities.
5. Then choose *Continue*.

The individual splits appear in the pool beneath the capacity requirements that were split.

6. Now dispatch the splits in case the indicator *Split dispatched* is not set.



The main capacity requirements can be dispatched to the work centers/capacities according to the strategy set. You can assign splits to the desired individual capacities manually or by setting the indicator *Split dispatched*. They are then given the status “Split dispatched”.

You cannot assign a capacity requirement that has been split to an individual capacity or to a person. If a capacity requirement that is to be dispatched to an individual capacity or a person is not yet split then the system generates an individual split and allocates it to the individual capacity or person.

Changing Capacity Requirements

To change capacity requirements proceed as follows:

1. Select an operation.
2. Choose *Goto* → *Operation* → *General* → *Change*
3. Change the desired values in the operation.
4. Once you have done this select *Exit* (or *Back* several times), to return to the planning table.



The changes are only temporary until the planning is saved, that means that they are only written to the database when the planning table is saved.

Changes can be seen immediately in as far as they are displayed graphically.

Changing the Available Capacity

Changing the Available Capacity

You can change the available capacity of every capacity. To do this proceed as follows:

1. Select the capacity for which you want to change the available capacity
2. Choose *Goto* → *Capacity* → *Change*.
You are now in the standard capacity maintenance.
3. Change the desired values in the capacity or in the shift sequence.
4. Once you have done this choose *Exit* (or *Back* several times), to return to the planning table.



The changes are only temporary until the planning is saved, that means that they are only written to the database when the planning table is saved.

Changes can be seen immediately in as far as they are displayed graphically.

Printing

You can print the following from within the planning table:

- A stock/requirements list.
Choose *Extras* → *Stock/reqmts list*.
- A capacity requirements list.
Choose *Extras* → *Evaluation* → *Capacity reqmts list*.
- Individual charts (graphical)
Choose *Plan* → *Print* → *Chart*.

Displaying Multiple Commitments

Displaying Multiple Commitments

You can make the individual operations visible for work centers/capacities for which a multiple commitment exists, as follows:

1. Select the desired lines.
2. Choose *Edit* → *Multiple commitment* → *Show*.

The capacity requirements are now arranged in such a way (next to and beneath one another) that no multiple commitments are hidden any more.

3. If you want the original display (one line), choose *Edit* → *Multiple commitment* → *Hide*.



You can specify in Customizing for *capacity leveling* under *define chart sequence* that multiple commitments are automatically shown in the capacity planning table. In the SAP standard this is done with a green line below the capacity affected.

Displaying Profiles

You can get the system to display the overall profile used as a basis for current planning and which subprofiles it contains.

1. Choose *Settings* → *Display profiles*

The system displays the overall profile with its subprofiles.

2. To display one of these subprofiles, select the pushbutton using the arrow to the right of the desired subprofile.

Displaying Logs

Displaying Logs

Prerequisites

You can call up logs for the following areas in both types of planning table.

The log...	lists...
for planning run	system messages that arise during planning
for scheduling	system messages that arise during scheduling
for Customizing	System messages that arise because of entries in Customizing

The logs for planning and scheduling only document the final execution of dispatching.

Procedure

Choose *Extras* → *Log* → <Area>.

Saving Planning

Prerequisites

Capacity Planning Tables (Graphical and Tabular Versions)

If the commitment you have defined in the planning table is what you want then save it. The planning table is left once the data is saved.

If the plan is not what you want then you can go back to the last one you saved by leaving the planning table without saving it and then calling it up again. In this way you can test the various commitments (simulation).

Capacity Planning Table with Temporary Saving Mode

If you have set the indicator *Restricted planning* then you do not leave the planning table on saving. That means that you can carry on working.

Procedure

Choose *Plan* → *Save*.

Planning to Period Split

Planning to Period Split

Usage

It may be necessary that:

- Start dates of operations are always at the start of a shift
- Operations can only be dispatched to a shift if they can also be completed during that shift

In these cases you should carry out dispatching using a period split that specifies the permitted start or finish dates of operations.

The following period splits are available to you:

- Hourly period split
- Shift period split
- Daily period split

Prerequisites

If you want to use this function choose a *PerSplit* in the strategy profile (for example, a shift split) and use the other indicators in the section *Period Split* to specify the conditions for dispatching to a period split:

Consider Setup Time When Dispatching

Use

Using various functions, you can do the following in the planning table for capacity leveling for the standard setup values and setup times for operations:

- Change manually
- Adjust automatically
- Consider when dispatching/rescheduling

Which functions are available in which planning table is summarized in the following table (x = available):

Function	Planning Table (tabular form)	Planning table (tabular) with periodically continuous time scale	Capacity planning table
Manually change standard setup values	x	x	x
Setup time optimization		x	x
Adjust the setup time automatically		x	x
Dispatch at the best time for setup		x	x

Constraints

These functions are not available for capacity leveling in the process industry (PP-PI), that is, for capacity leveling of process orders and planned orders that refer to master recipes.

Changing the Standard Value for Setup Manually

Changing the Standard Value for Setup Manually

Use

You can manually change the setup times of selected operations in the planning tables.



This function is not available for capacity leveling in the process industry (PP-PI), that is, for capacity leveling of process orders and planned orders that refer to master recipes.

Prerequisites

Use only standard value keys for which the setup standard values are located at the same place (that is, for which the setup standard values have the same standard value number) for the work centers relevant for capacity leveling.

Procedure

1. Select the operations for which you want to adjust the setup times.
2. Choose

In the capacity planning table (graphic)	<i>Functions → Adjust setup time → Manual</i>
In the capacity planning table (tabular form)	<i>Functions → Extended planning → Adjust setup time</i>

3. Enter the setup standard value for each operation with which the setup time should be recalculated.
4. Choose *Execute*.

Procedure

The system reschedules the relevant orders, although it takes the new setup standard values into account.

Adjust the setup time automatically

Use

You can use the function “automatic adjustment of setup time” on both types of planning table to adjust the setup times of all the operations in a commitment.

The automatic adjustment of the setup time recalculates the new setup time of every operation depending on the operation preceding the operation in question. The operations are rescheduled accordingly.



This function is not available for capacity leveling in the process industry (PP-PI), that is, for capacity leveling of process orders and planned orders that refer to master recipes.

Prerequisites

- You must activate the following functions in the strategy profile:
 - Plan. direction forwards
 - *Insert operation*
- To calculate the setup time of the operation, the function uses the value stored in the setup matrix for the transition between the predecessor of the operation and the operation itself. This value serves as the standard value for setup. It is here that you specify which standard value of the operation is used as the setup standard value.

If you do not maintain the setup matrix or if a setup transition is not specified in the setup matrix, then the setup standard value in the operation is used. In the control profile, you specify globally for all operations which standard value is to be treated as the setup standard value.
- In the setup matrix, a setup transition is identified by setup states that are defined in the preceding and subsequent operations for the work center. Setup states are defined in terms of setup group categories and setup group keys. These must be maintained in the operations.
- The function identifies setup transitions that you have identified as forbidden in the setup matrix and highlights them. You can define the colors using the check report.

Activities

Procedure and results of setup time adjustment

To adjust the setup times of all the work centers you have selected choose *Functions* → *Adjust setup time* → *Automatic* (capacity planning table) or *Functions* → *Extended planning* → *Adjust setup time* (capacity planning table (tabular form)). Even if you select only one capacity, the system adjusts the setup time for the whole work center.

The system recalculates the setup times of operations and reschedules the operations accordingly. If the setup times are reduced in a commitment where there were previously no gaps, then the gaps close automatically as long as you have activated the indicator *Close gaps* in the strategy profile.

Adjust the setup time automatically

After the setup time adjustment the original setup standard values in the operations are overwritten with the setup standard values from the setup matrix. If you deallocate a dispatched operation after setup time adjustment has taken place then the setup standard value that it had before the automatic standard value adjustment took place is reassigned to it.



If you change a work center commitment for which the setup time has been adjusted (for example, by deallocating an operation) then you have to carry out setup time adjustment again.

Adjustment of setup time of the first operation in the planning period

If the first operation in the commitment in the planning period does not have a predecessor in the evaluation period then the initial setup state of the work center is not defined by an operation.

You can define the initial setup state by entering an *Initial setup state* in the strategy profile.

The setup time of the first operation is calculated using the standard value saved in the setup time matrix for the transition between the initial setup state and the setup state given for the operation. If you do not specify an initial setup state in the strategy profile then the setup time of the operation is calculated using the setup standard value in the operation.

Forbidden setup transitions

If the function finds forbidden transitions during setup time adjustment then the operations concerned are highlighted.

Setup time optimization

Use

With automatic dispatching with setup time optimization, you can dispatch a group of operations on the capacity planning table without leaving any gaps while minimizing the setup time at the target work centers. This dispatching procedure is especially suitable for the initial commitment of resources.



This function is not available for capacity leveling in the process industry (PP-PI), that is, for capacity leveling of process orders and planned orders that refer to master recipes.

Prerequisites

- You must activate *Setup time optimization* in the strategy profile. This automatically activates or deactivates the following functions:

<i>Planning direction forwards</i>	is activated
<i>Dispatch at best time for setup</i>	is deactivated
<i>Dispatch at earliest point in time</i>	is deactivated
<i>Date entry when dispatching</i>	is deactivated

- To calculate the setup time of the operation, the function uses the value stored in the setup matrix for the transition between the predecessor of the operation and the operation itself. This value serves as the standard value for setup. It is here that you specify which standard value of the operation is used as the setup standard value.

If you do not maintain the setup matrix or if a setup transition is not specified in the setup matrix, then the setup standard value in the operation is used. In the control profile, you specify globally for all operations which standard value is to be treated as the setup standard value.

- In the setup matrix, a setup transition is identified by setup states that are defined in the preceding and subsequent operations for the work center. Setup states are defined in terms of setup group categories and setup group keys. These must be maintained in the operations.

Activities

Procedure and results of setup time optimization

For every target work center, the operations to be dispatched are first of all automatically arranged in the sequence with the smallest total setup time. The system takes the initial setup state of the work center into account. It also takes account of forbidden setup transitions. Then the operations are dispatched to the work center in this sequence without any gaps and with the new setup times. The setup standard values in the operations dispatched are overwritten with the setup standard values from the setup matrix.

If you deallocate the operations again, they are given back their original setup values so long as you have not saved your planning.

Setup time optimization

Dispatching date

There are the following options for the dispatching date:

- If there is already a commitment at the work center, then the operations to be dispatched are dispatched directly after the last operation at the end of the commitment without any gaps.
- If there is no commitment in the evaluation period at the work center, then the operations are dispatched at today's date.

Specification of the initial setup state of a work center

If there is no commitment at the work center in the evaluation period, then the setup state at the work center is not defined by an operation.

You can define the initial setup state by entering an *Initial setup state* in the strategy profile. The setup time of the first operation is calculated using the standard value saved in the setup time matrix for the transition between the initial setup state and the setup state given for the operation. If you do not specify an initial setup state in the strategy profile, the setup time of the operation is calculated using the setup standard value in the operation.

Dispatching at the Best Time for Setup

Use

With automatic dispatching at the best time for setup you can dispatch one or more operations on one of the planning tables in already existing commitments to work centers in such a way that the overall setup time increases as little as possible.



This function is not available for capacity leveling in the process industry (PP-PI), that is, for capacity leveling of process orders and planned orders that refer to master recipes.

Prerequisites

- The following elements must be activated in the strategy profile
 - the dispatching function *Dispatching at the best time for setup*
 - *Insert operation*
- The function *Setup time Optimization* must be deactivated because it overrides *Dispatch at best time for setup*.
 - To calculate the setup time of the operation, the function uses the value stored in the setup matrix for the transition between the predecessor of the operation and the operation itself. This value serves as the standard value for setup. It is here that you specify which standard value of the operation is used as the setup standard value.

If you do not maintain the setup matrix or if a setup transition is not specified in the setup matrix, then the setup standard value in the operation is used. In the control profile, you specify globally for all operations which standard value is to be treated as the setup standard value.
- In the setup matrix, a setup transition is identified by setup states that are defined in the preceding and subsequent operations for the work center. Setup states are defined in terms of setup group categories and setup group keys. These must be maintained in the operations.

Activities

Procedure and results of setup time adjustment

With automatic dispatching, the system looks for an optimal point for dispatching one operation after the other to the target work center. Once it finds the optimal time, it dispatches the operation there. If there are several equally good transitions for an operation to be dispatched, then the operation is dispatched at the latest date. The newly dispatched operation retains its original value for the setup standard value, as does its successor. To adjust the setup times of the new commitment, you have to carry out an automatic setup time adjustment.

Dispatching sequence

The operations are dispatched one after the other in the sequence you have specified in the strategy profile. Note that the result of dispatching depends on this sequence.

Dispatching at the Best Time for Setup**Forbidden setup transitions**

When determining the optimal time, the system takes into account whether the setup transitions are forbidden. If dispatching leads to a forbidden transition, then the operation is not dispatched at this time. If all possible times lead to forbidden transitions, then the operation is dispatched at the end of the capacity commitment even if this transition is forbidden.

Specification of the initial setup state of a work center

A special situation concerning setup time can be when the operation to be dispatched is before the first operation.

If there is no operation before it in the evaluation period, then the setup state of the work center is not defined by an operation.

You can define the initial setup state by entering an *Initial setup state* in the strategy profile. The setup time of the first operation is calculated using the standard value saved in the setup time matrix for the transition between the initial setup state and the setup state given for the operation. If you do not specify an initial setup state in the strategy profile, the setup time of the operation is calculated using the setup standard value in the operation.

Setup matrix

Definition

In the setup matrix you save setup values for operations that depend on the setup state of the work center.

Use

The setup time of an operation can depend on which operation was processed at the work center previously; that is, it depends on the setup state of the work center.

This is taken into account with the following functions:

- Automatic setup time adjustment
- dispatching at the best possible setup time
- Setup time optimization

To calculate setup times of operations these functions do not use the setup standard values that are in the operations but the setup standard values from the setup matrix.

You define the setup matrix in Customizing for *capacity planning* using *Define transition matrix*.



The setup matrix is not relevant for capacity leveling in the process industry (PP-PI), that is, for capacity leveling of process orders and planned orders that refer to master recipes. The functions for considering and adjusting setup times are not available here.

Structure

In the setup matrix, the dependency of the setup standard value of an operation on the setup status of the work center is as follows:

- The setup state of a work center is defined in terms of the setup group category and the setup group key of the operation that is processed at the work center.
- A setup transition is a sequence of two operations - a predecessor and a successor - that are processed consecutively at the work center.
- A setup standard value for the successor is assigned to the setup transition.
- You specify for each setup transition which standard value for the successor is to be interpreted as a setup standard value.

