FUJITSU

FUJITSU Server BS2000

SE700 / SE500 / SE300

Server Unit x86

Operating Manual

Valid for:

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

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Certified documentation
according to DIN EN ISO 9001:2008

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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.

The changes to this manual are due to the new generation of the Server Unit x86, which has been defined with the hardware lifecycle of the SE series. It is called SU300 M2 and supported from basic software V6.2A onwards.
Only differences to the previous model SU300 regarding structure and operation are described in detail.

The new base models of the Fujitsu servers BS2000 of the series SE that do not contain a /390-Server Unit but a SU300 M2 are called SE300B.

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 describes the hardware component Server Unit x86 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 SU300

This section describes the Server Unit SU300. SE300 is equipped with an SU300 as the first Server Unit. SE300, SE500 and SE700 can optionally be equipped with one or two additional Server Units SU300.

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

In the SU300 the base system X2000 enables BS2000 to execute (in Native mode or on BS2000 VMs). Optionally X2000 enables Linux/Windows systems to operate in parallel on XenVMs.

A SU300 occupies four height units (HUs) in the rack.

Features

–   16 models are available with up to 16 BS2000 processors. Capacity on Demand permits temporary processor attachment.

–   Depending on the model, the size of the main memory (for BS2000 and for the base system X2000) is 32 to 64 GB in the basic configuration. These models can be enhanced to up to 1504 GB (SU300) and 2912 GB (SU300B).

–   For the input/output system the Server Unit contains two 2.5" SATA hard disks, each with a capacity of 600 GB in size in the basic configuration, which are mirrored.

–   The Server Unit contains a DVD-RW drive.

–   Fibre Channels operating at 8 or 16 Gbps are available for connecting peripherals.

–   At least one 4-port LAN card is connected on the Server Unit. The first two ports are used for the connection to the Net Unit, and the other two can, if required, be used for BS2000 applications. Optionally LAN controllers operating at 10 Gbps can also be used.

–   Each Server Unit is equipped with 4 power supply units. 2 + 2 redundancy in 2 phases is thus guaranteed. If one phase fails completely, the Server Unit will continue to operate.

2.1   Switching the Server Unit on/off

Information on switching on and starting the SE server and on switching it off and shutting it down is provided in the "Basic Operating Manual" [1], "Switching the server on and off".

2.1.1   Switching the Server Unit on

Before the Server Unit is switched on, the status indicator lights up green (item 5 in figure 2 on page 10).

▶   As the administrator, BS2000 administrator or a privileged operator, switch on the Server Unit using the SE Manager (menu *Hardware →*
Units[→ *<se server>*] *(SE<model>)*, *Units* tab, *Switch on* symbol for the Server Unit), see the "Operation and Administration" manual [5].

The power-on indicator lights up green. The Server Unit switches on, conducts a system test and starts X2000.

If automatic IPL is configured for BS2000, the BS2000 system (Native or as a VM2000 monitor system) is also started with the configured settings.

If automatic startup is configured for XenVMs, these systems are also started.

2.1.2   Switching the Server Unit off

Before the Server Unit is switched off, the On/Off switch / status indicator lights up green, and after the Server Unit has been switched off it no longer lights up (item 4 in figure 2 on page 10).

▶   As the administrator, BS2000 administrator or a privileged operator, switch off the Server Unit using the SE Manager (menu *Hardware →*
Units[→ *<se server>*] *(SE<model>)*, *Units* tab, *Switch off* symbol for the Server Unit), see the "Operation and Administration" manual [5].

When the Server Unit is switched off, the BS2000 system is shut down properly taking into account the remaining runtime specified.

The "Power cable connected" status indicator (item 5 in figure 2 on page 10) lights up green when the server is switched off but connected to the power supply (power cable connected).

This status indicator does not light up in the following situations:
–   The Server Unit is switched off and not connected to the power source.
–   The Server Unit is switched on and operating normally.

