Capacity Planning in Customer Service and Plant Maintenance

HELP.PPCRPPMSM

Release 4.6C

Copyright

© Copyright 2001 SAP AG. All rights reserved.

No part of this publication may be reproduced or transmitted in any form or for any purpose without the express permission of SAP AG. The information contained herein may be changed without prior notice.

Some software products marketed by SAP AG and its distributors contain proprietary software components of other software vendors.

Microsoft®, WINDOWS®, NT®, EXCEL®, Word®, PowerPoint® and SQL Server® are registered trademarks of
Microsoft Corporation.

IBM®, DB2®, OS/2®, DB2/6000®, Parallel Sysplex®, MVS/ESA®, RS/6000®, AIX®, S/390®, AS/400®, OS/390®, and OS/400® are registered trademarks of IBM Corporation.

ORACLE® is a registered trademark of ORACLE Corporation.

INFORMIX®-OnLine for SAP and Informix® Dynamic Server™ are registered trademarks of Informix Software Incorporated.

UNIX®, X/Open®, OSF/1®, and Motif® are registered trademarks of the Open Group.

HTML, DHTML, XML, XHTML are trademarks or registered trademarks of W3C®, World Wide Web Consortium,
Massachusetts Institute of Technology.

JAVA® is a registered trademark of Sun Microsystems, Inc.

JAVASCRIPT® is a registered trademark of Sun Microsystems, Inc., used under license for technology invented and implemented by Netscape.

SAP, SAP Logo, R/2, RIVA, R/3, ABAP, SAP ArchiveLink, SAP Business Workflow, WebFlow, SAP EarlyWatch, BAPI, SAPPHIRE, Management Cockpit, mySAP.com Logo and mySAP.com are trademarks or registered trademarks of SAP AG in Germany and in several other countries all over the world. All other products mentioned are trademarks or registered trademarks of their respective companies.

Icons

Icon	Meaning
	Caution
	Example
	Note
	Recommendation
	Syntax
	Tip

Contents

Capacity Planning in Customer Service and Plant Maintenance 6
Capacity Requirements Planning in Customer Service (CS-SE) 7
Process for Capacity Requirements Planning in Customer Service 8
Reconciliation of Capacity and Scheduling 10
Inclusion of External Operations in Scheduling 11
Consideration of Shift Breaks when Planning 12
Available Capacity Versions in the Work Center 13
Consideration of Existing Capacity Loads 14
Capacity Load Records for the Production Work Center 15
Calling Up Planning Boards 17
Assignment of a Person to an Operation 18
Selection of a Suitable Person 20
Creation of Employee Requirements Records (Splits) 22
Splitting and Scheduling an Individual Operation 23
Creating Employee Requirements Records Automatically Using the System 24
Changing Employee Requirements Records Created Automatically 26
Dispatching of Requirements 27
Deallocation of Requirements 28
Deallocating Individual Operation Splits in the Order 29
Change of the Order 30
Display and Change of the Available Capacity 31
Graphical Monitor 32
Capacity Planning in Plant Maintenance (PM-WOC-CP) 34
Process for Capacity Requirements Planning in Plant Maintenance 35
Reconciliation of Capacity and Scheduling 37
Inclusion of External Operations in Scheduling 38
Consideration of Shift Breaks when Planning 39
Available Capacity Versions in the Work Center 40
Consideration of Existing Capacity Loads 41
Capacity Load Records for the Production Work Center 42
Calling Up Planning Boards 44
Assignment of a Person to an Operation 45
Selection of a Suitable Person 47
Creation of Employee Requirements Records (Splits) 49
Splitting and Scheduling an Individual Operation 50
Creating Employee Requirements Records Automatically Using the System 51
Changing Employee Requirements Records Created Automatically 53
Dispatching of Requirements 54
Deallocation of Requirements 55
Deallocating Individual Operation Splits in the Order 56
Change of the Order 57
Display and Change of the Available Capacity 58
Graphical Monitor 59

Capacity Planning in Customer Service and Plant Maintenance

Capacity Planning in Customer Service and Plant Maintenance

Capacity Planning in Customer Service (CS) [Page 7]

Capacity Planning in Plant Maintenance (PM-WOC-CP) [Page 34]

See also:

PP - Capacity Planning [Ext.]

Capacity Requirements Planning in Customer Service (CS-SE)

Purpose

Capacity requirements planning supports you in the detailed resource planning of technicians in Customer Service.

The capacities of the individual technicians must be maximized as far as possible in view of the changing daily requirements. Therefore, capacity requirements planning can help you when determining which people are available and when assigning them to order operations. You can use this component to define which persons can or should complete which activities for which date.

Integration

You can only use this component in connection with the following application components:

- *Service Orders* (CS-SE)
- *Capacity Requirements Planning* (PP-CRP)
- *Personnel Management* (PA)
- *Time Management* (PT)

To optimize the use of capacity requirements planning, certain settings must be made in the system. The system administration makes the settings in the Customizing for Production Planning and Plant Maintenance.

For more information, see Capacity Requirements Planning (PP-CRP) [Ext.] and the individual function descriptions within the unit Capacity Planning in Customer Service and Plant Maintenance [Page 1].

Process for Capacity Requirements Planning in Customer Service

Purpose

In Customer Service, you use capacity requirements planning if you want to maximize the capacities of individual technicians for work scheduling, in view of the changing daily requirements.

Prerequisites

Required Knowledge

If you want to use capacity requirements planning for Customer Service effectively in your company, you need knowledge of the following areas:

- Work center in Customer Service

  Refer to Work Center [Ext.] (for PM/CS) and Work Center [Ext.] (for PP and generally).

- Planning elements in Customer Service:
  - Notifications [Ext.]
  - Orders [Ext.]
  - Task lists [Ext.]
  - Maintenance plans [Ext.]
- Knowledge of personnel administration [Ext.] (application component PA-PA) and time management [Ext.].

Customizing

To optimize your use of capacity leveling, you must make certain settings in the Customizing for Plant Maintenance and Customer Service. The settings are usually made by your system administration.

For more information, see Settings and Profiles for Capacity Leveling [Ext.].

Process Flow

1. Capacity requirements arise in Customer Service as a result of tasks which are requested using service notifications, and which are planned and executed using orders. The capacity requirements scheduled match the limited available capacity of the individual persons.
2. The planner has the following options:
   - The planner enters the required **work center** in the order operation, schedules and saves the order. The system provisionally plans the requested capacity requirement to the work center. This means that initially the work is planned, but “not binding“ for this work center.
   - The planner enters a **person** in the operation for the order. This means that initially the work is planned, but “not binding“ for this person.

For more information, see Selection of a Suitable Person [Page 47].