Initial setup states

If an operation in the planning period does not have a predecessor in the evaluation period then the setup state of the work center is not defined. You can define the initial setup state of the work center using an *initial setup state* that you enter in the strategy profile.

To deal with such situations you define special transitions in the setup matrix between initial setup states and setup states that are given by operations. You assign these transitions, as with normal transitions, setup standard values for the following operation, in this case for the first operation.

Setup matrix

Initial setup states are characterized as follows in the setup matrix:

- Maximum three-figure key for the *predecessor group*
- No entry for the *predecessor subgroup*

Use of wildcard characters

You can use the wildcard character * in the setup matrix for the setup group key. The following example shows how this wildcard character is interpreted in the setup group key.



The system looks for a transition containing the setup group key AB for the preceding operation. However, there is only an entry for the setup group key A*. If the other entries for the transition are correct then the system uses the value for this entry.

Example

Blue and white color is filled up in a filling station. You maintain the following setup transitions in the setup matrix.

Predecessor	Successor	Setup standard value	Standard value number		
SGC	SGK	SGC	SGK		
Tank	blue	Tank	blue	1 hr	1
Tank	white	Tank	white	2 hr	1
Tank	white	Tank	blue	4 hr	1
Tank	blue	Tank	white	8 hr	1
IS1		Tank	blue	16 hr	1
IS2		Tank	white	32 hr	1

Two setup transitions with the *initial setup states* IS1 and IS2 are defined for processing filling operations after a long idle period.

The following abbreviations are used:

SGC	Setup group category
SGK	Setup group key
Setup standard value	Value assigned to the setup standard value
Standard value number	Number of the standard value in the operation that is interpreted as the setup standard value

Setup Group Category and Setup Group Key

Definition

The setup group category and setup group key characterize the setup state of a work center that is necessary for processing an operation.

Usage

The setup group key and setup group category are maintained in the operation. The setup states in the operations are evaluated in capacity leveling for setup time adjustment when dispatching to the best possible time for setup and for setup time optimization.

Structure

Several setup group keys can be combined to form a setup group category.

Displaying Material Stock Curves

Displaying Material Stock Curves

Prerequisites

You can hide and show a chart on the capacity planning table with a material stock curve for the materials to be produced on the capacity planning table.

You can update the curves, for example after you have changed the order data or created an order.

In Customizing for capacity leveling you specify which of the stock curves are to be displayed:

- Available quantity
- Safety stock
- Day's supply

You must select an overall profile for capacity leveling that allows the system to display material stock curves in the capacity planning table.

The overall profiles SAPSFCG001 and SAPSFCG004 have this function in the SAP standard.

Procedure

1. Select the objects for which you want to display material stock curves.
2. Choose *Extras* → *Material stock* → *Show*.
The chart with the material stock curves is displayed.
3. If you want to hide the chart again, choose *Extras* → *Material stock* → *Hide*.
4. If you want to update the material stock curves, choose *Extras* → *Material stock* → *Update*.

Material Availability Check (ATP) on the Capacity Planning Table

Use

For work orders (production orders, process orders, maintenance orders and networks) you can carry out availability checks using ATP logic on the capacity planning table.

Prerequisites

You make the necessary settings for the availability check in Customizing for orders.

You can specify the color with which the operations with missing parts are marked in Customizing for capacity leveling or with the [Check report for analyzing the overall profile for capacity leveling \[Page 172\]](#).

Actions

With *Functions* → *Availability check* the availability check is carried out for all orders for the operations selected. The operations with missing parts are highlighted. You can analyze the results of the availability check in the planning log. All the orders checked are listed in the log.

If at least one operation is highlighted because of missing parts then you can display the missing parts list after you have repeated the material availability check for this operation.

Planning Table (tabular form)

Planning Table (tabular form)

In the planning table (tabular form) available capacity and capacity requirements are shown in a period split. You can dispatch the capacity requirements to specific periods. You cannot dispatch capacity requirements to a period in a specific sequence.

You can start the planning table (tabular form) from several R/3 applications. The data is formatted according to different views depending on requirements (for example, the capacity situation of a work center, the capacity situation of all the work centers involved with an order).

Unit of available capacity and capacity requirements

You specify the unit in which available capacity and capacity requirements are displayed in the evaluation profile in Customizing for capacity planning. The available capacity and capacity requirements need not be displayed using a unit of time. You can also display the number of pieces as the available capacity that can be produced at a work center. You must define the conversion between the dimension "time" and other dimensions in work center maintenance or capacity maintenance.

Layout of the capacity planning table (tabular form)

The planning table (tabular form) is divided up into a resources section and a requirements section (see following graphic).

Resources section

In the upper section of the planning table (tabular form), the resources section, the following data is usually displayed for every period:

- Name of the work center or the capacity and capacity category
- Periods in which you can dispatch operations
- Available capacity of the work center in the capacity category affected
- Capacity requirements due to operations already dispatched in a period
- Capacity requirements due to operations not yet dispatched to a period

Requirements section

In the lower section of the capacity planning table (tabular form), the requirements section, the system can display operations that have been dispatched and/or operations that have not yet been dispatched. Which requirements are displayed is defined in the period profile in Customizing for capacity planning. If you want to change the setting for the current capacity leveling, choose the following menu options in the capacity planning table (tabular form): *Settings* -> *Requirements filter* and one of the menu options: *Dispatched reqmts*, *Reqmts not dispatched* or *All requirements*.

You can define other data to be displayed such as the name of the material, the quantity, order number, operation number using the field selection. You can find more information in [Field selection \[Page 171\]](#).

Planning Table (tabular form)

Work center / capacity 14100/001 Lathe
 cat.

Period	<input type="checkbox"/> 25.1995	<input checked="" type="checkbox"/> 26.1995	<input type="checkbox"/> 27.1995	<input type="checkbox"/> 28.1995	<input type="checkbox"/> 29.1995
Available capacity	24,0	8,0	7,0	10,0	12,0
Dispatched	8 33,3%				
Pool capacity reqmts	2 8,3%	6,5 81,2	13,0 185,7%		

Reqmts	Material	Target qty	Unit	Order	Op.	Description
<input checked="" type="checkbox"/> Tot. req. 6.5 h	Grab	20	Pc	0001891	0010	Turnina
<input type="checkbox"/> 13,0 h	Grab	35	Pc	0001953	0030	Turning
<input type="checkbox"/>						
<input type="checkbox"/>						
<input type="checkbox"/>						

The requirements of the activated periods are displayed in the requirements section of the planning table. If you want to activate a period place the cursor on a field in the period and choose the menu options: *Edit -> Period -> Activate period*

Dispatching takes place for example by selecting a capacity requirement in the lower section of the capacity planning table (tabular form) and assigning it to a period in the upper section of the capacity planning table (tabular form).

You can also display the remaining available capacity for several work centers and capacities for each period using a second view on the capacity planning table (tabular form). You can find relevant information in [Changing the view in the capacity planning table \(tabular form\) \[Page 112\]](#).

Functions in the Planning Table (tabular form)

Functions in the Planning Table (tabular form)

The following functions are available in the capacity planning table (tabular form):

- [Dispatching requirements \[Page 93\]](#)
- [Deallocating requirements \[Page 94\]](#)
- [Splitting requirements \[Page 95\]](#)
- [Manually changing the standard value for setup \[Page 97\]](#)
- [Changing/displaying data for operations, orders or capacities \[Page 107\]](#)
- [Displaying information on the capacity commitment \[Page 37\]](#)
- [Rescheduling planned orders taking production versions into account \[Page 33\]](#)
- [Automatic dispatching of planned orders taking production versions into account \[Page 34\]](#)
- [Changing production versions of planned orders \[Page 36\]](#)
- [Fixing time periods \[Page 31\]](#)
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- [Changing the view in the capacity planning table \(tabular form\) \[Page 112\]](#)
- [Saving planning \[Page 116\]](#)

Dispatching Requirements

If you want to dispatch an operation, proceed as follows:

- Select the operation that is to be dispatched and press the function key Dispatch.
- If you want to specify the period in which an operation is to be dispatched, select the period as well as the operation to be dispatched and press the function key Dispatch.
- If you want to specify the date, time and work center for dispatching explicitly, select the operation to be dispatched and press the function key Dispatch manually.

You can find more information on the time of dispatching an operation in [Date determination when dispatching and rescheduling \[Page 13\]](#).

Deallocating Requirements

Deallocating Requirements

Prerequisites

Dispatched requirements are only displayed in the capacity planning table (tabular form) if you have selected the corresponding requirements filter using *Settings* → *Requirements filter*

Procedure

1. Select the dispatched requirements that you want to deallocate.
2. Choose *Functions* → *Deallocate*.

The operation is automatically deallocated from the period to which it was previously dispatched.

Splitting Requirements

If you want to split requirements, proceed as follows:

1. Select the operation for which you want to split the requirements.
2. Press the function key Split.

You get to the dialog box *Define splits*.

3. Split the requirements for the operation into partial requirements (so-called splits) and allocate the splits to people or individual capacities, if necessary.

When allocating splits to people you can use the function key Ranking list to display the ranking list. The system displays the suitability of people, who are assigned to the work center and the capacity category, in the ranking list. This ranking list depends on the overall requirements profile, which is made up of the work center, capacity and operation. This profile is generated from the qualification requirements that come from the work center, capacity and operation.



The qualification requirement “PC knowledge” has the characteristic 2 (low) for the capacity, but in the requirements profile in the operation it has the characteristic 8 (high). The qualification requirement for the requirements profile in the operation is taken into account.

4. If you want a split to be dispatched and receive the status “dispatched”, then you should set the indicator “*Split dispatched*”.



The system only gives splits the status “dispatched” if they are assigned to people or individual capacities. You cannot assign a capacity requirement that has been split to an individual capacity or to a person. If a capacity requirement that is to be dispatched to an individual capacity or a person is not yet split then the system generates an individual split and allocates it to the individual capacity or person.

Consider Setup Time When Dispatching

Consider Setup Time When Dispatching

Use

Using various functions, you can do the following in the planning table for capacity leveling for the standard setup values and setup times for operations:

- Change manually
- Adjust automatically
- Consider when dispatching/rescheduling

Which functions are available in which planning table is summarized in the following table (x = available):

Function	Planning Table (tabular form)	Planning table (tabular) with periodically continuous time scale	Capacity planning table
Manually change standard setup values	x	x	x
Setup time optimization		x	x
Adjust the setup time automatically		x	x
Dispatch at the best time for setup		x	x

Constraints

These functions are not available for capacity leveling in the process industry (PP-PI), that is, for capacity leveling of process orders and planned orders that refer to master recipes.

Changing the Standard Value for Setup Manually

Use

You can manually change the setup times of selected operations in the planning tables.



This function is not available for capacity leveling in the process industry (PP-PI), that is, for capacity leveling of process orders and planned orders that refer to master recipes.

Prerequisites

Use only standard value keys for which the setup standard values are located at the same place (that is, for which the setup standard values have the same standard value number) for the work centers relevant for capacity leveling.

Procedure

5. Select the operations for which you want to adjust the setup times.
6. Choose

In the capacity planning table (graphic)	<i>Functions → Adjust setup time → Manual</i>
In the capacity planning table (tabular form)	<i>Functions → Extended planning → Adjust setup time</i>

7. Enter the setup standard value for each operation with which the setup time should be recalculated.
8. Choose *Execute*.

Procedure

The system reschedules the relevant orders, although it takes the new setup standard values into account.

Adjust the setup time automatically

Adjust the setup time automatically

Use

You can use the function “automatic adjustment of setup time” on both types of planning table to adjust the setup times of all the operations in a commitment.

The automatic adjustment of the setup time recalculates the new setup time of every operation depending on the operation preceding the operation in question. The operations are rescheduled accordingly.



This function is not available for capacity leveling in the process industry (PP-PI), that is, for capacity leveling of process orders and planned orders that refer to master recipes.

Prerequisites

- You must activate the following functions in the strategy profile:
 - Plan. direction forwards
 - *Insert operation*
- To calculate the setup time of the operation, the function uses the value stored in the setup matrix for the transition between the predecessor of the operation and the operation itself. This value serves as the standard value for setup. It is here that you specify which standard value of the operation is used as the setup standard value.

If you do not maintain the setup matrix or if a setup transition is not specified in the setup matrix, then the setup standard value in the operation is used. In the control profile, you specify globally for all operations which standard value is to be treated as the setup standard value.
- In the setup matrix, a setup transition is identified by setup states that are defined in the preceding and subsequent operations for the work center. Setup states are defined in terms of setup group categories and setup group keys. These must be maintained in the operations.
- The function identifies setup transitions that you have identified as forbidden in the setup matrix and highlights them. You can define the colors using the check report.

Activities

Procedure and results of setup time adjustment

To adjust the setup times of all the work centers you have selected choose *Functions* → *Adjust setup time* → *Automatic* (capacity planning table) or *Functions* → *Extended planning* → *Adjust setup time* (capacity planning table (tabular form)). Even if you select only one capacity, the system adjusts the setup time for the whole work center.

The system recalculates the setup times of operations and reschedules the operations accordingly. If the setup times are reduced in a commitment where there were previously no gaps, then the gaps close automatically as long as you have activated the indicator *Close gaps* in the strategy profile.

Adjust the setup time automatically

After the setup time adjustment the original setup standard values in the operations are overwritten with the setup standard values from the setup matrix. If you deallocate a dispatched operation after setup time adjustment has taken place then the setup standard value that it had before the automatic standard value adjustment took place is reassigned to it.



If you change a work center commitment for which the setup time has been adjusted (for example, by deallocating an operation) then you have to carry out setup time adjustment again.

Adjustment of setup time of the first operation in the planning period

If the first operation in the commitment in the planning period does not have a predecessor in the evaluation period then the initial setup state of the work center is not defined by an operation.

You can define the initial setup state by entering an *Initial setup state* in the strategy profile.

The setup time of the first operation is calculated using the standard value saved in the setup time matrix for the transition between the initial setup state and the setup state given for the operation. If you do not specify an initial setup state in the strategy profile then the setup time of the operation is calculated using the setup standard value in the operation.

Forbidden setup transitions

If the function finds forbidden transitions during setup time adjustment then the operations concerned are highlighted.

Setup time optimization

Setup time optimization

Use

With automatic dispatching with setup time optimization, you can dispatch a group of operations on the capacity planning table without leaving any gaps while minimizing the setup time at the target work centers. This dispatching procedure is especially suitable for the initial commitment of resources.



This function is not available for capacity leveling in the process industry (PP-PI), that is, for capacity leveling of process orders and planned orders that refer to master recipes.

