

FUJITSU Server BS2000

SE700 / SE500 / SE300

Basic 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

To ensure a consistently high quality standard and user-friendliness, this documentation was created to meet the regulations of a quality management system which complies with the requirements of the standard DIN EN ISO 9001:2008.

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The Linux-based basic software M2000, X2000, and HNC which is installed on the Management Unit, Server Unit x86, and HNC contains Open Source Software. The licenses for this can be found in the LICENSES directory on the relevant installation DVD.

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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:

- SU /390 for BS2000 guest systems
- Server Unit x86 with BS2000, Linux or Windows guest systems
- Application Units x86 for operating Native or hypervisor systems (e.g. Linux, Windows, VMware, OVM, etc.)
- Shareable tape and disk periphery
- A high-speed, server-internal infrastructure to connect the components with each other and with the customer's IP or FC network.

The SE server is installed entirely and tested on the vendor's premises in accordance with customer specifications.

Many hardware components are redundant in design, thus ensuring that even if a fault occurs with these components, operation can continue with the same performance.

You can easily upgrade the models on site.

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.

Names and abbreviations

Because the names are used frequently, for the sake of simplicity and clarity the following **abbreviations** are employed:

- **SE server** for the FUJITSU Server BS2000 SE Series (Server Units /390 and x86) with the following models:
 - **SE700** for FUJITSU Server BS2000 SE700 / SE700B (with SU700, more than one SU300 and AU optional)
 - **SE500** for FUJITSU Server BS2000 SE500 / SE500B (with SU500, more than one SU300 and AU optional)
 - **SE300** for FUJITSU Server BS2000 SE300 / SE300B (with SU300, more than one SU300 and AU optional)

Based on the different models, a distinction is made between the following SUs:

- **SU700** for the Server Unit of the unit type SU /390 in SE700 and SE700B
- **SU500** for the Server Unit of the unit type SU /390 in SE500 and SE500B
- **SU300** for the Server Unit of the unit type SU x86 in SE300, optionally in SE500 / SE700
Both **SU300 M1** and **SU300 M2** are described in the operating manual.
- **MU** for the Management Unit. The MU enables centralized, user-friendly and cross-system management on the SE server.
Both **MU M1** and **MU M2** are described in the operating manual.
- **AU** for the Application Unit (on a varying hardware base)
The names of the models are derived from the hardware bases. **AU47** is, for example, an Application Unit based on a PRIMERGY RX4770.

- **HNC** (High Speed Net Connect)
The HNC connects the Server Unit /390 to the LAN and as the net client enables the BS2000 systems on the SU /390 to access the Net-Storage.
Both **HNC M1** and **HNC M2** are described in the operating manual.
HNC is also the name used for the basic HNC software.

For a description of the further features of the SE servers SE700, SE500 and SE300, please refer to the [chapter “System overview” on page 23](#).



Figure 1: SE Server SE700 and SE700B

1.1 Documentation for the SE servers

A wide range of documentation is available for the SE servers. As the BS2000 OSD/XC software package comprises the BS2000 OSD/BC operating system and additional system-related software products, the documentation for BS2000 OSD/XC consists of the following:

- The manuals on BS2000 OSD/BC, which provide the basic literature on BS2000 OSD/XC.
- The manuals for the system-related software products which belong to the BS2000 OSD/XC software package also apply.

Any additions to the manuals are described in the Readme files for the various product versions. These Readme files are available at <http://manuals.ts.fujitsu.com> under the various products.

Current information, version and hardware dependencies and instructions for installing and using a product version are contained in the associated Release Notice. Release Notices, in particular those relating to BS2000 OSD/XC, M2000, X2000, and HNC, are available at <http://manuals.ts.fujitsu.com>.

The documentation for the SE servers consists of the following parts:

- Operating Manual SE700 / SE500 / SE300 (consisting of a number of modules):
 - Basic Operating Manual SE700 / SE500 / SE300
 - Server Unit /390 (SE700 / SE500)
 - Server Unit x86 (SE700 / SE500 / SE300)
 - Additive Components (SE700 / SE500 / SE300)
- Operation and Administration
- Security Manual
- Quick Guide

Further literature is listed in Related publications.

1.2 Objective and target groups of this 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 this manual carefully in order to obtain optimal performance from the SE server.

Readers require a knowledge of BS2000 system operation and administration as well as basic knowledge of Linux. In some places knowledge of X2000 is helpful. This can be obtained from the “Operation and Administration” manual [5].