3. If the planning has been completed as far as possible, the planner can check the capacity availability, which they have entered for the operations. The capacity requirement for other orders or other operations is considered for this work center.

   For more information, see Capacity Availability Check [Ext.].

4. Owing to the number of orders resulting from both unplanned service and preventive maintenance, it is often not possible to utilize all of the available technicians equally when the order is created. Usually, some will have less capacity than is planned, whilst others will have more.

   To utilize resources fully, the planner must regularly perform capacity leveling. To do this, the planner selects the graphical or tabular planning board, and then uses the functions available for capacity leveling.

   For more information, see:

   Splitting of Operations [Page 49]

   Dispatching of Requirements [Page 54]

   Deallocation of Requirements [Page 55]

   Change of the Order [Page 57]

   Display and Change of the Available Capacity [Page 58]

Reconciliation of Capacity and Scheduling

Use

You can use different functions to reconcile the available capacity and order scheduling individually with one another.

Prerequisites

The scheduling parameters are maintained in the Customizing for Plant Maintenance.

You can find these by choosing *Plant Maintenance and Service Management → Maintenance Processing and Service Processing → Maintenance Orders and Service Orders → Scheduling → Set scheduling parameters*.

Features

The following functions are available:

- Inclusion of External Operations in Scheduling [Page 38]
- Consideration of Shift Breaks When Planning [Page 39]
- Available Capacity Versions in the Work Center [Page 40]
- Consideration of Existing Capacity Loads [Page 41]
- Capacity Load Records for the Production Work Center [Page 42]

See also:

Control Key [Ext.]

Scheduling [Ext.]

Inclusion of External Operations in Scheduling

Use

You use this function to include external operations in the scheduling of the order.

Prerequisites

A suitable control key has been created in your system. The *Scheduling external operation* (scheduling of an external operation with standard values) parameter has been maintained for this control key.

You maintain control keys in the Customizing for Plant Maintenance and Service Management by choosing *Maintenance Plans, Work Centers, Task Lists and PRTs* → *Task Lists* → *Operation Data* → *Maintain control keys*.

If the *Scheduling external operation* parameter is **not** maintained for the control key, the operation end date is calculated in days based on the planned delivery time entered. The dates for the following operations are then determined with reference to this operation end date.

Features

For external operations, you have the following scheduling options:

You can include external operations based on the data entered for them in order scheduling. This results in the dates for the following operations being scheduled with reference to the duration of the external operation.

The system can calculate the operation end date in days based on the planned delivery time entered. The dates for the following operations are then determined with reference to this operation end date.

See also:

Control Key [Ext.]

Consideration of Shift Breaks when Planning

Use

You use this function to consider shift breaks when scheduling orders.

Prerequisites

- Shift sequences have been defined for the required work centers.

  You can find these in the Customizing for Production by choosing *Basic Data* → *Work Center* → *Capacity Planning* → *Available Capacity* → *Define shift sequence*.
- In the scheduling parameters, scheduling including breaks has been selected.
- In the order, you can select *Breaks included* in the *Control* field on the *Additional data* tab page.

Features

You can schedule an order in such a way that the work to be performed does not occur in a break. The system considers the shift sequences for the work centers, as well as the start and end times of defined breaks (for example, breakfast, lunch and so on).

Available Capacity Versions in the Work Center

Use

You use this function to plan orders over several shifts.

Prerequisites

- The available capacity versions have been maintained for the required work centers.

  You can find these in the Customizing for Production by choosing *Basic Data* → *Work Center* → *Capacity Planning* → *Available Capacity* → *Define version of available capacity*.

- In the order, the required version has been entered in the *Control* section on the *Additional data* tab page.

Features

You can plan over a period of several shifts.

A work center can have several available capacity versions with regard to its capacity (for example, normal, normal with overtime, weekends and so on). This is useful, for example, if there are two shifts each day in your company and you have to schedule an order which takes longer than a single shift to process.

Consideration of Existing Capacity Loads

Use

You use this function if you want the system to consider the existing capacity loads for the work centers/employees during scheduling.

Prerequisites

For the required order type, it is defined in your system which overall profile is used to perform a capacity availability check and whether an order of this order type should be released if insufficient capacity is available.

You make these settings in the Customizing for Plant Maintenance and Service Management by choosing *Maintenance Processing and Service Processing → Maintenance Orders and Service Orders → Functions and Settings for Order Types → Availability Check for Materials, PRTs and Capacities → Define inspection control*.

Features

When scheduling the order, the system considers the existing capacity loads for the work centers/employees. Loads with the status “Provisionally planned” are viewed here as committed capacity.

The system checks whether capacity being planned provisionally at the desired time would result in a capacity overload for the work center. If this is the case, the system delays the new order until there is no longer a capacity overload or the planning horizon has been reached. The system therefore reschedules the dates and times for this order.

If the system does not determine a capacity overload for the dates and times originally planned, it schedules the new order with the original dates as committed capacity.

Capacity Load Records for the Production Work Center

Use

You can configure the system so that the usage of a PP work center by Plant Maintenance can be seen on the planning board for Production.

Prerequisites

- The technical object in the order is assigned to a PP work center.

  For this, the PP work center must be entered in the location data for the technical object. The technical object and work center must be assigned to the same plant.

- System conditions and operating conditions have been created in the Customizing for Plant Maintenance.

  These are maintained by choosing *MaintenanceProcessing and Service Processing* → *Maintenance Orders and Service Orders* → *General Data* → *Create system conditions or operating conditions*.

- In the order, the *System condition* indicator is set at header level.

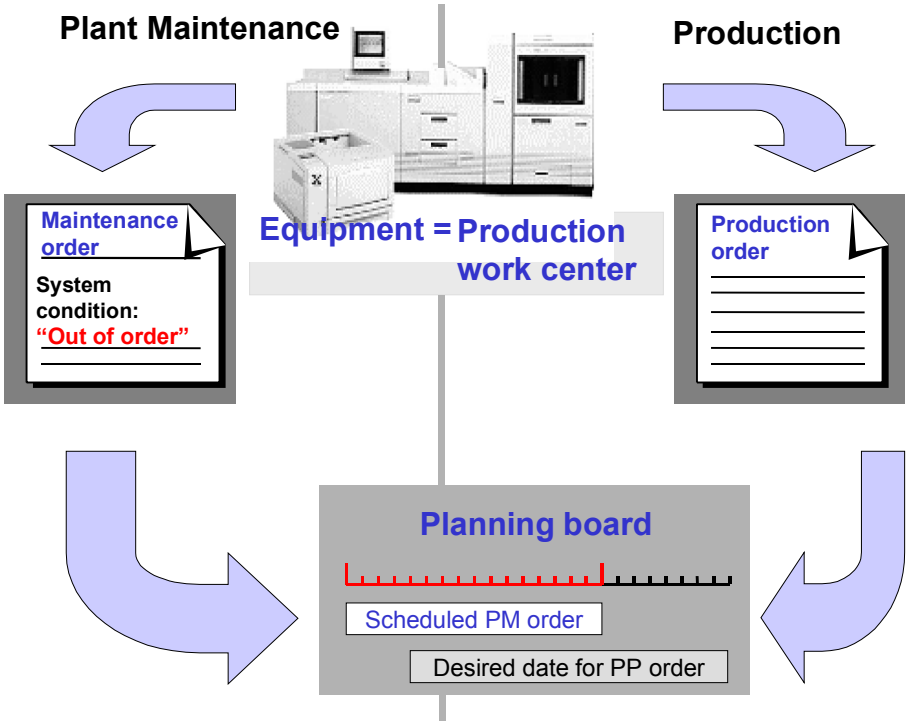
  The result is that the system generates capacity requirements records.

