English

FUJITSU Server BS2000

SE700 / SE500

Server Unit /390

Operating Manual

Valid for:

SE700 / SE500 / SE300 (basic software V6.1A and higher)
SE700B / SE500B / SE300B (basic software V6.2A and higher)

Edition April 2017

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Certified documentation according to DIN EN ISO 9001:2008

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Contents

1 Introduction

The FUJITSU Server BS2000 SE Series unites the existing server lines S servers and SQ servers in the server line SE servers.
Depending on requirements, the SE server contains all the system components needed for operation as an overall application:

– /390-based BS2000 Server Unit
– x86-based Server Units with BS2000, Linux or Windows guest systems
– x86-based Application Units for operation under Linux, Windows or VMware
– Shareable tape and disk periphery
– A high-speed, server-internal infrastructure to connect the components with each other and with the customer LAN or SAN.

Information on the hardware lifecycle of the FUJITSU Server BS2000 SE Series (Changes since the last edition of the manual)

With the hardware lifecycle of the SE series, the hardware basis for the Server Unit x86, the Management Unit and the HNC has been renewed. These new generation versions are called SU300 M2, MU M2 and HNC M2. They are supported from basic software V6.2A onwards.
The FUJITSU BS2000 servers of the SE series that are equipped with this hardware generation are called SE300B, SE500B and SE700B.

The changes in the manuals are mainly due to these new hardware lifecycle generation models. Any differences to the previous models regarding structure and operation are described in detail.

Information on using the manual

The SE700 / SE500 / SE300 Operating Manual, which consists of a number of modules, describes the features and hardware components of the FUJITSU Server BS2000 of the SE Series. Users should read the operating manuals carefully in order to obtain optimal performance from the SE server.

This manual described the hardware component Server Unit /390 (SU700 and SU500) and complements the Basic Operating Manual [1]. You will find a comprehensive introductory chapter in the Basic Operating Manual . The chapters "Important notes" chapter on SE server operation and "Environmental protection and service" are contained only in the Basic Operating Manual .

2 Server Unit SU700

This section describes the Server Unit SU700. SE700 is equipped with an SU700 as the first Server Unit.

Components and ports which are not used are not described below.

The SU700 enables BS2000 to execute (in Native mode on on BS2000 VMs) on /390 architecture.

Features

– 10 models with a high performance range are available. Depending on the model, one or two processor modules are used. The processor module has 8 CPUs. Depending on the model, 2 to 15 processors are available. Capacity on Demand permits temporary processor attachment.

– One hot spare processor is available with dynamic activation.

– The main memory is up to 256 GB in size.

– The I/O system has up to 126 Fibre Channels, each with a throughput of 8 Gbit/s.

– The SU supports a 10 Gbps LAN (connection via the HNC).

The Server Unit SU700 consists of the following components:

– a CPU box (see section “CPU box”)

– an AROMA-P (Automatic and Remote Operation Manager)
controls the power supply of the SU and occupies two height units (HUs).

– two to eight channel boxes (see section “Channel box (CHE box)”)

2.1 CPU box

Depending on the configuration, the CPU box contains one or two system boards.

Each system board contains a processor chip with the following features:
– depending on the model, up to eight CPU cores with a joint cache
– two IOPs (I/O processors)
– one Mac (Memory Access Controller)
– The processor chip is connected directly to the memory of the system board.
– Processors on different system boards communicate over an Inter Connect Interface.

The CPU box, together with AROMA-P, occupies six height units (HUs) in the rack.

2.2 Channel box (CHE box)

Depending on the configuration level, up to eight channel boxes (#0 through #7) and up to 126 FC channels are possible in an SE700. In the basic configuration, the SU700 has two channel boxes, channel box #0 and channel box #4.

Up to eight channel modules, each with two FC channels (8 Gbps), can be integrated into a channel box. Only in the case of the first channel box is the first slot already occupied on the system side.

A channel box occupies two height units (HUs) in the rack.

3 Server Unit SU500

This section describes the Server Unit SU500. SE500 is equipped with an SU500 as the first Server Unit.

Components and ports which are not used are not described below.

The SU500 enables BS2000 to execute (in Native mode on on BS2000 VMs) on /390 architecture.

Features

– 6 models with a high performance range are available. The processor module has 8 CPUs. Depending on the model, 1 to 3 processors are available. Capacity on Demand permits temporary processor attachment.

– One hot spare processor is available with dynamic activation.

– The main memory is up to 64 GB in size.

– The I/O system has up to 94 Fibre Channels, each with a throughput of 8 Gbit/s.

– The SU supports a 10 Gbps LAN (connection via the HNC).

The Server Unit SU500 consists of the following components:

– a CPU box (see section “CPU box”)

– an AROMA-P (Automatic and Remote Operation Manager)
controls the power supply of the SU and occupies two height units (HUs).

– two to six channel boxes (see section “Channel box (CHE box)”)

3.1 CPU box

The CPU box contains one system board.

The system board contains a processor chip with the following features:
– four CPU cores with a joint cache
– two IOPs (I/O processors)
– one Mac (Memory Access Controller)

The CPU box, together with AROMA-P, occupies six height units (HUs) in the rack.

3.2 Channel box (CHE box)

Depending on the configuration level, up to six channel boxes (#0 through #5) are possible. In the basic configuration, the SU500 has two channel boxes, channel box #0 and channel box #5.

Up to eight channel modules, each with two FC channels (8 Gbps), can be integrated into a channel box. Only in the case of the first channel box is the first slot already occupied on the system side.

A channel box occupies two height units (HUs) in the rack.

4 Operating the service processor

The service processor (SVP) is operated under menu guidance via the “SVP Console Window”. The SVP console window is made available by the SE Manager when the SVP console is called.

Jobs are assigned to the service processor via special SVP frames (in this chapter abbreviated to: frames). All the information you require as an operator working with the frames can be found in this chapter.

After switching on the MU and the Server Unit, BS2000 operation must be prepared, i.e. the BS2000 operating system must be loaded (IPL = Initial Program Load). The following activities may be required for the IPL:

- select the IORSF (Input/Output Resource File) and start the IMPL (Initial Micro Program Load)
  This is only necessary if you want to load another IORSF.
- specify the operating mode (Native/VM2000)
  This is only necessary if you want to change the mode setting.
- start IPL using PROGRAM LOAD FRAME
  To do this you may have to redefine device parameters in the DETAIL-1 frame.
- configure an automatic IPL (POWER ON IPL)

The following sections provide examples of standard processing relevant to loading of BS2000. There is also an description of how to select a particular configuration and how to re-initialize the SVP.

Standard processing at the SKP console at a glance:

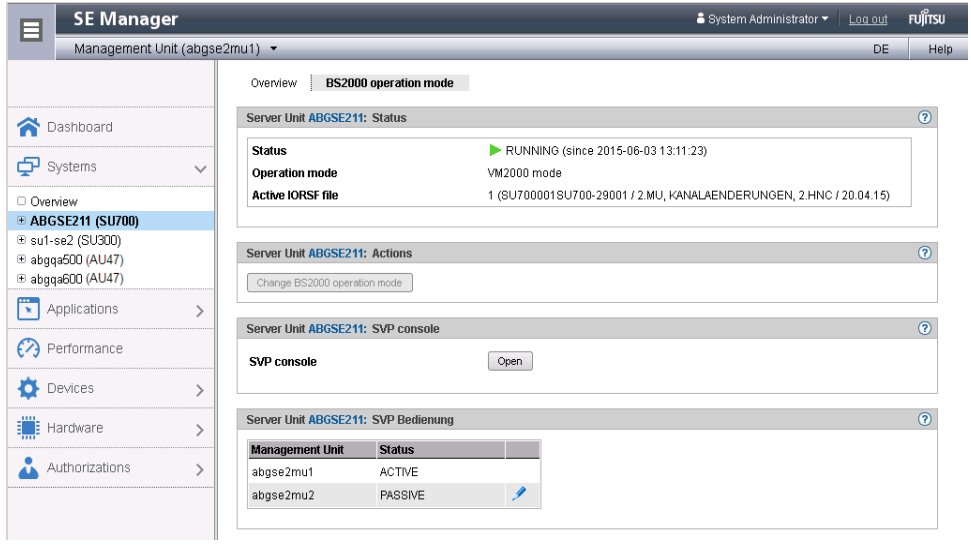
- Selecting IORSF
- Re-initializing SVP
- Setting up PROGRAM LOAD FRAME: PRESET-1
- Setting up PROGRAM LOAD FRAME: PRESET-2
- Setting the operating mode for "loading BS2000 / VM2000" using PROGRAM LOAD FRAME: DETAIL-2
- Executing IPL in PROGRAM LOAD FRAME: DETAIL-1

4.1 Opening the SVP console

► Proceed as follows to log in on the SE Manager as an administrator: When you log in as an operator, the account must have the SVP right.

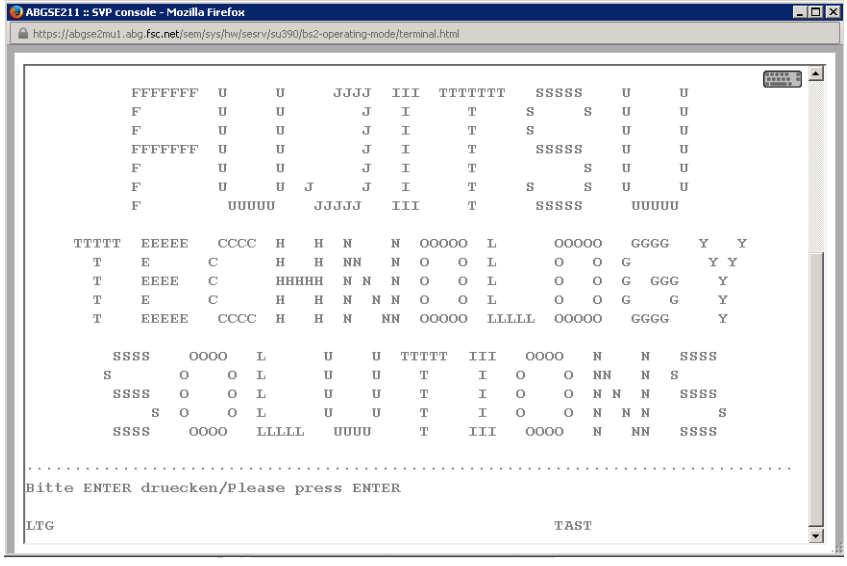
After you have logged in successfully, you can access the functions of the SE Manager and consequently also those for operating the operating system (BS2000 or VM2000) on the Server Unit.

► Select *Systems* → [*<se server> (SE<model>)* →] *<su-name>(SU</390>), BS2000 operation mode* tab.



► Click *Open* in the *SVP console* group to open a window with the SVP console. Information on console access can also be obtained in the SE Manager's help.

A new window opens in which a terminal emulation sets up the connection to the SVP console:



► Confirm connection setup with the ENTER key.

After a brief wait time, the SVP frame below is displayed:

- After the server has been started: the MODE SELECTION FRAME (see page 24)
- After the SVP console has been closed and opened again or when an SVP console has already been opened by another user: the last frame displayed.

CAUTION!
When the SVP frame is opened again or when another SVP console is opened by another user, the window content is not displayed in full.
Click on Clear. This causes the screen to be refreshed, i.e. the frame that was last output is displayed again in its entirety.
If possible, the SVP should only be used via an SVP console. As frame outputs are sent to all active SVP consoles, operating multiple SVP consoles at the same time leads to them impairing each other.

4.2 General SVP frame structure

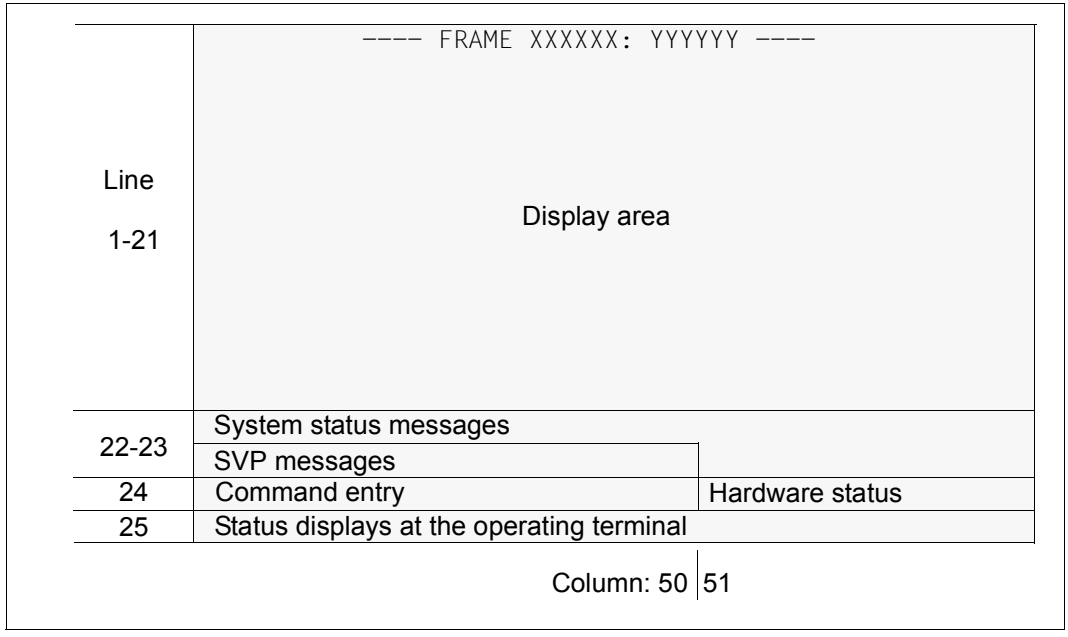


Figure 1: General structure of a frame

Each frame is divided into different areas:

Lines 1 - 21 This is the display area of a frame. Here the functions and parameters that may be selected or output are displayed. Hardware-related information is also output.

Line 22 + 23 System status messages and SVP messages are displayed here.

Line 24 Commands can be entered here. Information on the hardware status is shown as of column 51.

Line 25 This line is used for the status displays of the emulated console.