2.2 Front of the Server Unit
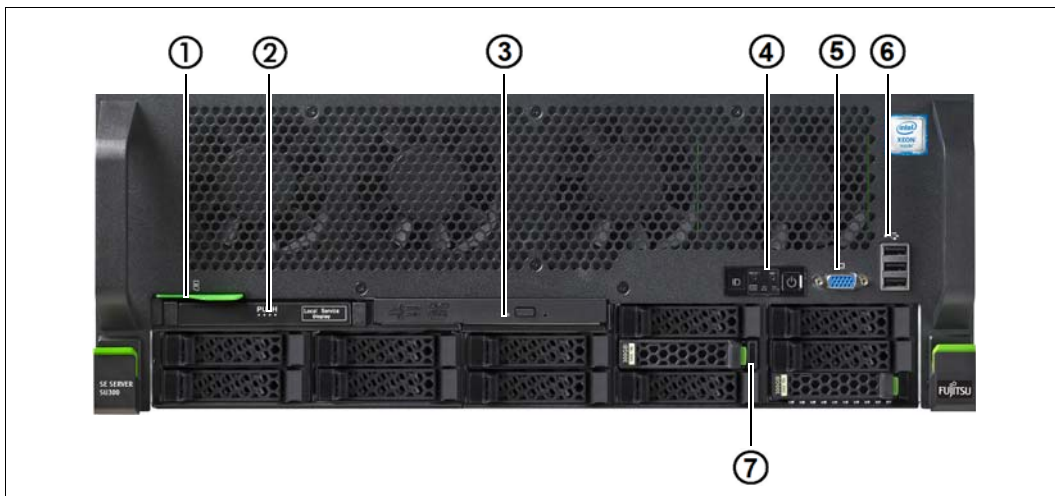
Figure 1: Server Unit (front)

1	ID card (green)	5	Video port (for Customer Support only)
2	ServerView Local Service Display	6	3x USB ports (for Customer Support only)
3	Optical drive activity indicator	7	HDD indicators
4	Operating panel (for further details see figure 2 on page 10)		
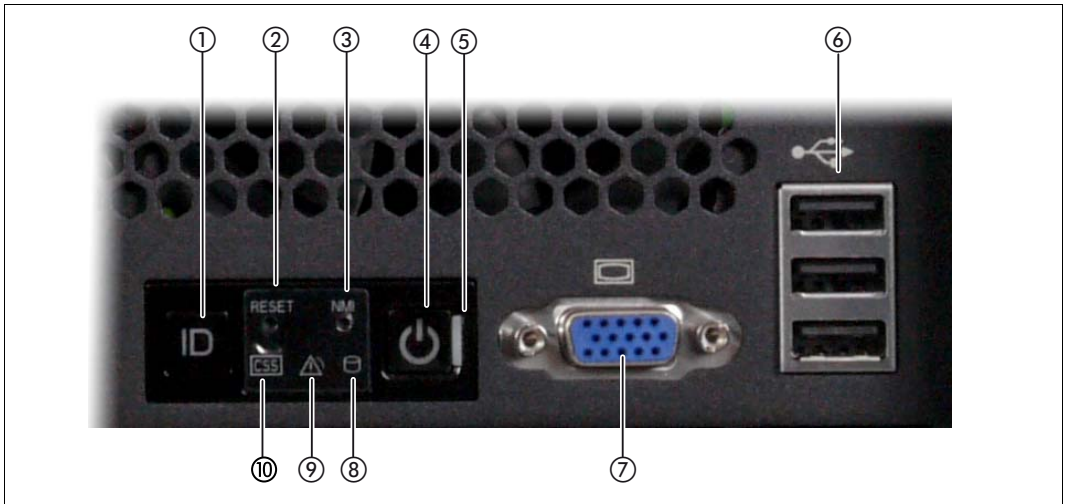
Figure 2: Front - Detailed view: Operating panel

1	ID button/ ID indicator	6	3x USB ports (for Customer Support only)
2	Reset button	7	Video port (for Customer Support only)
3	NMI button	8	HDD activity indicator
4	On/Off button / Status indicator	9	Global error indicator
5	Status indicator (power cable connected)	10	CSS indicator

ID card

You can pull the ID card (see figure 1 on page 9) out and push it in again as far as it will go.

The ID card contains various system information, e.g. product name, serial number, MAC addresses and DNS name.

2.2.1 Controls

ID   Identification (ID) button

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

On/Off switch

When the Server Unit is switched off, it is switched on again by pressing the On/Off switch once.

When the Server Unit is in operation, it is switched off by pressing the On/Off switch once (this takes a little time).

Normally the system may only be switched on or off by Customer Support. The customer should only perform an "emergency power off", see SE300 "Switching off in an emergency" in the Basic Operating Manual [1].