  You can set the indicator for the system condition in the maintenance item (for planned orders) and in orders entered directly.

Features

The scheduled maintenance work appears as a capacity load for the Production work center on the planning board for Production. The load is fixed and cannot be changed by the production planner.

Capacity Load Records for the Production Work Center



Capacity Load from a Maintenance Order

A production planner wants to schedule a production order for equipment A1234. The order has a duration of five days. On the planning board, the planner sees that preventive maintenance work is being peformed on the equipment during the desired week. This requires the shutdown of the equipment.

The production planner can display the maintenance order for the preventive maintenance work by double clicking in the planning board. Here, it indicates the planner from Plant Maintenance responsible for this order. If the production planner wants the maintenance order to be executed at another time, then they must contact the planner from Plant Maintenance.

Calling Up Planning Boards

In Customer Service

1. For the **graphical planning board**, choose:

   Logistics → *Customer service* → *Service processing* and then *Order* → *Capacity planning* → *Leveling* → *Work center (graphical)* or *Individual capacity (graphical)*.

   For the **tabular planning board**, choose:

   Logistics → *Customer service* → *Service processing* and then *Order* → *Capacity planning* → *Leveling* → *Work center (tabular)* or *Individual capacity (tabular)*.

2. Perform capacity leveling using the functions provided.

In Plant Maintenance

1. For the **graphical planning board**, choose:

   Logistics → *Plant maintenance* → *Maintenance processing* and then *Capacity planning* → *Leveling* → *Work center view* → *Planning board (graphical)*.

   For the **tabular planning board**, choose:

   Logistics → *Plant maintenance* → *Maintenance processing* and then *Capacity planning* → *Leveling* → *Work center view* → *Planning board (tabular)*.

2. Perform capacity leveling using the functions provided.

For more information about the tabular planning board and its functions, see Tabular Planning Board [Ext.].

For more information about the graphical planning board and its functions, see Graphical Planning Board [Ext.].

Assignment of a Person to an Operation

Use

You use this function to assign a person to an operation - the person who should execute the operation or who should be informed about processing of the operation.

Prerequisites

The person is managed in Personnel Management.

The assignment does **not** depend on whether there are capacity requirements records for the operation.

Prerequisites for a Default Value

In certain situations, it is advisable to have the system propose a personnel number in the operation.

In a company, a technician is assigned to each piece of equipment. The technician is responsible for preventive maintenance and maintenance of the equipment. Each technician is entered in the equipment master record as a partner with the function “Person responsible”. If an order is created for this equipment, the system should automatically propose the technician responsible in the order header and in the operation.

For the system to propose a personnel number in the operation, the following prerequisites must be met:

- In the Customizing for Plant Maintenance, a default value is entered in the *Header funct.* (partner function for the order header) field by choosing *Assign partner determination procedure to order types*.

  For example, this default value can be the partner function “Person responsible” or the partner function “Responsible”. Entries can now be made in the relevant field for orders of this order type.

- In one of the following objects assigned to the order, a person is entered as a partner:
  - Reference object
  - Notification
  - Work center

    The function of this partner corresponds to the function which was entered in the Customizing for Plant Maintenance by choosing *Assign partner determination procedure to order types* in the *Header funct.* (partner function for the order header) field.

- The person who was entered as the partner in the reference object, notification or work center is managed with a personnel number in Personnel Management.

If all the prerequisites have been met, the system proposes an entry, in the field for the person responsible in the *Responsibilities* section of the order header, which you can overwrite if necessary. It then also proposes this entry in the *Personnel number* field in the operation.

Subsequent changes of the partner do **not** overwrite the person entered in the operation.

A change to the person entered in the operation has **no** effect on the tasks of the partner.

Features

In addition to the work center, you enter the personnel number of the person in the required operation on the *Internal* tab page. It is possible here to enter a person who does not work on the work center entered.

Entering a person does not have any effect on the capacity requirements records that are generated by the system on the requirements assignment screen.

You can use the field as a selection criterion for operations. It is also available in the completion confirmation.

Selection of a Suitable Person

Use

You use this function when using the search help provided for the *Personnel number* field in the operation.

Prerequisites

These special search help functions are only available if you have selected the field *Special search help* for the order type when assigning the partner determination procedure in the Customizing for Plant Maintenance and Customer Service.

If you do **not** select the field, the system only provides a collective search help (for example, “Name/First name” or “Organizational assignment”).

Features

Search for a Person Belonging to a Particular Work Center

The system searches for those persons who work at the work center which you have entered for the operation. You can select the person required from the list provided by the system.

Search for a Person Belonging to a Particular Work Center Who Has Certain Qualifications

The system searches in the work center, which you have entered for the operation, for persons who have particular qualifications.

For the search, the system needs a qualification requirements profile which you enter on the *Internal* (internal processing) operation detail screen or if you call up the search help. One or more qualifications belong to the qualification profile. You can specify the importance of each of the qualifications for this search.

In the list provided in a dialog box by the system, you can establish the extent to which the qualifications of the person found meet the desired qualifications. If one of the essential requirements is not fulfilled, the suitability rating is 0 anyway.

You can call up additional information in the dialog box:

- Detailed information about the qualification requirements profile (see also Profile [Ext.])
- Detailed information about the qualifications of individual persons
- Comparison between requirement profile and qualifications of the person selected

  Alternative qualifications are also displayed. (For example, a class 3 driving licence (car) was required; alternative qualification of a class 2 (heavy goods vehicle) licence is also possible since this incoporates a car driving licence.)