Prerequisites

- You must activate *Setup time optimization* in the strategy profile. This automatically activates or deactivates the following functions:

<i>Planning direction forwards</i>	is activated
<i>Dispatch at best time for setup</i>	is deactivated
<i>Dispatch at earliest point in time</i>	is deactivated
<i>Date entry when dispatching</i>	is deactivated

- To calculate the setup time of the operation, the function uses the value stored in the setup matrix for the transition between the predecessor of the operation and the operation itself. This value serves as the standard value for setup. It is here that you specify which standard value of the operation is used as the setup standard value.

If you do not maintain the setup matrix or if a setup transition is not specified in the setup matrix, then the setup standard value in the operation is used. In the control profile, you specify globally for all operations which standard value is to be treated as the setup standard value.

- In the setup matrix, a setup transition is identified by setup states that are defined in the preceding and subsequent operations for the work center. Setup states are defined in terms of setup group categories and setup group keys. These must be maintained in the operations.

Activities

Procedure and results of setup time optimization

For every target work center, the operations to be dispatched are first of all automatically arranged in the sequence with the smallest total setup time. The system takes the initial setup state of the work center into account. It also takes account of forbidden setup transitions. Then the operations are dispatched to the work center in this sequence without any gaps and with the new setup times. The setup standard values in the operations dispatched are overwritten with the setup standard values from the setup matrix.

If you deallocate the operations again, they are given back their original setup values so long as you have not saved your planning.

Dispatching date

There are the following options for the dispatching date:

- If there is already a commitment at the work center, then the operations to be dispatched are dispatched directly after the last operation at the end of the commitment without any gaps.
- If there is no commitment in the evaluation period at the work center, then the operations are dispatched at today's date.

Specification of the initial setup state of a work center

If there is no commitment at the work center in the evaluation period, then the setup state at the work center is not defined by an operation.

You can define the initial setup state by entering an *Initial setup state* in the strategy profile. The setup time of the first operation is calculated using the standard value saved in the setup time matrix for the transition between the initial setup state and the setup state given for the operation. If you do not specify an initial setup state in the strategy profile, the setup time of the operation is calculated using the setup standard value in the operation.

Dispatching at the Best Time for Setup

Dispatching at the Best Time for Setup

Use

With automatic dispatching at the best time for setup you can dispatch one or more operations on one of the planning tables in already existing commitments to work centers in such a way that the overall setup time increases as little as possible.



This function is not available for capacity leveling in the process industry (PP-PI), that is, for capacity leveling of process orders and planned orders that refer to master recipes.

Prerequisites

- The following elements must be activated in the strategy profile
 - the dispatching function *Dispatching at the best time for setup*
 - *Insert operation*
- The function *Setup time Optimization* must be deactivated because it overrides *Dispatch at best time for setup*.
 - To calculate the setup time of the operation, the function uses the value stored in the setup matrix for the transition between the predecessor of the operation and the operation itself. This value serves as the standard value for setup. It is here that you specify which standard value of the operation is used as the setup standard value.

If you do not maintain the setup matrix or if a setup transition is not specified in the setup matrix, then the setup standard value in the operation is used. In the control profile, you specify globally for all operations which standard value is to be treated as the setup standard value.
- In the setup matrix, a setup transition is identified by setup states that are defined in the preceding and subsequent operations for the work center. Setup states are defined in terms of setup group categories and setup group keys. These must be maintained in the operations.

Activities

Procedure and results of setup time adjustment

With automatic dispatching, the system looks for an optimal point for dispatching one operation after the other to the target work center. Once it finds the optimal time, it dispatches the operation there. If there are several equally good transitions for an operation to be dispatched, then the operation is dispatched at the latest date. The newly dispatched operation retains its original value for the setup standard value, as does its successor. To adjust the setup times of the new commitment, you have to carry out an automatic setup time adjustment.

Dispatching sequence

The operations are dispatched one after the other in the sequence you have specified in the strategy profile. Note that the result of dispatching depends on this sequence.

Dispatching at the Best Time for Setup**Forbidden setup transitions**

When determining the optimal time, the system takes into account whether the setup transitions are forbidden. If dispatching leads to a forbidden transition, then the operation is not dispatched at this time. If all possible times lead to forbidden transitions, then the operation is dispatched at the end of the capacity commitment even if this transition is forbidden.

Specification of the initial setup state of a work center

A special situation concerning setup time can be when the operation to be dispatched is before the first operation.

If there is no operation before it in the evaluation period, then the setup state of the work center is not defined by an operation.

You can define the initial setup state by entering an *Initial setup state* in the strategy profile. The setup time of the first operation is calculated using the standard value saved in the setup time matrix for the transition between the initial setup state and the setup state given for the operation. If you do not specify an initial setup state in the strategy profile, the setup time of the operation is calculated using the setup standard value in the operation.

Setup matrix

Setup matrix

Definition

In the setup matrix you save setup values for operations that depend on the setup state of the work center.

Use

The setup time of an operation can depend on which operation was processed at the work center previously; that is, it depends on the setup state of the work center.

This is taken into account with the following functions:

- Automatic setup time adjustment
- dispatching at the best possible setup time
- Setup time optimization

To calculate setup times of operations these functions do not use the setup standard values that are in the operations but the setup standard values from the setup matrix.

You define the setup matrix in Customizing for *capacity planning* using *Define transition matrix*.



The setup matrix is not relevant for capacity leveling in the process industry (PP-PI), that is, for capacity leveling of process orders and planned orders that refer to master recipes. The functions for considering and adjusting setup times are not available here.

Structure

In the setup matrix, the dependency of the setup standard value of an operation on the setup status of the work center is as follows:

- The setup state of a work center is defined in terms of the setup group category and the setup group key of the operation that is processed at the work center.
- A setup transition is a sequence of two operations - a predecessor and a successor - that are processed consecutively at the work center.
- A setup standard value for the successor is assigned to the setup transition.
- You specify for each setup transition which standard value for the successor is to be interpreted as a setup standard value.

Initial setup states

If an operation in the planning period does not have a predecessor in the evaluation period then the setup state of the work center is not defined. You can define the initial setup state of the work center using an *initial setup state* that you enter in the strategy profile.

To deal with such situations you define special transitions in the setup matrix between initial setup states and setup states that are given by operations. You assign these transitions, as with normal transitions, setup standard values for the following operation, in this case for the first operation.

Initial setup states are characterized as follows in the setup matrix:

- Maximum three-figure key for the *predecessor group*
- No entry for the *predecessor subgroup*

Use of wildcard characters

You can use the wildcard character * in the setup matrix for the setup group key. The following example shows how this wildcard character is interpreted in the setup group key.



The system looks for a transition containing the setup group key AB for the preceding operation. However, there is only an entry for the setup group key A*. If the other entries for the transition are correct then the system uses the value for this entry.

Example

Blue and white color is filled up in a filling station. You maintain the following setup transitions in the setup matrix.

Predecessor	Successor	Setup standard value	Standard value number		
SGC	SGK	SGC	SGK		
Tank	blue	Tank	blue	1 hr	1
Tank	white	Tank	white	2 hr	1
Tank	white	Tank	blue	4 hr	1
Tank	blue	Tank	white	8 hr	1
IS1		Tank	blue	16 hr	1
IS2		Tank	white	32 hr	1

Two setup transitions with the *initial setup states* IS1 and IS2 are defined for processing filling operations after a long idle period.

The following abbreviations are used:

SGC	Setup group category
SGK	Setup group key
Setup standard value	Value assigned to the setup standard value
Standard value number	Number of the standard value in the operation that is interpreted as the setup standard value

Setup Group Category and Setup Group Key

Setup Group Category and Setup Group Key

Definition

The setup group category and setup group key characterize the setup state of a work center that is necessary for processing an operation.

Usage

The setup group key and setup group category are maintained in the operation. The setup states in the operations are evaluated in capacity leveling for setup time adjustment when dispatching to the best possible time for setup and for setup time optimization.

Structure

Several setup group keys can be combined to form a setup group category.

Changing/Displaying Data for Operation, Order or Capacity

You can change or display **operation data** from the planning table (tabular form) in the following way:

- Select the operation that you want to change or display and select the menu options *Goto* → *Operation* and then, for example, one of the menu options *Display*, *Change*, *Components* or *Prod.resource/tools*.
- If you want to change and/or dispatch or deallocate operations using your own enhancements, select the operations that you want to change and select the menu options *Functions* → *Extended planning* → *User*. You can find more information about user exits in [User Exits \[Page 149\]](#).



Note that you can only call up an enhancement if the project to which it is assigned is activated.

If you want to change or display **order data** from the planning table (tabular form), select the menu options *Goto* → *Order* and one of the menu options *Display order* or *Change order*.

If you want to change or display **capacity data** from the planning table (tabular form), choose *Goto* → *Capacity* and one of the menu options *Display capacity*, *Change capacity*, or *Reset capacity*

You can find more information on maintaining work center data, capacity data and order data from the capacity planning table (tabular form) in [Executing capacity leveling/planning sessions \[Page 117\]](#).

Maintaining Sequence Numbers

Maintaining Sequence Numbers

You can specify a sequence number for sequencing. You do this either for specific operations in the production order, for the production order itself or for a planned order. Select the object and choose *Goto* → *Order* → *Sequence no.* You reach a dialog box where you can maintain the sequence number.

Displaying Profiles

You can get the system to display the overall profile used as a basis for current planning and which subprofiles it contains.

1. Choose *Settings* → *Profiles* → *Display overall prof.*
The system displays the overall profile with its subprofiles.
2. To display one of these subprofiles, select the pushbutton using the arrow to the right of the desired subprofile.

Further Display Functionality

Further Display Functionality

Displaying Data on People

If you want to display data on people on one of the planning tables choose *Goto* → *Person* → *Display*. To be able to display the data you must have called up the planning table (tabular form) using the individual capacity view.

Capacity Distribution

If when you are on the capacity planning table (tabular form) you want to display the distribution used to distribute the requirements over the periods select the requirements for which you want to display the distribution and choose *Extras* → *Evaluation* → *Cap. distribution*.

Calendar

If when you are on the capacity planning table (tabular form) you want to display the current calendar choose *Extras* → *Display calendar*.

Planning Table Information

To display further information on the capacity planning table (tabular form), choose *Extras* → *Planning table info*. The system displays capacity requirements in the active periods and the unit of capacity. It also displays which requirements (dispatched, not dispatched) are shown on the planning table (tabular form) at the moment.

Information on the Capacity Commitment (Planning Info System)

You can display the following data on the capacity commitment on the planning tables.

- The total capacity requirements for the dispatched operations
- The available capacity of the capacity in the period when the capacity requirements arise (at the earliest today's date)
- The setup time as a proportion of the total processing time of the dispatched operations

Individual Period View

To see the data for a particular period separately on the planning table (tabular form), select the period that you want to look at and choose *Extras* → *Individual periods*.

Line Information

You can find various items of information in the individual lines, for example, in the requirements section of the planning table. The appropriate heading for the lines may not be displayed. To deal with this problem you can get the system to display a dialog box for the line on which you have placed your cursor. Place the cursor on the appropriate line and choose *Extras* → *Line information*.

Capacity Graphic

If you want to display the SAP presentation graphic on the capacity planning table (tabular form) for the work center for which you are carrying out capacity leveling, choose *Extras* → *Cap. graphic*.

Further Display Functionality

The system displays the requirements, overload and remaining available capacity for the work center for the individual periods.

Changing View in the Capacity Planning Table (tabular view)

Changing View in the Capacity Planning Table (tabular view)

You can display two different views on the planning table (tabular form):

- On entering the planning table (tabular form) detailed information is displayed on a work center and the capacities that belong to it. You can display other selected work centers by scrolling.
- In a second view you can display a maximum of six work centers or capacities for which remaining available capacity is displayed.

If you want to change view, choose the following menu options on the planning table *Settings* → *Change view*.

Creating an Order

Prerequisites

You can create orders in the planning tables.

Procedure

4. Choose *Goto* → *Order* → *Create*.
A dialog box *Create order* is displayed.
5. Enter the order data.
6. Choose *Enter*.



In the case of missing or inconsistent order data you automatically branch to order maintenance and can maintain/correct the order data.

Result

The order is automatically scheduled and you return to the capacity planning table. You can now dispatch the order.

Changing an Order

Changing an Order

Prerequisites

You can change orders in the planning tables, for example to adjust capacity requirements. Order data that can be changed includes the following:

- Order quantity
- Work center where the operation is to be carried out
- Order dates

Procedure

3. Select the requirements that you want to change as a result of changing the order data. The order is determined using this selection.
4. Choose the following menu options on the planning table: *Goto* → *Order* → *Change order*.



To call up a planning table with the work center view you specify one or more work centers. From within the planning table you can branch to the operations in an order and change the work center where an operation is to be processed. However, if the new work center was not one of those originally specified when calling up the planning table then the work center is not displayed in the planning table.

Displaying Logs

Prerequisites

You can call up logs for the following areas in both types of planning table.

The log...	lists...
for planning run	system messages that arise during planning
for scheduling	system messages that arise during scheduling
for Customizing	System messages that arise because of entries in Customizing

The logs for planning and scheduling only document the final execution of dispatching.

Procedure

Choose *Extras* → *Log* → *<Area>*.

Saving Planning

Saving Planning

Prerequisites

Capacity Planning Tables (Graphical and Tabular Versions)

If the commitment you have defined in the planning table is what you want then save it. The planning table is left once the data is saved.

If the plan is not what you want then you can go back to the last one you saved by leaving the planning table without saving it and then calling it up again. In this way you can test the various commitments (simulation).

Capacity Planning Table with Temporary Saving Mode

If you have set the indicator *Restricted planning* then you do not leave the planning table on saving. That means that you can carry on working.

Procedure

Choose *Plan* → *Save*.

Executing Capacity Leveling/Planning Table Modes

To execute capacity leveling you can call up the planning tables in two different modes:

- In one mode you can do the following on the planning table: Display/change available capacities, order- and operation data or create new orders. However, the original data is only overwritten on the database if you save the data when leaving the planning table.

You can thus generate (in simulation) and analyze various capacity situations on the planning table to find the optimal planning situation and then save it.

You can also specify in the control profile that on leaving the planning table using the event `CY_PLANNING_TABLE_END` further actions can be triggered. For example, you can first of all carry out planning for bottleneck work centers. If you have first defined an appropriate job that carries out mass dispatching to non-bottleneck work centers then this is triggered on leaving the planning table.

- If you set the indicator *Restricted planning* in the control profile then the planning table is called up in a mode with restricted planning functions. But in this planning table mode you can temporarily save your planning. The system generates logs for the saving procedures.