This manual is intended for people who operate an SE server:

- As administrator you manage the entire SE server with all its components and the operating systems which run on it. You need a good knowledge of the BS2000, Linux and Windows operating systems and of the network and peripherals.

As administrator you can also manage the integration of the optional Application Units on which an open operating system runs in Native or virtualized mode (e.g. under VMware).
- As operator you operate BS2000 on the Server Unit of the SE server. You need a good knowledge of the BS2000 operating system and also of the connected peripherals.
- As XenVM administrator you operate the virtual machines and their devices for Linux and Windows guest systems on the Server Unit x86 of the SE server. You need a good knowledge of the Linux and Windows operating systems and also of the connected peripherals.

1.3 Summary of contents

This operating manual deals with the hardware-related display and operating functions of the FUJITSU BS2000 servers of the SE Series.

Chapter 2 contains important information on the installation and operation of the SE server and the components.

The content of the other chapters is based on the module of the existing operating manual. Information on the modules of the operating manual can be found in [section “Documentation for the SE servers” on page 10](#).

The Glossary explains important terms used in this manual. The Abbreviations chapter gives an overview of the abbreviations that have been employed in this manual.




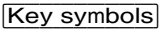


References to publications are given in the text with shortened forms of the titles in quotes.

The Related publications chapter lists the full title of each document that is referred to.

The Index at the end of the manual lists the key terms and the page numbers telling you where to find the information about these terms.

1.4 Notational conventions

The following **notational conventions** are used in this manual:

 WARNING!	This indicates a hazardous situation which <i>could result in serious personal injury</i> if the user does not perform the procedure correctly.
 CAUTION!	This indicates a hazardous situation which <i>could result in minor or moderate personal injury</i> , if the user does not perform the procedure correctly. This signal also indicates that damage to the product or other property <i>may</i> occur if the user does not perform the procedure correctly. This indicates also the tasks which are performed by Customer Support.
	This indicates information that could help the user to use the product more effectively.
►	The prompt symbol indicates activities which need to be performed (e.g. entries on the keyboard).
italics	Texts from the SE Manager
monospace	System inputs and outputs
monospace semibold	Statements which are entered via the keyboard are displayed in this font.
<abc>	Variables which are replaced by values.
	Keys are displayed as they appear on the keyboard. When uppercase letters need to be entered, the Shift key is specified, e.g.  -  for A. If two keys need to be pressed at the same time, this is indicated by a hyphen between the key symbols.
[number]	The titles of related publications in the text are abbreviated. The complete title of each publication which is referred to by a number is listed in the Related Publications chapter after the associated number.

Names and abbreviations

Because the names are used frequently, for the sake of simplicity and clarity the following **abbreviations** are employed:

- **SE server** for the FUJITSU Server BS2000 SE Series (Server Units /390 and x86) with the following models:
 - **SE300** for FUJITSU Server BS2000 SE300 (with SU300, optionally AUs)
 - **SE500** for FUJITSU Server BS2000 SE500 (with SU500, optionally SU300 and AUs)
 - **SE700** for FUJITSU Server BS2000 SE700 (with SU700, optionally SU300 and AUs)

- **SU** for the Server Unit irrespective of the unit type
A distinction is made between SUs depending on the unit type:
 - **SU /390** for Server Unit /390 (type of Server Unit with one or more /390 processors)
 - **SU x86** for Server Unit x86 (type of Server Unit with one or more x86 processors)A distinction is made between the following SUs according to models:
 - **SU300** for the Server Unit of the unit type SU x86 in SE300, optionally in SE500 / SE700
 - **SU500** for the Server Unit of the unit type SU /390 in SE500
 - **SU700** for the Server Unit of the unit type SU /390 in SE700

- **MU** for the Management Unit. The MU permits central, user-friendly and cross-system management on the SE server.

- **AU** for the Application Unit (on a varying hardware base)
A distinction is made between the models according to the hardware base. **AU47** is, for example, an Application Unit based on a PRIMERGY RX4770.

- **HNC** (High Speed Net Connect)
The HNC connects the Server Unit /390 to the LAN and as the net client enables the BS2000 systems on the SU /390 to access the Net-Storage. HNC is also the name used for the HNC software.

- **SKP** (service console processor)
The MU and SE Manager contain the SKP functionality for an SU /390.

- **SVP** (service processor)

- **BS2000 server** as the generic term for SE server, S and SQ server. BS2000 servers are operated with the relevant BS2000 operating system.
- **S server** for the Business Servers of the S Series (/390 architecture)
- **SQ server** for the business servers of the SQ Series (x86 architecture)
- **BS2000** for the BS2000 OSD/BC operating system in compound nouns, e.g. BS2000 system.