  If you have the necessary authorization, you can use this screen to register an employee lacking a qualification for a course which will provide them with the necessary qualification. (However, this function is only available if your R/3 personnel system has **not** been decoupled.)

If you copy an employee into the operation, the system also writes the requirements profile used for the search into the operation on the *Internal* (internal processing) tab page.

Selection of a Person and Copying

Once you have selected the required person, the system copies the personnel number and the selected date into the partner.

Creation of Employee Requirements Records (Splits)

Use

The planner can use this function to split operations and generate capacity loads for individual people.

Features

The planner can enter the following information for each individual operation:

- The operation should be processed by several people, if necessary also in specific time segments.
- The operation should be processed by a single person in specific time segments.

This information, in the form of capacity requirements records, can be:

- Entered manually by the planner on the requirements assignment screen of the required operation

  For more information, see Splitting and Scheduling an Individual Operation [Page 50].
- Created automatically by the system

For more information, see Creating Employee Requirements Records Automatically Using the System [Page 51] and Changing Employee Requirements Records Created Automatically [Page 53].

Splitting and Scheduling an Individual Operation

This function is available **in the order and in the planning board**. The procedure in the order is described below:

1. Select the required operation in the operation overview of the order.
2. Select one of the detail screens for the required operation.
3. Choose the *Requirements assignment* tab page.
4. Enter the personnel and time data for the required splits. In addition, enter whether or not the system should schedule the splits.
5. Save the order.

   The system creates the splits for the operation and schedules the splits indicated.

Creating Employee Requirements Records Automatically Using the System

Use

This function enables you to save time in planning situations of this type that frequently recur: You do not have to enter the distribution of work manually for each operation; the system processes it for you. It creates requirements records (= splits) for the required employees. In this way, the system distributes the work equally between the specified people.

This function is **only** available **in the order**.

This function is executed automatically by the system if you create:

- An order
- New operations for an existing order

The function is not executed again if existing operations are changed (for example, after you have deleted all the requirements assignment records for an operation).

Prerequisites

The following must be configured in the Customizing for the order type:

- A partner determination procedure has been defined in Customizing for the order type that you use.
- One of the partner functions for the partner determination procedure specified has been entered in the field *Function split gen*. This function is of type *Person*.

Consequently, the system generates employee requirements records for partners automatically, which are specified in the order and have the partner function entered in Customizing. Partners with other partner functions are not considered.

An example situation could be as follows:

- Order type: PM01
- Partner determination procedure: PM
- Partner functions in procedure:
  - VW (Partner type: Person)
  - AG (Partner type: Organization)
  - ZM (Partner type: Person)
- Partner function in field *Split gen.*: VW
- The following partners were entered in the order:

- Smith (Partner function VW)
- Jones (Partner function VW)
- Reeves (Partner function AG)
- Mortimer (Partner function ZM)

The system generates employee requirements records automatically for partners Smith and Jones.

Procedure

1. Create an order.
2. Enter the required partners.
3. Create the required operations for the order.

   If you enter work centers for the operations, the people, for whom you generate employee requirements records, do **not** necessarily have to work at these work centers.

   You can already maintain employee requirements records manually for certain operations. These entries are **not** overwritten by the automatic function when saving.
4. Save the order.

Result

The system now creates requirements records (= splits) for the required employees. In this way, the work is distributed equally between the specified people. The system schedules the splits.

Further processing of the splits is made using PP Capacity Planning logic.

The capacity requirements records for the operation are scheduled based on the working times, which have been entered in the work center specified.

The requirements records for the employees (splits) are scheduled based on the working times, which have been entered in the personnel master data in HR.

If you want to check the requirements records, you can call up the order again. You can find the requirements records generated on the requirements assignment screen for the respective operation.

If you want to change the requirements records, see Changing Employee Requirements Records Created Automatically [Page 53].

Changing Employee Requirements Records Created Automatically

Use

The employee requirements records generated automatically by the system divide the planned work equally between the people specified as partners on the partner screen for the order. (For more information, see Creating Employee Requirements Records Automatically Using the System [Page 51].)

If you do not want this type of distribution, you must change it manually.

This function for creating employee requirements records automatically is only executed by the system **when operations are created** for an order. It is not executed again when operations are changed.

For example, if you delete all the requirements records for an operation on the requirements assignment screen and save the order, no new requirements records are created by the system. The system assumes that all the changes to the requirements records are desired. Therefore, if you want employee requirements records in this situation, you must enter them manually.

Changes to the partner information in the order also have no effect on an order already saved. For example, if you add another function “Employee responsible” for an order in change mode and save it, the requirements records already created are not changed. If you require another employee requirements record for an operation in this situation, you must enter it manually.

Procedure

1. Call up the required order in change mode.
2. Call up the requirements assignment screen for the first operation that you want to change.
3. Change the employee requirements records as required.
4. Execute any other required changes.
5. Save the order.

Dispatching of Requirements

Use

You use this function if you want to fix the scheduling of the provisional operations and splits intended for a work center/person.

Features

From the provisionally planned, but not binding requirements for a work center or a person, the planner dispatches the individual requirements of a work center or a person in specific planning periods. The planner uses dispatching to fix the processing of the tasks by the work center and thereby reduce the available capacity of the work center.

The system does not change the data for dispatched operations/splits even if you reschedule the order.

On the planning boards, the planner can also dispatch requirements for a different work center than the one originally entered in the operation.

For more information, see Functions in the Graphical Planning Board [Ext.] and Functions in the Tabular Planning Board [Ext.].

Deallocation of Requirements

Use

The planner can use this function to deallocate individual operations and splits from specific planning periods for a work center or a person. The planner uses deallocation to reverse the binding scheduling for processing tasks by the work center or the person. The deallocated operations can be replanned by rescheduling them into another planning period.

For more information, see Functions in the Graphical Planning Board [Ext.], Functions in the Tabular Planning Board [Ext.] and Deallocating Individual Operation Splits in the Order [Page 56].

Deallocating Individual Operation Splits in the Order

1. Select the required operation in the operation overview of the order.
2. Select one of the detail screens for the required operation.
3. Choose the *Requirements assignment* tab page.

   Here you can see all the split records which the system has created for the operation.
4. Cancel the selection for the scheduling of splits.
5. Save the order.

   The system deallocates the splits no longer selected for this operation.

Change of the Order

Use

It may be that during capacity leveling the planner determines when working in the planning board that entries in the order must be changed. The planner can use this function to make these changes to the order directly from the planning board.

For more information, see Changing an Order [Ext.] and Planning of an Order [Ext.].

Display and Change of the Available Capacity

Use

You use this function if, during the planning on the planning board, you want to:

- Know how much capacity a work center has available
- Change the available capacity of a work center

Features

On the planning board, the planner can display an overview of the available capacity of a work center over several planning periods.