4.2.1 System status messages in line 22

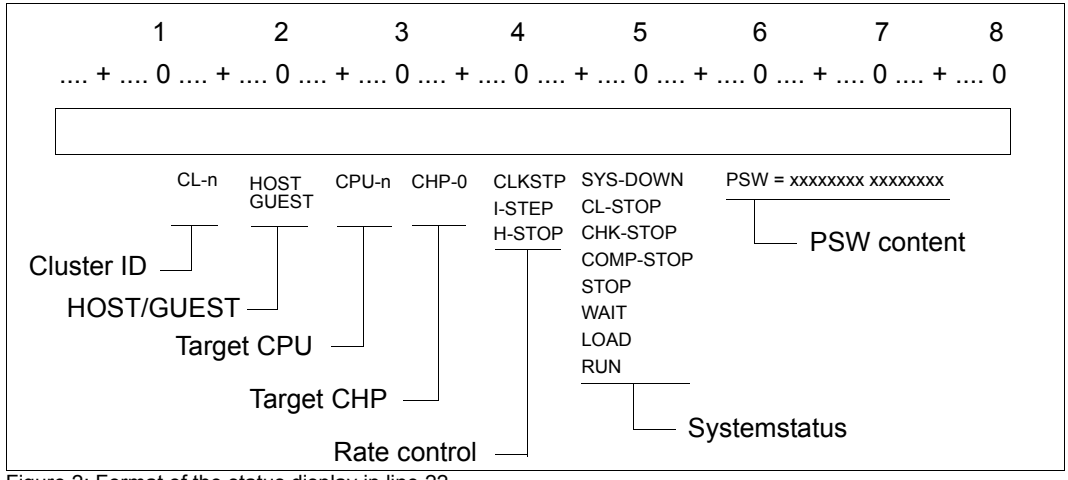


Figure 2: Format of the status display in line 22

Meaning of the status information in line 22:

Column	Icon	Meaning
17 - 20	CL -n	Cluster ID of the Server Unit (n = 0 - 3)
22 - 26	none HOST GUEST	The system is operated in BS2000-NATIVE mode The selected CPU is occupied by the VM2000 monitor system The selected CPU is occupied by a VM2000 guest system
28 - 32	CPU - n	Display of the selected CPU (n = 0 - F); selection with PF16
34 - 38	CHP - 0	Display of the channel processor CHP - 0.
40 -45	none CLKSTP I-STEP H-STOP	The system is in the normal status The system is in the clock-stop status The system is in the instruction step mode The system is in the hardware stop status
47 - 55	SYS-DOWN CL-STOP CHK-STOP COMP-STOP STOP WAIT LOAD RUN	The system is in the system down status The cluster is in the clock stop status The selected CPU is in the CHECK stop status The address comparison stop mode is active and the selected CPU is in the address comparison stop status The selected CPU is in the stop status The selected CPU is in the wait status An IPL is executed via the selected CPU The selected CPU is in the run status
58 -80	none PSW =	The system is in the run status The system is in the stop status on the PSW address (PSW=Program Status Word)

4.2.2 System status messages in line 23

The following picture shows the extended area of the system status messages in line 23:

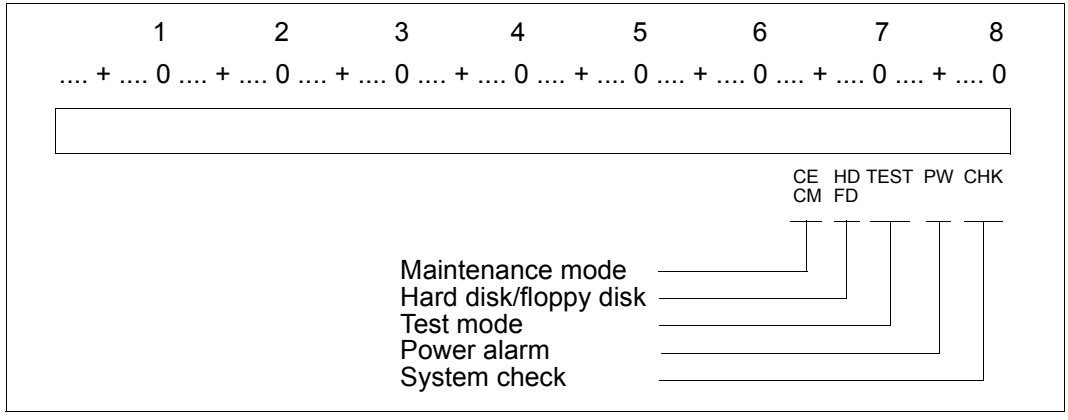


Figure 3: Format of the extended area of the status display in line 23

Meaning of the status messages in line 23:

Column	Icon	Meaning
63 - 64	none CE CM	The SVP is in user mode The SVP is in maintenance mode The SVP is in hot system maintenance mode
66 - 67	HD FD	Hard disk 2 or MO (Magneto Optical disk) is online A formatted floppy disk is mounted in the FD drive
70 - 73	none TEST	The system is in the user mode The system is in test mode = maintenance mode (display together with CE)
75 - 76	none PW	The power supply is okay (Power Warning) An error has occurred in the power supply of the server
78 - 80	none CHK	No machine error (machine check) A machine error occurred in the server

4.2.3 Hardware status display in line 24

The following diagram shows the format of the hardware status display in line 24:

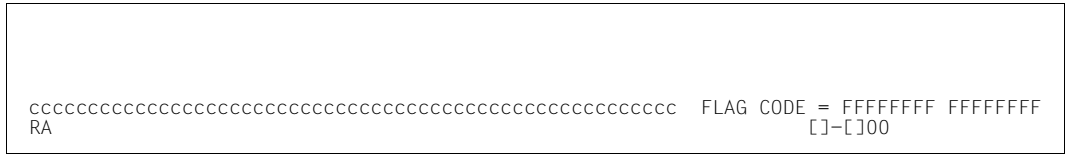


Figure 4: Format of the status display in lines 24 and 25

Meaning of the status information in line 24:

Column	Icon	Meaning
2 - 50	cccc cccc	Command input area
52 - 80	FFFFFFFF FFFFFFFF	FLAG code

The FLAG code represents a message or error code which can be evaluated by service department personnel. The display appears according to the severity of the FLAG code which occurred. As a rule the last FLAG code is displayed.

4.2.4 Status displays in line 25

Displays in line 25 of the SVP console and their meaning:

Column	Icon	Meaning
2	R	The console is ready
3	A	The SVP is active
10 - 25	none	The SVP is ready for input
10	X	Input locked
12 - 25	WAIT SYSTEM NOT CONNECTED CONNECTING	After input the keyboard is locked until output is completed Keyboard still locked because of SVP activity The MU has no connection to the SVP A connection to the SVP is being set up
31	none T	The system is in user mode The system is in test mode = maintenance mode
32	none S	The selected CPU is in the run status The selected CPU is in the stop status
33	none W	The selected CPU is in the run status The selected CPU is in the wait status
61 - 70	[ ] - [ ] 00	Status display for hardcopy printers This display is irrelevant for the MU
	For a redundant MU:	
	ACTIVE	This MU has a connection to the SVP
	NOT ACTIV	The other MU has a connection to the SVP

If a write console message is output (e.g. `SHUTDOWN COMPLETED`), line 25 is displayed in the format of the terminal emulation, and the BEL icon is displayed.

```
 ccccccccccccccccccccccccccccccccccccccccccccccccccccccccc  FLAG CODE = D90557 X 00000H00
LTG               BEL                                          TAST FEHL          EM:1
```

Spalte	Symbol	Bedeutung
1 -3	LTG	Übertragungsleitung eingeschaltet
21 -23	BEL	Signal
56 - 59	TAST	Tastatur angeschlossen
61 - 64	FEHL	Eingabeversuch bei gesperrter Tastatur
76 - 79	EM:1	Emulationsebene 1

To delete the message and switch the display from line 25, click on ModSel.

4.3 Using SVP frames

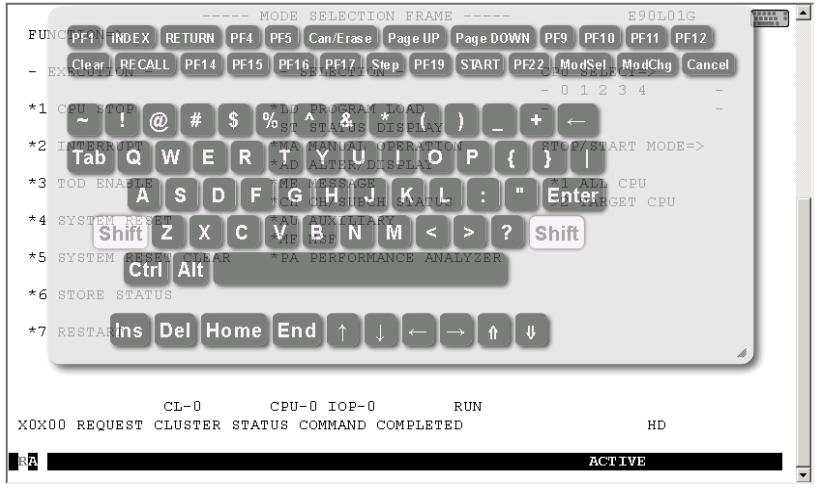
You assign a job to the SVP by invoking the relevant frame, selecting the desired function, and specifying the required parameters. To select a function or specify a parameter, you must enter the alphanumeric characters shown in the frame in the input fields marked by an arrow (=>). After an entry, the cursor automatically switches to the next entry field. You can select entry fields manually with the tabulator key or arrow keys. Once you have entered all the functions and parameters assigned to a job, press the ENTER key. In some frames, SVP functions can also be initiated by actuating the corresponding function key (also known as pfkey).

Instead of selecting a function, you can also enter a command in the command input line in all frames (screen line 24) and assign a job to the SVP in this way. Frames can also be selected using the `FR␣Frame-ID`, e.g. `FR ML` (to switch to the MODE SELECTION FRAME, in upper or lower case). A command entered in line 24 takes priority over a selected frame function.

4.3.1 SVP functions (function keys)

A virtual keyboard is available to you for making entires on the SVP console.

► Click the keyboard icon at the top right to open the virtual keyboard. Clicking the icon again closes the keyboard.



Function keys (pfkeys) PF1 through PF24 and Clear and Cancel are located in the upper part of the virtual keyboard. You can trigger the corresponding SVP functions by clicking with the mouse.

Some function keys are labeled with the name of the function they are most frequently used for (e.g. INDEX instead of PF2).

Function key PF20 (stop function) has no function in order to provide protection against it being pressed inadvertently and is therefore not offered on the virtual keyboard.

The table 1 on page 20 shows the function keys and their functions which are applicable for most frames. Any different function allocations of function keys are described in the frames concerned. As an alternative, SVP functions can be called and entries made in the frames using your keyboard.

Some of the function keys listed here only have a function in CE mode (CE=Customer Engineer, maintenance mode) and are used solely by Customer Support personnel. Customer Support can enable and disable CE mode on the server using a sliding switch on the inside of the maintenance panel or on the MU using a CLI command.

PF..	Function key of the virtual keyboard	Alternative entry on the keyboard	Name	Function
PF1	PF1	ESC F1	Help	Help functions
PF2	INDEX	ESC F2	Index	Only effective in CE mode: switches to the index frame.
PF3	RETURN	ESC F3	Return	Switches to the preceding frame.
PF4	PF4	ESC F4		Frame-specific function is performed.
PF5	PF5	ESC F5		Frame-specific function is performed.
PF6	Can/Erase	ESC F6	Cancel/ Erase Input	Command or input data is deleted.
PF7	Page up	ESC F7	Page up	The previous screen contents are displayed
PF8	Page down	ESC F8	Page down	The next screen contents are displayed
PF9	PF9	ESC F9		Frame-specific function is performed.
PF10	PF10	ESC F10		Frame-specific function is performed.
PF11	PF11	ESC SHIFT F1		Frame-specific function is performed.
PF12	PF12	ESC SHIFT F2		Frame-specific function is performed.
PF13	RECALL	ESC SHIFT F3	Recall	Previous SVP commands are displayed in the command line. They can then be executed again with changed operands
PF14	PF14	ESC SHIFT F4		Frame-specific function is performed.
PF15	PF15	ESC SHIFT F5		Frame-specific function is performed.

Table 1: Function keys for SVP functions (part 1 of 2)

PF..	Function key of the virtual keyboard	Alternative entry on the keyboard	Name	Function
PF16	PF16	ESC SHIFT F6	Change CPU	Selects the CPU for which the subsequent commands are to apply. This CPU is then connected logically with the SVP.
PF17	PF17	ESC SHIFT F7		not assigned
PF18	Step	ESC SHIFT F8	Step	Executes the next command if the server is in Single Cycle Instruction Mode
PF19	PF19	ESC SHIFT F9	ARMSS management	Changes the user rights of an existing ARMSS connection
PF20		ESC SHIFT F10	Stop	Only effective in CE mode: Stops the selected CPU
PF21	START	SHIFT F5	Start	Starts the selected CPU
PF22	PF22	SHIFT F6		not assigned
PF23	ModSel	SHIFT F7	Mode Select	– Switches to the MODE SELECTION FRAME – Erases WRITE-CONSOL message on the screen (e.g. SHUTDOWN COMPLETED) – Erases BEL display in screen line 25
PF24	ModChg	F7	ModeChange	Switches back and forth between FJ-PROGRAM FRAME and SVP FRAME (for Customer Support only if appropriate settings apply!)
	Cancel	F5	Cancel/Reset	Cancel input, release keyboard
	Clear	F6	Refresh/Clear	The last frame output is displayed again. All inputs of the current frame made to date are reset.

Table 1: Function keys for SVP functions (part 2 of 2)

4.3.2 Switching between SVP frames

A switch between the frames is only possible within a specified scheme or via an FR command. The possible switches between the frames are possible:

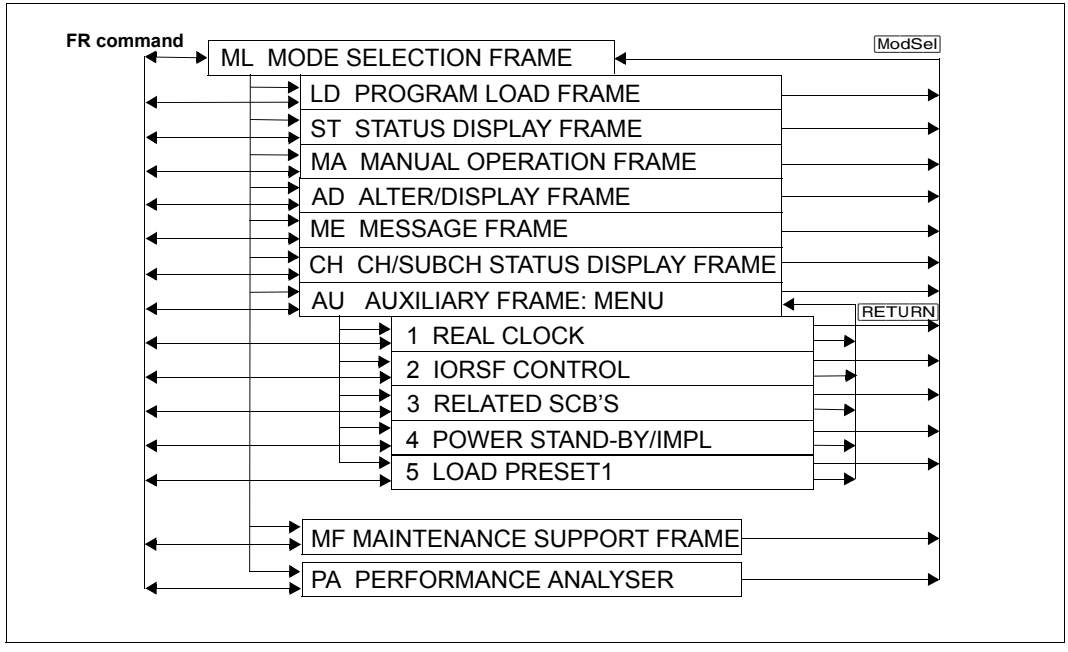
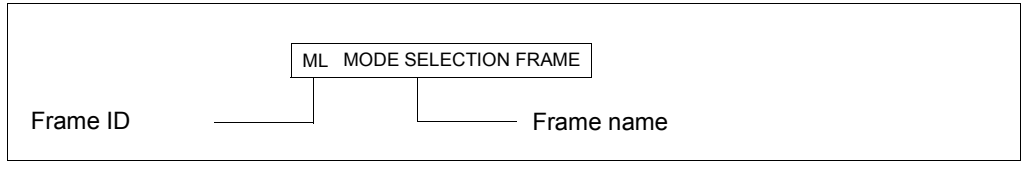


Figure 5: Switching between the frames

Explanation of the figure:

The frames are represented by this symbol:



Each frame has an ID consisting of two letters derived from the frame name. In the above example the MODE SELECTION FRAME is also shown with the ID ML.

Arrows and SVP functions show how and with which button you can switch to another frame.

4.3.3 Options for switching between frames

The following table shows the options for switching to another frame in the SVP window.

