



**GREAVES**  
SINCE 1859

Testing: Unit Testing / User Manual



**PREMIUM**

Module: Production Planning

## **ENVIRONMENT**

**SYSTEM** : SAP R/3 ECC 6.0

**CLIENT** : 200

## **UNIT TESTING SCENARIO**

**SCENARIO NUMBER** : PP 01 – 02

**DESCRIPTION** : Capacity Planning

## **PREPARED BY**

**NAME** :

**DATE** :

**TEAM** : Production Planning

## **APPROVED & TESTED BY**

**NAME** : Nanhe Babu (PwC)

**DATE** :

**TEAM** : Production Planning

In current version of SAP, Work Centre works with infinite capacity.

After MRP Run, even if a particular Work Centre is overloaded, one will be able to Complete Production Order defined at that particular Work Centre.

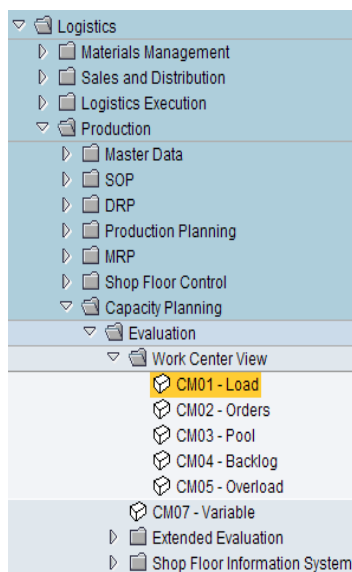
Capacity Evaluation can be used for analysis purpose & capacity Leveling can be used manually to allocate the load to different Work Centre.

### 1. Transaction Code/ Path

Capacity Evaluation

<b>Menu Path</b>	<b>Logistics → Production → Capacity Planning → Evaluation → Work Centre View</b>
<b>T. Code</b>	<b>CM01, CM02, CM03, CM04, CM05</b>

### 2. Input Data



#### 2.1 Input Screen Name – CM01 : Initial Screen

##### Capacity Planning: Selection

Standard overview		Detailed cap. list		Variable overview	
Operator					
Work Center	<input type="text"/>	<input type="checkbox"/>		<input type="checkbox"/>	
Capacity Planner Group	<input type="text"/>	<input type="checkbox"/>		<input type="checkbox"/>	
Plant	<input type="text"/>	<input type="checkbox"/>		<input type="checkbox"/>	

Description of the Field	Nature of the Field	Value of the Field
Work Center	Mandatory	
Capacity Planner Group	Optional	
Plant	Optional	

Press Enter.

Capacity evaluations is used to analyse capacity loads. One can adjust the analyses for each user according to the planning level, planning horizon and the area of responsibility. Available capacities and capacity requirements can be selected according to various criteria and cumulated using any period split one chooses.

- One can use work center hierarchies to cumulate the available capacities of production work centres and their capacity requirements to superior planning work centres. The capacity evaluation is a part of the component Capacity Planning
- One can execute various evaluations in the capacity evaluation on-line or in batch.
- One get an overview of the load situation of selected work centres using the **standard overview**.
- One can use the **detailed capacity list** to display the orders that cause the capacity requirements at work centres.
- One can use the **variable overview** to display any capacity planning data you wish.

The various evaluations can be displayed both in tabular and graphical form. The SAP Gantt diagram gives you an overview of the dates of the operations at a work center.

From all of the evaluation lists one can either display or change work centres and capacities. From the detailed capacity list One can also process orders and confirmations and display stock/requirements lists.

You can use the EXCEL interface to export the evaluation lists and continue working with Microsoft Excel.

## 2.2 Input Screen Name – Standard Overview

Enter Work Centre & Click Standard Overview

**Capacity Planning: Selection**

Standard overview | Detailed cap. list | Variable overview

Work Center: LBBTC

Capacity Planner Group:

Plant: 1210

### Capacity Planning: Standard Overview

Cap. details/period

Work center: LBBTC "Lapping, Basic block, Testing Plant 1210  
Capacity cat.: 002 Assembly