For information on switching on and starting the SE300 and on switching it off and shutting it down, see "Switching the SE300 on/off" in the Basic Operating Manual [1].

⚠ **CAUTION!**
Loss of data
When the On/Off switch is pressed and held down for several seconds, Server Unit operation is terminated ungracefully and abruptly. Notify Customer Support.

ℹ The On/Off switch does not disconnect the server from the voltage grid. To disconnect from the voltage grid completely, remove the power plug(s).

RST or   Reset button
RESET
Pressing the Reset button reboots the Server Unit.

⚠ **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.

2.2.2   Indicators on the operating panel

ID   **ID indicator (blue)**

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

The ID indicator can also be activated via the ServerView Operations Manager and the iRMC web interface, and its status can be reported to the ServerView Operations Manager and the iRMC.

Status indicator (green)

Does not light up when the Server Unit is switched off but connected to the power supply (power cable connected).

Lights up green during power up and when operating normally (S0).

Status indicator (power cable connected) (green)

on the right-hand side of the On/Off switch

Does not light up in the following cases:

– The Server Unit is not connected to the power source

– The Server Unit is switched on and operating normally (S0)

Lights up green when one of the following cases occurs:

– The Server Unit is switched off but connected to the power supply (power cable connected)

– The Server Unit is switched on but is in the power up delay

> **i** After the Server Unit has been connected to the power source, it takes approximately 60 seconds until the Server Unit has entered standby mode.

HDD activity indicator (green)

Lights up green when an internal hard disk drive is being accessed.

Global error indicator (yellow)

Lights up yellow when a prefailure event was detected which requires Customer Support to become active (by way of precaution).

Flashes yellow when an error was detected which requires Customer Support to become active.

Does not light up when no critical event has occurred.

If the event is still acute after a power failure, the indicator is activated after the restart.

The indicator also lights up in standby mode.

If the indicator flashes or lights up **yellow**, call Customer Support.

CSS   **CSS indicator (yellow)**

Lights up yellow when a prefailure event was detected which requires Customer Support to become active (by way of precaution).

Flashes yellow when an error was detected which requires Customer Support to become active.

Does not light up when no critical event has occurred.

If the event is still acute after the Server Unit has been switched on/off, the indicator is activated after the restart.

The indicator also lights up in standby mode.

If the indicator flashes or lights up **yellow**, call Customer Support.

2.2.3   Indicators on the operable drives/components

Optical drive activity indicator

Lights up green when the storage medium is accessed.

ServerView Local Service Display

A tray mechanism enables you to pull the ServerView Local Service Display out of the computer housing to read information. Press the front of the module to release the lock.

You can also swing the ServerView Local Service Display out of its normal position at an angle of 120°. This makes it easier to read the information when the Server Unit is located high up in the rack.

⚠ **CAUTION!**
   If a fault occurs, please contact Customer Support.

2.2.4   Hard disks

Figure 3: Indicators on a hot-plug HDD module

1	HDD BUSY (green) – Lights up: HDD in active phase (drive active, access to drive) – Does not light up: HDD inactive
2	HDD FAULT (orange) – 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 slide-in module is not correctly inserted) – Slow flashing: HDD Rebuild – (the data is being restored after changing a hard disk drive)

If a hard disk drive continuously indicates an error, the drive should be replaced by Customer Support as soon as possible. In this case call Customer Support.

2.2.5 DVD-RW drive

The DVD-RW drive enables you to read digital data which is stored on a data CD or data DVD (CD-R or DVD-R for example).
You can also store digital data on a writeable CD or DVD.

This drive is used for:

● X2000: providing an update (administrator or Customer Support)

● BS2000: installing a BS2000 emergency system (administrator or Customer Support)

● BS2000: updating BS2000 via EMFILE (administrator)

● BS2000: data transfer between BS2000 systems via EMFILE (customer/administrator)

● BS2000: creating a BS2000 EMFILE on CD/DVD directly from the BS2000 system (customer/administrator)