Button	Effect
INDEX	Only in CE mode: by clicking on this button you switch from any frame directly to the index frame. The selection of the desired frame can then be made by entering the frame ID in the index frame.
RETURN	This button switches back to the previous frame or to the higher-level frame.
ModSel	This button switches switches from any frame to the MODE SELECTION FRAME.
Frame selection	Enter a frame code in the MODE SELECTION FRAME (e.g. ST, AU, AU5)
Change to subframes	You can change to a subframe by selecting it from the main frame or from a subframe that has already been invoked. This can be done: – with SVP function calls (the buttons are shown in the corresponding frame or subframe) – by selecting a function with or without entering a parameter.
FR command	It is possible to switch to any frame with the FR command. The command is entered in the command line (screen line 24) of a frame. It has the following format: **FR XX** (XX is the code of the desired frame; see figure 5 on page 22)

4.4 SVP frames and subframes

The frames are used by the operator for sending jobs to the SVP and for receiving replies from the SVP.

Some frames have up to seven subframes. The subframes contain other, more detailed functions and information which does not fit in the main frame.

Several frames display settings stored by the SVP. The current setting is indicated by an “>” arrow before the corresponding menu item. An example of this is provided in figure 6: STOP/START MODE applies only for the target CPU (selected CPU).

This manual only describes the frames required by the operator.

4.4.1 (ML) MODE SELECTION FRAME

```
                  ----- MODE SELECTION FRAME -----     E90L01G
FUNCTION=>

- EXECUTION -             - SELECTION -              CPU SELECT=>
                                                     - 0 1 2 3 4       -
*1 CPU STOP              *LD PROGRAM LOAD           -                 -
                         *ST STATUS DISPLAY
*2 INTERRUPT             *MA MANUAL OPERATION       STOP/START MODE=>
                         *AD ALTER/DISPLAY
*3 TOD ENABLE            *ME MESSAGE                 *1 ALL CPU
                         *CH CH/SUBCH STATUS         >2 TARGET CPU
*4 SYSTEM RESET          *AU AUXILIARY
                         *MF MSF
*5 SYSTEM RESET CLEAR    *PA PERFORMANCE ANALYZER

*6 STORE STATUS

*7 RESTART



              CL-0       CPU-0 CHP-0        RUN


RA                                                      []-[]00
```

Figure 6: MODE SELECTION FRAME screen

By making entries in this frame and pressing the ENTER key, you can switch to other frames or execute various basic functions.

FUNCTION => The desired function can be selected by entry of a number listed in the EXECUTION column or a letter combination listed in the SELECTION column.

SELECTION=> After entering the appropriate letter combination you can switch to the following SVP FRAMEs:

LD	PROGRAM LOAD	Load BS2000	page 27
ST	STATUS DISPLAY	Display status	page 34
MA	MANUAL OPERATION	Manual operations	page 35
AD	ALTER/DISPLAY	Alter/display storage/register	page 37
ME	MESSAGE	Display message	page 41
CH	CH/SUBCH STATUS	Display status of channel/subchannel	page 42
AU	AUXILIARY	Auxiliary controls	page 44
MF	MSF	Display FLAG codes	page 53
PA	PERORMANCE ANALYZER	Performance analysis	page 54

EXECUTION The following function is executed after the corresponding number has been entered:

CAUTION!
The functions are executed according to the entries in the CPU SELECT and STOP/START MODE fields (see table on next page)!

1	CPU STOP	stops either the CPU selected in the CPU SELECT and STOP/START MODE fields or all CPUs
2	INTERRUPT	creates an external interrupt for the CPU selected in the fields CPU SELECT and STOP/START MODE
3	TOD ENABLE	time entry is enabled
4	SYSTEM RESET	all CPUs, channel processors, channels and controllers are reset
5	SYSTEM RESET CLEAR	as 4; in addition, the working memory is erased
6	STORE STATUS	selected CPU is stopped, the status is stored
7	RESTART	starts the system again (this function is only possible if the operating system has a restart facility)

CPU SELECT => A particular CPU can be selected here for the functions in the EXECUTION selection menu (see the previous page).
The CPUs available are displayed in the two lines below this.

0 ... F Selection of a particular CPU

STOP/START MODE => This can be used to indicate whether the functions in the EXECUTION selection menu are to be carried out for all CPUs or only for the CPU in the CPU SELECT field.

1 ALL CPU all CPUs are selected

2 TARGET CPU only the CPU selected in the CPU SELECT field is selected

The following table shows all the functions that can be meaningfully combined:

Function	CPU SELECT	STOP/START MODE	Effect on:
CPU STOP	-	1 All CPU	all CPUs
	0 ... F	2 TARGET CPU	selected CPU
INTERRUPT **STORE STATUS** **RESTART**	0 ... F	2 TARGET CPU	selected CPU
TOD ENABLE **SYSTEM RESET** **SYSTEM RESET CLEAR**	–	–	all CPUs

–: unusable

4.4.2 (LD) PROGRAM LOAD FRAME: BASIC

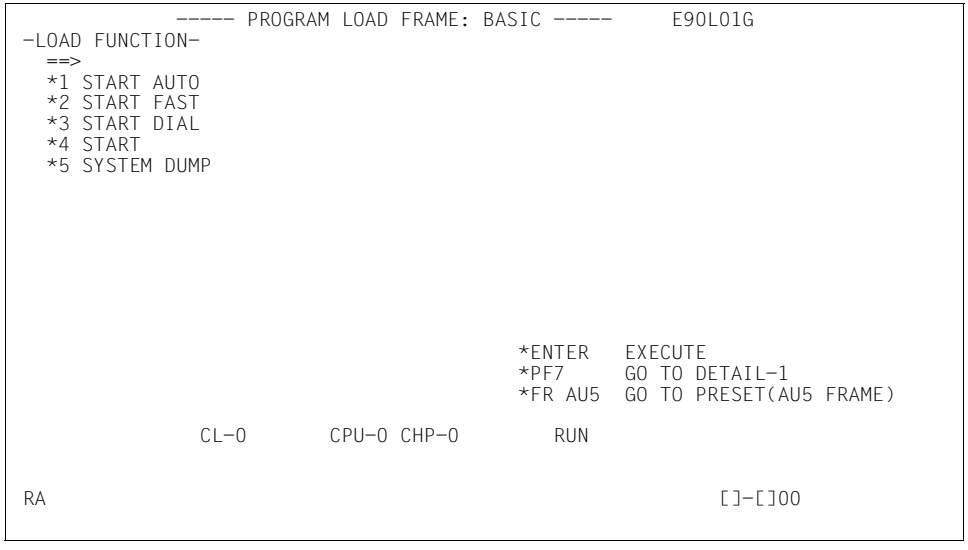


Figure 7: PROGRAM LOAD FRAME: BASIC screen

An IPL is executed by entering a load function and pressing the ENTER key. The predefined parameters in (AU5) AUXILIARY FRAME: LOAD PRESET are used.

LOAD FUNCTION ==> The following function is selected after the corresponding number has been entered:

1	START AUTO	executes IPL: automatic startup
2	START FAST	executes IPL: fast startup
3	START DIAL	executes IPL: dialog startup
4	START	not used
5	SYSTEM DUMP	executes SLED

Frame-specific functions

ENTER Executes IPL / SYSTEM DUMP

After making your entries in the mask and pressing the ENTER key, the following prompt will appear:

```
**********************************
*                                *
* ARE YOU SURE ? (ENTER Y OR N) N *
*                                *
**********************************
```

CAUTION!
The IPL must not be executed during system operation! If this instruction is not heeded, BS2000 will be aborted!

► Press the Y and ENTER keys to execute the IPL, or N and ENTER to cancel the procedure.

Page up Swap to PROGRAM LOAD FRAME: DETAIL-1 (see below)

FR AU5 Enters the frame command in line 24:
Swap to AUXILIARY FRAME: LOAD PRESET1 (see page 50)

4.4.2.1 (LD) PROGRAM LOAD FRAME: DETAIL-1

```
             ----- PROGRAM LOAD FRAME: DETAIL-1 -----     E90L01G

-LOAD FUNCTION-           -IPL DEVICE-
  ==>                       ==> 2
  *1 START AUTO             *1 PRESET GROUP ------------------+
  *2 START FAST            >*2 CURRENT GROUP --------+        |
  *3 START DIAL             *3 UNIT ADDRESS -+       +        +
  *4 START                                   A108    A108     A108
  *5 SYSTEM DUMP                             XXXX    XXXX     XXXX
  *6 LOAD CLEAR -----+                       XXXX    XXXX     XXXX
  *7 LOAD NON CLEAR -+                       XXXX    XXXX     XXXX
                     |
                     +MT CONTROL-        --- DETAIL-2 STATUS ---
  PARMS=> 1           ==> 1                VM  MODE : AVM/EX
                     >*1 NL                EXA MODE : ENABLE
                      *2 SL                IPL EXEC : ENABLE
                      *3 NL-REWIND
                      *4 SL-REWIND        *ENTER  EXECUTE
                                          *PF3    GO TO BASIC FRAME
                                          *PF9    GO TO DETAIL-2

               CL-0       CPU-0 CHP-0        RUN


RA                                                          []-[]00
```

Figure 8: PROGRAM LOAD FRAME: DETAIL-1 screen

By making entries in this frame and pressing the ENTER key you can control the execution of an IPL.

Before completing this frame, check whether the correct firmware for operating Native BS2000 or VM2000 has been loaded by the SVP. Information on this is provided in the DETAIL-2 STATUS field.

DETAIL-2 STATUS In this position the current settings of the PROGRAM LOAD FRAME: DETAIL-2 are displayed.

important display

VM MODE:	Loaded firmware
NATIVE	for BS2000 operation
AVM/EX	for VM2000

If the setting is not correct, click on PF9 to correct the entry in PROGRAM LOAD FRAME: DETAIL-2. After you have made the correction and clicked on PF9, the setting is stored and you are returned to this frame (see page 32).

If the setting is correct, complete this frame and execute the IPL.

LOAD FUNCTION ==> The following function is selected after the corresponding number has been entered:

1	START AUTO	executes IPL: automatic startup
2	START FAST	executes IPL: fast startup
3	START DIAL	executes IPL: dialog startup
4	START	not used
5	SYSTEM DUMP	executes SLED
6	LOAD CLEAR	clears main memory before IPL
7	LOAD NON CLEAR	does not clear main memory before IPL

Functions 6 or 7 must be used for an IPL from a real or emulated tape device. In addition, function 3 must be selected at MT CONTROL (see page 31).

IPL DEVICE ==> By entering the corresponding number in this field you can specify from which device group an IPL is to be executed.

1	PRESET GROUP	The first device address in this column is the device from which an IPL is to be executed. The order and number were specified previously in (AU5) AUXILIARY FRAME: LOAD PRESET-1. If IPL is terminated normally, the device address list is transferred from the PRESET GROUP to the CURRENT GROUP. If the IPL is unsuccessful, the next device address from the PRESET GROUP is reloaded. If this loading is terminated normally, this device address heads the CURRENT GROUP.
2	CURRENT GROUP	The first device address in this column is the device from which the last IPL was executed. If the loading from this device is unsuccessful, the IPL is repeated with the next device address. If it is terminated normally, this address then heads the CURRENT GROUP
3	UNIT ADDRESS	A new device address from which the operating system is to be loaded can be entered here. If the IPL is terminated normally, this device address is put in the first position in the CURRENT GROUP. If the IPL is unsuccessful, the loading is not repeated.

PARMS => A maximum of 8 characters can be entered in this field. Their position and meaning are listed below:

Position 1	␣	loading BS2000
	1	loading VM2000
Position 2 - 5	**mn**	The mnemonic pair of an SKP console can be entered here if the standard consoles with the mnemonic pairs C2C3 and C4C5 are not available for the IPL.
Position 6 - 8		not used

MT CONTROL ==> IPL from tape:

1	NL	from current tape position
2	SL	skip label then load
3	NL-REWIND	rewind then load
4	SL-REWIND	rewind, skip label then load

Function 3 must be selected for an IPL of a real or emulated tape device.

Frame-specific functions

ENTER Executes IPL / SYSTEM DUMP

After making your entries in the mask and pressing the ENTER key, the following prompt will appear:

```
**********************************
*                                *
* ARE YOU SURE ? (ENTER Y OR N) N *
*                                *
**********************************
```

CAUTION!
The IPL must not be executed during system operation! If this instruction is not heeded, BS2000 will be aborted!

► Press the Y and ENTER keys to execute the IPL, or N and ENTER to cancel the procedure.

RETURN Swap to PROGRAM LOAD FRAME: BASIC (see page 27)

PF9 Swap to PROGRAM LOAD FRAME: DETAIL-2 (see next page).

4.4.2.2 (LD) PROGRAM LOAD FRAME: DETAIL-2

```
             ----- PROGRAM LOAD FRAME: DETAIL-2 -----     E90L01G

-VM MODE-                          -IPL EXECUTION-
  ==> 2                              ==> 1
  *1 NATIVE                         >*1 ENABLE
 >*2 AVM/EX                          *2 DISABLE









                                        *ENTER  EXECUTE
                                        *PF3    GO TO BASIC FRAME
                                        *PF9    GO TO DETAIL-1

               CL-0       CPU-0 CHP-0        RUN


RA                                                          []-[]00
```

Figure 9: PROGRAM LOAD FRAME: DETAIL-2 screen

By making an entry in this frame and pressing the ENTER key, you set the operating mode.

VM MODE ==> Selection of the firmware to be loaded from SVP

1	NATIVE	for BS2000 operation
2	AVM/EX	for VM2000

IPL EXECUTION ==> IPL execution

1	ENABLE	executes IPL
2	DISABLE	does not execute IPL

If there are changes to the VM MODE and `IPL EXECUTION => 2`, only the other firmware is loaded and no IPL is executed.

Frame-specific functions

ENTER Sets operating mode.

- ► After selecting the firmware to be loaded in the `VM MODE ==>` field and entering `2` in the `IPL EXECUTION ==>` field, press the ENTER key.

The following prompt appears on the screen:

```
**********************************
*                                *
* ARE YOU SURE ? (ENTER Y OR N) N *
*                                *
**********************************
```

CAUTION!
The operating mode must not be reset during system operation!
If this instruction is not heeded, BS2000 will be aborted!

- ► Press the Y key to reload the firmware, or the N key to cancel the procedure. Confirm your entry with the ENTER key.
- ► After reloading the firmware, click on the PF9 key to carry out IPL in PROGRAM LOAD FRAME: DETAIL-1.

RETURN Swap to PROGRAM LOAD FRAME: BASIC (see page 27)

PF9 Swap to PROGRAM LOAD FRAME: DETAIL-1 (see page 28) without saving the changes you have made.

4.4.3 (ST) STATUS DISPLAY FRAME

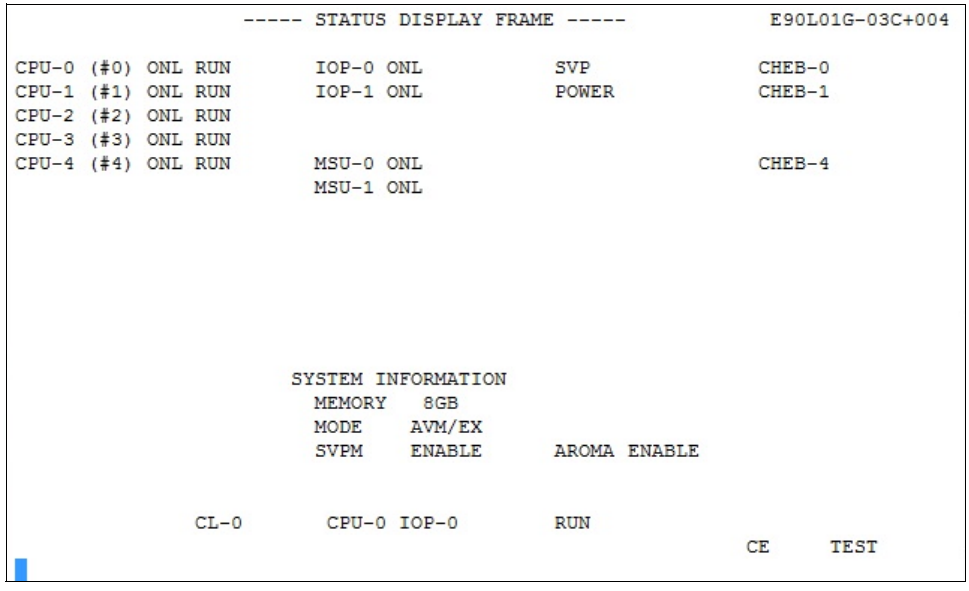


Figure 10: STATUS DISPLAY FRAME screen

This frame informs you about the current status of the server and its individual components (power on/off, online/offline, normal/maintenance state, etc.). Components which are not installed are not displayed. At most the following components are possible:

– CPU: `CPU-0` through `CPU-F`
– I/O processor: `IOP-0` through `IOP-3`
– Main Storage Unit: `MSU-0` through `MSU-3`
– Channel box: `CHEB-0` through `CHEB-F`

The important displays are the memory size, the addressing mode (`MODE EXA` or `AVM/EX`) and the availability of the SKP functionality (`SVPM ENABLE` display).