If necessary, the planner can also change this available capacity.

Activities

Displaying Available Capacity

In the graphical and tabular planning boards, you will find this function under *Goto* → *Capacity* → *Display capacity*.

Changing Available Capacity

In the graphical and tabular planning boards, you will find this function under *Goto* → *Capacity* → *Change capacity*.

Graphical Monitor

Use

You use the graphical monitor to display a current overview of the work assigned to the individual people at a work center.

The graphical monitor is automatically updated by the system at specified intervals. You can therefore obtain an up-to-date overview for several people and, if necessary, several orders.

Prerequisites

In order to use the graphical monitor, people must have been assigned for the specified work center in the *Time Management* (PT) application component.

You define the selection period, update period and the data for the graphic profile on the initial screen for the graphical monitor.

You make the individual settings for the graphical display (mode, view, increment and break times) on the monitor screen by choosing *Settings*.

Features

Color Differentiation of Scheduled Jobs

The graphical monitor displays the person splits scheduled in different colors. It distinguishes between:

- Current jobs
- Jobs in the past
- Jobs in the future

Reading Help

So that you know on exactly which time position the cursor is, the graphical monitor displays a vertical line. The time is also shown in the status line.

Updating

The display is automatically updated by the system at specific intervals, which you define in the graphic profile. After the update, finally confirmed operations are no longer displayed. However, newly added operations are displayed.

Order Display

On the monitor display, you can display the accompanying order by double clicking on the required person split.

Automatic Updating After Change to Order

If you change the order data, the monitor display changes automatically after the update according to the data changed.

The paging function is available for person splits and the people listed in the monitor. For more information, see Sending of Short Messages Using Paging [Ext.].

Activities

Depending on the application component in which you are working, choose one of the following menu paths to call up the graphical monitor:

- *Logistics → Customer service → Service processing → Order → Capacity planning → Graphical monitor*
- *Logistics → Plant maintenance → Maintenance processing → Capacity planning → Graphical monitor*

Capacity Planning in Plant Maintenance (PM-WOC-CP)

Purpose

Capacity planning supports you in detailed work scheduling for the individual maintenance work centers (maintenance groups).

The capacities available to the work centers must be utilized as fully as possible in view of the changing daily requirements. Therefore, capacity planning can help you in determining which work centers and individual persons are available, and help in assigning them to orders and order operations. You can use this component to specify which work centers or persons can or should complete which activities by which date.

Integration

You can only use this component in connection with the following application components:

- *Maintenance Orders* (PM-WOC-MO)
- *Capacity Planning* (PP-CRP)

To plan persons, you also require the following application components:

- *Personnel Management* (PA)
- *Time Management* (PT)

To optimize the use of capacity planning, certain settings must be made in the system. The system administration enters the settings in Customizing for Production Planning and Plant Maintenance.

For further information, see Capacity Planning (PP-CRP) [Ext.], and the individual function descriptions in the unit Capacity Planning in Customer Service and Plant Maintenance [Page 1].

Process for Capacity Requirements Planning in Plant Maintenance

Purpose

In Plant Maintenance, you use capacity requirements planning if you want to maximize the capacity of the individual work centers for work scheduling, in view of the changing daily requirements.

Required Knowledge

If you want to use capacity requirements planning for Plant Maintenance effectively in your company, you need knowledge of the following areas:

- Work center in Plant Maintenance

  Refer to Work Center [Ext.] (PM and CS) and The Work Center (PP/General) [Ext.].

- Planning elements in Plant Maintenance:
  - Notifications [Ext.]
  - Orders [Ext.]
  - Task lists [Ext.]
  - Maintenance plans [Ext.]
- Knowledge of personnel administration [Ext.] (application component PA-PA) and time management [Ext.].

Customizing

To optimize your use of capacity leveling, you must make certain settings in the Customizing for Plant Maintenance. The settings are usually made by your system administration.

For more information, see Settings and Profiles for Capacity Leveling [Ext.].

Process Flow

1. Capacity requirements arise in Plant Maintenance from tasks that are requested in the form of orders. The capacity requirements requested and scheduled match the limited available capacity of the work centers and individual persons.
2. The maintenance planner has the following options:
   - The planner enters the required **work center** in the order operation, schedules and saves the order. The system provisionally plans the requested capacity requirement to the work center. This means that initially the work is planned, but “not binding“ for this work center.
   - The planner enters a **person** in the operation for the order. This means that initially the work is planned, but “not binding“ for this person.

   For more information, see Selection of a Suitable Person [Page 47].
3. If the planning has been completed as far as possible, the planner can check the capacity availability, which they have entered for the operations. The capacity requirement for other orders or other operations is considered for this work center.

For more information, see Capacity Availability Check [Ext.].

4. Owing to the number of orders resulting from both unplanned maintenance and preventive maintenance, it is often not possible to utilize all of the available work centers and persons equally when the order is created. Usually, some will have less capacity than is planned, whilst others will have more.

   To utilize resources fully, the maintenance planner must regularly perform capacity leveling. To do this, the planner selects the graphical or tabular planning board, and then uses the functions available for capacity leveling.

   For more information, see:

   Splitting of Operations [Page 49]

   Dispatching of Requirements [Page 54]

   Deallocation of Requirements [Page 55]

   Change of the Order [Page 57]

   Display and Change of the Available Capacity [Page 58]

Reconciliation of Capacity and Scheduling

Use

You can use different functions to reconcile the available capacity and order scheduling individually with one another.

Prerequisites

The scheduling parameters are maintained in the Customizing for Plant Maintenance.

You can find these by choosing *Plant Maintenance and Service Management* → *Maintenance Processing and Service Processing* → *Maintenance Orders and Service Orders* → *Scheduling* → *Set scheduling parameters*.

Features

The following functions are available:

- Inclusion of External Operations in Scheduling [Page 38]
- Consideration of Shift Breaks When Planning [Page 39]
- Available Capacity Versions in the Work Center [Page 40]
- Consideration of Existing Capacity Loads [Page 41]
- Capacity Load Records for the Production Work Center [Page 42]

See also:

Control Key [Ext.]

Scheduling [Ext.]

Inclusion of External Operations in Scheduling

Use

You use this function to include external operations in the scheduling of the order.

Prerequisites

A suitable control key has been created in your system. The *Scheduling external operation* (scheduling of an external operation with standard values) parameter has been maintained for this control key.

You maintain control keys in the Customizing for Plant Maintenance and Service Management by choosing *Maintenance Plans, Work Centers, Task Lists and PRTs* → *Task Lists* → *Operation Data* → *Maintain control keys*.