> **i** After the CD/DVD has been inserted, the medium/drive must still be assigned for BS2000 operation by using BS2000 commands (`/ATTACH-DEVICE` or `/CHECK-TAPE`) (see the "Operation and Administration" manual [5].
>
> The device must be detached in BS2000 to permit it to be used in X2000 or for installation of the BS2000 emergency system.
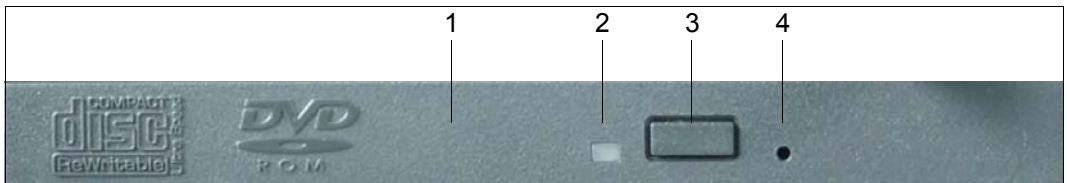
2.2.5.1 Components of the drive

Figure 4: DVD-RW drive: front view

1	Drive tray: contains the CD/DVD
2	Drive indicator: – flashes quickly when a CD/DVD is inserted – goes out when the drive is ready for reading – lights up when the DVD drive is accessed
3	Eject button: To open the tray press the button briefly (for less than 1 second)
4	Opening for manually removing the CD/DVD (Customer Support)

2.2.5.2   Inserting a CD/DVD

1. Check that the drive indicator is not bright.

2. Push the eject button briefly. The drive tray slides open.

3. Place the CD/DVD in the tray with the label facing upward.

4. Press the tray gently in the direction of the drive until it locks in place.

> **i**   If the indicator does not go dark after a CD/DVD has been inserted but stays bright without the CD/DVD being accessed, this probably means that the CD/DVD is damaged or dirty.

2.2.5.3   Removing a CD/DVD

> **i**   If the indicator on the DVD drive lights up, the drive is being accessed. Wait until the indicator is dark.
> Make sure that no application is using the device.

1. When the drive indicator has gone out, the CD/DVD can then be ejected using `/UNLOAD-TAPE` (if the device is still attached in the BS2000 system) or by briefly pressing the eject button.
    The drive tray slides open.

    > **i**   If the CD/DVD is not ejected, the drive is defective and the CD/DVD must be removed manually, see below.

2. Remove the CD/DVD from the tray.

3. Press the tray gently in the direction of the drive until it locks in place.

2.2.5.4   Removing a CD/DVD manually

If there is a power failure or the drive is switched off, you can remove the CD/DVD manually.

> **i**   Make sure that no application is using the device.
> The device should be detached while BS2000 is operating.

►   Press a piece of wire (e.g. a paper clip) firmly into the opening for manual removal.

The drive tray is unlocked and can be pulled out.

Always contact Customer Support after the tray has been pulled out manually.

> **i**   After it has been removed manually, an operational drive is also only available again after the Server Unit has been restarted.

2.2.5.5 Precautionary measures when handling CDs and DVDs

⚠️ **CAUTION!**
Data carrier damage

- Only use high-quality data carriers.

- Avoid touching the surface of a CD/DVD.
  Handle CDs/DVDs only by their edges.

- Do not use a ballpoint pen or pencil to mark the CD/DVD label.

- Always store CDs/DVDs in their cases. You thus avoid dust contamination, scratches or other damage.

- Protect your CDs/DVDs from dust and direct sunlight.

- Avoid storing a CD/DVD in areas subject to high temperatures or humidity.

- Never clean CDs/DVDs with petrol, a thinner, water, a cleaning spray or antistatic material.

- Never place any objects on the open tray, and do not press the tray down when it is open.