The planning functions of the first mode are either not available or only to a limited extent:

- You cannot dispatch operations to individual capacities
- You cannot change or display orders.
- You cannot change sequence numbers of orders
- You cannot change capacities.
- You cannot display operations. You can only change operations in orders to a limited extent: You can change their standard values.
- You cannot use the trigger `CY_PLANNING_TABLE_END` to start actions after leaving the planning table.

Capacity Availability Check

Capacity Availability Check

Use

You can use the capacity availability check to check whether sufficient capacity is available on the planned date for the operations in an order. You can execute the capacity availability check in the following planning situations:

- When creating an order
- When changing an order
- When releasing an order

The system executes the check on a periodic basis; that is, it compares available capacity with capacity requirement periodically. In doing so, it considers the existing capacity load of the capacities (basic load). If, during the check, the system determines that capacity is not sufficient, you can - during the capacity availability check - execute finite scheduling for the order. During finite scheduling, the system searches for dates that have sufficient capacity - also on a periodic basis.

- **During the interactive processing of orders**, the capacity availability check is available as an online function that you can call up anytime. In addition, the system can automatically trigger the capacity availability check when you create or release an order. After the system has completed the actual check, you can view the results of the check and manually trigger finite scheduling.
- **During the collective processing of orders**, the system executes the capacity availability check automatically in the background, if you have set it to do this in Customizing. Here you also specify whether the system converts a planned order in the case of insufficient capacity or releases an order, or whether a user decision is necessary after collective processing before doing this.

The following table summarizes in which processing mode and for which order types the [check \[Page 121\]](#) and the [finite scheduling \[Page 123\]](#) is available.

Processing mode	Order types	Features
Interactive order processing	<ul style="list-style-type: none"> • Production orders • Process orders • Maintenance orders • Service orders • Networks 	Check, finite scheduling
	<ul style="list-style-type: none"> • Planned orders 	Check
Collective release	<ul style="list-style-type: none"> • Production orders 	Check, finite scheduling
	<ul style="list-style-type: none"> • Process orders • Networks • Planned orders 	Check

Capacity Availability Check

Collective conversion of planned orders to	Production orders	Check, finite scheduling
	Process orders	Check



The SOP functionality provides SOP orders with their own capacity availability check.

Integration

The capacity availability check is a capacity leveling function on a periodic basis.

Prerequisites

For the capacity availability check you must enter settings in the following areas:

Settings for the availability check

In:	You specify:
Header data screen for a capacity	<ul style="list-style-type: none"> • Whether a capacity is relevant for finite scheduling and therefore also relevant for the capacity availability check • The allowed overload for the capacity in percentage terms The load limit as of which the system interprets the capacity load as an overload is 100% plus the allowed overload.
Customizing the availability check	<ul style="list-style-type: none"> • Whether the system should automatically trigger the capacity availability check at order creation or order release • With which overall profile for the capacity availability check [Page 136] the system should work If you do not enter a profile, the system uses: <ul style="list-style-type: none"> – The standard profile SAPSFCG013 for production orders and process orders – The standard profile SAPPM_G013 for maintenance orders and service orders • Whether the system allows the conversion or release of an order in the case of insufficient capacity, or whether a user decision is necessary in order to do this
Customizing the shop floor control profile (only relevant for the collective processing of production orders)	<ul style="list-style-type: none"> • Whether the system, in the event of insufficient capacity: <ul style="list-style-type: none"> – Executes finite scheduling – <i>Confirms the capacity</i> for the capacity requirements of the operations, that is, incorporates them in the basic load, thereby considering them in a future capacity availability check

Capacity Availability Check

You will find the Customizing menu paths in the following table:

Order category	Customizing for the availability check
Production order	Customizing shop floor control: <ul style="list-style-type: none"> • <i>Availability check</i> → <i>Define check control</i> • <i>Basic data</i> → <i>Shop floor control profile</i>
Network	Customizing the <i>Project System</i> by choosing <i>Set availability check</i>
Process order	Customizing the <i>Production Planning Process Industry</i> by choosing <i>Availability check</i> → <i>Define check control</i>
Maintenance order Service order	Customizing <i>Maintenance and Customer Service</i> by choosing <i>Availability check for materials, PRTs and capacities</i> → <i>Define check control</i>

Features

For information about checks and finite scheduling in the capacity availability check, see:

- [Checks in the capacity availability check \[Page 121\]](#)
- [Finite scheduling in the capacity availability check \[Page 123\]](#)

Activities

Initial basic load requirement

When you use the capacity availability check for the first time or when you only use the availability check or the planning table irregularly for orders relevant to production, the basic load is usually not current; that is, it does not contain all the capacity requirements that are relevant to the capacity availability check. In this case, you should specify the basic load before the capacity availability check using the report RCCYLOAD. For further information, see [Specify initial basic load \(Report RCCYLOAD\) \[Page 130\]](#).

Online availability check

For further information about how to execute an availability check in order processing, see [Check capacity availability online \[Page 132\]](#)

Checks in the Capacity Availability Check

Use

When you execute a capacity availability check, the system checks the capacity availability for all operations in an order on a capacity level. In doing so, the system considers the existing capacity load for the capacities - the basic load.

Prerequisites

- **Controlling the check**

If you do not want the system to use the SAP standard settings to execute the check, you have to enter the desired [Overall profile for the capacity availability check \[Page 136\]](#) in Customizing for the *Availability check*. If you do not enter a profile, the system uses:

- The standard profile SAPSFCG013 for production orders and process orders
- The standard profile SAPPMM_G013 for maintenance orders and service orders

- **Checks in the collective processing of production orders**

If you want the system to execute finite scheduling after the check in the collective processing of production orders, you must set this in Customizing in the *Production control profile*.

Features

During the check, the system only considers the capacities relevant to the capacity scheduling.

Check sequence

The check sequence is defined by the numerical sequence of the operations in the order.

Period split

The system carries out the check periodically based on the period split that you set in Customizing (Period profile in the overall profile). The smallest period split you can set is a daily split. For each period, the system compares the capacity requirement needed by the operation to be checked in this period with the free capacity of the capacities in this period.

Available capacity in a period

The free capacity of a capacity is the difference between the available capacity of the capacity (including the allowed overload) and the *basic load*. You define in Customizing (Selection profile in the overall profile) which capacity requirement the system interprets as the basic load. The standard definition of the basic load is the capacity requirement of dispatched operations and operations with confirmed capacity for all order types (work orders, planned orders and SOP orders). For further information, see [Determination of basic load \[Page 128\]](#).

The free capacity can also be reduced by the backlog. The system considers the capacity requirements of operations that lie in the past, if you have set the system to do this in Customizing. The system loads these requirements temporarily into the current and the following period, up to the maximum load limit of the capacity - taking into account the basic load. Therefore, a greatly reduced capacity is available for the operation to be checked. For further information, see [Considering the backlog \[Page 127\]](#).

Checks in the Capacity Availability Check

Capacity requirements of an operation in a period

You specify in Customizing (Selection profile in the overall profile) which capacity requirements the system considers during the check (on which scheduling level, to which order type, etc.)

The system determines, with the help of the distribution key that you entered in Customizing (Evaluation profile in the overall profile), the capacity requirement of an operation in a period. The distribution key specifies how the capacity requirement of an operation is distributed over the period. For further information, see [Distribution of capacity requirements \[Ext.\]](#).

Capacity overload

The system interprets a capacity load as a *Capacity overload* when the capacity load in a period exceeds the load limit of the capacity (100% plus the allowed overload).

Activities

Interactive order processing

If the system determines during the check that the capacities are loaded to more than 100% of the available capacity, the system takes you to the *Capacity availability* dialog box, where you can do the following:

- Branch to the display of the check results
- Start finite scheduling

For further information, see [Check capacity availability online \[Page 132\]](#).

Collective processing of production orders

After the check, the system executes finite scheduling automatically, if you have set it to do this in Customizing in the *Production control profile*.

If you have not entered any settings for finite scheduling, the system - depending on the Customizing settings in the *Production control profile* - incorporates into the basic load the capacity requirements of the operations that are feasible according to capacity. The following is possible:

- The system only incorporates into the basic load the capacity requirements of the operations in an order that are feasible according to capacity.
- When all operations in an order are feasible according to capacity, the system incorporates all capacity requirements; otherwise it does not incorporate any.

Collective processing of other orders

After the check, the capacity availability check is finished. The system does not execute finite scheduling. When all operations in an order are feasible according to capacity, the system incorporates all capacity requirements of all operations into the basic load; otherwise it does not incorporate any.

Finite Scheduling in the Availability Check

Use

- If, during the capacity availability check for operations in an order, the system determines that capacity is not sufficient, you can - during the capacity availability check - execute finite scheduling for the order. During finite scheduling, the system searches for dates on which you can execute the order without capacity problems, taking into account the existing capacity load (basic load). **In interactive order processing**, you can trigger finite scheduling manually when the check has finished.
- **In the collective processing of production orders** (collective conversion of planned orders into production orders, collective release of production orders), the system executes finite scheduling automatically when the check has finished, if you have set the system to do this in Customizing.

In collective processing of other orders (collective conversion of planned orders in process orders, collective release), finite scheduling is not available when the check has finished.

Prerequisites

- **Controlling finite scheduling**

If you do not want the system to use the SAP standard settings to execute finite scheduling, you have to enter the desired [Overall profile for the capacity availability check \[Page 136\]](#) in Customizing for the *Availability check*. If you do not enter a profile, the system uses:

- The standard profile SAPSFCG013 for production orders and process orders
- The standard profile SAPPMM_G013 for maintenance orders and service orders

Finite scheduling in the collective processing of production orders

If you want the system to execute finite scheduling during the capacity availability check in the collective processing of production orders, you must set this in Customizing in the *Production control profile*.

Features

During finite scheduling, the system searches for dates on which the operations in the order that have not yet been dispatched can be processed without capacity problems.

Planning direction

The system searches in the planning direction that you specified in Customizing (Strategy profile in the overall profile).

Search period

The period in which the system searches for dates is determined as follows by the order dates and the planning period that you defined in Customizing (Time profile in the overall profile):

- In the case of forward scheduling, the system searches:
 - Up until the end of the planning period, if order finish is earlier than the end of the planning period

Finite Scheduling in the Availability Check

- Up until order finish, if this is later than the end of the planning period
- In the case of backward scheduling, the system searches:
 - Up until the start of the planning period, if order start is later than the start of the planning period
 - Up until order start, if this is earlier than the start of the planning period

Backlog

[The system considers the backlog \[Page 127\]](#) if you set it to do this in Customizing (Time profile and strategy profile in the overall profile).

Dispatching sequence

You specify in Customizing, using *Dispatching sequence* (Strategie profile in the overall profile), in which sequence the system searches for new dates for the operations in the order. In the standard setting, the system processes the operations in their numerical order, that is, in their time sequence. You should always use this dispatching sequence.

Scheduling procedure

The following procedure is valid in the case where all operations in an order have capacity requirements.

The system first searches for dates with feasible capacities for the first operation (planning direction forward) or the last operation in the order (planning direction backwards).

- If sufficient capacity is available on the scheduled dates, the operation continues to hold these dates.
- If the system finds new dates with sufficient capacity, it dispatches the operation to these dates temporarily; that is, the operation is temporarily given the status *dispatched*. The capacity availability check is based on a period split; therefore the system always dispatches the operation at the start of a period (planning direction forward) or at the end of a period (planning direction backward).
- If the system does not find any new dates, the operations continue to hold the scheduled dates.

The system then executes finite scheduling for the next operation. When you work with the standard settings for the strategy profile in the [Overall profile \[Page 17\]](#), the system dispatches temporarily this operation at the earliest after the operation that was just dispatched (planning direction forward) or at the latest before this operation (planning direction backward), thereby maintaining the time sequence of the operations. When the system does not find sufficient capacity in the search period, it dispatches the operation temporarily in any case to this earliest or latest point in time. Otherwise, the system dispatches the operation to the date with sufficient capacity.

The system repeats this procedure until all operations are scheduled in terms of capacity. During finite scheduling, the system does not shift operations with the status *dispatched* – that is, operations that you already dispatched before the capacity availability check in the planning table. The system shifts operations whose scheduled dates lie in the past and that have not been dispatched, to the current date or into the future using 'today' scheduling.

When all operations have been scheduled according to capacity, the system executes for the order midpoint scheduling on an exact time scale. During this procedure, the dispatched operations, that is, operations that were already dispatched before finite scheduling and also

Finite Scheduling in the Availability Check

temporarily dispatched operations are fixed. After midpoint scheduling, the system withdraws the status *dispatched* from the operations that were temporarily dispatched during finite scheduling.



You can generally not achieve 100% utilization of capacity in a period. To achieve this, the capacity requirement of an operation in a period would have to be exactly the same as the free capacity in this period.

Operation sequence after scheduling

If all operations in an order have capacity requirements and you use [the standard settings in the strategie profile \[Page 136\]](#), the time sequence after scheduling corresponds to the operation sequence in the order. This is the case described in the section *Scheduling procedure*.

In general, the system maintains the time sequence of the operations when the following conditions are met:

- The operation belongs to an order with the following characteristics:
 - The order is an order that does not have relationships (planned orders, production orders, maintenance orders and service orders without explicitly maintained relationships), and in which the first operation (planning direction forward) or the last operation (planning direction backward) has capacity requirements.
 - The order is an order with relationships that have to be maintained explicitly (process orders, networks, maintenance and service orders with relationships), and in which all operations have capacity requirements.
- You use the standard settings in the strategy profile of the overall profile for the availability check; that is, you have activated *Consider operation sequence in the order* and have entered the numerical operation sequence as the dispatching sequence.

If these conditions are not met, the time sequence of the operations can be violated during scheduling.

Activities

Interactive order processing

After finite scheduling, the dialog box *Operation dates* appears, in which the new dates and the date shift are displayed. The *CapConfirmed* indicator is set for the operations for which the system has found dates with feasible capacities; that is, the operations have confirmed capacity at the moment. You can cancel this indicator at any time or set it again for any number of operations, even when capacity is insufficient. You can now decide whether you want to incorporate the new dates in the order, and for which operations you confirm the capacity; that is, you decide which capacity requirements you incorporate into the basic load.

Collective processing of production orders

After finite scheduling, the capacity availability check is finished. The system incorporates the newly determined dates into the order. Depending on your Customizing settings for the *Production control profile*, the system incorporates the capacity requirements of the operations that are feasible according to capacity into the basic load. The following is possible:

- The system only incorporates into the basic load the capacity requirements of the operations in an order that are feasible according to capacity.

Finite Scheduling in the Availability Check

- When all operations in an order are feasible according to capacity, the system incorporates all capacity requirements; otherwise it does not incorporate any.

Considering the Backlog

Use

You can consider the backlog in the capacity availability check, that is, the capacity requirements that lie in the past. The backlog is made up of all capacity requirements between the start of the time period where the database is read and today's date.