4.4.4 (MA) MANUAL OPERATION FRAME

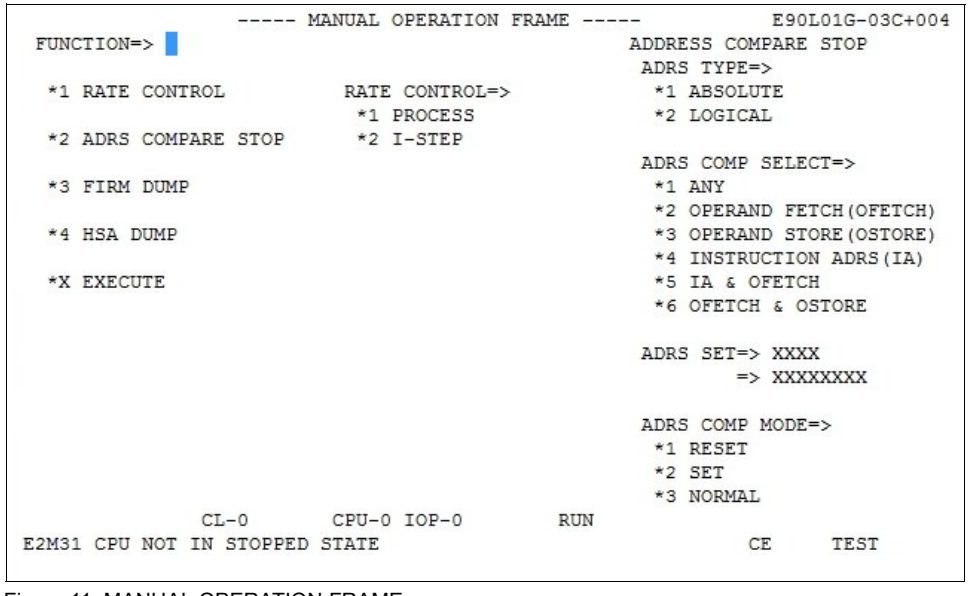


Figure 11: MANUAL OPERATION FRAME screen

By making an entry in this frame and pressing the ENTER key, you can perform various manual operations.

Instructions on this frame are only executed when the CPU has been stopped (see message in frame line 23). The CPU status is displayed in line 22.

- Selection of a CPU by clicking on PF16
- Stopping of the selected CPU (see (ML) MODE SELECTION FRAME page 24)

FUNCTION => The following function is executed after the corresponding character has been entered and the ENTER key has been pressed:

1	RATE CONTROL	defines program operation
2	ADRS COMPARE STOP	sets mode for compare address stop
3	3 FIRM DUMP	outputs a firmware dump to tape, MTC or an emulated tape device (for Customer Support only)
4	HSA DUMP	executes HSA dump (for Customer Support only) (HSA Hardware/Software Area)
X	EXECUTE	executes functions 1 - 4

The following table shows the additional entries required for each of the three main functions in other input fields:

	Input field					
Function	RATE CONTROL	UNIT ADRS	ADRS TYPE	ADRS COMP SELECT	ADRS SET	ADRS COMP MODE
1 RATE CONTROL	o	x	x	x	x	x
2 ADRS COMP STOP	x	x	o	o	o	o
3 FIRM DUMP	x	o	x	x	x	x
4 HSA DUMP	x	x	x	x	x	x

o: entry required
x: entry not possible

RATE CONTROL => defines program operation

1	PROCESS	continual program operation
2	I-STEP	step-by-step command execution

ADRS TYPE => Entries for address compare stop:

		entry under ADRS SET is
1	ABSOLUTE	absolute address
2	LOGICAL	a logical address

ADRS COMP SELECT => Address compare stop if compare stop address is same as

1	ANY	any address
2	OPERAND FETCH (OFETCH)	operand read address
3	OPERAND STORE (OSTORE)	operands write address
4	INSTRUCTION ADRS(IA)	instruction address
5	IA & OFETCH	instruction and operand read address
6	OFETCH & OSTORE	operand read and write address

UNIT ADRS => Device address for output of a firmware dump

ADRS SET => Compare stop address

XXXX	address space larger than 32 bits
XXXXXXXX	32-bit address

ADRS COMP MODE => Address compare stop mode

1	RESET	Switches off address compare stop and resets address compare stop conditions in the fields ADRS TYPE, ADRS COMP SELECT and ADRS SET
2	SET	Switches on address compare stop
3	NORMAL	Switches off address compare stop

4.4.5 (AD) ALTER/DISPLAY FRAME

```
                  ----- ALTER/DISPLAY FRAME ----          E90L01G
FUNCTION =>
 *A ALTER
 *D DISPLAY
FACILITY =>
 -- MEMORY --
 *L  LOGICAL
 *R  REAL
 *P  P-VIRTUAL
 *S  S-VIRTUAL
 *ABS   *KEY
 *V  A-VIRTUAL
 *I  H-VIRTUAL



ADRS=>
    =>

                                                      *PF9 CHANGE
                                                           FACILITY
             CL-0       CPU-0 IOP-0        RUN
E2B31 CPU-00 NOT IN STOPPED STATE                   CE     TEST
```

Figure 12: ALTER/DISPLAY FRAME screen

By making an entry in this frame and pressing the ENTER key, you can use this frame to display and change the contents of the main memory and the memory protect key.

Instructions on this frame are only executed when the CPU has been stopped (see message in frame line 23). The CPU status is displayed in line 22.

- ► Selection of a CPU by clicking on PF16
- ► Stopping of the selected CPU (see (ML) MODE SELECTION FRAME page 24)

FUNCTION => The following function is selected after the corresponding letter has been entered:

A	ALTER	change and modify memory contents
D	DISPLAY	display memory contents

FACILITY => Possible displays of memory areas with various addresses:

L	LOGICAL	logical storage address
R	REAL	real storage address
P	P-VIRTUAL	primary virtual storage address
S	S-VIRTUAL	secondary virtual storage address
ABS		absolute address
KEY		memory protect key
V	A-VIRTUAL	address space virtual address
I	H-VIRTUAL	basic address space virtual address

ADRS => Memory address

XXXX	address space larger than 32 bits
XXXXXXXX	32-bit address

Frame-specific functions

PF9 When you click on this button, the following subframe is displayed:

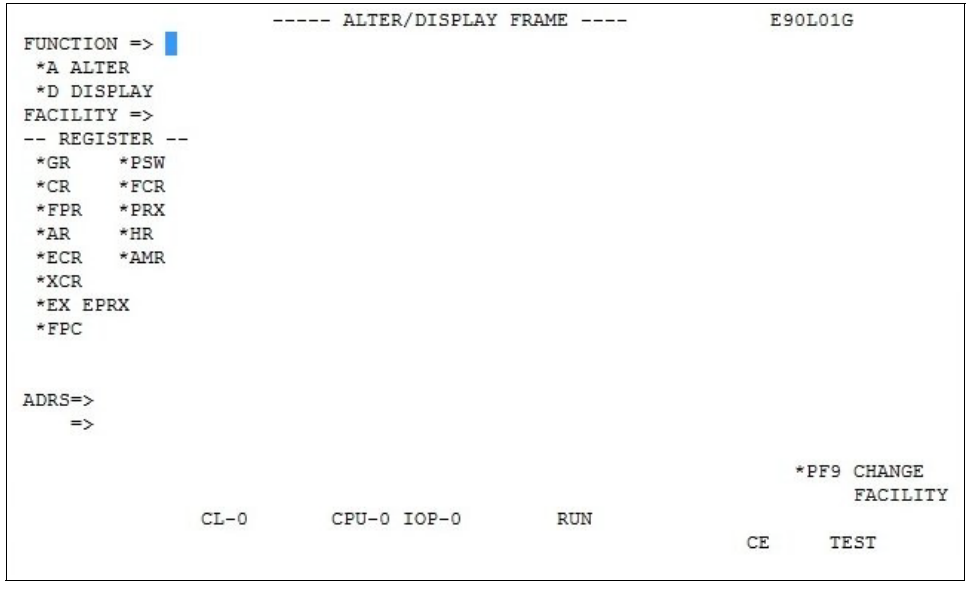


Figure 13: ALTER/DISPLAY FRAME screen

By making the appropriate entries and pressing the ENTER key, you can use this frame to change and display the contents of important CPU registers.

Instructions on this frame are only executed when the CPU has been stopped (see message in frame line 23). The CPU status is displayed in line 22.

- Selection of a CPU by clicking on PF16
- Stopping of the selected CPU (see (ML) MODE SELECTION FRAME page 24)

FUNCTION => The following function is selected after the corresponding letter has been entered:

A	ALTER	change and modify register contents
D	DISPLAY	display register contents

FACILITY => Possible displays of registers:

GR	General register
PSW	Program status word
CR	Control register
FCR	Feature control register
FPR	Floating-point register
PRX	Prefix register
AR	Access register
HR	Hyper register
ECR	Extended control register
AMR	Address modulation register
XCR	Extended control register
EX EPRX	Extended prefix register

Additional display, if IEEE Arithmetic Operation Mechanism is activated:

FPC	Floating point control register

ADRS => no input required

Frame-specific functions

PF9 returns to the frame for memory display

4.4.6 (ME) MESSAGE FRAME

```
                    ----- MESSAGE FRAME -----                E90L01G
NEWEST LINE = 0776
LINE ID  MESSAGE                                              MM/DD HH:MM:SS
0759 01  X2LA9 FUNCTION: ST                                   03/25 14:47:23
0760 01  X2SA9 SSU0                                          03/25 14:48:56
0761 01  E2SA1 COMMAND NOT FOUND                             03/25 14:48:56
0762 01  X2SA9 PF 8                                          03/25 14:49:14
0763 01  X2SA9 PF 3                                          03/25 14:50:30
0764 01  X2LA9 FUNCTION: MA                                 03/25 14:50:35
0765 01  E2M31 CPU NOT IN STOPPED STATE                      03/25 14:50:35
0766 01  X2MA9 PF 2                                          03/25 14:51:47
0767 01  E2MA2 UNSUPPORTED PF KEY                           03/25 14:51:47
0768 01  X2MA9 PF 3                                          03/25 14:51:56
0769 01  X2LA9 FUNCTION: AD                                 03/25 14:52:10
0770 01  E2B31 CPU-0 NOT IN STOPPED STATE                    03/25 14:52:11
0771 01  X2BA9 PF 9                                          03/25 14:53:48
0772 01  X2B00 COMMAND COMPLETED                            03/25 14:53:48
0773 01  X2BA9 PF 2                                          03/25 14:54:49
0774 01  E2BA2 UNSUPPORTED PF KEY                           03/25 14:54:49
0775 01  X2BA9 PF 3                                          03/25 14:55:15
0776 01  X2LA9 FUNCTION: ME                                 03/25 14:55:20
              CL-0       CPU-0 CHP-0        RUN


RA                                                        []-[]00
```

Figure 14: MESSAGE FRAME screen

All SVP messages and commands to the SVP are stored in a message file. They can be viewed in the MESSAGE FRAME.

Frame-specific functions

Page down	one page forwards, in the direction of the newer entries
Page up	one page backwards, in the direction of the older entries
PF11	one page to the right for the display of long messages
PF10	one page to the left

Entering a line command in line 24 permits you to display a certain entry in the uppermost line.

Example: `L 0700`

4.4.7 (CH) CH/SUBCH STATUS DISPLAY FRAME: CHANNEL

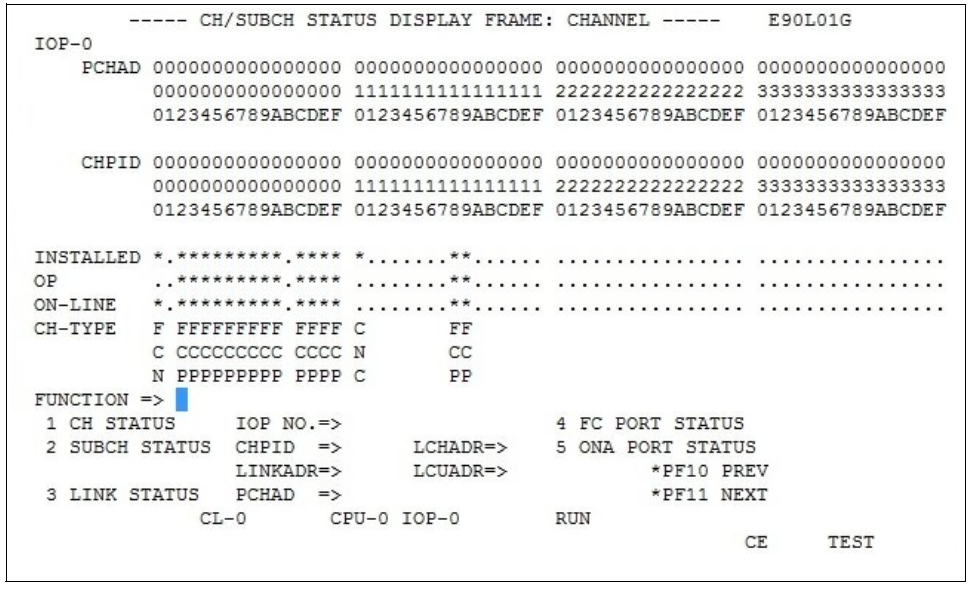


Figure 15: CH/SUBCH STATUS DISPLAY FRAME: CHANNEL screen

By making entries in the input fields and pressing the ENTER key, you display the status of the
I/O system. Further subframes are supplied in conjunction with FUNCTION 2 to 5.

FUNCTION => The following information is displayed on the screen after the corresponding number has been entered:

1	CH STATUS	channel status (additional input in `CHP NO` field)
2	SUBCH STATUS	subchannel status (additional input in the fields `CHPID` and `LINKADR`)
3	LINK STATUS	LINK status of a type-S channel (type-S channel not supported on SU /390)
4	FC PORT STATUS	Port status of a type-FC channel (additional input in `PCHAD` field)
5	ONA PORT STATUS	Port status of an ONA channel (Optical Network Adapter, not supported by BS2000)

IOP NO => channel processor
0 ... 7

CHPID => channel path number
000 ... 0FF

LCHADR => logical channel address
no input required

LINKADR => link address for type-S channel (not supported on SU /390)

LCUADR => logical control unit address
no input required

PCHAD => physical channel address
000 ... 0FF

Frame-specific functions

PF10 Display of channels with lower addresses.

PF11 Display of channels with higher addresses.