1.5 Open Source Software

The Linux-based operating systems X2000 and HNC which are installed on the Server Unit x86, Management Unit and HNC contain Open Source Software. The licenses for this can be found in the LICENSES directory on the relevant installation DVD.

2 Important notes

2.1 Notes from the manufacturer

The system fulfills the requirements of the EU directives 2004/108/EC "Electromagnetic Compatibility" and 2006/95/EC "Low Voltage Directive", 2009/125/EC (Ecodesign) and the directive regarding the restriction of the use of particular hazardous substances in electrical and electronic equipment 2014/30/EU. Each individual component bears the CE Marking to confirm this (CE = Communauté Européenne).

2.1.1 For safe operation

This manual contains important information regarding the use and handling of this product. Read this manual thoroughly. Pay special attention to the [section "Note on safety" on page 19](#) Use the product according to the instructions and information available in this manual. Keep this manual handy for further reference.

The manufacturer makes every effort to prevent users and bystanders from being injured or from suffering damage to their property. Use the product according to this manual.

2.1.2 About this product

The FUJITSU Server BS2000 of the SE Series is designed and manufactured for use in standard applications such as computing center work, office work, and general industrial applications. This product is not intended for use in nuclear-reactor control systems, aeronautical and space systems, air traffic control systems, mass transportation control systems, medical devices for life support, missile launch control systems or other specialized uses in which extremely high levels of reliability are required, the required levels of safety cannot be guaranteed, or a failure or operational error could be life-threatening or could cause physical injury.



These safety-critical areas of application are hereafter referred to as "Areas of application with high safety requirements".

You may not use the product in areas with high safety requirements without ensuring the required level of safety. If you wish to use this product in an area of application with high safety requirements please consult the responsible sales representatives before use.

2.1.3 Trademark acknowledgments

- Linux is a free multiplatform multiuser operating system.
- Ethernet is a registered trademark of Xerox Corporation in the United States and in certain other countries.
- All other product names mentioned herein are the trademarks or registered trademarks of their respective owners.
- System and product names in this manual are not always noted with trademark (™) or registered trademark symbols (®).

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2.2 Note regarding radio interference suppression



WARNING!

This is a product which meets Class A of EN55022. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

2.3 Note on safety

2.3.1 Important alert messages



CAUTION!

This alert signal indicates a hazardous situation that could result in minor or moderate personal injury if the user does not perform the procedure correctly. This signal also indicates that damage to the product or other property may occur if the user does not perform the procedure correctly.

Warning
<p>Possible damage to the system if used incorrectly Be sure to follow the precautions below when installing the equipment. Otherwise, the business server may be damaged.</p>
<p>Possible damage to the system if used incorrectly In the factory all the power cables are connected to the power distribution units which are integrated into the rack. Attach the connection cables of the multiple socket outlets to the in-house installation so that they are easy to access. Do not connect any additional consumer loads to the power distribution units - this could cause the nominal load capacity of the multiple socket outlet or feed cables / fuses to be exceeded! If you want to connect additional equipment, please contact Customer Support.</p>
<p>Possible data loss if used incorrectly Before shutting down power, you should ensure that the following events occur; otherwise data may be destroyed. All applications have finished processing. No user is using the components. When a unit of the SE server (MU, SU, HNC or AU) is turned off, the operating status indicator lights up orange. Check this before shutting down the main power (to UPS, power cable, and power distribution box). If necessary, back up files before shutting down.</p>

2.3.2 Maintenance



WARNING!

All maintenance measures which are described in this manual may only be performed by the Customer Support. Incorrect performance of these tasks may cause electric shock, injury, or fire.

- Installation and reinstallation of all components, and initial settings
- Removal of front, rear, or side covers
- Mounting/de-mounting of optional internal devices
- Plugging or unplugging of external interface cables
- Maintenance and inspections (repairing, and regular diagnostics and maintenance)



CAUTION!

All maintenance measures for this product and the optional products of the manufacturer may only be performed by Customer Support. Users must not perform these tasks. Incorrect operation of these tasks may cause malfunction.

2.4 Installation and operation precautions



CAUTION!

Equipment damage:

Be sure to follow the precautions below when installing or operating the equipment. Otherwise, the SE server may be damaged.

2.4.1 Installation precautions



WARNING!

The S server is installed on the vendor's premises. Modifications may only be carried out by Customer Support. The customer may not make any changes to the server!

The following section is therefore for information purposes only.