Prerequisites

You set the start of the time period for reading the database in Customizing (Time profile in the overall profile).

If you want to consider the backlog during the capacity availability check, you must do the following:

- Activate the *Total capacity load* indicator in the strategy profile in the [overall profile for the capacity availability check \[Page 136\]](#) and
- Set the *Backlog dispatching date* in the time profile in the overall profile to 0

Features

During the capacity availability check, the system loads the current and the subsequent periods with the capacity requirements from the past, up to the maximum load limit for the capacities. The available capacity in these periods is therefore reduced by the backlog. The system considers the reduced available capacity during the check and also during finite scheduling in the capacity availability check.

Determination of Basic Load

Determination of Basic Load

Use

The free capacity of a capacity is the difference between the total available capacity of the capacity (including the allowed overload) and the existing capacity load, that is, the *basic load*. The system uses as the standard interpretation of the basic load, the detailed scheduling capacity requirements of operations that are dispatched and have a confirmed capacity, that is, of operations:

- **That you have dispatched using the planning table for capacity leveling**
 - If you dispatch an operation using a planning table, it is given the status *dispatched*.
- **For which you or the system have set the *Capacity confirmed* indicator**
 - During the online capacity availability check, the dialog box appears in the event of insufficient capacity, and you can manually set the *Capacity confirmed* indicator, or cancel it.
 - During the capacity availability check in the background, the system sets the *Capacity confirmed* indicator after the check or after finite scheduling automatically, if necessary.
 - If you [specify the initial basic load \[Page 130\]](#) using the report RCCYLOAD, you can incorporate orders and operations in the basic load. The system sets the *Capacity confirmed* indicator for the incorporated operations.

Prerequisites

You specify in the selection profile for the overall profile which capacity requirements the system interprets as a basic load; you enter this in Customizing for the *Availability check*. If you do not enter a profile, the system uses:

- The standard profile SAPSFCG013 for production orders and process orders
- The standard profile SAPPMM_G013 for maintenance orders and service orders



The logic of the capacity availability check is based on a basic load that consists of dispatched operations and operations with confirmed capacity - as defined in the standard profile. Any other definition could lead to incorrect results in the capacity availability check. You are therefore advised to use only the standard settings.

Activities

Initial basic load requirement

When you use the capacity availability check for the first time or when you only use the availability check or the planning table irregularly for orders relevant to production, the basic load is usually not current; that is, it does not contain all the capacity requirements that are relevant to the capacity availability check. In this case, you should specify the basic load before the capacity availability check using the report RCCYLOAD. For further information, see [Specify initial basic load \(Report RCCYLOAD\) \[Page 130\]](#).

Determination of Basic Load**Displaying the orders and operations in the basic load**

If you want to display the capacity requirements of the planned orders and work orders with dispatched operations or operations with confirmed capacity, you call up the capacity evaluation using the standard overall profile SAPSFC010.

Determination of Basic Load (Report RCCYLOAD)

Determination of Basic Load (Report RCCYLOAD)

Use

When you use the capacity availability check for the first time or when you only use the availability check or the planning table irregularly for orders relevant to production, the basic load is not current; that is, it does not contain all the capacity requirements that are relevant to the capacity availability check. In this case, you should specify the basic load before the capacity availability check using the report RCCYLOAD.

Procedure

1. Choose *Tools* → *ABAP Workbench* → *Development* → *ABAP Editor*
The *ABAP Editor: Initial screen* appears *Einstieg*.
2. Enter RCCYLOAD as the program, and choose *Program* → *Execute* → *Direct*



You can call up the report for Determination of basic load in *Plant Maintenance* and in *Customer Service* by choosing:

- *Plant maintenance* → *Maintenance processing* → *Capacity planning* → *Create basic load*
- *Service management* → *Service processing* → *Order* → *Capacity planning* → *Create basic load*

The *Initialization of Basic Load* screen appears.

3. Select the capacity requirements from the screen sections *Order-related data* and *Operation and requirements-related data* that you want to incorporate into or remove from the basic load.

The selection criteria are linked by a logical AND.

4. Set the following indicators in the screen section for operation and requirements-related data as required:

If you want to:	Set the indicator:
Select <i>all</i> capacity requirements that load a pooled capacity and fulfill all the selection criteria other than the work center	<i>Take into account all capacity requirements for pooled capacities affected</i>
Select <i>all</i> capacity requirements for an order if at least one capacity requirement meets the selection criteria	<i>Always take whole orders into account for the basic load</i>

5. Choose in the *Control* screen section what the system should do:

If the system should:	Choose:

Determination of Basic Load (Report RCCYLOAD)

Display the number of selected capacity requirements	<i>Determine number of capacity requirements affected</i>
<ul style="list-style-type: none"> • Incorporate the selected capacity requirements into the basic load and • Set the Capacity confirmed indicator for the corresponding operations 	<i>Take into account capacity requirements selected for the basic load</i>
<ul style="list-style-type: none"> • Remove the selected capacity requirements from the basic load and • Remove the Capacity confirmed indicator for the corresponding operations (if set) 	<i>Remove capacity requirements selected from the basic load</i>

6. Choose *Program* → *Execute*.

Checking the Capacity Availability Online

Checking the Capacity Availability Online

Use

In order processing, you can call up the capacity availability check manually at any time. In addition to this, the system can trigger the capacity availability check automatically at order creation or order release, if you have set the system to do this in Customizing. During the capacity availability check, the system only considers the capacities that are relevant for finite scheduling.

If, during the [check \[Page 121\]](#) for the operations in the order, the system determines that the capacities are loaded to over 100%, the *Capacity availability* dialog box appears. Here you can:

- Decide for which operations you want to confirm the capacity
- Execute [finite scheduling \[Page 123\]](#)

After finite scheduling, you can decide whether you want to incorporate the new dates and confirm the capacity of the operations.

Prerequisites

The *Capacity availability* dialog box is on the screen.

For information regarding the Customizing settings for the capacity availability check, see the section on prerequisites for the [Capacity availability check \[Page 118\]](#).

Procedure

1. Call up the capacity availability check in the order header.

If the system determines insufficient capacity, it takes you to the *Capacity availability* dialog box.

If you want to:	Choose:
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Checking the Capacity Availability Online

<p>Branch to the display of check results, and from there execute, if required, finite scheduling</p>	<p><i>Detail Infos</i></p> <p>The <i>Capacities with overload</i> dialog box appears. The system displays periodically for the operations all the load data for all capacities relevant to capacity scheduling that are loaded with operations, for example:</p> <ul style="list-style-type: none"> • Available capacity in a period • The total capacity requirements in the period • The capacity requirements of the checked operation • The load limit of the capacity (100% plus the allowed overload) • The actual load on the capacity in the period <p>Overloaded periods, that is, periods where the capacity load exceeds the load limit, are underlined in red.</p>
<p>Immediately execute finite scheduling</p>	<p><i>Finite scheduling</i></p> <p>The system executes finite scheduling, and the dialog box <i>Operation dates</i> appears.</p> <p>Here the new dates and date shift for each operation are displayed in days.</p>

In both dialog boxes the *Capacity confirmed* indicator is set for an operation, if there is sufficient capacity available on all the capacities that are loaded by the operation; that is, if the capacity load of all capacities lie within the load limit. You can cancel this indicator at any time or set it again for any number of operations, even when capacity is insufficient.

All possible activities that you can select in the *Capacities with overload* and *Operation dates* dialog boxes are summarized in the following table:

Possible activities in the *Capacities with overload* dialog box

If you want to:	Choose:
<p>Incorporate the displayed confirmation indicators</p>	<p><i>Copy</i></p> <p>The system only incorporates into the basic load the capacity requirements for operations for which the <i>Capacity confirmed</i> indicator is set.</p>
<p>Confirm capacity of all operations</p>	<p><i>Confirm all</i></p> <p>The system sets the <i>Capacity confirmed</i> indicator for all operations and incorporates their capacity requirements into the basic load.</p>

Checking the Capacity Availability Online

Confirm the capacity of none of the operations	<i>Confirm none</i> The system cancels the <i>Capacity confirmed</i> indicator for all operations and does not incorporate any capacity requirements into the basic load.
Execute finite scheduling for an order	<i>All finite sched.</i> The system executes finite scheduling, and the dialog box <i>Operation dates</i> appears (see below).
Set the <i>Capacity confirmed</i> indicator for all operations	<i>Select all</i>
Cancel the <i>Capacity confirmed</i> indicator for all operations	<i>Delete all selections</i>
Reset the confirmation indicator to the status before the check	<i>Cancel</i>

Possible activities in the *Operation dates* dialog box

If you want to:	Choose:
<ul style="list-style-type: none"> Incorporate the displayed operation dates into the order Incorporate the displayed confirmation indicators 	<i>Copy</i> The system only incorporates into the basic load the capacity requirements for operations for which the <i>Capacity confirmed</i> indicator is set.
<ul style="list-style-type: none"> Incorporate the displayed operation dates into the order Confirm capacity of <i>all</i> operations 	<i>Confirm all</i> The system sets the <i>Capacity confirmed</i> indicator for all operations and incorporates their capacity requirements into the basic load.
<ul style="list-style-type: none"> Incorporate the displayed operation dates into the order Confirm the capacity of <i>none</i> of the operations 	<i>Confirm none</i> The system cancels the <i>Capacity confirmed</i> indicator for all operations and does not incorporate any capacity requirements into the basic load.
Set the <i>Capacity confirmed</i> indicator for all operations	<i>Select all</i>
Cancel the <i>Capacity confirmed</i> indicator for all operations	<i>Delete all selections</i>
View the dispatching log	<i>Dispatching log</i>
View the scheduling log	<i>Sched. log</i>

Checking the Capacity Availability Online

Reset the operation dates and the confirmation indicators to the status before finite scheduling	<i>Cancel</i>
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If you reschedule an operation that has had its capacity confirmed (for example, by scheduling the order or by shifting the operation in the planning table), prior to doing so you should cancel the *Capacity confirmed* indicator and then execute finite scheduling again. The system does not cancel the indicator automatically during scheduling or rescheduling. If you do not cancel the indicator, the basic load is no longer correct - it can even exceed 100%.

Overall Profile for the Capacity Availability Check

Overall Profile for the Capacity Availability Check

Definition

Profile that contains the settings for the [check \[Page 121\]](#) and [finite scheduling \[Page 123\]](#) in the [capacity availability check \[Page 118\]](#).



The capacity availability check is a capacity leveling function. You define the overall profile for the capacity availability check - as with the overall profile for capacity leveling - in Customizing for *Capacity leveling and extended evaluations*. In the standard package, the system uses the following profiles for the capacity availability check:

- SAPSFCG013 for production orders and process orders
- SAPPM_G013 for maintenance orders and service orders

Structure

The overall profile contains several subprofiles in which the settings are grouped thematically. The most important functions of the various subprofiles for the capacity availability check are listed in the following table:

Subprofiles of the overall profile for the capacity availability check

Subprofiles	Function
Control profile	<p>Controls capacity leveling as a capacity availability check</p> <p>You must enter the following for the <i>Presentation type</i> and <i>Layout type</i> fields:</p> <ul style="list-style-type: none"> • <i>Presentation type: 4 (Capacity availability check)</i> • <i>Layout type: 1 (Period split layout)</i>
Selection profile	<p>Controls which capacity requirements are relevant for the capacity availability check, and which capacity requirements the system interprets as an already existing capacity load on a capacity (basic load).</p> <p>The standard definition of the basic load is the capacity requirements of dispatched operations and operations with confirmed capacity. These are operations that you:</p> <ul style="list-style-type: none"> • Dispatched in the planning table • Confirmed the capacity of during a capacity availability check • Confirmed the capacity of during basic load determination  <p>The logic of the capacity availability check is based on this definition of the basic load. Any other definition would lead to incorrect results for the capacity availability check. You are therefore advised to use the standard selection profile from SAP.</p>

Overall Profile for the Capacity Availability Check

Time profile	<p>Specifies:</p> <ul style="list-style-type: none"> • Together with the order dates, the time period in which the system searches for free capacity during finite scheduling in the capacity availability check. For further information, see Finite scheduling in the capacity availability check [Page 123] in the section <i>Search period</i>. • The time period for reading the database • The backlog dispatching date, if the system has to consider the backlog in the capacity availability check; that is, if it must consider the capacity requirements of operations from the past. <p>The backlog is made up of all capacity requirements between the start of the time period where the database is read and today's date. You must enter a 0 as a backlog dispatching date (load in the current date period).</p>
Period profile	<p>Controls with which period split the system executes the check and finite scheduling in the capacity availability check.</p> <p>The check compares periodically the free capacity and the capacity requirements. The smaller the period split, the finer the degree of detail achieved by the check.</p>
Evaluation profile	<p>Controls the distribution of capacity requirements over the periods on the period split (distribution key) and the density of capacity requirements and available capacities.</p>
Strategy profile	<p>Controls finite scheduling and backlog dispatching during the capacity availability check. For the capacity availability check, you must:</p> <ul style="list-style-type: none"> • Enter the planning direction • Set the <i>Finite scheduling</i> indicator • Set the <i>Total capacity load</i> indicator, if you want to consider the backlog during the capacity availability check. <p>If you want to consider the backlog, you must also enter the backlog dispatching date 0 in the time profile.</p> <ul style="list-style-type: none"> • Enter the <i>Dispatching sequence</i> • Activate the dispatching function <i>Set up the dispatching sequence</i> • Activate the dispatching function <i>Consider operation sequence in the order</i> (only relevant for orders without relationships [Page 17]) • Activate the dispatching function <i>Midpoint scheduling</i>

The following subprofiles in the overall profile are not relevant for the capacity availability check:

- List profile
- Capacity planning table profile
- Planning table profile (tabular)

Overall Profile for the Capacity Availability Check

Mass Processing

Use

When you want to process a large number of operations or orders with the following planning functions in capacity planning, you can use mass processing:

- Dispatching
- Deallocating
- Changing operations data and dispatching or deallocating operations using the [user exit \[Page 149\]](#) CY190001

You can use mass processing to:

- Simplify handling and planning of large amounts of data
- Increase data flow
- Take pressure off the system
- To reduce the online response times

Features

Overview

In mass processing, the system executes the desired planning function for all the selected operations or orders. You can also carry out mass processing online or as a background job. Mass processing is executed using an overall profile for capacity leveling with the capacity planning table which you use to define your planning strategies.

Before you start mass processing, you select the operations or orders to be processed using selection criteria and filter criteria, and you specify the control parameters for mass processing. While the system executes mass processing you do not need to make any entries. When mass processing jobs are executed the system does not call up the capacity planning table.