2.3 Rear of the Server Unit
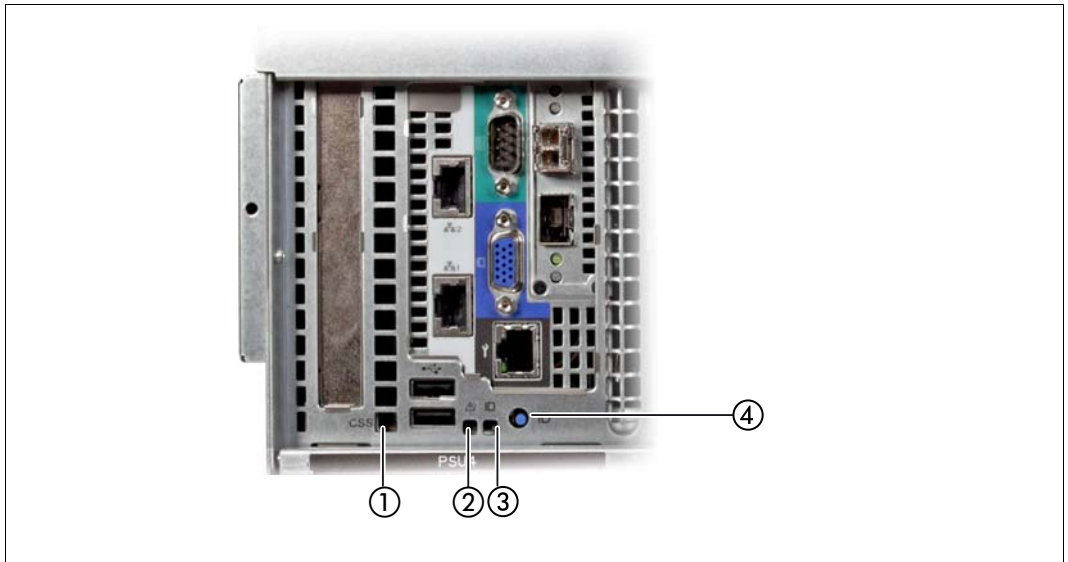
Global error indicator and CSS indicator

Figure 5: Global error indicator and CSS indicator, ID button and ID indicator

1	CSS indicator (yellow)
	Lights up yellow when a prefailure event was detected which requires Customer Support to become active (by way of precaution).
	Flashes yellow when an error was detected which requires Customer Support to become active.
	Does not light up when no critical event has occurred.
	If the event is still acute after the Server Unit has been switched on/off, the indicator is activated after the restart.
	The indicator also lights up in standby mode.
	If the indicator flashes or lights up **yellow**, call Customer Support.
2	Global error indicator (yellow)
	– **Lights up yellow** when a prefailure event was detected which requires Customer Support to become active (by way of precaution).
	– **Flashes yellow** when an error was detected which requires Customer Support to become active.
	– **Does not light up** when no critical event has occurred.
	If the event is still acute after a power failure, the indicator is activated after the restart.
	The indicator also lights up in standby mode.
	If the indicator flashes or lights up **yellow**, call Customer Support.
3	ID indicator (blue)
	Lights up blue when the MU has been selected by pressing the ID button. Press the button again to deactivate it.
	The ID indicator can also be activated via the ServerView Operations Manager and the iRMC web interface, and the status can be reported to the ServerView Operations Manager and the iRMC.
4	ID button

LAN ports

Figure 6: LAN indicators

1	LAN link/transfer (System LAN port **SYS1** or **SYS2**)	**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 (System LAN port **SYS1** or **SYS2**)	**Lights up green** for a LAN transfer rate of 10 Gbps.
		Lights up yellow for a LAN transfer rate of 1 Gbps.
		Does not light up for a LAN transfer rate of 100 Mbps.

The MAC addresses entered on the green ID card refer to LAN #1 (SYS1) and #2 (SYS2). The MAC addresses of LAN ports #3 (not used) and #4 (not used) are then the next two MAC addresses in ascending order. The green ID card is located on the front of the Application Unit, see item 1 in figure 1 on page 9.
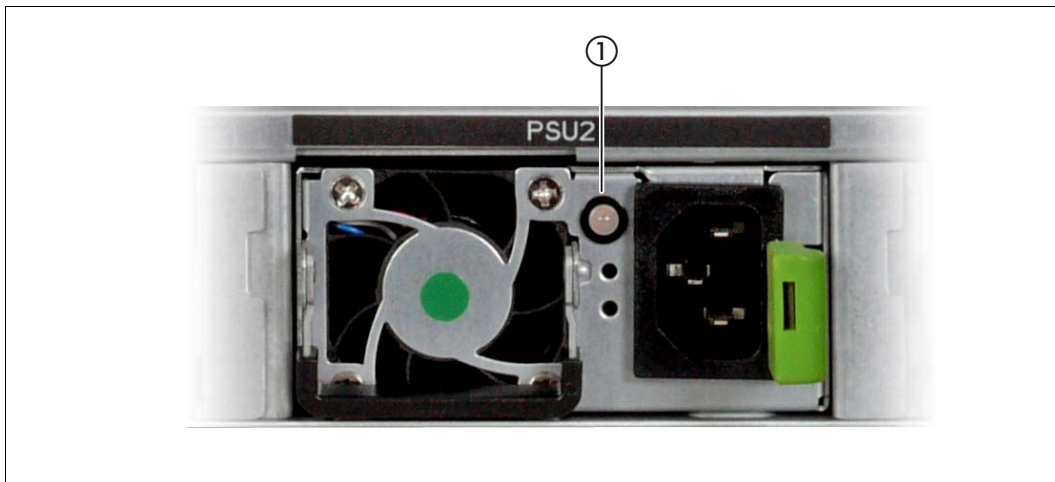
Indicators on the power supply units