4.4.8 (AU) AUXILIARY FRAME: MENU

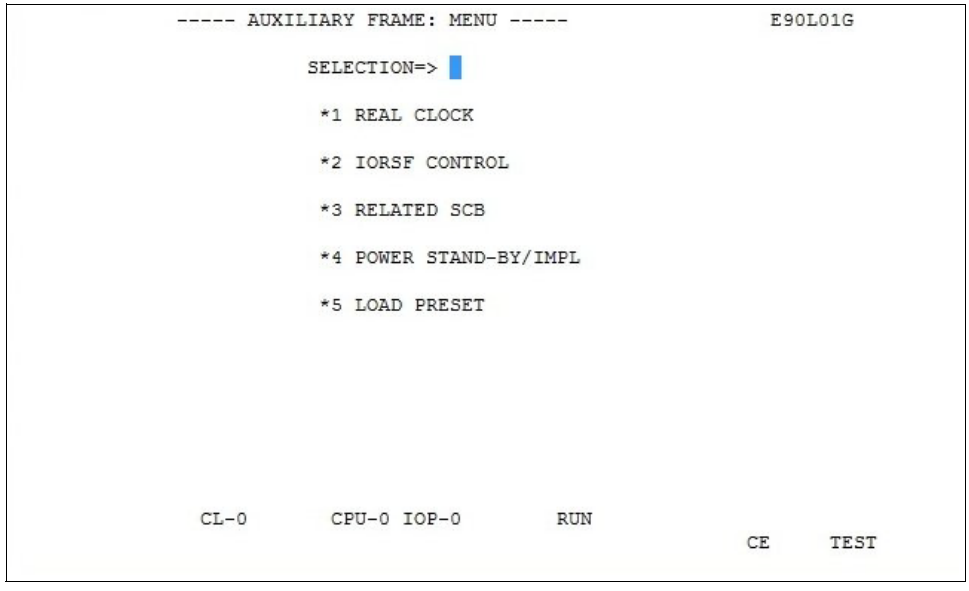


Figure 16: AUXILIARY FRAME: MENU screen

You can move to other frames by making entries in this menu frame and pressing the ENTER key.

SELECTION => The following subframes are displayed on the screen by entering the appropriate number:

1	REAL CLOCK	displaying/setting SVP clock	page 45
2	IORSF CONTROL	displaying/editing IORSF	page 46
3	RELATED SCB	memory size for related SCBs	page 48
4	POWER STAND-BY/IMPL	executing POWER STAND-BY or IMPL	page 49
5	LOAD PRESET	presetting LOAD FRAME	page 50

4.4.8.1 (AU1) AUXILIARY FRAME: REAL CLOCK

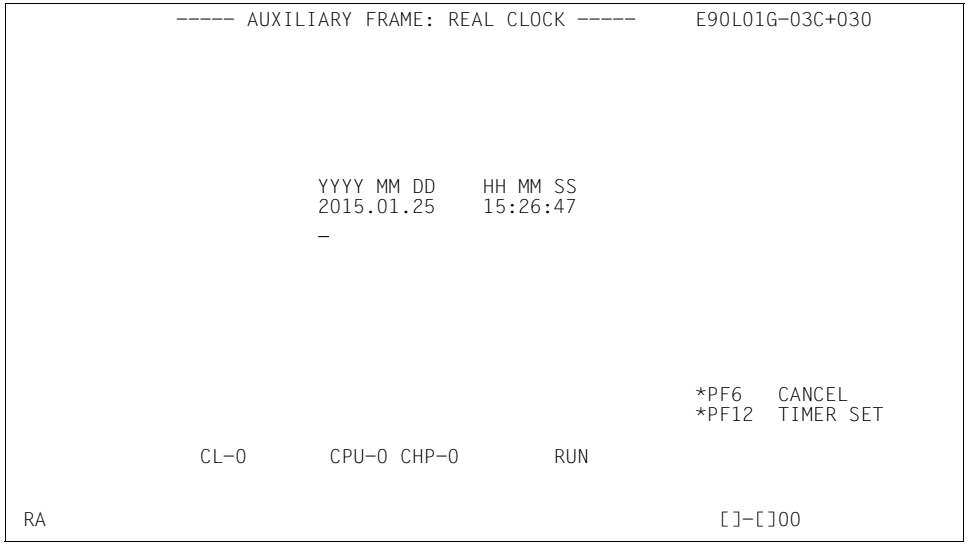


Figure 17: AUXILIARY FRAME: REAL CLOCK screen

When the screen is invoked, the current date and time of the SVP are displayed. Corrections can be entered in the line below. These corrections take effect when you click on PF12.

The SVP clock is synchronized by the MU (message in line 23: `SET TIME COMMAND COMPLETED`). The MU time is taken over by the SVP here.

As a consequence, an incorrect time specification in the MU has to be corrected in the SVP.
The administrator can set the local time in the MU in the SE Manager using the *System time* tab in the menu *Hardware* → *Units*[→ *<se server>*] *(SE<model>)* → *<mu-name> (MU)* → *Management* (see the "Operation and Administration" manual [7]).

Frame-specific functions

Can/Erase	Delete input
PF12	Corrections are carried out by the SVP

4.4.8.2 (AU2) AUXILIARY FRAME: IORSF CONTROL

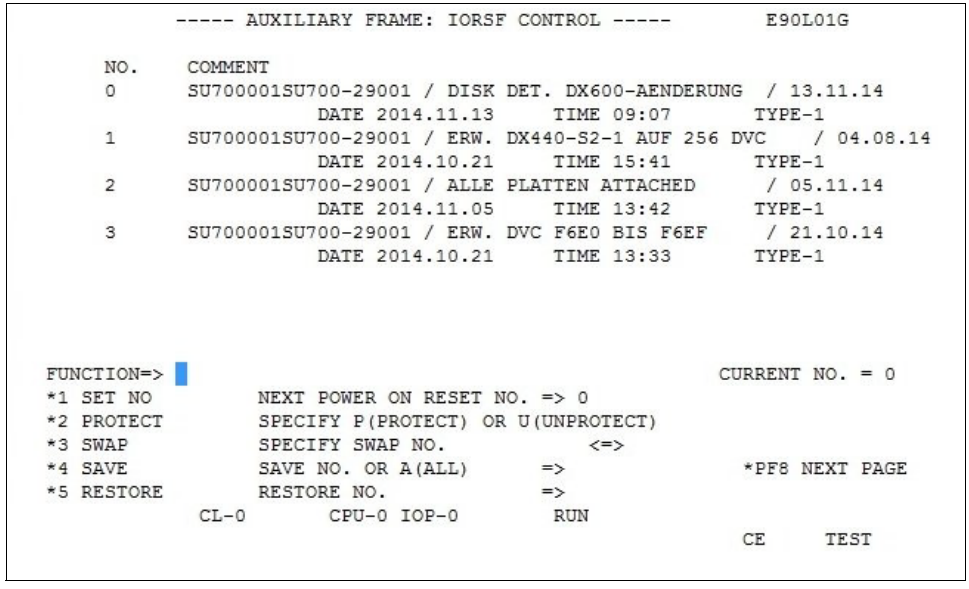


Figure 18: AUXILIARY FRAME: IORSF CONTROL screen

The IORSF files are displayed in this frame. The file number of the current IORSF is displayed in the `CURRENT NO. =` field.

When you select a function and press the ENTER key, parameters are requested in the other input fields. Once you have entered the parameters and pressed the ENTER key, the functions for the IORSF files are executed.

FUNCTION => The following function is selected after the corresponding number has been entered:

1	SET NO	selects an IORSF. Entry of the set number in the `NEXT POWER ON RESET NO. =>` field. For activation, an IMPL is required (see AU4 frame on page 49).
2	PROTECT	engages/disengages IORSF protection from being overwritten: After selecting function 2, enter `P` (Protect) or `U` (Unprotect) before the appropriate number
3	SWAP	swaps two IORSFs: enter the numbers in the `SPECIFY SWAP NO.␣␣<=>␣␣` fields.

4	SAVE	saves one or all IORSFs: enter the number or the value A (All) in the field SAVE NO. OR A(ALL) ==> ␣
5	RESTORE	restores an IORSF: enter the numbers in the field RESTORE NO. ==> ␣

NEXT POWER ON RESET NO. => Enter the number of the IORSF file which is to be activated after the next IMPL. You can only make an entry if you select function 1 beforehand.

SPECIFY SWAP NO.␣␣<=>␣␣ Enter the numbers of two IORSF files which are to be swapped. You can only make entries if you select function 3 beforehand.

SAVE NO. OR A(ALL) ==> ␣ Specify the number of the IORSF file which is to be saved. Specifying "A" saves all IORSF files. You can only make entries if you select function 4 beforehand.

RESTORE NO. ==> ␣ Specify the number of the IORSF file which is to be restored. You can only make entries if you select function 5 beforehand.

Frame-specific functions

Page down	Sets 4 to 7 are displayed
Page up	Sets 0 to 3 are displayed
PF8	The next page is displayed.

4.4.8.3 (AU3) AUXILIARY FRAME: RELATED SCB'S

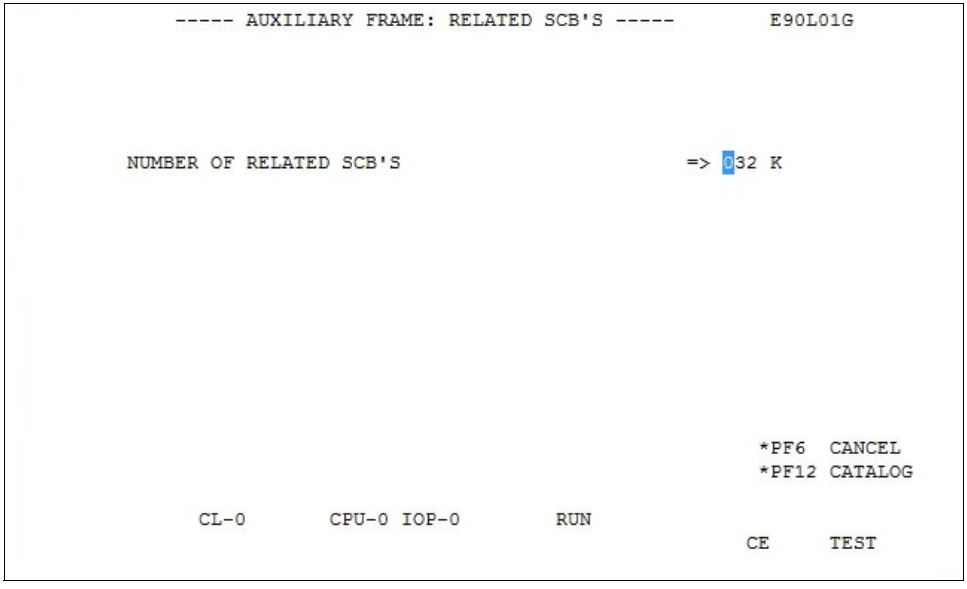


Figure 19: AUXILIARY FRAME: RELATED SCB'S screen

Changes in this frame are reserved for the Customer Support.

4.4.8.4 (AU4) AUXILIARY FRAME: POWER STAND-BY/IMPL

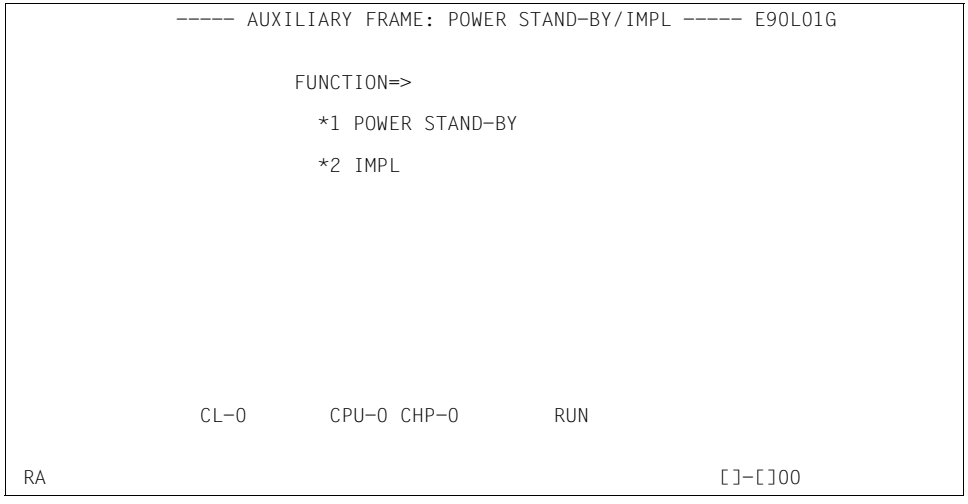


Figure 20: AUXILIARY FRAME: POWER STAND-BY/IMPL screen

By making an entry in this frame and pressing the ENTER key, you can switch the server off or re-initialize it.

FUNCTION => The following function is selected after the corresponding number has been entered:

1	POWER STAND-BY	switches the Server Unit off; order: first devices connected to the PCI (Power Control Interface), then the servers (for further information on this see "Switching the SE700 / SE500 on and off" in the Basic Operating Manual [1])
2	IMPL	executes IMPL

After you have selected a function and pressed the ENTER key, the following prompt will appear:

```
**********************************
*                                *
* ARE YOU SURE ? (ENTER Y OR N) N *
*                                *
**********************************
```

CAUTION!
POWER STAND-BY or IMPL may not be executed during system operation! If this instruction is not heeded, BS2000 will be aborted!

► Press the Y and ENTER keys to switch off the system or to execute an IMPL, or the N and ENTER keys to cancel the procedure.

4.4.8.5 (AU5) AUXILIARY FRAME: LOAD PRESET1

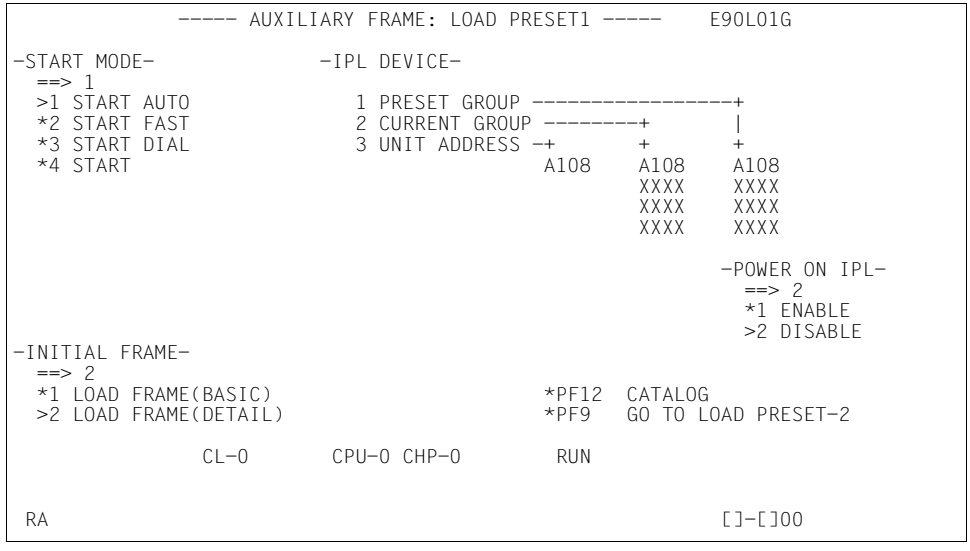


Figure 21: AUXILIARY FRAME: LOAD PRESET1 screen

You can predefine the execution of an IPL by making an entry in this frame and clicking on PF12.

START MODE ==> Predefine the loading mode by entering the appropriate number and comment for the BS2000 loading mode:

1	START **AUTO**	for automatic startup
2	START **FAST**	for fast startup
3	START **DIAL**	for dialog startup
4	START	not used

IPL DEVICE Entries in this field specify from which device an IPL should be executed.