All errors, warnings and information messages for a mass processing run or for the status of the background job are collected in a log.

Specification of parameters for mass processing

Before you start mass processing you must define the following parameters [Define parameters \[Page 141\]](#):

- The planning function to be carried out, for example dispatching
- An overall profile for capacity leveling with the capacity planning table
 - Thus you specify the following:
 - Using the strategy profile: the planning strategy, for example the dispatching sequence
 - Using the selection profile: the selection and filter criteria which you use to select the operations and orders to be processed
- The job name

Mass Processing

Using this name

- The system saves the parameters and the selection- and filter criteria for mass planning
- The system carries out the job online or in the background
- The system specifies a log

Starting or dispatching mass processing

If you want to start mass processing or carry out dispatching you must

- Specify the execution mode
- Select the operations and orders for mass processing, that is, the values for the selection and filter criteria

You use the execution mode to specify how the system is to carry out mass processing. You can choose between the following options:

- **Immediately online**

The system executes mass processing jobs immediately online.

Since you cannot continue working in the system mode during online execution, it is recommended above all for tests with small amounts of data. You can use such tests to check your planning strategy for mass dispatching.

- **Immediately as a background job**

The system executes mass processing jobs immediately in the background.

- **At a later date defined by you as a background job**

The system carries out the mass processing job in the background on the date you specify. At this point you must explicitly specify a variant for the mass processing report RCCYMAB2. You specify the job name as a value for the variant. Thus you copy to the variant the parameters and the selection- and filter criteria defined under this job name.

If necessary, you can also create a new variant. You can use the variants defined here to create jobs for mass processing in standard background processing. You can do this elsewhere than in the mass processing menus. For example, you can use this process if you want to start mass processing automatically when you leave the planning table ([event-triggered mass processing \[Page 148\]](#)).

The parameters and the selection- and filter criteria are automatically stored under the job name when mass planning is carried out. You can also [Save parameters and selection- and filter criteria under the job name \[Page 142\]](#) without immediately starting mass processing or dispatching at a later date. You can call up the stored parameters and selection- and filter criteria at any time.

Evaluation of mass processing (log)

You can call up the log for the batch run at any time to find out about the status of your job or to analyze messages concerning planning.

Defining Parameters for Mass Processing

Procedure

1. In the capacity planning menu, choose *Leveling* → *Variable* → *Background* → *Execute*.
2. Specify the name of the job for mass processing.
 You can use the possible entries function to select the name of a job that has already been run or for which you have already defined parameters and saved. If you press *Enter* up to twice, all the parameters are loaded that are stored under the job name, and all of them, excluding the selection criteria and filter criteria, are displayed.
3. Specify an overall profile for capacity leveling with the capacity planning table.
4. If you want to define or change the values for the selection and filter criteria before mass processing set the indicator *Redefine selection* (X).
5. Choose the *action* that the system should execute during mass processing:

Action	Description
<i>Dispatching</i>	During a mass processing run, the system dispatches the operations that were selected using the selection and filter criteria.
<i>Deallocating</i>	During a mass processing run, the system deallocates the operations that were selected using the selection and filter criteria.
<i>User exits</i>	During a mass processing run, the system transfers the operations that were selected using the selection and filter criteria to the user exit CY190001. This user exit can change customer-specific operations data and then start dispatching or deallocating these operations. For more information, see User Exits [Page 149] .

Result

The parameters for the job are defined.

You can now

- [Starting or scheduling mass processing \[Page 143\]](#)
- [Save parameters \[Page 142\]](#) and load them, if desired, at a later date

Saving Parameters for Mass Processing

Saving Parameters for Mass Processing

Procedure

1. [Defining parameters for mass processing \[Page 141\]](#).
2. Select *Save parameters*.
3. Choose *Execute*.

If you have set the indicator *Redefine selection* you reach the selection screen for capacity leveling.

- a) Use the selection and filter criteria to define the objects for mass processing.
- b) Choose *Execute*.

Result

The parameters and selection and filter criteria are automatically saved under the job name. You can load them again at any time using your job name.

With *Back* you return to the screen for maintaining the mass processing parameters.

Starting or Scheduling Mass Processing

1. [Defining parameters for mass processing \[Page 141\]](#).
2. Choose an execution mode for mass processing.
 If you choose *Call function at once* (online execution) and want to see a log immediately after the execution of mass processing set the indicator *Display error log (X)*.
3. Choose *Execute*.
4. If you have set the indicator *Redefine selection* you reach the screen for maintaining selection and filter criteria.
 - a) Use the selection and filter criteria to define the objects for mass processing.
 - b) Choose *Execute*.

The parameters and selection and filter criteria are automatically saved under the job name.

Result

The result and how you are to proceed depends on the execution mode chosen.

Execution mode	Result and further procedure
<i>Call function at once</i>	The system executes mass processing immediately online. You cannot carry on working in this mode during the execution. If you have set the indicator <i>Display error log</i> the error log is displayed once mass processing is finished.
<i>Execute background job immediately</i>	The system executes mass processing immediately as a background job.

Starting or Scheduling Mass Processing

<i>Schedule batch job</i>	<p>You reach the screen <i>Mass dispatching: Variants</i>.</p> <ol style="list-style-type: none"> 1. Select the variant with which the mass processing report (RCCYMAB2) is to be started. <p>If necessary change an existing variant or define a new one [Page 146].</p> <ol style="list-style-type: none"> 2. Choose <i>Dispatching</i> → <i>Display/change variant</i>. 3. Choose <i>Variants</i> → <i>Change values</i>. 4. Specify the job name and choose <i>Save</i>. <p>Thus you copy to the variant the parameters and the selection- and filter criteria defined under this job name.</p> <ol style="list-style-type: none"> 5. Choose <i>Back</i> twice. <p>You go back to the screen <i>Mass dispatching: Variants</i>.</p> <ol style="list-style-type: none"> 6. Define the runtime for the background job using <i>Dispatching</i> → <i>Dispatch</i>. <p>The system schedules mass planning at once as a background job, releases the job and then executes it at the specified date.</p> <ol style="list-style-type: none"> 7. Choose <i>Back</i> twice.
---------------------------	--

You can find general information on the status of your background jobs under *System* → *Services* → *Jobs* → *Job overview*.

If, along with the status information, you want to see the messages and information on the mass processing run [call up the logs for mass processing \[Page 145\]](#).

You can find more information on background processing and variants in the documents

- *Introduction to the R/3 System*
- *BC - ABAP Programming*

Calling up the Log for Mass Processing

Procedure

1. You can call up the log in the capacity planning menu with *Leveling* → *Variable* → *Background* → *Log*.
2. Specify the name of the job for which you want to see a log.
If you do not specify a name you receive logs for all the jobs listed under the possible entries function. Specify whether the logs are to be displayed in alphabetical or temporal sequence.
3. Choose *Execute*.

Result

Depending on your settings you branch to:

- the message log for the job
- to the list of all the jobs

If you want to display the message log for a job you select the job name and choose *Edit* → *Select*.

Create, Change Variant for Mass Processing Report

Create, Change Variant for Mass Processing Report

Prerequisites

The following describes procedures for calling up the list of variants that already exist in the mass processing menu and defining or changing variants for the mass processing report RCCYMAB2.

You can use the variants defined here to create jobs for mass processing in standard background processing. You can do this elsewhere than in the mass processing menus, for example for [Event-driven mass processing \[Page 148\]](#).

You can find detailed information on variants in the documentation:

- *Introduction to the R/3 System*
- *BC - ABAP Programming*

Procedure

Calling up list of variants that have already been created

1. [Defining parameters for mass processing \[Page 141\]](#).
2. Select *Schedule background job*.
3. Choose *Execute*.

If when defining parameters you have set the indicator *Redefine selection* you reach the selection screen for capacity leveling.

- a) Use the selection and filter criteria to define the objects for mass processing.
- b) Choose *Execute*.

The parameters and selection and filter criteria are automatically saved under the job name.

You reach the screen *Mass dispatching: Variants* where the variants that have already been created are listed.

Creating new variants

1. On the screen *Mass dispatching: Variants* choose: *Variant Dispatching* → *Create variant*.
2. Specify the name of the variant and choose *Create*.

When you first create a variant on the screen *Mass dispatching* you reach the dialog box *Variants: Change screen assignment*

- Maintain the screen allocation.
- Choose *Execute*.

You reach the screen *Maintain variants*.

3. Specify the job name whose parameter-, selection- and filter criteria you want to copy to the variant.
4. Choose *Execute*.

Create, Change Variant for Mass Processing Report

You branch to the screen for maintaining variant attributes.

5. Enter a short text in the field *Meaning* that describes the variant and, if necessary, describe the attributes or the screen allocation.
6. Save the variant.
7. Press *Back* twice to branch to the screen *Mass dispatching. Variants*.

If you now want to start or schedule the mass processing job, select the variant and start/dispatch it. The mass processing job is executed using the job name that you have copied as a value to the variant.

Change variant

1. On the screen *Mass dispatching:Variants* choose: the variant that you want to change.
2. Choose *Schedule job → Show/change variant*.
3. You can use *variants* to
 - Call up value maintenance and specify the job name whose parameters, selection- and filter criteria you want to copy to the variant
 - Maintain the attributes and variants

Save your entries every time

4. Press *Back* twice to branch to the screen *Mass dispatching. Variants*.

Event-Driven Mass Processing

Use

You can get the system to automatically execute background jobs on saving the planning table.

You can also use a background job to execute mass processing. For example, after you have planned the bottleneck work centers of the capacity planning table you can automatically dispatch operations that have not yet been dispatched to non-bottleneck work centers.

Prerequisites

If you want the system to execute a background job on leaving the planning table you must set the indicator *Set event* in the control profile. You can also specify a parameter.

Actions

If you leave and save the capacity planning table the system automatically sets the events `CY_PLANNING_TABLE_END` and `SAP_PLANNING_TABLE_END` and starts the background job with the appropriate event and the appropriate parameters. You must have previously created the event-controlled background job.

For a mass processing job with the mass processing report `RCCYMAB2` you use the variant to specify:

- Which planning function is executed
- Which objects are processed
- Which overall profile is used to execute capacity leveling

You can read about how to define a variant for the mass processing report in the section [Defining and changing variants for the mass processing report \[Page 146\]](#).



If the events `CY_PLANNING_TABLE_END` or `SAP_PLANNING_TABLE_END` have not been created in your system then you must create them using transaction `SM62` as user-defined events.

You can find more information on background processing and variants in the documents

- *Introduction to the R/3 System*
- *BC - ABAP Programming*

User Exits

The following customer functions (user exits) are available in capacity planning for the development class CY:

- **Sequence formation**

The enhancement CYPP0001: Changing sequencing criteria and sequencing.

You can use this enhancement to define the contents of the sort criteria and the sequence of the operations to be dispatched. Up to eight ascending or descending sort criteria are available for each operation.

A prerequisite for working with this user exit is that you must have activated the dispatching function *Sort operations to be dispatched* in the strategy profile.

- **Operation change**

Enhancement CY190001: Changing operations in orders in capacity planning

You can change operation data using this enhancement. In addition, you can select the relevant objects on the planning table and transfer the operations that belong to the selected objects to the enhancement using the menu options *Functions → Extended planning → User*.

Then, you can change operation data such as standard values, work center, sequence number and dates in the operations that were transferred, and transfer them back to capacity planning along with the functions that are to be used on the changed operations. For each operation you can transfer two of the functions **Change**, **Dispatch** and **Deallocate**. The changed objects are written to the database when you save the planning table.

- **Fixing planning periods on the capacity planning table**

Enhancement CY040001: Fixing planning periods

You can use this enhancement to automatically lock periods for dispatching on the planning table. You should also read [Fixing planning periods \[Page 31\]](#).

- **User-specific data in the table section of the planning tables**

Enhancement CYPP0002: User-defined fields

You can use this enhancement to enter user-specific data in the table section of the two types of capacity planning table.

In Customizing for capacity leveling the structure USER is available in the layout key; the fields are empty when delivered.

- **Change selection list for fields in layout key**

You can use the enhancement CYPP0003 to reduce or enhance the list of fields that are offered for selection in Customizing for the layout- or sort key.

- **Assign new values to fields in sort-layout key**

You can use the enhancement CYPP0004 to assign new values to the fields in the sort-layout key and thus generate sort sequences for your objects in the tabular section of the planning tables in capacity leveling. In the sort-layout key itself you can specify for every

User Exits

field only an ascending or descending sort on the basis of the ASCII character set.



An enhancement is only called up if the project to which it is assigned is activated.

You can maintain enhancements to a development class using the transaction CMOD. You can find help on the technical realization in the documentation for transaction CMOD.

Settings and Profiles for Capacity Leveling

[Overall profile \[Page 152\]](#)

[Control profile \[Page 154\]](#)

[Selection profile \[Page 156\]](#)

[Time profile \[Page 157\]](#)

[Changing the time profile on the initial screen of capacity leveling \[Page 158\]](#)

[Evaluation profile \[Page 159\]](#)

[Strategy profile \[Page 160\]](#)

[Period profile \[Page 165\]](#)

[Profile for capacity planning table \(tabular form\) \[Page 166\]](#)

[Profile for capacity planning table \[Page 167\]](#)

[List profile \[Page 169\]](#)

[Field selection \[Page 171\]](#)

[Examples of general settings \[Page 173\]](#)

[Parameters for scheduling and calculating capacity requirements \[Ext.\]](#)

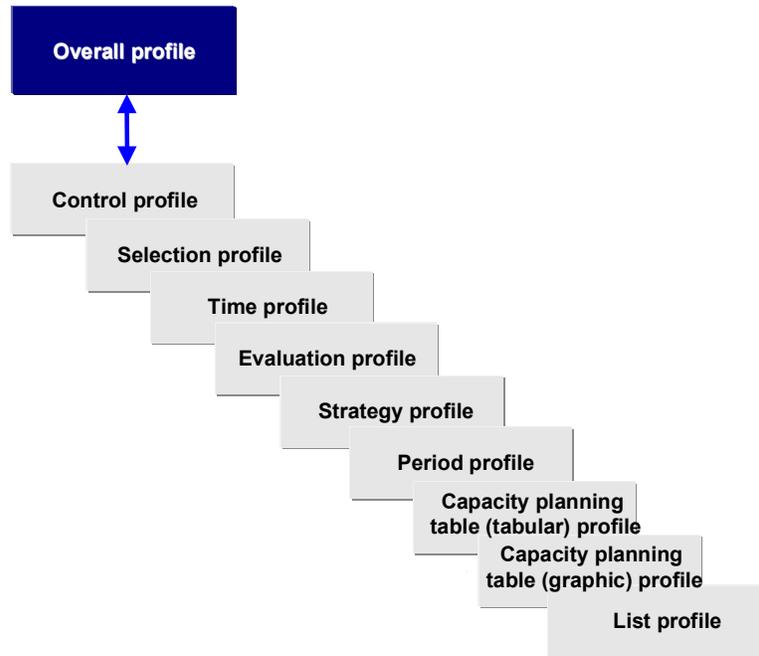
[Scheduling levels \[Ext.\]](#)

[Parameters for detailed scheduling \[Ext.\]](#)

Overall Profile

Overall Profile

The *overall profile* contains various profiles for capacity leveling. You create and maintain these profiles in Customizing for capacity leveling.