If the *Scheduling external operation* parameter is **not** maintained for the control key, the operation end date is calculated in days based on the planned delivery time entered. The dates for the following operations are then determined with reference to this operation end date.

Features

For external operations, you have the following scheduling options:

You can include external operations based on the data entered for them in order scheduling. This results in the dates for the following operations being scheduled with reference to the duration of the external operation.

The system can calculate the operation end date in days based on the planned delivery time entered. The dates for the following operations are then determined with reference to this operation end date.

See also:

Control Key [Ext.]

Consideration of Shift Breaks when Planning

Use

You use this function to consider shift breaks when scheduling orders.

Prerequisites

- Shift sequences have been defined for the required work centers.

  You can find these in the Customizing for Production by choosing *Basic Data* → *Work Center* → *Capacity Planning* → *Available Capacity* → *Define shift sequence*.
- In the scheduling parameters, scheduling including breaks has been selected.
- In the order, you can select *Breaks included* in the *Control* field on the *Additional data* tab page.

Features

You can schedule an order in such a way that the work to be performed does not occur in a break. The system considers the shift sequences for the work centers, as well as the start and end times of defined breaks (for example, breakfast, lunch and so on).

Available Capacity Versions in the Work Center

Use

You use this function to plan orders over several shifts.

Prerequisites

- The available capacity versions have been maintained for the required work centers.

  You can find these in the Customizing for Production by choosing *Basic Data* → *Work Center* → *Capacity Planning* → *Available Capacity* → *Define version of available capacity*.

- In the order, the required version has been entered in the *Control* section on the *Additional data* tab page.

Features

You can plan over a period of several shifts.

A work center can have several available capacity versions with regard to its capacity (for example, normal, normal with overtime, weekends and so on). This is useful, for example, if there are two shifts each day in your company and you have to schedule an order which takes longer than a single shift to process.

Consideration of Existing Capacity Loads

Use

You use this function if you want the system to consider the existing capacity loads for the work centers/employees during scheduling.

Prerequisites

For the required order type, it is defined in your system which overall profile is used to perform a capacity availability check and whether an order of this order type should be released if insufficient capacity is available.

You make these settings in the Customizing for Plant Maintenance and Service Management by choosing *Maintenance Processing and Service Processing → Maintenance Orders and Service Orders → Functions and Settings for Order Types → Availability Check for Materials, PRTs and Capacities → Define inspection control*.

Features

When scheduling the order, the system considers the existing capacity loads for the work centers/employees. Loads with the status “Provisionally planned” are viewed here as committed capacity.

The system checks whether capacity being planned provisionally at the desired time would result in a capacity overload for the work center. If this is the case, the system delays the new order until there is no longer a capacity overload or the planning horizon has been reached. The system therefore reschedules the dates and times for this order.

If the system does not determine a capacity overload for the dates and times originally planned, it schedules the new order with the original dates as committed capacity.

Capacity Load Records for the Production Work Center

Use

You can configure the system so that the usage of a PP work center by Plant Maintenance can be seen on the planning board for Production.

Prerequisites

- The technical object in the order is assigned to a PP work center.

  For this, the PP work center must be entered in the location data for the technical object. The technical object and work center must be assigned to the same plant.

- System conditions and operating conditions have been created in the Customizing for Plant Maintenance.

  These are maintained by choosing *MaintenanceProcessing and Service Processing* → *Maintenance Orders and Service Orders* → *General Data* → *Create system conditions or operating conditions*.

- In the order, the *System condition* indicator is set at header level.

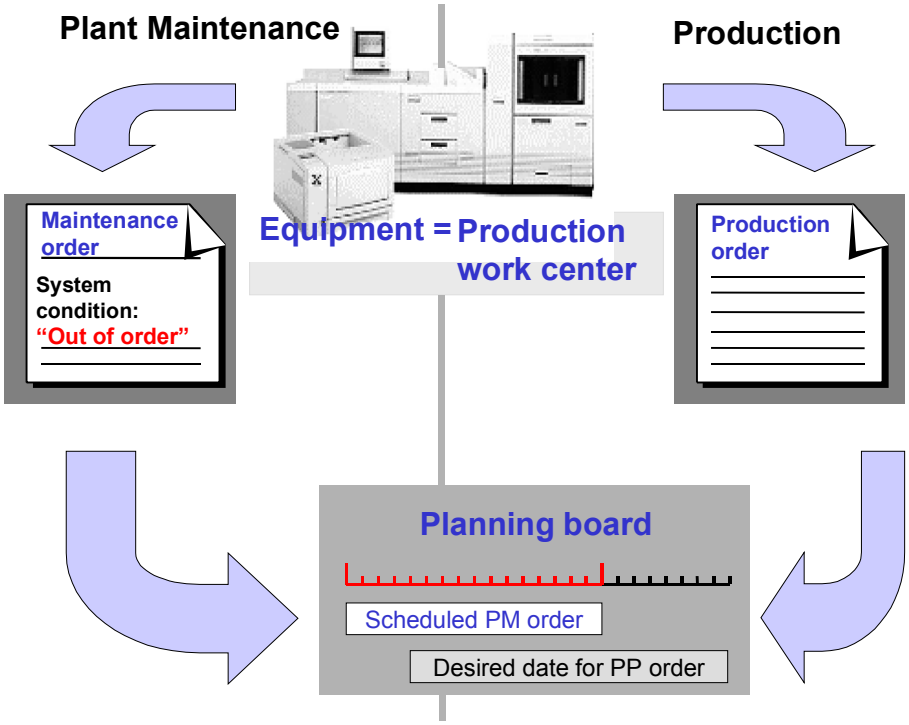
  The result is that the system generates capacity requirements records.

  You can set the indicator for the system condition in the maintenance item (for planned orders) and in orders entered directly.

Features

The scheduled maintenance work appears as a capacity load for the Production work center on the planning board for Production. The load is fixed and cannot be changed by the production planner.

Capacity Load Records for the Production Work Center



Capacity Load from a Maintenance Order

A production planner wants to schedule a production order for equipment A1234. The order has a duration of five days. On the planning board, the planner sees that preventive maintenance work is being peformed on the equipment during the desired week. This requires the shutdown of the equipment.

The production planner can display the maintenance order for the preventive maintenance work by double clicking in the planning board. Here, it indicates the planner from Plant Maintenance responsible for this order. If the production planner wants the maintenance order to be executed at another time, then they must contact the planner from Plant Maintenance.

Calling Up Planning Boards

In Customer Service

3. For the **graphical planning board**, choose:

   Logistics → *Customer service* → *Service processing* and then *Order* → *Capacity planning* → *Leveling* → *Work center (graphical)* or *Individual capacity (graphical)*.