1 PRESET GROUP Up to four unit addresses can be entered in the input field for PRESET GROUP. The operating system is loaded from the first device (IPL). In the case of an error, the IPL is executed by the next device listed.

POWER ON IPL ==> Here you determine the behavior of the SVP after switching on.

1	ENABLE	automatically executes IPL after IMPL
2	DISABLE	does not execute IPL, i.e. IPL must be triggered manually using PROGRAM LOAD FRAME: BASIC or PROGRAM LOAD FRAME: DETAIL-1

INITIAL FRAME ==> Here you can set the display form of the PROGRAM LOAD FRAME.

1	LOAD FRAME (BASIC)	PROGRAM LOAD FRAME: BASIC (see page 27)
2	LOAD FRAME (DETAIL)	PROGRAM LOAD FRAME: DETAIL-1 (see page 28)

Frame-specific functions

PF12 Storing settings

PF9 switches to the LOAD PRESET2 screen

```
              ----- AUXILIARY FRAME: LOAD PRESET2 -----   E90L01G

-VM MODE-
  ==> 2
  *1 NATIVE
  >2 AVM/EX




-START IPL NO-
  ==> 1
  >1 FIX(1)
  *2 CURRENT


                                              *PF12  CATALOG
                                              *PF9   GO TO LOAD PRESET-1

               CL-0       CPU-0 CHP-0         RUN

                 0
 RA                                                        []-[]00
```

Figure 22: AUXILIARY FRAME: LOAD PRESET2 screen

You can set the operation mode by making an entry in this frame and clicking on PF12.

VM MODE ==> Selection of the firmware to be loaded from SVP

1	NATIVE	for BS2000 operation
2	AVM/EX	for VM2000

START IPL NO ==> Selection of the IPL Start Mode number

1	FIX(1)	Start Mode number 1 (automatic start)
2	CURRENT	not used on the Server Unit

Frame-specific functions

PF12 Storing settings

PF9 switches to the LOAD PRESET1 screen

4.4.9 (MF) MSF FRAME

```
          ----- MSF FRAME: FLAG CODE LOG DISPLAY -----     E90L01G

INITIALIZED  2010.03.11 15:43:23
LAST SEQ  0538                                                NODE:SELF
                                                                   1/14
  SEQ   UNIT          FLAG CODE      DATE    TIME   CT  KIND  LINK INFORMATION
*0538   ICC     A9 7M12 3C 006D2H00  03.16 16:50:42     ATTN       HC27 SP4
                AW 026D 0C 006D0H00
*0537   ICC     A9 7M12 3C 00692H00  03.16 16:50:34     ATTN       HC26 SP3
                AW 0269 0C 00690H00
*0536   ICC     A9 7M12 3C 002D2H00  03.16 16:50:28     ATTN       HC25 SP2
                AW 022D 0C 002D0H00
*0535   ICC     A9 7MC4 3C 00642H00  03.16 16:50:18     ATTN       HC24 SP1
                AW XX64 0C 00640H00
*0534   ICC     A9 7MC1 3C 00642H00  03.16 16:50:12     ATTN       HC23
                AW XX64 0C 00640H00
*0533   ICC     A9 7M12 3C 00292H00  03.16 16:42:39     ATTN       HC22
                AW 0229 0C 00290H00
*0532   ICC     A9 7M12 3C 006D2H00  03.16 16:42:33     ATTN       HC21
                AW 026D 0C 006D0H00
                                    PF1:HELP  PF7:PREV PAGE  PF8:NEXT PAGE
              CL-0       CPU-0 CHP-0        RUN

                                                 FLAG CODE = A97M123C 006D2H00
RA                                                            []-[]00
```

Figure 23: MSF FRAME: FLAG CODE LOG DISPLAY screen

The SVP logs all FLAG codes. The FLAG codes are displayed when this frame is invoked. As from a certain priority, the FLAG codes are displayed in frame line 24.

Frame-specific functions

PF1	help function
Page up	one page backwards, in the direction of the newer entries
Page down	one page forwards, in the direction of the older entries

This frame is intended for use by Customer Support.
You only reach FLAG CODE LOG DISPLAY via a subframe (call FR MF with `Function -> L1`) and then <L1>.

4.4.10 (PA) PERFORMANCE ANALYZER FRAME

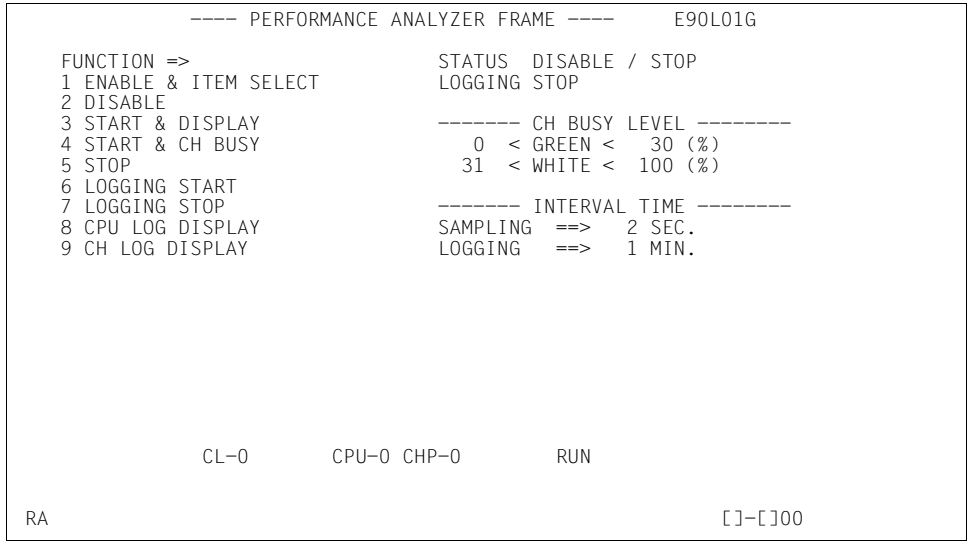


Figure 24: PERFORMANCE ANALYZER FRAME screen

The PA frame is not intended for use.

4.5 Examples of SVP operation

4.5.1 Selecting IORSF

The steps described below are required to load a specific IORSF the next time IMPL takes place or the next time the system is switched on.

IORSF with Level 2 is selected in the example below.

Requirement

You are logged in to the SE Manager and have opened the SVP console.

An operator account has access to the SVP console when the individual right permits SVP access.

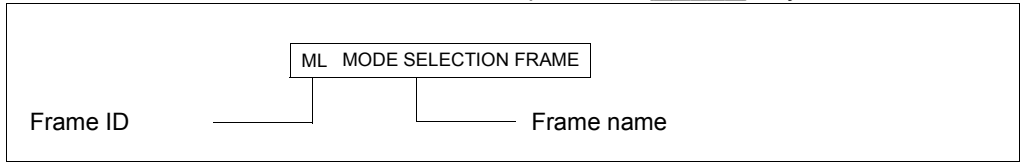
The MODE SELECTION FRAME is displayed on the screen:

```
                 ----- MODE SELECTION FRAME -----     E90L01G
FUNCTION=>

- EXECUTION -             - SELECTION -              CPU SELECT=>
                                                     - 0 1 2 3 4       -
*1 CPU STOP              *LD PROGRAM LOAD           -                 -
                         *ST STATUS DISPLAY
*2 INTERRUPT             *MA MANUAL OPERATION       STOP/START MODE=>
                         *AD ALTER/DISPLAY
*3 TOD ENABLE            *ME MESSAGE                 *1 ALL CPU
                         *CH CH/SUBCH STATUS         >2 TARGET CPU
*4 SYSTEM RESET          *AU AUXILIARY
                         *MF MSF
*5 SYSTEM RESET CLEAR    *PA PERFORMANCE ANALYZER

*6 STORE STATUS

*7 RESTART



              CL-0       CPU-0 CHP-0        RUN


RA                                                        []-[]00
```

Figure 25: MODE SELECTION FRAME screen

Invoke the AUXILIARY FRAME: MENU screen

► Enter AU in the FUNCTION=> field and then press the ENTER key,



or

► enter the FR AU command in line 24 and press the ENTER key.

The AUXILIARY FRAME: MENU screen is displayed:

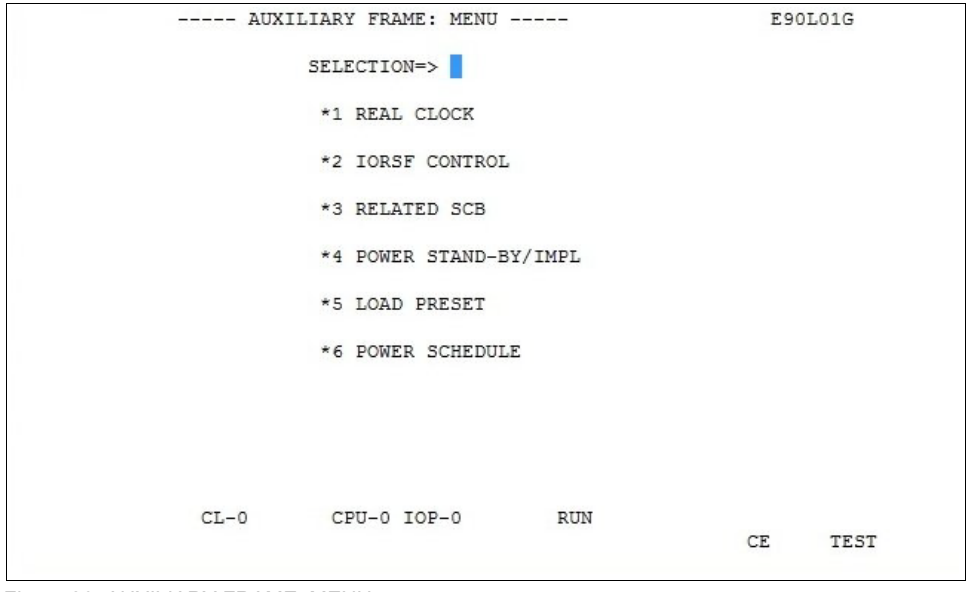


Figure 26: AUXILIARY FRAME: MENU screen

Invoking IORSF Control Frame

► Enter `2` in the SELECTION=> field. Press the ENTER key.

> If the frame code `AU2` is entered in the MODE SELECTION FRAME or the `FR AU2` command is entered in line 24, the following frame is displayed immediately.

The AUXILIARY FRAME: IORSF CONTROL screen is displayed:

```
          ----- AUXILIARY FRAME: IORSF CONTROL -----        E90L01G

      NO.    COMMENT
      0      SU700001SU700-29001 / DISK DET. DX600-AENDERUNG  / 13.11.14
                    DATE 2014.11.13     TIME 09:07       TYPE-1
      1      SU700001SU700-29001 / ERW. DX440-S2-1 AUF 256 DVC    / 04.08.14
                    DATE 2014.10.21     TIME 15:41       TYPE-1
      2      SU700001SU700-29001 / ALLE PLATTEN ATTACHED      / 05.11.14
                    DATE 2014.11.05     TIME 13:42       TYPE-1
      3      SU700001SU700-29001 / ERW. DVC F6E0 BIS F6EF     / 21.10.14
                    DATE 2014.10.21     TIME 13:33       TYPE-1



FUNCTION=>                                              CURRENT NO. = 0
*1 SET NO          NEXT POWER ON RESET NO. => 0
*2 PROTECT         SPECIFY P(PROTECT) OR U(UNPROTECT)
*3 SWAP            SPECIFY SWAP NO.            <=>
*4 SAVE            SAVE NO. OR A(ALL)       =>              *PF8 NEXT PAGE
*5 RESTORE         RESTORE NO.              =>
             CL-0       CPU-0 IOP-0        RUN
                                                          CE     TEST
```

Figure 27: AUXILIARY FRAME: IORSF CONTROL screen

The first four IORSF are displayed in the upper portion of the screen. You can scroll to the next four IORSFs with the Page down key, and back with the Page up key.

In this example the IORSF with the number 0 is active.

Display: `CURRENT NO. = 0`

Now you want to activate the IORSF with the number 2:

► Enter `1` in the FUNCTION=> field. Press the ENTER key.

► For our example enter `2` in the `NEXT POWER ON RESET NO` field and press the ENTER key.

4.5.2 Activating IORSF

The set IORSF must be activated with an IMPL:

Requirement

You are in the AUXILIARY FRAME: IORSF CONTROL.

- ► Click on RETURN to switch back to the AUXILIARY FRAME: MENU.
- ► Enter 4 in the SELECTION=> field. Press the ENTER key.

  The AUXILIARY FRAME: POWER STAND-BY/IMPL screen is displayed:

```
                 ----- AUXILIARY FRAME: POWER STAND-BY/IMPL ----- E90L01G

                             FUNCTION=>  2

                               *1 POWER STAND-BY

                               *2 IMPL









                    CL-0       CPU-0 CHP-0        RUN


 RA                                                                    []-[]00
```

Figure 28: AUXILIARY FRAME: POWER STAND-BY/IMPL screen

- ► Enter 2 in the FUNCTION=> field to execute an IMPL. Press the ENTER key.

  The following prompt appears on the screen:

```
***********************************
*                                 *
* ARE YOU SURE ? (ENTER Y OR N) N *
*                                 *
***********************************
```

CAUTION!
The IMPL must not be executed during system operation! If this instruction is not heeded, BS2000 will be aborted!

- ► Press the Y key to execute the IMPL or the Y key to cancel the procedure. Confirm your entry with the ENTER key.

4.5.3 Setting up PROGRAM LOAD FRAME PRESET1

In this example, you specify:

- LOAD function 1 with the name AUTO (AUTO=Automatic Startup) for a POWER ON IPL
- Device number of the IPL device to be used for a POWER ON IPL (currently A108)
- Automatic IPL after a POWER ON
- The LOAD FRAME should always be displayed as PROGRAM LOAD FRAME: DETAIL-1.

Requirement

You have opened the SVP window and set up the connection to the SVP console.

The MODE SELECTION FRAME is displayed on the screen (see page 55).

Invoke the AUXILIARY FRAME: LOAD PRESET1 screen

► Enter `AU` in the FUNCTION=> field and then press the ENTER key,

or

► enter the `FR AU` command in line 24 and press the ENTER key.

The AUXILIARY FRAME: MENU screen is displayed (see page 56).

► Enter `5` in the SELECTION=> field. Press the ENTER key.

The AUXILIARY FRAME: LOAD PRESET1 screen is displayed:

```
          ----- AUXILIARY FRAME: LOAD PRESET1 -----   E90L01G

-START MODE-              -IPL DEVICE-
  ==> 1
  >1 START AUTO              1 PRESET GROUP ------------------+
  *2 START FAST              2 CURRENT GROUP --------+        |
  *3 START DIAL              3 UNIT ADDRESS -+       +        +
  *4 START                                   A108    A108     A108
                                                     XXXX     XXXX
                                                     XXXX     XXXX
                                                     XXXX     XXXX

                                                            -POWER ON IPL-
                                                              ==> 1
                                                              *1 ENABLE
                                                              >2 DISABLE
-INITIAL FRAME-
  ==> 2
  *1 LOAD FRAME(BASIC)                        *PF12  CATALOG
  >2 LOAD FRAME(DETAIL)                       *PF9   GO TO LOAD PRESET-2

               CL-0       CPU-0 CHP-0        RUN


 RA                                                          []-[]00
```

Figure 29: AUXILIARY FRAME: LOAD PRESET1 screen

You can reach this screen directly from the MODE SELECTION FRAME by entering the frame code `AU5` in the `FUNCTION=>` field or the command `FR AU5` in line 24 and pressing the ENTER key.