The following table summarizes the standard overall profiles that the system offers when you call up capacity leveling using the central capacity planning menu:

Overall profiles when accessing capacity leveling using the capacity planning menu

Menu option <i>Leveling</i> →...	Overall profile	SET/GET parameter
<i>Work center view</i> → <i>Planning table (graphic)</i>	SAPSF001	CYA
<i>Work center view</i> → <i>Planning table (tabular)</i>	SAPSF002	CYB
<i>Indiv. capacity view</i> → <i>Planning table (graphic)</i>	SAPSF005	CYH
<i>Indiv. capacity view</i> → <i>Planning table (tabular)</i>	SAPSF006	CYI
<i>Order view</i> → <i>Planning table (graphic)</i>	SAPSF004	CYM
<i>Order view</i> → <i>Planning table (tabular)</i>	SAPSF003	CYE
<i>Rough-cut planning</i>	SAPSOP001	No SET/GET parameters
<i>Sng-itm, interactive (day view)</i>	SAPMP001	No SET/GET parameters
<i>Sng-itm, interactive (weekly view)</i>	SAPMP002	No SET/GET parameters
<i>Sng-itm, interactive (monthly view)</i>	SAPMP003	No SET/GET parameters
<i>Sng-itm, interactive (according to planning calendar)</i>	SAPMP014	No SET/GET parameters
<i>Repet. manufacturing</i>	SAPMP005	KP2
<i>Variable</i>		CYG
<i>Project view</i> → <i>Planning table (graphic)</i>	SAPPS_G002	CYN
<i>Project view</i> → <i>Planning table (tabular)</i>	SAPPS_G001	CYF

Overall Profile

<i>Plant maint. view → Work center view → Planning table (graphic)</i>	SAPPM_G006	CYO
<i>Plant maint. view → Work center view → Planning table (tabular)</i>	SAPPM_G005	CYP
<i>Plant Maint. view → Individ. capacity view → Planning table (graphic)</i>	SAPPM_G002	CYK
<i>Plant Maint. view → Individ. capacity view → Planning table (tabular)</i>	SAPPM_G001	CYD

If you want to use your own overall profile to call up capacity leveling, assign the appropriate parameter to this overall profile in your user master.

If you call up capacity leveling using the menu option *Variable*, you can enter any existing overall profile and use it to start capacity leveling.

Control Profile

Control Profile

A control profile contains settings that define the type of display and the layout of the data as well as the locking properties of the system. You can maintain the following data:

- *Presentation*: You use the presentation to define how data is displayed in capacity leveling. You can choose between the planning table, planning table (tabular form) and the list display.
- *Layout type*: Here you specify whether the data for capacity requirements and available capacity are **displayed per period** or **continuously**. Data can be displayed per period in the planning table (tabular form) or in the planning table. Data is displayed continuously in the capacity planning table.
- *Change mode*: If this indicator is set, capacity leveling is called up in change mode and you can change the objects. If you have not set the indicator then capacity leveling is called up in display mode. With *Locking properties* you control when orders are locked.



If you are not authorized to change capacity leveling parameters, then you automatically go to display mode even if the indicator *is* set.

- *GUI status for display mode*: You can use this GUI status to define how the menu is set up for the planning tables for display mode. If you do not maintain the GUI status for display mode, then the system uses the GUI status predefined by SAP.
- *GUI status for change mode*: You can use this GUI status to define how the menu is set up for the planning tables for display mode. If you do not maintain the GUI status for display mode, then the system uses the GUI status predefined by SAP.
- *Restrict. plan.:* If you set this indicator then the capacity planning table is called up in a session in which you can temporarily save the results of your planning without leaving the planning table.

You can carry on working in the planning table during the saving process. The system saves changes made since the last time the saving process was started; it saves them in the next saving process.

In this planning table session orders are only locked during the saving process; they are not locked while the capacity planning table is being called up or during processing. The locking properties in the control profile are not taken into account.

Planning functions are limited in this planning table session:

- You cannot dispatch operations to individual capacities
- You cannot change or display orders.
- You cannot change sequence numbers of orders
- You cannot change capacities
- You cannot display operations. You can make limited changes to operations in orders. You can change their standard values.
- When leaving the planning table you cannot start another action automatically using the trigger CY_PLANNING_TABLE_END.

Control Profile

- *Locking properties:* This indicator determines when orders are locked if you call up the planning table in *Change mode*. Other users cannot change the orders that you have locked. You can:
 - *Only lock orders on changing them*

The orders are only locked when you change them, for example, when you dispatch an operation.
 - *Only lock orders in pool*

The orders in the pool are locked when they are read in. The dispatched orders, on the other hand, are only locked when you change them. Special case: If one operation belonging to an order is in the pool and another has been dispatched then the order is not locked.
 - *Lock all orders*

All orders are already locked when the system reads them in.

In the order view only those orders are locked on being read in that you selected in the initial screen of capacity leveling. However, any other orders that the system reads in to determine the relevant available capacities and displays on the planning table are not locked.
- *Always sort:* You use this indicator to specify that the lines in the capacity planning table are to be sorted after every change (for example, after deallocating a requirement). If the indicator is not set then new lines are added to existing ones on the planning table.
- *Set event and parameters:* You use this setting to determine that on leaving the planning table other actions are automatically triggered, such as mass dispatching. You use the indicator *Set event* to set the trigger CY_PLANNING_TABLE_END. On leaving the planning table the job is automatically triggered that you have defined for this event and the *parameter*.
- *Standard value number:* In this way you specify which standard value in the operations is interpreted as the setup standard value. This information is only used for the [Planning functions taking the setup time into account \[Page 96\]](#) if setup transitions are not maintained in the [Setup matrix \[Page 104\]](#).

Selection Profile

Selection Profile

You use the selection profile to specify how to select, filter and group data in capacity leveling:

- *Object set*: An object set contains criteria and their default values or fixed values, which are used to select the relevant objects for capacity leveling.
- *Filter set*: A filter set contains criteria and their default values or fixed values, which are used to filter the requirements for the objects selected.

You use the object set and the filter set to define the selection screens that appear when you call up capacity leveling from the capacity planning menu.

- *Reqmts grouping*: By specifying the requirements grouping you determine the criteria used to group together the requirements in whichever planning table you are using. You must not change the requirements groupings provided in the SAP standard package because settings are critical for generating an accurate display on the planning tables.

Selection of Capacity Requirements

In the selection profile you define the view of capacity requirements (see also “View of capacity requirements” in [Scheduling and calculating capacity requirements \[Ext.\]](#)). You can specify which requirements the system should read for which scheduling level (detailed, rate-based or rough-cut) and for which order categories. You can then edit these capacity requirements.

Selecting Capacities

When accessing the planning tables using a hierarchy work center, you can display the work centers that lie below it in the hierarchy. You can then dispatch operations to these work centers. If you want to display the subordinate work centers in the hierarchy, you should set the indicator *Explode hierarchy*.



If you have set the indicator *Explode hierarchy* you must enter the name of the hierarchy to be exploded in the evaluation profile.

If you want to specify that planning is to take place at the level of individual capacities that are allocated to a selected capacity, then you should set the indicator *Planning for indiv. caps*.

In the selection profile, you can enter the version of available capacity of a work center that is to be displayed on the planning table. It does not have to be the active version in the work center, that is important, for example, for cumulating available capacity. If you have not maintained a version of available capacity in the strategy profile, the system uses the version of available capacity in the work center. If no version of available capacity is maintained in either the selection profile or in the work center, the system automatically selects the standard available capacity in the work center.

Time Profile

A time profile contains date specifications and instructions as to how you can enter date specifications. In the time profile, you specify the database read period, the evaluation period, the planning period and the date for dispatching the backlog. Please consider the following points:

- The system accesses all requirements lying completely or partially within the database read period.
- The evaluation period must be smaller than or equal to the database read period.
- The planning period must be smaller than or equal to the evaluation period.



If you have not entered a planning period then the system makes it the same as the evaluation period.

- All the backlogged capacity requirements up to the date for dispatching the backlog are dispatched. This gives you a summarized overview of backlogged operations. This date is used for the planning table (tabular form) or for displaying data per period.

You use the entry type to specify how you want to enter the limits for the periods or the date for dispatching the backlog. Typical entry types are calendar day or calendar month.

There are two different ways of entering the start and finish dates for the periods or the date for dispatching the backlog:

- **Entry with firm date:** In this case, you can enter the start or the end of the period directly. Typical entries for the month would be 03/95 and 05/95.
- **Relative to the current date:** Depending on the type of entry, you can refer to the current date. For example, if the type of entry is calendar days and the current date is 05/01/95, by entering -10 and 10 you specify a period of 10 calendar days before and after the current date.

Changing the Time Profile on the Initial Screen of Capacity Leveling

Changing the Time Profile on the Initial Screen of Capacity Leveling

Prerequisites

You can change the [Time profile \[Page 157\]](#) in the initial screen of capacity leveling.

Procedure

Choose *Settings* → *Change time profile*

You branch to the dialog box *Change time profile*. The system displays the data for the current time profile and you can change it.

Evaluation Profile

An evaluation profile contains settings that are important for evaluating data. This includes the capacity unit used by the system to display available capacities and capacity requirements. You can also use the indicator *Unit of measure frm capacity* to specify that the available capacities and capacity requirements on the planning tables are to be displayed in the unit of measure maintained in the capacity.

You can use the indicator *Cumul. indiv. cap.* to specify that the system is to calculate the available capacity by cumulating the available capacities of the individual capacities that belong to the capacity category.

In addition, you can use the indicator *Hierarchy cumulation* to specify that the capacity requirements are to be calculated by cumulating them using a work center hierarchy. When you set the indicator *Dyn. capacity cumul.*, the system cumulates available capacity dynamically using a hierarchy. For this purpose you should enter the name of the hierarchy.

The settings in the section *Distribution* are used everywhere in capacity leveling where period splits are used. You can maintain the following data:

- The indicator *From work center/operation* specifies which distribution key is used. If this is set, the distribution keys you maintained in the work center are used to distribute the capacity requirements.

For networks and maintenance orders, the distribution key from the operation is used if you set the indicator. If you have not maintained a distribution key in networks and maintenance orders, then the system uses the distribution key for internal processing in the work center.

If the indicator is not set, the system uses a distribution key maintained in this profile.

- Distribution of capacity requirements
- Distribution of the capacity requirements for internally processed operations or activities, for example in maintenance orders and networks

Strategy Profile

Strategy Profile

You specify data in the strategy profile that controls how operations are dispatched on the planning tables.

Settings for the planning tables

The following settings are important for dispatching operations on both types of planning table:

- *Finite scheduling*: If you set this indicator then finite scheduling is carried out during dispatching. You can find more information on finite scheduling in [Finite scheduling \[Page 21\]](#).
- *Plan. direction forwards*: If you set this indicator, during automatic dispatching, the system looks to the “future” for a possible date to dispatch operations within the planning period. If you do not set the indicator, the system looks to the “past”.
- *Dispatch at earliest point in time*: If you have set this indicator then the system tries to dispatch operations as early as possible in the planning period without taking preceding operations in the order into account. If this indicator is set, then the system switches to *Planning direction forwards*.
- *Consider Float bef. prod.*: If this indicator is set, the system is to check whether, during dispatching, an operation was shifted within the float before production. The system only takes this indicator into account if you have activated the dispatching function *Operation date check* and set the indicator *Take op. floats into acct.*
 - *Use float before prod.*: This indicator specifies that the system is to check whether an operation was dispatched within the float before production. This indicator is only taken into account if you have activated the dispatching function *Operation date check* and set the indicator *Use float before production*.
 - *Use float aft. production*: This indicator specifies that the system is to check whether an operation was dispatched within the operation float. This indicator is only taken into account if you have activated the dispatching function *Operation date check* and set the indicator *Use float before production*.
- *Cancel dispatching due to error*: If this indicator is set, the system terminates the dispatching of an operation if it discovers errors during finite scheduling or the operation date check.



For example, if you have set the indicator *Use operation float*, *Use float before production* and *Cancel dispatching due to error* then the system checks whether the operation was shifted within the sum of the operation float and the float before production. If the time of dispatching lies outside this period, then the dispatching of the operation is terminated.

If you have not set the indicator, and the system finds errors during scheduling or the operation date check, it still dispatches the operation. The system always makes an entry in the planning log.

- *Reschedule with production. version*: This indicator is only relevant for planned orders. You thus specify that when an operation is rescheduled, the production version in which the work center is entered as the production line is copied to the order. If no such production version

Strategy Profile

exists, then the planned order is rescheduled. It is scheduled using the old standard values and the formulas from the new work center.

- *Term. resch. with prod. version*: This indicator is only effective in conjunction with the indicator *Reschedule with prod. version*. It specifies that rescheduling a planned order taking the production version into account is terminated if no production version exists in which the new work center is entered as the production line.
- *Date entry when dispatching*: If you set this indicator, the system does not dispatch operations automatically on the planning tables. Dispatching is only possible manually. If you have set the indicator, you reach a dialog box once you have selected the planning table function *Dispatch*. You have to enter a start time or finish time and/or a target work center in this dialog box depending on the planning time that has been set. This entry is then valid for all operations that you have selected.



You can manually dispatch an operation on the planning table (tabular form) with the function key *Manual dispatching* even if the indicator *Date entry on dispatching* is not set in the strategy profile.

- *Dispatch. sequence*: Sequence and format key or sort key used to specify the sequence in which operations are to be dispatched.
- *Treatment of queue time*: Key you use to define the queue time used for scheduling if you do not want the system to use the queue time calculated by lead time scheduling. It is important to note that with finite scheduling for an operation the system does not take other reduction measures, such as splitting, into account.
- *Reduction level*: If you have used the key *Treatment of queue time* to specify that the queue time is to be reduced, then you should enter the desired reduction level.
- *Change planning direction*: If you set this indicator, the system searches for remaining available capacity to dispatch operations in the whole planning period. The system first looks for remaining available capacity in the planning direction defined. If it doesn't find any here it searches in the other direction.

The indicator *Insert operation* should not be set. If it is set, then the system only searches in the planning direction specified in the strategy profile.