Week	Requirements	AvailCap.	CapLoad	RemAvailCap	Unit
02.2009	5,518.12	46.00	999 %	5,472.12	H
03.2009	1,483.73	138.00	999 %	1,345.73	H
04.2009	999.08	138.00	724 %	861.08	H
05.2009	60.54	115.00	53 %	54.46	H
06.2009	0.00	138.00	0 %	138.00	H
07.2009	0.00	138.00	0 %	138.00	H
08.2009	0.00	138.00	0 %	138.00	H
09.2009	0.00	138.00	0 %	138.00	H
10.2009	0.00	138.00	0 %	138.00	H
11.2009	0.00	138.00	0 %	138.00	H
<b>Total &gt;&gt;&gt;</b>	<b>8,061.47</b>	<b>1,265.00</b>	<b>637 %</b>	<b>6,796.47</b>	<b>H</b>

### Standard overview

Red marked Lines are Overloaded dates against that requirements.

E.g. 02.2009, 03.2009, 04.2009 are overloaded & 05.2009, 06.2009...11.2009 are not.

A lists predefined by SAP showing data on the capacity situation at work centers. For every capacity for the selected work centers the following information is displayed in columns:

- Period
- Capacity requirements in the period
- Available capacity in the period
- Capacity load (capacity requirements/available capacity in percentage terms) in the period
- Free available capacity in the period

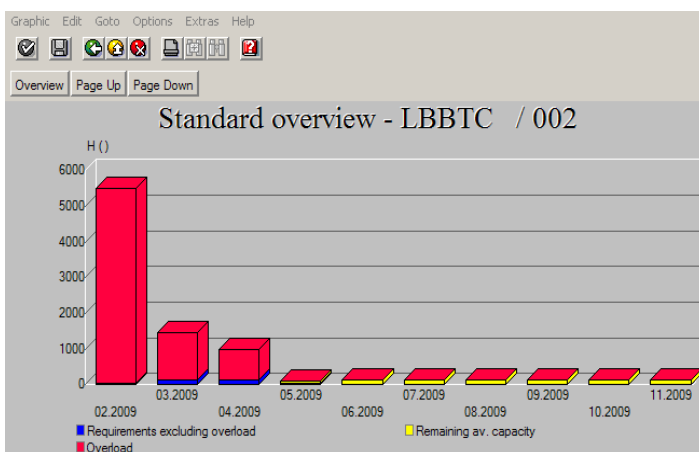
**Structure**

- Contents, layout and format of the list  
The contents and the layout of the standard overview as well as the sequence and width of the columns are defined by SAP and cannot be changed.
- Format of capacity data  
You define the format of the capacity data such as the period split or the evaluation period in the options profile. You can change settings during the capacity evaluation at any time.

**Integration**

- Display and edit objects  
Depending on your settings in the options profile you can display or change work centers and capacities
- Graphical display  
You can graphically display data in the standard overview.

One clicks  icon, following graphical display is shown.



Select particular date & Click **Cap. details/period** to give detailed analysis.

**Capacity Planning: Standard Overview: Details**

Week	P	PeggedRqmt	Material	PgRqmtQty	Reqmnts	Earl.start	LatestFin.
<b>Total</b>							
02.2009		16855	240790	211 EA	5,518.118 H	29.12.2008	08.01.2009
02.2009		55327	240790	489 EA	214.458 H	29.12.2008	22.01.2009
02.2009		55339	245754	399 EA	276 H	08.01.2009	29.01.2009
02.2009		59965	240790	495 EA	69 H	30.12.2008	24.01.2009
02.2009		60429	240457	250 EA	254.143 H	30.12.2008	12.01.2009
02.2009		60430	240457	250 EA	253 H	30.12.2008	12.01.2009
02.2009		60431	240495	300 EA	253 H	30.12.2008	14.01.2009

One can download it to either of the option

Save list in file...

In which format should the list be saved ?