START MODE ==> Enter `1` for automatic start of BS2000

IPL DEVICE

PRESET GROUP A unit address from which the operating system is loaded (IPL) must be entered in the input field for `PRESET GROUP`. A maximum of three further addresses can be entered. Entry in this example: `A108`.

POWER ON IPL ==> Enter `1` for automatic IPL after POWER ON

INITIAL FRAME ==> Enter `2` for a detailed display of the LOAD FRAME

Store parameters

► Click on PF12

The values entered are saved and thus made known to the SVP. These settings are accessed for each IPL.

4.5.4 Setting up PROGRAM LOAD FRAME PRESET2

In the PROGRAM LOAD FRAME PRESET2 you specify which operating mode is to be set after the server is switched on.

The following are specified in the example below:

- VM2000 operating mode
- Automatic startup of the operating system

Requirement

You are in the AUXILIARY FRAME: LOAD PRESET1.

Invoke the AUXILIARY FRAME: LOAD PRESET2 screen

► Click on PF9.

The AUXILIARY FRAME: LOAD PRESET2 screen is displayed:

```
              ----- AUXILIARY FRAME: LOAD PRESET2 -----  E90L01G

-VM MODE-
  ==> 2
  >1 NATIVE
  *2 AVM/EX




-START IPL NO-
  ==> 1
  >1 FIX(1)
  *2 CURRENT


                                              *PF12  CATALOG
                                              *PF9   GO TO LOAD PRESET-1

               CL-0       CPU-0 CHP-0         RUN


 RA                                                          []-[]00
```

Figure 30: AUXILIARY FRAME: LOAD PRESET2 screen

VM MODE ==> Enter 2 for VM2000 operation

START IPL NO ==> Always enter 1 for automatic startup

Store parameters

► Click on PF12

The values entered are saved and thus made known to the SVP. These settings are accessed for each IPL.

4.5.5 Executing IPL in PROGRAM LOAD FRAME: DETAIL-1

The IPL can be executed manually according to the setting using PROGRAM LOAD FRAME DETAIL-1.

The following are specified in the example below:

- loading VM2000
- dialog startup
- IPL device is specified manually by the entry of the unit address (here: loading the VM2000 from a device with the unit address A108)

Requirement

You are in the AUXILIARY FRAME: LOAD PRESET2 screen.

Invoke the PROGRAM LOAD FRAME: DETAIL-1 screen

► Click on ModSel to return to the MODE SELECTION FRAME.

► Enter the frame code `LD` and press the ENTER key.
Or enter the `FR LD` command in line 24 and press the ENTER key.

After entering `LD` or `FR LD` in the MODE SELECTION FRAME, depending on the INITIAL FRAME setting in the AUXILIARY FRAME: LOAD PRESET1 screen (see page 60) one of the following screens is displayed:
– PROGRAM LOAD FRAME: DETAIL-1 screen
– PROGRAM LOAD FRAME: BASIC screen

In the example the PROGRAM LOAD FRAME: DETAIL-1 is displayed:

```
             ----- PROGRAM LOAD FRAME: DETAIL-1 -----   E90L01G

-LOAD FUNCTION-           -IPL DEVICE-
  ==>                       ==> 2
  *1 START AUTO             *1 PRESET GROUP ------------------+
  *2 START FAST            >*2 CURRENT GROUP --------+        |
  *3 START DIAL             *3 UNIT ADDRESS -+       +        +
  *4 START                                   A108     A108     A108
  *5 SYSTEM DUMP                                      XXXX     XXXX
  *6 LOAD CLEAR -----+                                XXXX     XXXX
  *7 LOAD NON CLEAR -+                                XXXX     XXXX
                     |
                     +MT CONTROL-         --- DETAIL-2 STATUS ---
  PARMS=>             ==> 1                 VM  MODE : NATIVE
                     >*1 NL                 EXA MODE : ENABLE
                      *2 SL                 IPL EXEC : ENABLE
                      *3 NL-REWIND
                      *4 SL-REWIND         *ENTER  EXECUTE
                                           *PF3    GO TO BASIC FRAME
                                           *PF9    GO TO DETAIL-2

               CL-0       CPU-0 CHP-0        RUN


RA                                                          []-[]00
```

Figure 31: PROGRAM LOAD FRAME: DETAIL-1 screen

Before completing this frame, check whether the correct firmware for operating Native BS2000 or VM2000 has been loaded by the SVP. Information on this is provided in the DETAIL-2 STATUS field.

DETAIL-2 STATUS The settings in DETAIL-2 FRAME are displayed here.

Check the settings. If the settings are correct, complete this frame and execute the Initial Program Load by pressing the ENTER key.

If the settings are not correct, correct them in DETAIL-2 FRAME (see below).

In our example `VM MODE: NATIVE`, i.e. the firmware for BS2000 operation, is loaded. This setting must be changed in DETAIL-2 FRAME for this example.

Swap to PROGRAM LOAD FRAME: DETAIL-2

For this example, go to the section “Setting operating mode via PROGRAM LOAD FRAME: DETAIL-2” on page 66 and continue there.

If the DETAIL-2 STATUS is correct, fill in the entry fields as follows:

```
             ----- PROGRAM LOAD FRAME: DETAIL-1 -----  E90L01G

-LOAD FUNCTION-           -IPL DEVICE-
  ==> 3                     ==> 3
  *1 START AUTO             *1 PRESET GROUP ------------------+
  *2 START FAST            >*2 CURRENT GROUP --------+        |
  *3 START DIAL             *3 UNIT ADDRESS -+       +        +
  *4 START                                   A108     A108     A108
  *5 SYSTEM DUMP                                      XXXX     XXXX
  *6 LOAD CLEAR -----+                                XXXX     XXXX
  *7 LOAD NON CLEAR -+                                XXXX     XXXX
                     |
                     +MT CONTROL-         --- DETAIL-2 STATUS ---
  PARMS=> 1           ==> 1                 VM  MODE : AVM/EX
                     >*1 NL                 EXA MODE : ENABLE
                      *2 SL                 IPL EXEC : ENABLE
                      *3 NL-REWIND
                      *4 SL-REWIND         *ENTER  EXECUTE
                                           *PF3    GO TO BASIC FRAME
                                           *PF9    GO TO DETAIL-2

               CL-0       CPU-0 CHP-0        RUN


RA                                                          []-[]00
```

Figure 32: PROGRAM LOAD FRAME: DETAIL-1 screen

LOAD FUNCTION ==> Enter `3` for a dialog start

IPL DEVICE ==> Enter `3` for entry of a device address

UNIT ADDRESS The device address of the load device can be entered in this field

In this example, the previous IPL was executed successfully from the current device with device address `A108`. Thus the desired address is already in the `UNIT ADDRESS` field. It was also entered in the `CURRENT GROUP` field by the SVP. Entering a `2` in the `IPL DEVICE` field loads the operating system from the desired device.

PARMS => Enter `1` in the first position of the field to load VM2000

MT CONTROL ==> `1` is the default. This parameter is only important for loading from tape.

executes IPL

► Press the [ENTER] key after you have checked all the settings.

The following prompt appears on the screen:

```
**********************************
*                                *
* ARE YOU SURE ? (ENTER Y OR N) N *
*                                *
**********************************
```

CAUTION!
The IPL must not be executed during system operation!
If this instruction is not heeded, BS2000 will be aborted!

► Press the [Y] key to execute the IPL, or the [N] key to cancel the procedure. Confirm your entry with the [ENTER] key.

4.5.6 Setting operating mode via PROGRAM LOAD FRAME: DETAIL-2

The operating mode can be set anew according to the setting using PROGRAM LOAD FRAME: DETAIL-2. This selects the appropriate firmware for running BS2000 or VM2000.

The following are specified in the example below:

- VM2000 operating mode
- executing IPL after reloading the firmware

Requirement

You are in the PROGRAM LOAD FRAME: DETAIL-1 screen.

Invoke the PROGRAM LOAD FRAME: DETAIL-2 screen

► Click on PF9

The PROGRAM LOAD FRAME: DETAIL-2 screen is displayed:

```
          ----- PROGRAM LOAD FRAME: DETAIL-2 -----  E90L01G

-VM MODE-                          -IPL EXECUTION-
  ==> 2                              ==> 1
 >*1 NATIVE                         >*1 ENABLE
  *2 AVM/EX                          *2 DISABLE









                                     *ENTER  EXECUTE
                                     *PF3    GO TO BASIC FRAME
                                     *PF9    GO TO DETAIL-1

            CL-0       CPU-0 CHP-0        RUN


RA                                                      []-[]00
```

Figure 33: PROGRAM LOAD FRAME: DETAIL-2 screen

VM MODE ==> Enter 2 for VM2000 operation

IPL EXECUTION ==> Enter 1 for executing IPL

Storing settings

► After you have checked all the settings, click on PF9 to store them and to switch to PROGRAM LOAD FRAME: DETAIL-1.

The new setting is displayed under VM MODE: in the DETAIL-2 STATUS field. VM MODE: AVM/EX is now displayed. The firmware is relocated before the IPL is executed.

By filling PROGRAM LOAD FRAME: DETAIL-1 and pressing the ENTER you can execute the IPL (see page 64).

Make sure you fill in the PARMS field correctly.

5 HNC (High Speed Net Connect)

The High Speed Network Connect (HNC for short) connects the Server Unit /390 to the LAN. Furthermore, as net client the HNC permits access to the Net-Storage. The HNC is managed using the SE Manager.

The internal disks, power supply units, and fans are redundant in design and can be replaced during ongoing operation.

The rack console serves as a monitor for the Management Unit and consequently as a local access administrative and operating functions of the SE server. When necessary (in the event of maintenance), the rack console can also be attached to the HNC using the KVM switch.

The HNC software is preinstalled ex works.

HNC redundancy is possible as an option. Up to four HNCs can be integrated.

Detailed information on operating the HNC is provided in the "Operation and Administration" manual [7].

Detailed information on the various hardware components and interfaces of the HNC is provided in the data sheet "FUJITSU Server BS2000 SE Series".
See the product site for the relevant server at *http://www.fujitsu.com/de*:

- Go to *Products* → *Servers* → *BS2000* → FUJITSU Server *BS2000* and select SE700 or SE500.

With the release of basic software version 6.2A, a new HNC hardware generation has been introduced as well: HNC M2. Any differences to HNC M1 are described in this manual. In all other cases, this manual only refers to HNC, irrespective of the hardware version M<x>.

5.1 Front of the HNC

Figure 34: HNC M1 - front

Bild 35: HNC M2 - front

Indicators on the front panel of HNC M1

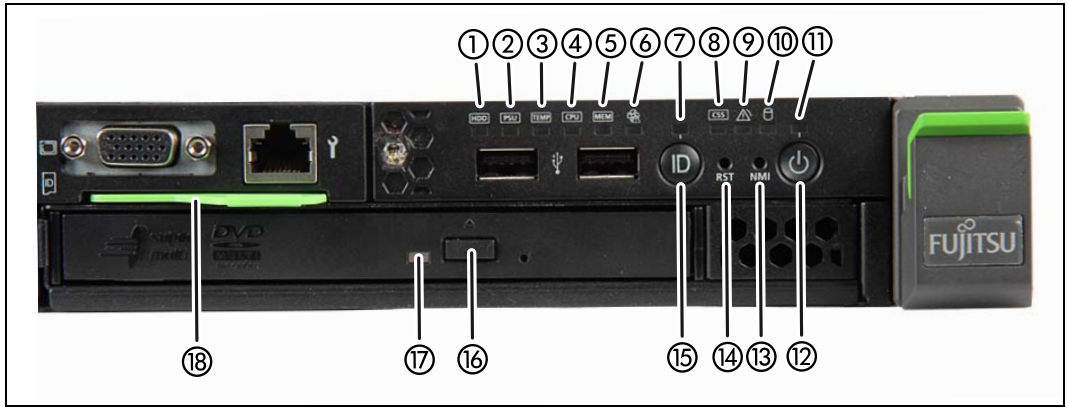


Figure 36: HNC M1 (front panel)

1	HDD/SDD error indicator	10	HDD/SSD activity indicator
2	PSU fault indicator	11	Status indicator
3	Temperature fault indicator	12	On/Off button
4	CPU fault indicator (notify Customer Support)	13	NMI button (for Customer Support only)
5	Storage fault indicator (notify Customer Support)	14	Reset button (for Customer Support only)
6	Fan fault indicator (notify Customer Support)	15	ID button
7	ID indicator	16	Open/close optical drive

8	CSS indicator (notify Customer Support)	17	Optical drive activity indicator
9	Global error indicator (notify Customer Support)	18	ID card (green)

Indicators on the front panel of HNC M2

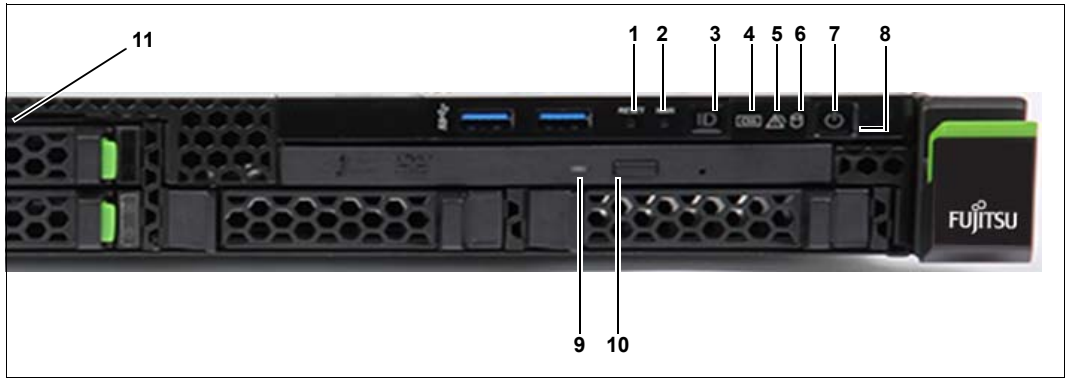


Bild 37: HNC M2 (front panel)

1	Reset button (for Customer Support only)
2	NMI button (for Customer Support only)
3	ID button / ID indicator
4	CSS indicator (orange); notify Customer Support
5	Global error indicator (orange); notify Customer Support
6	HDD/SSD activity indicator
7	On/Off button / Status indicator
8	Status indicator (power cable connected); next to the On/Off switch
9	Optical drive activity indicator
10	Open/close optical drive
11	ID card (green); further left, above HDD module

Optical drive and USB interfaces

The DVD-RW drive is used by Customer Support to install and update the HNC software.

Use of the USB interfaces is reserved for Customer Support.

Controls

ID Identification (ID) button

Lights up (blue) on the front and on the rear of the HNC when the ID button is pressed. The two ID indicators are synchronized.

On/Off button

When the HNC is switched off, it is switched on again by pressing the On/Off button once.

When the HNC in is in operation, it is switched off by pressing the On/Off button once.

CAUTION!
Possible loss of data!

The On/Off switch does not disconnect the server from the voltage grid. To disconnect from the mains completely, remove the power plugs.

RST or **RESET** Reset button

Pressing the Reset button reboots the HNC.

CAUTION!
Possible loss of data!

NMI NMI button

CAUTION!
Do not press! Possible loss of data! The NMI button may only be used by Customer Support.

Indicators on the operating panel

Power-on indicator (three colors)

Lights up orange when the HNC is switched off but line voltage is present.

Lights up yellow during power up delay.

If the HNC is switched off and then immediately switched on again, it is only restarted after a power up delay. This prevents a current overload, for example.

Lights up green when the HNC is switched on.

Flashes green when the HNC has been switched on and is in standby mode or in sleep mode.

Hard disk activity indicator (green)

Flashes green when an internal hard disk drive is being accessed.