Settings in the capacity planning table

- *Insert operation*: If this indicator is set, you can dispatch operations at a particular time. If the time to which it is dispatched clashes with an already existing commitment, then the system dispatches the operation before or after the commitment depending on the planning direction. Other operations that have already been dispatched are shifted in the planning direction.
- *Close gaps*: Key you use to specify how the system is to deal with gaps caused when an operation has been deallocated or rescheduled. The following options are available:
 - The gap in the capacity commitment remains.
 - All the operations up to the next gap in the commitment are shifted one way or the other depending on the planning direction so as to close the gap.
 - All the operations are shifted to the end of the planning period according to the planning direction in order to close the gap that has arisen.

Strategy Profile

- *Planning in non-work periods*: This indicator specifies that operations can be dispatched to non-work periods without you having to change the available capacities in the work centers. During dispatching, the calendar, operating times and available capacities in the work centers are ignored and instead the following data is used:

Operating time	00:00 to 24:00
Efficiency rate	100%

- *Dispatching at best time for setup*: If you set this indicator, the system dispatches operations into existing commitments in such a way that the setup times of the commitments increase as little as possible. You must also set the indicator *Insert operation*.



This function is not available for capacity leveling in the process industry (PP-PI), that is, for capacity leveling of process orders and planned orders that refer to master recipes.

- *Initial setup state*: Initial setup states are states of work centers. They are used in:
 - Adjustment of setup time
 - Setup time optimization
 - Dispatching of an operation at the best time for setup

A key for a setup group category that is a maximum of three characters long identifies an initial state.



These functions are not relevant for capacity leveling in the process industry (PP-PI) - See previous point

- *Period split*: Defines the period split for dispatching operations on the capacity planning table (for example, shift split). You use the following indicators to define whether and how the period split is taken into account on dispatching:
 - *Start search in period split*: Specifies for dispatching with the period split at what point the system starts to look for remaining available capacity.
 - *Always adhere to period split*: Specifies that when dispatching to the period split either the start or finish dates of operations (depending on the planning direction) lie on points of the period split.
 - *Operation completely in period split*: Specifies that when dispatching to the period split the start- and finish date of an operation must lie within an interval of a period split, for example, a shift. If the indicator is set and an operation is longer than a split interval, then the operation is dispatched at the next possible time.

Settings for the planning table (tabular form)

The following indicator is relevant for dispatching operations on the **capacity planning table (tabular form)**:

- *Overall capacity load*: If you have set this indicator, the system takes account of overloads in individual periods when dispatching operations. Thus, a 200% load for one period means that no operation can be dispatched to the following period.

Setting for the capacity planning table (tabular form) with periodic-continuous display

When dispatching operations on the capacity planning table (**tabular form**) with the **periodic-continuous display** the following indicators are relevant as for the capacity planning table:

- *Insert operation*
- *Close gaps*
- *Initial setup state*
- *Dispatch at best time for setup*



The *Initial setup state* and *Dispatch at best time for setup* in the process industry; that is, for capacity leveling of process orders and planned orders that refer to a master recipe, are not relevant or are not available.

Dispatching functions

In the strategy profile you can define which functions are to be active when dispatching. The following functions are possible:

- *Forming the dispatching sequence*: This function must be activated if you want to define the dispatching sequence (for example, with a user exit). For more information, see [Planning Taking Account of the Sequence \[Page 17\]](#)
- *Taking account of the operation sequence in the order*: If you have activated this function, you can dispatch an operation depending on the planning direction only after its immediate dispatched predecessor (planning direction forwards) or its immediate dispatched successor (planning direction backwards). This function is only relevant for planned orders, production orders and maintained orders without explicitly maintained relationships. For more information, see [Planning Taking Account of the Sequence \[Page 17\]](#)
- *Operation date check*: This function must be active if the system is to check operation dates.
- *Midpoint scheduling*: This function must be activated if, when dispatching an operation, you want midpoint scheduling to take place when the status has been set. Otherwise midpoint scheduling takes place when you save the planning table.
- *Change production version on error*: If you have activated this function and an error in automatic dispatching occurs (for example, capacity overload), the next production version is automatically copied to the planned order. The production versions are sorted alphanumerically according to production version key. The planned order is scheduled using the routing for this version, but not dispatched. The operations remain in the pool and can be dispatched to the new production line along with other operations. This function only works with planned orders.
- *Setup time optimization*: If you have activated this function, then you can dispatch a group of selected operations in the pool to the target work centers in the sequence that minimizes

Strategy Profile

setup time. For more information about this function, see [Optimization of setup time \[Page 100\]](#).



This function is not available for capacity leveling in the process industry (PP-PI), that is, for capacity leveling of process orders and planned orders that refer to master recipes.

Further settings for dispatching

In the strategy profile, you can use the key *Dispatching internal production* to specify at what time the system is to dispatch internally processed operations, for example from plant maintenance orders and networks. Here you can choose between dispatching at the earliest point in time, the latest point in time and dispatching depending on the valid distribution key of the scheduling capacity.

Dispatching using the distribution key leads to the operation being dispatched to the period when it is currently displayed. The distribution key contains a distribution strategy. The earliest and latest dates for the distribution are defined in the distribution strategy. This determines whether the system uses the earliest or latest start date.

Period Profile

The profile for period-related displays contains settings that are relevant to period-related evaluations. These include the period type and the period duration. With both of these entries you specify the period split for your evaluation period.

You can also specify a *Planning calendar* in the period profile. You can use it to define period lengths more easily.

Profile for the Planning Table (tabular form)

Profile for the Planning Table (tabular form)

In the profile defining the display of the periodic planning table, you can specify the following parameters:

- You can use the *Layout ID* to define:
 - Which requirements are displayed in which charts,
 - How the information is sorted in the charts,
 - Which object information is displayed.

You use the layout ID to combine layout keys that belong together.

- You use the key *Reqmts to be displayed* to define the type of requirements that you want to display. So you have the choice between requirements generated by operations not yet dispatched and/or those already dispatched. You can change the setting from within the planning table (tabular form).
- You use the indicator *Ind.width* to determine the width of the screen on which the planning table (tabular form) is displayed. This indicator is relevant if you have a wide screen or one with a high resolution. You can change the setting from within the planning table (tabular form).
- You use the formula *Formula rem. av. cap* to specify the formula to be used to calculate the remaining available capacity. You can also specify whether the requirements generated by operations not yet dispatched (pool) are to be taken into account when calculating the remaining available capacity.
- The *Dispatch time* is the time when the operation that is rescheduled on the planning table (tabular form) is dispatched. The system proposes this time when rescheduling an operation.

Profile for Capacity Planning Table

The profile for the planning table contains settings that determine how the planning table is set up and what it looks like. This includes the following:

- The indicator *Log* you use to specify that the customizing-specific system messages that are displayed when generating the planning table are displayed in a log. You can call up the log from the capacity planning table.
- The key *Chart sequence* which determines how many charts are displayed and in what sequence.
- The *Layout ID* that determines how information is displayed in the table section. The layout is linked to the requirements grouping in the selection profile. For every group in the requirements grouping there has to be a layout key in the layout used.
- The key *LineReprSelec* that defines the line representation selection used to determine how a line is graphically displayed in the table section.
- The key *Time scale* that defines the scale to be displayed in the diagram section. This definition contains the data for representing the pre-evaluation period, the planning period and the post-evaluation period.
- The key *Graphical object selection* that defines the graphical object type selection used to determine what data for an application object (for example, operation) is to be graphically displayed in the diagram section depending on its status.



For an operation in the pool, the queue time, setup time, processing time, teardown time and wait time are displayed. However, for an operation that has been dispatched, only the setup time, processing time and teardown time are displayed.

- The keys *AxisReprSelec* and *CurvRepresSelec* specify the graphical properties of the material stock curves in the chart that can be displayed on the capacity planning table.
- The graphics profile that represents the overall basis for the graphical display. The graphics profile is defined using the following three entries:
 - *Group*: Profile group you use to define the application area for the graphics profile.
 - *Name*: Profile name that, together with the profile group and the profile index, identifies the graphics profile.
 - *Index*: Profile index that can be used to distinguish between modes such as change and display.

For every graphical profile that was defined using these three entries the following are defined in Customizing for capacity leveling under *Technical settings*:

- *Chart group*: Chart group includes data concerning whether the chart contains a title bar, time scale, table heading, table section and diagram section and what background colors these sections have.
- *Graphical element group*: It combines graphical element categories which determine what the graphical elements look like.

Profile for Capacity Planning Table

- *Color category*: Color group combines color categories that specify the color and pattern or table lines, time strips and time fences as well as graphical objects in the diagram section.
- *Form group*: It combines form types that define the formatting of texts (for example, in a table line).
- *Options profile*: It contains default values for displaying the planning table (for example, height and width) as well as data concerning technical properties (for example, whether or not a double-click has a function).

List profile

In the list profile you enter the profiles for the following lists:

- Capacity requirements list
- Standard Overview
- Detailed Capacity List

The list display is defined using these profiles.

Set

Set

Definition

Grouping of selection criteria. Based on these selection criteria you can choose your data in the capacity evaluation and capacity leveling, for example work centers by work center name and plant.

There are the following types of set:

- A **basic set** contains only one selection criterion; for example, the work center name.
- A **multidimension set** contains one or more selection criteria, for example the work center name and type of work center, and consists of several basic sets.

Use

Sets are used to define:

- The columns in the variable overview (basic sets and multidimension sets)
- The selection criteria on the [selection screens \[Ext.\]](#) in the capacity evaluation (multidimension sets)
- The selection criteria on the selection screen (initial screen) and the filter screen of capacity leveling (basic sets and multidimension sets)

Structure

Basic set

To define the selection criterion you link the basic set to the appropriate table field. You can specify fixed values and variables for the selection criterion.

The purpose of variables is so that during capacity planning you can enter individual values or intervals for the selection criterion on the selection or filter screens. Variables are also used to specify default criteria for the selection criterion on the selection screen (for example, with the SET/GET parameter) which you can overwrite.

Multidimension set

Multidimension sets comprise basic sets.



A multidimension set consisting of a basic set that refers to the selection criterion “operation status” is not permitted (and also does not make sense).

You can define variables, basic sets, multidimension sets and combinations in Customizing for the *Capacity evaluation* and *Capacity leveling*.

For further information, see the Implementation Guide.

Field Selection

You use the field selection to specify the fields that are to be displayed on the planning tables during capacity leveling. You can make this setting directly in the planning table (tabular form) as well as in Customizing.

You can maintain the field selection separately, for example for the resource section in the upper section of the planning table (tabular form) or for the requirements section in the lower part.

Maintenance in Customizing

To maintain field selections in Customizing, proceed as follows:

1. Go to the screen *Layout key - select display fields* in the section for defining the layout key in Customizing for capacity leveling. Specify the layout key for which you want to make or change a field selection. Press the function key *Maintain fld. selection*.

You reach the screen *Field selection for list maintenance*. On this screen, you are offered database fields to choose from depending on the layout key displayed on one of the planning tables.

2. Select the fields which are to be displayed.
3. Press the function key *Maintain Sequence*.

The system displays the fields selected and a heading line for the planning table (tabular form) on a wide screen. You can maintain this line. A heading line for the standard screen width is also displayed at the same time.

4. Enter the length used to display the fields.
5. If you press the function key *Heading default* then the system searches for the heading in the key words fitting the field length.
6. If you want to maintain the sequence of the data fields, select the line of the data field that you want to move and position the cursor on the line before which the data field is to be inserted. Press the function key *Move*.

Maintenance in the Planning Table (tabular form)

If you want to maintain the field selection in the planning table (tabular form), please proceed as follows:

1. Select the line in the resource section or the requirements section in the capacity planning table (tabular form) for which you want to maintain the field selection.
2. On the screen *Period Requirements per Resource*, choose *Settings → Maintain fld. select*.

You reach the screen *Field selection for list maintenance*. The system displays the layout key fields for the line on which the cursor was positioned. The rest of the procedure for maintaining the field selection is the same as in Customizing.

Check Report for Analyzing the Overall Profile for Capacity Leveling

Check Report for Analyzing the Overall Profile for Capacity Leveling

Usage

You can use the check report to:

- Analyze an overall profile for capacity leveling for errors
- Copy the overall profile being analyzed to another overall profile in another client
- Specify the color for highlighting objects on the capacity planning table, for example for the ATP check for highlighting objects with missing parts

Prerequisites

The overall profile must be created.

Actions

Analysis of the overall profile for capacity leveling

You can call up the check report

- With transaction *CMCH*
- In the capacity planning table with *Settings* → *Display profiles*.
- From maintaining the overall profile

The check report analyses and lists the profiles that the overall profile contains. The system highlights profiles containing errors. You can explode the hierarchy of the profile containing the error. The errors and their possible causes are displayed on the screen.

In the long text for the error message there are the possible measures you can take to correct the error and links to the Customizing transactions affected.

For errors in the selection profile and the control profile you can branch directly to the Customizing transaction affected by double-clicking on it.

Copying overall profiles

After analyzing the overall profile you can copy it to another overall profile in any client.

Defining the color selecting objects in the case of errors

If a function discovers errors on the capacity planning table, for example missing parts in the ATP check for production orders, the objects affected are highlighted. You can define the colors after checking the overall profile with *Edit* → *Assign colors*.

Examples of General Settings

The following gives examples of settings in the strategy profile to achieve particular business objectives.

If you want to...

- **Keep to scheduled dates in the order**, that means, if the dates must lie within the operation and order floats, set the following indicators in the strategy profile:

- *Use operation float*
- *Use float bef. prod.*
- *Use float aft. prod.*
- *Cancel dispatching due to error*

If you also set the indicator *Insert operation*, the system tries to dispatch the requirements (operation) for the scheduled dates even if the work center commitment is already fixed. It does this by shifting other requirements (operations).

- **Achieve a machine commitment without gaps**, set the indicator *Dispatch at earliest point in time* in the strategy profile. Dispatching takes place within the planning period at the earliest possible time, independently of the dates calculated in scheduling.

To close the gaps that may have arisen as a result of deallocating or rescheduling a requirements (operation) you must specify "Until end of the planning period" for the indicator "*Close gaps*".

- **Replace a work center that is no longer available with another** dispatch the requirements for the various orders to another work center, then set the indicator *Date entry on dispatching* in the strategy profile. If this indicator is set you get to a dialog box after selecting requirements to be dispatched. You must enter the new work center and depending on the planning direction and the dispatching date in this dialog box. The entries are then valid for all selected requirements (operations).
- **Take the backlog into account when dispatching on the planning table (tabular form)**, set the indicator *Overall capacity load* in the strategy profile. If you have set the indicator then the overall load for all the periods in the planning period is taken into account.