- unconverted
- Spreadsheet
- Rich text format
- HTML Format
- In the clipboard

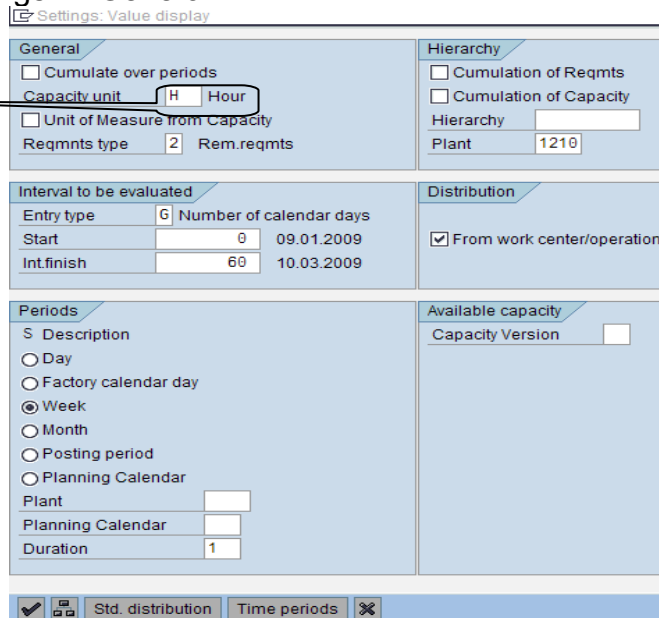
OK Cancel

One can select particular line & Click Order header, it will ask for Planned Order or Rtg for Planned order. It will take to either of the screen.

In the above screen of Standard Overview screen, if one needs to see in different Unit (MIN instead of H) then Goto Settings → General

### General

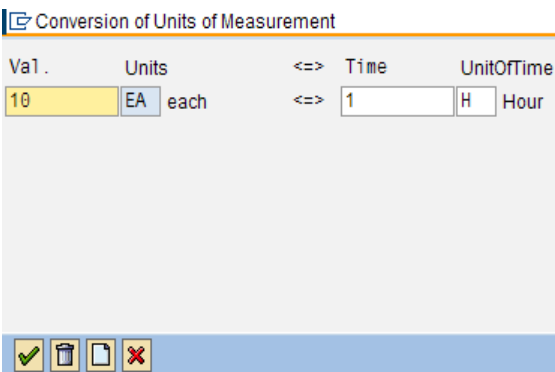
Here its 'H' one can change it to 'MIN'\*\*\*



### Periods

One can change from Week to Day or Month or either option.

\*\*\* in case one wants to see capacity in Units rather than Time based H (Hour or MIN). One needs to define the relation or conversion between the two for that particular Work Centre  
Go To Capacity View of that particular Work Centre → Header → Extras → Units of Measurement.



Here 1 H ↔ 10 EA is been defined. It signifies in 1 Hour, 10 Units are produced. Depending upon Plant specific conversion factor can be set. One can maintain more than one conversion factor. Below are two screen in which, one screen shows prior conversion & other after conversion

### Before Conversion

Week	Requirements	AvailCap.	CapLoad	RemAvailCap	Unit
03.2009	7,002.46	115.00	999 %	6,887.46	H
04.2009	999.08	138.00	724 %	861.08	H
05.2009	60.54	115.00	53 %	54.46	H
06.2009	0.00	138.00	0 %	138.00	H
07.2009	0.00	138.00	0 %	138.00	H
08.2009	0.00	138.00	0 %	138.00	H
09.2009	0.00	138.00	0 %	138.00	H
10.2009	0.00	138.00	0 %	138.00	H
11.2009	0.00	138.00	0 %	138.00	H
Total >>>	8,062.08	1,196.00	674 %	6,866.08	H

### After Conversion & entering EA in General Tab

Week	Requirements	AvailCap.	CapLoad	RemAvailCap	Unit
03.2009	70,024.59	1,150.00	999 %	68,874.59	EA
04.2009	9,990.82	1,380.00	724 %	8,610.82	EA
05.2009	605.39	1,150.00	53 %	544.61	EA
06.2009	0.00	1,380.00	0 %	1,380.00	EA
07.2009	0.00	1,380.00	0 %	1,380.00	EA
08.2009	0.00	1,380.00	0 %	1,380.00	EA
09.2009	0.00	1,380.00	0 %	1,380.00	EA
10.2009	0.00	1,380.00	0 %	1,380.00	EA
11.2009	0.00	1,380.00	0 %	1,380.00	EA
Total >>>	80,620.80	11,960.00	674 %	68,660.80	EA

## Detailed Capacity List

### Capacity Planning: Detailed Capacity List

Plant	1210	PEU
Work center	LBBTC	"Lapping, Basic block, Testing & Cowling
Capacity cat.	002	Person