CSS

CSS and Global error indicators (yellow/orange)

Generally, the states of these indicators have the following meanings:

- **Do not light up** when the HNC is OK.
- If the event is still acute after a power failure, the indicator is activated after the restart.
- **Light up** when a prefailure event was detected. The indicator also lights up in standby mode.
- **Flash** when an error was detected. The indicator also flashes in standby mode.

Irrespective of the color, when an indicator lights up or flashes this indicates an error event. Please notify customer support.

ID

ID indicator (blue)

Lights up blue when the HNC has been selected by pressing the ID button. To deactivate, press the button again.

Optical drive activity indicator

Lights up green when the storage medium is accessed. See also figure 34 on page 70 and figure 35 on page 70.

Hard disk drive control indicators

Figure 38: Front - Detailed view: Indicators on a hard disk module

1	HDD BUSY (green) – Lights up: HDD in active phase – Does not light up: HDD inactive
2	HDD FAULT (orange) (in conjunction with a RAID controller) – Does not light up: no HDD error – Lights up: HDD Faulty or Rebuild Stopped (drive defective, needs replacing, a rebuild process was stopped or the HDD module is not correctly inserted) – Slow flashing: HDD Rebuild (the data is being restored after changing a hard disk drive) – Fast flashing: HDD Identify – Four fast flashes/pause: HDD Predicted Fault – Two fast flashes/pause: HDD Hot Spare (The corresponding drive has failed).

5.2 Rear of the HNC

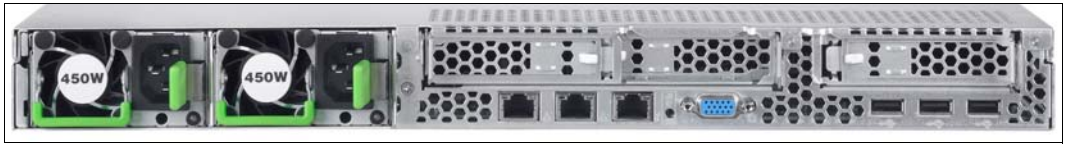


Figure 39: HNC M1 - rear

Bild 40: HNC M2 - rear

ID/CSS/Global error indicator

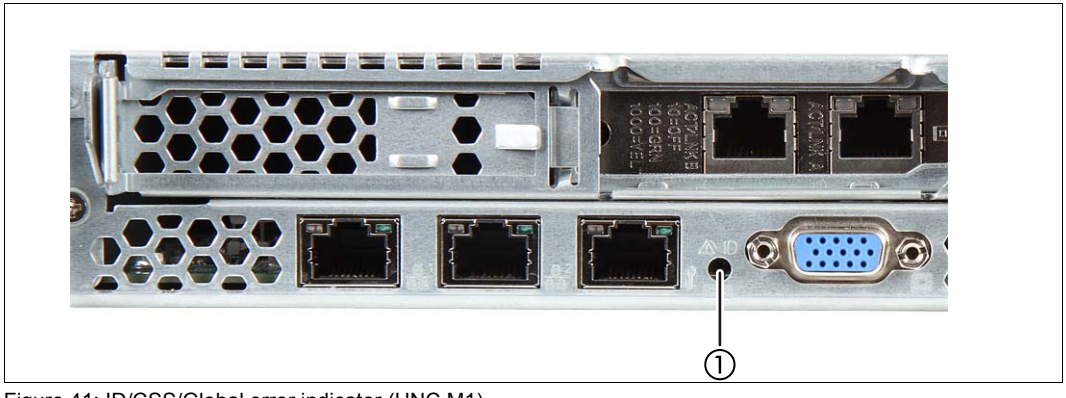


Figure 41: ID/CSS/Global error indicator (HNC M1)

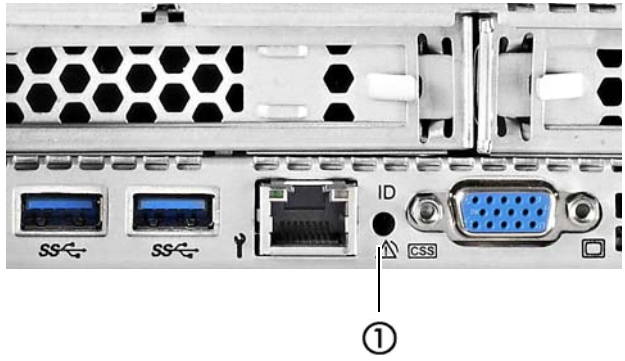


Figure 42: ID/CSS/Global error indicator (HNC M2)

1	ID/CSS/Global error indicator

ID ID indicator (blue)

Lights up blue when the HNC has been selected by pressing the ID button. To deactivate, press the button again.

CSS CSS and Global error indicator (yellow/orange)

Generally, the states of these indicators have the following meanings:

- **Do not light up** when the HNC is OK.
- If the event is still acute after a power failure, the indicator is activated after the restart.
- **Light up** when a prefailure event was detected. The indicator also lights up in standby mode.
- **Flash** when an error was detected. The indicator also flashes in standby mode.

Irrespective of the color, when an indicator lights up or flashes this indicates an error event. Please notify customer support.

LAN indicators

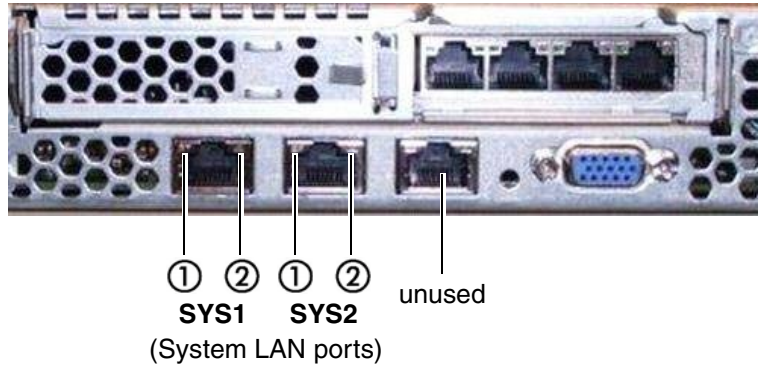


Figure 43: LAN indicators (HNC M1)

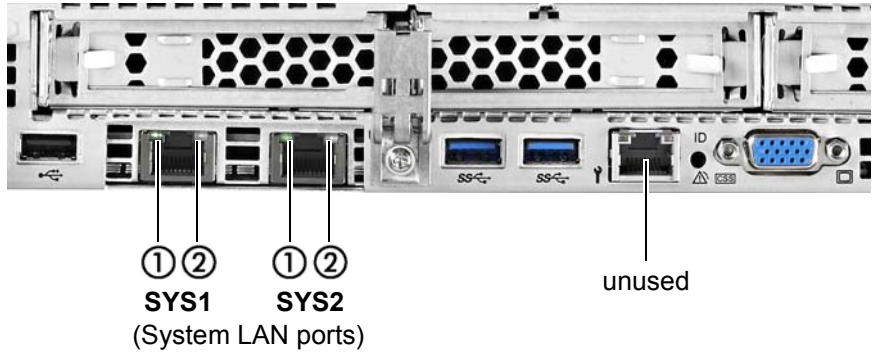


Figure 44: LAN indicators (HNC M2)

1	LAN activity indicator Lights up green if a LAN connection exists. Does not light up if no LAN connection exists. Flashes green when a LAN transfer is in progress.
2	LAN speed indicator Lights up yellow for a LAN transfer rate of 1 Gbps. Lights up green for a LAN transfer rate of 100 Mbps. Does not light up for a LAN transfer rate of 10 Mbps.

Indicator on hot-plug power supply unit

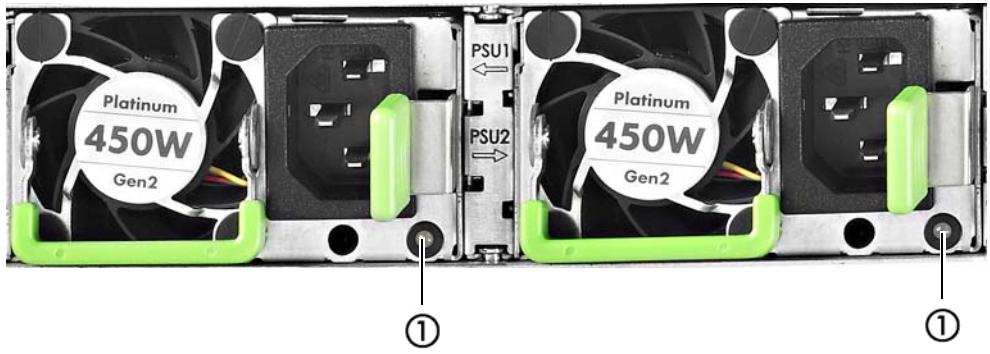


Figure 45: Indicator on hot-plug power supply unit

1	Indicator on hot-plug power supply unit (two colors) Flashes green when the HNC is switched off, but line voltage is present (standby mode). Lights up green when the HNC is switched on and functioning properly. Flashes orange when a predictable error has been detected, but the power supply unit is still running. [1)] Lights up orange when no line voltage is present or the power supply unit has failed.

1) The following events are detected as predictable errors:
   - The temperature is very high.
   - The power consumption is very high.
   - The current strength is very high.
   - The fan speed is very low.

   In each of these cases please notify Customer Support.

Assignment of the PCIe slots

The assignment of the PCIe slots differs from HNC M1 to HNC M2.

PCIe slot assignment on an HNC M1

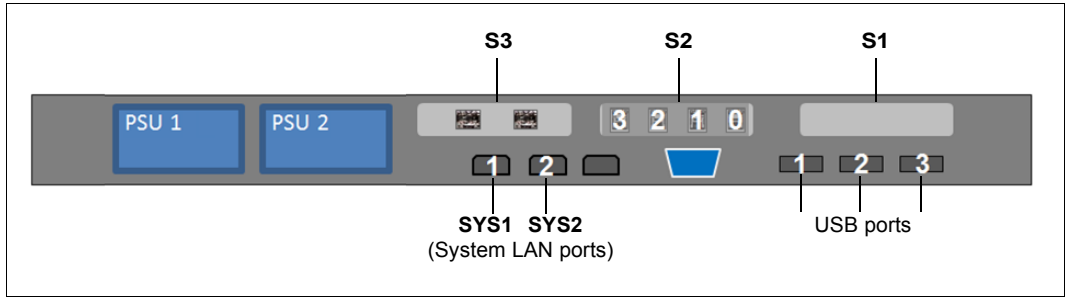


Figure 46: Principle of PCIe slot assignment at the rear of the device (HNC M1)

The figure shows the PCIe slots of the HNC M1:

PCIe slot	Assignment
S1	Not assigned; an optical LAN card is optionally possible
S2	4-port LAN card
S3	FibreChannel card

Table 2: PCIe slot assignment on an HNC

PCIe slot assignment on the HNC M2

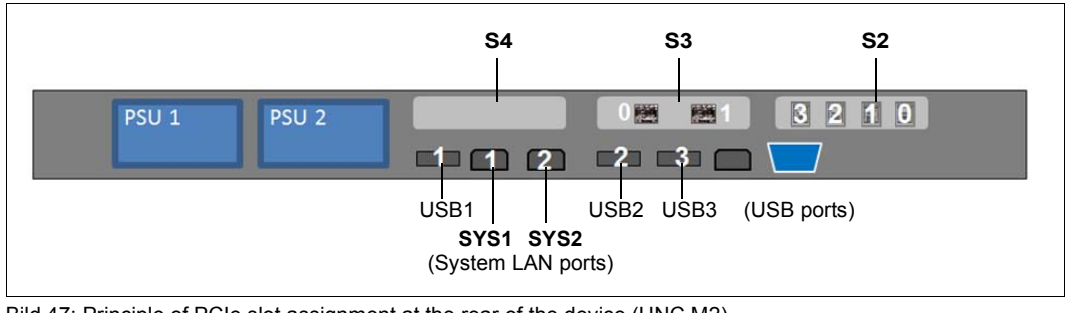


Bild 47: Principle of PCIe slot assignment at the rear of the device (HNC M2)

The figure shows the PCIe slots of the HNC M2:

PCIe slot	Assignment
S2	4-port LAN card
S3	FibreChannel card
S4	not assigned; an additional 4-port LAN card or a 10 GbE LAN card with 2 optical or RJ45 interfaces are optional

Tabelle 3: PCIe slot assignment on an HNC M2

6 What to do if ...

In this chapter you are told how the Server Unit informs you of how you perform a system dump when inexplicable system downtime occurs.

In the event of hardware faults the operating system will take the necessary recovery action autonomously. Customer Service is automatically informed by means of a ServiceCall and initiates repair measures, possibly in conjunction with the customer.

6.1 Indicators when a hardware fault occurs

The server informs you of hardware faults in the following manner:

- On the server's control panel

  When the yellow CHECK lamp lights up, this can signal a hardware fault. At the same time the status indicator displays the FLAG code. This can mean a fault in the service processor or a hardware malfunction.

- In the SVP console window

  On the SVP console, indicators in row 24 of the SVP frame can signal a hardware fault. Evaluation of the FLAG code is reserved for Customer Support. The figure below shows the format of the display:

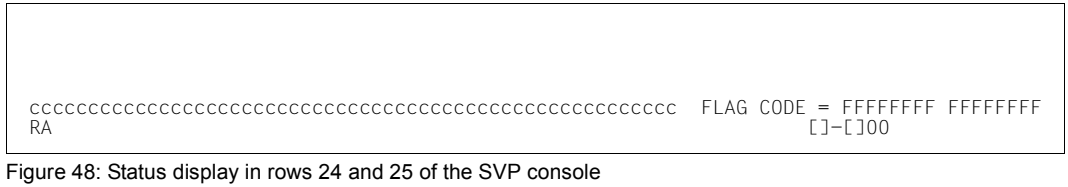


Figure 48: Status display in rows 24 and 25 of the SVP console

FLAG code FF . . . FF can have different meanings and consequently require different responses:

– A WRITE-CONSOLE message has been displayed. This can be deleted with ModSel. This does not delete the FLAG code indicator.

– A warning has been displayed, e.g. when the room temperature is too high. The cause of the fault must be rectified. System operation can continue in the meantime.

– A fault which has automatically been corrected by the hardware occurred on the server or at the interface to the peripheral devices. In this case, too, system operation can continue.

– A fault has occurred which does not permit system operation to continue. In this case you can respond as follows:

  When system downtime occurs, perform an MPL. If this does not rectify the fault, notify Customer Support and discuss how to proceed further.

6.2 Performing a system dump

Requirement:

SVP console opened and ready

1. Select (LD) PROGRAM LOAD FRAME
2. Select LOAD FUNCTION => 5 (SYSTEM DUMP)

The memory dump stored by the DUMP program to disk or tape is required for error diagnosis.

The BS2000/VM2000 system must subsequently be reloaded by means of IPL.

Information on SLED operation is provided in the "Introduction to System Administration" manual [8].

Related publications

You will find the manuals on the internet at *http://manuals.ts.fujitsu.com*. You can order printed versions of manuals which are displayed with the order number.

[1] **FUJITSU Server BS2000**
SE700 / SE500 / SE300
Basic Operating Manual

[2] **FUJITSU Server BS2000**
SE700 / SE500
Server Unit /390

[3] **FUJITSU Server BS2000**
SE700 / SE500 / SE300
Server Unit x86

[4] **FUJITSU Server BS2000**
SE700 / SE500 / SE300
Additive Components

[5] **FUJITSU Server BS2000 SE Series**
Security Manual
User Guide

[6] **FUJITSU Server BS2000 SE Series**
Quick Guide
User Guide

[7] **FUJITSU Server BS2000 SE Series**
Operation and Administration
User Guide

[8] **BS2000 OSD/BC V10.0**
Introduction to System Administration (SE Server)
User Guide

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