Figure 7: Indicators on the power supply units

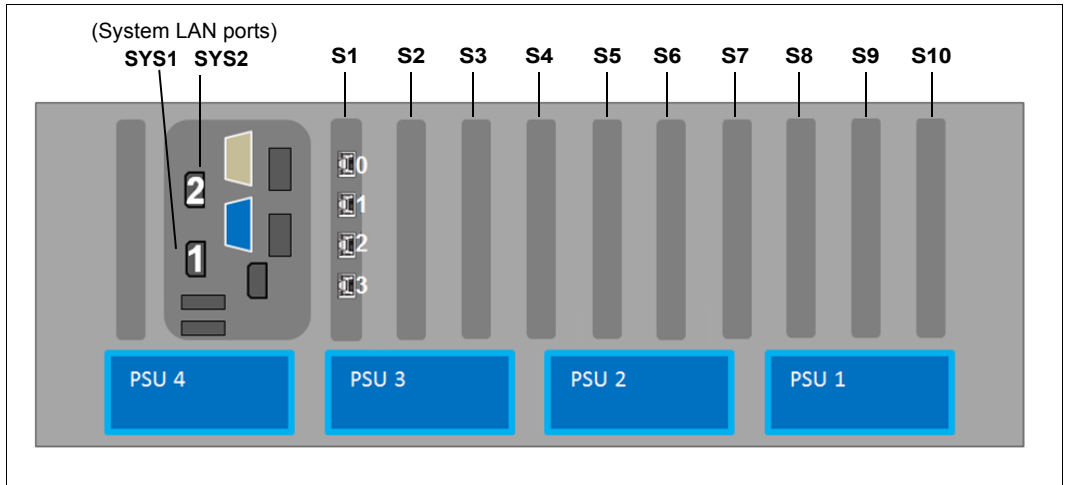| 1	Power supply unit fault indicator and warning indicator	**Lights up amber** when a critical event occurs (power supply unit switches off). Call Customer Support.

Assignment of the PCIe slots

Figure 8: Principle of PCIe slot assignment at the rear of the device

The figure shows the PCIe slots of an SU300 (SU300 M2):

–   S1 is equipped with a 4-port LAN controller.

–   In the figure, slots S2 through S10 are not equipped.
    Depending on the customer's wishes, the slots can be equipped with FibreChannel,
    LAN or (RAID) SAS controllers.

On models with mono processors (10A to 10F), only the PCIe-Slots S1 to S4 are available. The slots S5 through S10 can only be used with larger configuration.

They can optionally be upgraded with two further processor chips without changing the BS2000 performance so that additional Linux/Windows guest systems can be operated on XenVM and the full number of PCIe slots is also available.

3 What to do if ...

In this chapter you are told how you perform a system dump and create diagnostic documentation for the base system X2000 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.

The SE Manager displays information on the hardware status of the Server Unit in the menu *Hardware → Units*[*→ <se server>*] *(SE<model>)*, *Units* tab.

3.1 Performing a system dump

Requirement

Logging into the SE Manager as administrator or a privileged operator.

1. In the menu *Systems → [<se server> (SE<model>) →] <su-name> (SU300) → BS2000* select the *Operation* tab (in VM2000 mode the tab must be selected on the monitor VM).

2. Perform the *BS2000 Dump IPL* action.

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.

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

3.2 Creating diagnostic documentation

Requirement

Logging into the SE Manager as administrator or a privileged operator.

1. In the menu *Hardware → Units*[*→ <se server>*] *(SE<model>) → <su-name> (SU300) →* *Service* select the *Diagnostics* tab.

2. Perform the *Generate new diagnostic data* action.

The created diagnostic data file is a compressed tar archive and contains important logging, trace, and configuration files of the Unit. You can download the diagnostic data file and send it to the Support Center for assessment.

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
      Operation and Administration**
      User Guide

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

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

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

Related publications

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