Week	P	PeggedRqmt	Material	PgRqmtQty	Reqmnts	Earl_start	LatestFin.
<b>Total</b>					<b>8,061.471 H</b>		
<input type="checkbox"/> 02.2009		16855	240790	211 EA	214.458 H	29.12.2008	08.01.2009
<input type="checkbox"/> 02.2009		55327	240790	489 EA	276 H	29.12.2008	22.01.2009
<input type="checkbox"/> 02.2009		55339	245754	399 EA	69 H	08.01.2009	29.01.2009
<input type="checkbox"/> 02.2009		59965	240790	495 EA	254.143 H	30.12.2008	24.01.2009
<input type="checkbox"/> 02.2009		60429	240457	250 EA	253 H	30.12.2008	12.01.2009
<input type="checkbox"/> 02.2009		60430	240457	250 EA	253 H	30.12.2008	12.01.2009
<input type="checkbox"/> 02.2009		60431	240405	200 EA	253 H	30.12.2008	12.01.2009

A list the user can alter in which the capacity requirements for selected work centres are arranged according to the pegged requirements and displayed per period. For every capacity at the work centres you can display the following information in columns:

- Period
- For each order the capacity requirements per period
- Other data for the pegged requirements and the capacities

From the detailed capacity list, one can display or edit the following objects (by clicking Choose fields):

Object	Display	Edit
Work center, capacity	x	x
Order	x	x
Confirmation		x
Goods receipt		x
Material	x	
Pegged requirements	x	
Current stock/Requirements list	x	

## Variable Overview

### Capacity Planning: Variable Overview


Version	Overview of order categories				
Unit	H				

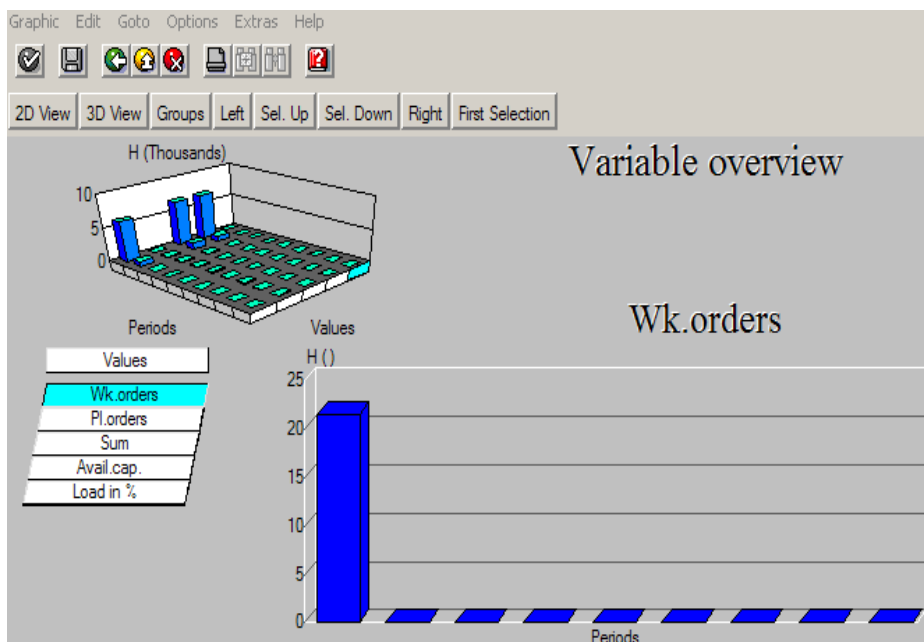
  

Week	Wk.orders	P1.orders	Sum	Avail.cap.	Load in %
03.2009	20.41	6,982.05	7,002.46	115.00	6,089.09
04.2009	0.00	999.08	999.08	138.00	723.97
05.2009	0.00	60.54	60.54	115.00	52.64
06.2009	0.00	0.00	0.00	138.00	0.00
07.2009	0.00	0.00	0.00	138.00	0.00
08.2009	0.00	0.00	0.00	138.00	0.00
09.2009	0.00	0.00	0.00	138.00	0.00
10.2009	0.00	0.00	0.00	138.00	0.00
11.2009	0.00	0.00	0.00	138.00	0.00

List that the user can format and in which capacity planning data is displayed per period. You can display the following information in columns:

- Period
- Capacity requirements in the period that are selected according to selection criteria laid down by the user
- Available capacities for the selected capacity requirements
- Values that are calculated from values in other columns, capacity requirements and constants

One clicks  icon, following graphical display is shown.