   For the **tabular planning board**, choose:

   Logistics → *Customer service* → *Service processing* and then *Order* → *Capacity planning* → *Leveling* → *Work center (tabular)* or *Individual capacity (tabular)*.

4. Perform capacity leveling using the functions provided.

In Plant Maintenance

3. For the **graphical planning board**, choose:

   Logistics → *Plant maintenance* → *Maintenance processing* and then *Capacity planning* → *Leveling* → *Work center view* → *Planning board (graphical)*.

   For the **tabular planning board**, choose:

   Logistics → *Plant maintenance* → *Maintenance processing* and then *Capacity planning* → *Leveling* → *Work center view* → *Planning board (tabular)*.

4. Perform capacity leveling using the functions provided.

For more information about the tabular planning board and its functions, see Tabular Planning Board [Ext.].

For more information about the graphical planning board and its functions, see Graphical Planning Board [Ext.].

Assignment of a Person to an Operation

Use

You use this function to assign a person to an operation - the person who should execute the operation or who should be informed about processing of the operation.

Prerequisites

The person is managed in Personnel Management.

The assignment does **not** depend on whether there are capacity requirements records for the operation.

Prerequisites for a Default Value

In certain situations, it is advisable to have the system propose a personnel number in the operation.

In a company, a technician is assigned to each piece of equipment. The technician is responsible for preventive maintenance and maintenance of the equipment. Each technician is entered in the equipment master record as a partner with the function “Person responsible”. If an order is created for this equipment, the system should automatically propose the technician responsible in the order header and in the operation.

For the system to propose a personnel number in the operation, the following prerequisites must be met:

- In the Customizing for Plant Maintenance, a default value is entered in the *Header funct.* (partner function for the order header) field by choosing *Assign partner determination procedure to order types*.

  For example, this default value can be the partner function “Person responsible” or the partner function “Responsible”. Entries can now be made in the relevant field for orders of this order type.

- In one of the following objects assigned to the order, a person is entered as a partner:
  - Reference object
  - Notification
  - Work center

    The function of this partner corresponds to the function which was entered in the Customizing for Plant Maintenance by choosing *Assign partner determination procedure to order types* in the *Header funct.* (partner function for the order header) field.

- The person who was entered as the partner in the reference object, notification or work center is managed with a personnel number in Personnel Management.

If all the prerequisites have been met, the system proposes an entry, in the field for the person responsible in the *Responsibilities* section of the order header, which you can overwrite if necessary. It then also proposes this entry in the *Personnel number* field in the operation.

Subsequent changes of the partner do **not** overwrite the person entered in the operation.

A change to the person entered in the operation has **no** effect on the tasks of the partner.

Features

In addition to the work center, you enter the personnel number of the person in the required operation on the *Internal* tab page. It is possible here to enter a person who does not work on the work center entered.

Entering a person does not have any effect on the capacity requirements records that are generated by the system on the requirements assignment screen.

You can use the field as a selection criterion for operations. It is also available in the completion confirmation.

Selection of a Suitable Person

Use

You use this function when using the search help provided for the *Personnel number* field in the operation.

Prerequisites

These special search help functions are only available if you have selected the field *Special search help* for the order type when assigning the partner determination procedure in the Customizing for Plant Maintenance and Customer Service.

If you do **not** select the field, the system only provides a collective search help (for example, “Name/First name” or “Organizational assignment”).

Features

Search for a Person Belonging to a Particular Work Center

The system searches for those persons who work at the work center which you have entered for the operation. You can select the person required from the list provided by the system.

Search for a Person Belonging to a Particular Work Center Who Has Certain Qualifications

The system searches in the work center, which you have entered for the operation, for persons who have particular qualifications.

For the search, the system needs a qualification requirements profile which you enter on the *Internal* (internal processing) operation detail screen or if you call up the search help. One or more qualifications belong to the qualification profile. You can specify the importance of each of the qualifications for this search.

In the list provided in a dialog box by the system, you can establish the extent to which the qualifications of the person found meet the desired qualifications. If one of the essential requirements is not fulfilled, the suitability rating is 0 anyway.

You can call up additional information in the dialog box:

- Detailed information about the qualification requirements profile (see also Profile [Ext.])
- Detailed information about the qualifications of individual persons
- Comparison between requirement profile and qualifications of the person selected

  Alternative qualifications are also displayed. (For example, a class 3 driving licence (car) was required; alternative qualification of a class 2 (heavy goods vehicle) licence is also possible since this incoporates a car driving licence.)

  If you have the necessary authorization, you can use this screen to register an employee lacking a qualification for a course which will provide them with the necessary qualification. (However, this function is only available if your R/3 personnel system has **not** been decoupled.)

If you copy an employee into the operation, the system also writes the requirements profile used for the search into the operation on the *Internal* (internal processing) tab page.

Selection of a Suitable Person

Selection of a Person and Copying

Once you have selected the required person, the system copies the personnel number and the selected date into the partner.

Creation of Employee Requirements Records (Splits)

Use

The planner can use this function to split operations and generate capacity loads for individual people.

Features

The planner can enter the following information for each individual operation:

- The operation should be processed by several people, if necessary also in specific time segments.
- The operation should be processed by a single person in specific time segments.

This information, in the form of capacity requirements records, can be:

- Entered manually by the planner on the requirements assignment screen of the required operation

  For more information, see Splitting and Scheduling an Individual Operation [Page 50].
- Created automatically by the system

For more information, see Creating Employee Requirements Records Automatically Using the System [Page 51] and Changing Employee Requirements Records Created Automatically [Page 53].

Splitting and Scheduling an Individual Operation

This function is available **in the order and in the planning board**. The procedure in the order is described below:

1. Select the required operation in the operation overview of the order.
2. Select one of the detail screens for the required operation.
3. Choose the *Requirements assignment* tab page.
4. Enter the personnel and time data for the required splits. In addition, enter whether or not the system should schedule the splits.
5. Save the order.

   The system creates the splits for the operation and schedules the splits indicated.

Creating Employee Requirements Records Automatically Using the System

Use

This function enables you to save time in planning situations of this type that frequently recur: You do not have to enter the distribution of work manually for each operation; the system processes it for you. It creates requirements records (= splits) for the required employees. In this way, the system distributes the work equally between the specified people.

This function is **only** available **in the order**.

This function is executed automatically by the system if you create:

- An order
- New operations for an existing order

The function is not executed again if existing operations are changed (for example, after you have deleted all the requirements assignment records for an operation).

Prerequisites

The following must be configured in the Customizing for the order type:

- A partner determination procedure has been defined in Customizing for the order type that you use.
- One of the partner functions for the partner determination procedure specified has been entered in the field *Function split gen*. This function is of type *Person*.