Depending upon selection, i.e., single work Centre, capacity planner Group & plant or only entering capacity planner & plant, one can do the analysis

### Capacity Planning: Selection

Standard overview			Detailed cap. list			Variable overview		
						Operator		
Work Center		LBBTC						<input type="checkbox"/>
Capacity Planner Group		415						<input type="checkbox"/>
Plant		1210						<input type="checkbox"/>

Here, Work Centre, Capacity Planner Group & plant have been entered as selection parameters

**Evaluation → Work Centre View → Orders wise CM02**

Click Variable Overview

**Capacity Planning: Variable Overview**

Week	Internal	OResAna1.	Sample	Pr.orders	Netwk.orders	Mnt.orders	Sum	Avail.cap.	Cap. load
03.2009	0.00	0.00	0.00	20.41	0.00	0.00	20.41	115.00	17.75
04.2009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	138.00	0.00
05.2009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	115.00	0.00
06.2009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	138.00	0.00
07.2009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	138.00	0.00
08.2009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	138.00	0.00
09.2009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	138.00	0.00
10.2009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	138.00	0.00
11.2009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	138.00	0.00

**Evaluation → Work Centre View → Back Log wise CM04 (Prior day's details are displayed)**

**Capacity Planning: Variable Overview**

Day	Internal	OResAna1.	Sample	Pr.orders	Netwk.orders	Mnt.orders	Sum	Avail.cap.	Cap. load
12.01.2009	0.00	0.00	0.00	20.41	0.00	0.00	20.41	23.00	88.74

**Capacity Planning: Standard Overview**

Work center: LBBTC "Lapping, Basic block, Testing Plant 1210  
Capacity cat.: 002 Assembly

Day	Requirements	AvailCap.	CapLoad	RemAvailCap	Unit
12.01.2009	5,804.56	0.00	999 %	5,804.56	H
<b>Total &gt;&gt;&gt;</b>	<b>5,804.56</b>	<b>0.00</b>	<b>999 %</b>	<b>5,804.56</b>	<b>H</b>

**Evaluation → Work Centre View → Over Load wise CM04 (Over Loaded for particular Week / Day are displayed, if no Work centre / Capacity Planner Group is entered in Selection parameters, all Over Loaded Work centre are displayed)**

**Capacity Planning: Standard Overview**

Work center: LBBTC "Lapping, Basic block, Testing Plant 1210  
Capacity cat.: 002 Assembly

Week	Requirements	AvailCap.	CapLoad	RemAvailCap	Unit
03.2009	7,002.46	115.00	999 %	6,887.46	H
04.2009	999.08	138.00	724 %	861.08	H

**Extended Evaluation – Order wise (CM52)**

**Capacity evaluation**

Change time profile

Objects

Order  to

Planned order  to

One can enter Production order or Planned order in order to know Capacity Evaluation Work centre, order wise.

### 3. Transaction Code/ Path

Capacity Leveling – Leveling is done manually.

<b>Menu Path</b>	<b>Logistics → Production → Capacity Planning → Leveling → Work Centre View</b>
<b>T. Code</b>	<b>CM21,CM22,CM23,CM31</b>

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

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:

- Long-term planning (LTP)
- Material requirements planning (MRP)
- 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.

#### Long-term planning (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.

#### Material requirements planning (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.

#### Shop floor control (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.

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 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:

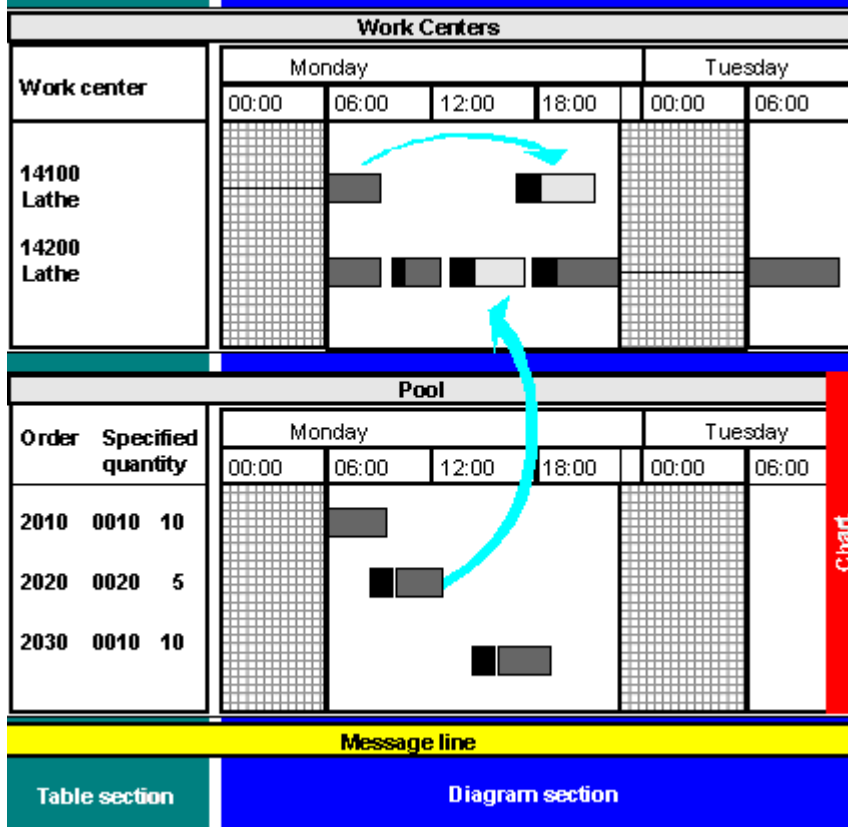
- The table section contains information for identifying and describing the objects displayed in the diagram section.
- The diagram section is a window on the virtual time axis in which the available capacity and the capacity requirements are displayed with their start and finish dates. This window displays 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.



### 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 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

Work center / capacity cat.		14100/001		Lathe		
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"/>	6.5 h	Grab	20	Pe	0001891	0010	Turning
<input type="checkbox"/>	13.0 h	Grab	35	Pe	0001953	0030	Turning
<input type="checkbox"/>							
<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).

## Period Requirements per Resource

Dispatch Dispatch Deallocate Strategy Order

Work ctr Cap.ca W 12.01.2009 13.01.2009 14.01.2009 15.01.2009 16.01.2009

LBBTC 002 " 23.0 0 23.0 0 23.0 0 999.9- 999 207.5- 999

1 / 1

Requirements											
	Totreq	Sp1	Material	Prio	Order	Op.	Work ctr	Cap	Operation	qua	Rem.set
<input type="checkbox"/>	0.1	0	TEST1		27000090	0010	LBBTC	002		10.000	0.00
<input type="checkbox"/>	214.5	0	240790		16855	0010	LBBTC	002		211.000	0.00
<input type="checkbox"/>	497.0	0	240790		55327	0010	LBBTC	002		489.000	0.00
<input type="checkbox"/>	10.2	0	240790	1	27000098	0010	LBBTC	002		10.000	0.00
<input type="checkbox"/>	10.2	0	240790	1	27000099	0010	LBBTC	002		10.000	0.00
<input type="checkbox"/>	508.2	0	240790		60448	0010	LBBTC	002		500.000	0.00
<input type="checkbox"/>	254.1	0	240457		60429	0010	LBBTC	002		250.000	0.00
<input type="checkbox"/>	254.1	0	240457		60430	0010	LBBTC	002		250.000	0.00
<input type="checkbox"/>	254.1	0	240465		60432	0010	LBBTC	002		250.000	0.00
<input type="checkbox"/>	508.2	0	240465		60433	0010	LBBTC	002		500.000	0.00
<input type="checkbox"/>	254.1	0	240465		60434	0010	LBBTC	002		250.000	0.00
<input type="checkbox"/>	304.9	0	240495		60431	0010	LBBTC	002		300.000	0.00
<input type="checkbox"/>	298.8	0	240790		60445	0010	LBBTC	002		294.000	0.00
<input type="checkbox"/>	3.0	0	240790		60446	0010	LBBTC	002		3.000	0.00

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 analyse 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



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- 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.