Consequently, the system generates employee requirements records for partners automatically, which are specified in the order and have the partner function entered in Customizing. Partners with other partner functions are not considered.

An example situation could be as follows:

- Order type: PM01
- Partner determination procedure: PM
- Partner functions in procedure:
  - VW (Partner type: Person)
  - AG (Partner type: Organization)
  - ZM (Partner type: Person)
- Partner function in field *Split gen.*: VW
- The following partners were entered in the order:

- Smith (Partner function VW)
- Jones (Partner function VW)
- Reeves (Partner function AG)
- Mortimer (Partner function ZM)

The system generates employee requirements records automatically for partners Smith and Jones.

Procedure

5. Create an order.
6. Enter the required partners.
7. Create the required operations for the order.

   If you enter work centers for the operations, the people, for whom you generate employee requirements records, do **not** necessarily have to work at these work centers.

   You can already maintain employee requirements records manually for certain operations. These entries are **not** overwritten by the automatic function when saving.
8. Save the order.

Result

The system now creates requirements records (= splits) for the required employees. In this way, the work is distributed equally between the specified people. The system schedules the splits.

Further processing of the splits is made using PP Capacity Planning logic.

The capacity requirements records for the operation are scheduled based on the working times, which have been entered in the work center specified.

The requirements records for the employees (splits) are scheduled based on the working times, which have been entered in the personnel master data in HR.

If you want to check the requirements records, you can call up the order again. You can find the requirements records generated on the requirements assignment screen for the respective operation.

If you want to change the requirements records, see Changing Employee Requirements Records Created Automatically [Page 53].

Changing Employee Requirements Records Created Automatically

Use

The employee requirements records generated automatically by the system divide the planned work equally between the people specified as partners on the partner screen for the order. (For more information, see Creating Employee Requirements Records Automatically Using the System [Page 51].)

If you do not want this type of distribution, you must change it manually.

This function for creating employee requirements records automatically is only executed by the system **when operations are created** for an order. It is not executed again when operations are changed.

For example, if you delete all the requirements records for an operation on the requirements assignment screen and save the order, no new requirements records are created by the system. The system assumes that all the changes to the requirements records are desired. Therefore, if you want employee requirements records in this situation, you must enter them manually.

Changes to the partner information in the order also have no effect on an order already saved. For example, if you add another function “Employee responsible” for an order in change mode and save it, the requirements records already created are not changed. If you require another employee requirements record for an operation in this situation, you must enter it manually.

Procedure

6. Call up the required order in change mode.
7. Call up the requirements assignment screen for the first operation that you want to change.
8. Change the employee requirements records as required.
9. Execute any other required changes.
10. Save the order.

Dispatching of Requirements

Use

You use this function if you want to fix the scheduling of the provisional operations and splits intended for a work center/person.

Features

From the provisionally planned, but not binding requirements for a work center or a person, the planner dispatches the individual requirements of a work center or a person in specific planning periods. The planner uses dispatching to fix the processing of the tasks by the work center and thereby reduce the available capacity of the work center.

The system does not change the data for dispatched operations/splits even if you reschedule the order.

On the planning boards, the planner can also dispatch requirements for a different work center than the one originally entered in the operation.

For more information, see Functions in the Graphical Planning Board [Ext.] and Functions in the Tabular Planning Board [Ext.].

Deallocation of Requirements

Use

The planner can use this function to deallocate individual operations and splits from specific planning periods for a work center or a person. The planner uses deallocation to reverse the binding scheduling for processing tasks by the work center or the person. The deallocated operations can be replanned by rescheduling them into another planning period.

For more information, see Functions in the Graphical Planning Board [Ext.], Functions in the Tabular Planning Board [Ext.] and Deallocating Individual Operation Splits in the Order [Page 56].

Deallocating Individual Operation Splits in the Order

1. Select the required operation in the operation overview of the order.
2. Select one of the detail screens for the required operation.
3. Choose the *Requirements assignment* tab page.

   Here you can see all the split records which the system has created for the operation.
4. Cancel the selection for the scheduling of splits.
5. Save the order.

   The system deallocates the splits no longer selected for this operation.

Change of the Order

Use

It may be that during capacity leveling the planner determines when working in the planning board that entries in the order must be changed. The planner can use this function to make these changes to the order directly from the planning board.

For more information, see Changing an Order [Ext.] and Planning of an Order [Ext.].

Display and Change of the Available Capacity

Use

You use this function if, during the planning on the planning board, you want to:

- Know how much capacity a work center has available
- Change the available capacity of a work center

Features

On the planning board, the planner can display an overview of the available capacity of a work center over several planning periods.

If necessary, the planner can also change this available capacity.

Activities

Displaying Available Capacity

In the graphical and tabular planning boards, you will find this function under *Goto* → *Capacity* → *Display capacity*.

Changing Available Capacity

In the graphical and tabular planning boards, you will find this function under *Goto* → *Capacity* → *Change capacity*.

Graphical Monitor

Use

You use the graphical monitor to display a current overview of the work assigned to the individual people at a work center.

The graphical monitor is automatically updated by the system at specified intervals. You can therefore obtain an up-to-date overview for several people and, if necessary, several orders.

Prerequisites

In order to use the graphical monitor, people must have been assigned for the specified work center in the *Time Management* (PT) application component.

You define the selection period, update period and the data for the graphic profile on the initial screen for the graphical monitor.

You make the individual settings for the graphical display (mode, view, increment and break times) on the monitor screen by choosing *Settings*.

Features

Color Differentiation of Scheduled Jobs

The graphical monitor displays the person splits scheduled in different colors. It distinguishes between:

- Current jobs
- Jobs in the past
- Jobs in the future

Reading Help

So that you know on exactly which time position the cursor is, the graphical monitor displays a vertical line. The time is also shown in the status line.

Updating

The display is automatically updated by the system at specific intervals, which you define in the graphic profile. After the update, finally confirmed operations are no longer displayed. However, newly added operations are displayed.

Order Display

On the monitor display, you can display the accompanying order by double clicking on the required person split.

Automatic Updating After Change to Order

If you change the order data, the monitor display changes automatically after the update according to the data changed.

The paging function is available for person splits and the people listed in the monitor. For more information, see Sending of Short Messages Using Paging [Ext.].

Activities

Depending on the application component in which you are working, choose one of the following menu paths to call up the graphical monitor:

- *Logistics → Customer service → Service processing → Order → Capacity planning → Graphical monitor*
- *Logistics → Plant maintenance → Maintenance processing → Capacity planning → Graphical monitor*