Follow the instructions below to ensure safety when positioning the SE server:

- The Server Unit, Management Unit, Application Units and further components are installed in one or more closed racks. Consequently the ambient operating temperature inside the rack may be higher than the room temperature. Install the business server in an environment in which the ambient temperature is always below 35 °C (95 °F).
 - Adjust air circulation to prevent the temperature inside the rack from exceeding the maximum ambient temperature specified for the server components.
 - The maximum allowable operating temperature of the server components is 35 °C (95 °F).
- A certain amount of air flow is required for safe operation of the server components.
 - The server components have ventilation openings at the front and rear. Do not cover or close the ventilation openings. Doing so may cause the server components to overheat.
- Positioning the Business Server may cause the entire rack to be unstable because of uneven mechanical loading.
- The racks of the SE server have no stabilizer. When an SU or heavy peripherals are pulled out of the rack, there may therefore be a risk of it tipping over.
- The power supply for the server components is implemented via power distribution units mounted in the rack which themselves must be connected to the inhouse power supply using appropriate CEE connectors.
- The large number of power supply components in the rack means that the configuration can generate leakage currents > 3.5 mA.
- For this reason the rack may be connected to the in-house power network only via permanent links or industrial cables in accordance with IEC 60309 (formerly IEC 309) .



CAUTION!

Equipment damage:

In configurations with multiple feed cables such as the SE server, it must be noted that all cables must be disconnected to disconnect the system from the power network.

2.4.2 Operating precautions



WARNING!

Danger of electric shock and fire

- Do not damage, break or modify the cables. Cable breaks can cause electric shocks and fires.



CAUTION!

Equipment damage:

- Do not cover or block ventilation openings.
- Install the SE server in a location away from direct sunlight and sources of heat.
- Install the Server Unit in an environment free of dust, corrosive gases, and salt air.
- Install the business server in a location free of vibration and on an even surface to prevent the business server from leaning.
- Do not run any cable beneath any equipment. Also, prevent cables from becoming taut. Never disconnect the power cable of the Server Unit while power is being supplied to the SE server.
- Keep objects off the rack and the rack components. Never use the rack as a work area.
- Do not allow condensation to form. In winter, slowly raise the ambient room temperature to prevent condensation from forming in the Server Unit.
- Use the SE server only after it has warmed up sufficiently.
- Operate the SE server away from noise-generating sources, such as photocopiers, air conditioners, and welding equipment.
- Take preventive measures to control electrostatic buildup. Note that carpets often generate static charge which may cause the SE server to malfunction.
- When moving the business server, do not pull on the front cover. Doing so may cause damage to the SE server.

3 System overview

3.1 Features

The FUJITSU Server BS2000 SE Series comprises several models whose total operating performance is determined by the number of CPUs in the Server Unit. All models have at least one CPU for BS2000 OSD/XC, the BS2000 operating system complemented by additional system-related software products.

A FUJITSU Server BS2000 of the SE Series (SE server for short) consists of the following components:

- Management Unit (MU) with SE Manager
An autonomous server known as the "Management Unit" (MU) is integrated into the rack for monitoring and central operation of the system.
For SU /390 the MU performs SVP operation.
Remote service of the SE server is performed by means of AIS Connect (over the internet). For AIS Connect the Management Unit requires an internet access over the administration LAN. The customer operates the access for remote service via the SE Manager.
- Server Unit
 - A /390-based Server Unit (SU /390) enables operation of BS2000 (Native BS2000 or VM2000).
 - An x86-based Server Unit (SU x86) enables operation of BS2000 (Native or VM2000). XenVM operation with Linux or Windows guest systems is also possible as an option.

In the basic configuration the SE server is equipped with one Server Unit:

- SE700 in its basic configuration with one SU700 (type SU /390)
10 models of the SU700 are available with 2 to 15 processors.
- SE500 in its basic configuration with one SU500 (type SU /390)
6 models of the SU500 are available with 1 to 3 processors.

- SE300 in its basic configuration with one SU300 (type SU x86)
The SU300 provides BS2000 performance solely on the basis of x86 technology. 16 models are available with 1 to 16 XEON processor cores. In terms of processor performance, configurability and scalability of the monoprocessor performance, the SU300 models range below the SU700/SU500 models.

SE servers can optionally be equipped with additional SU300s. For example, an SE500/700 can be equipped with up to two SU300s, and an SE300 with up to three SU300s.

- Net Unit, for SU /390 with HNC
Gigabit Ethernet Switches are integrated into the rack for internal communication. In the case of SE700 and SE500 the Net Unit is by default redundant in design. In the case of SE300, redundancy of the Net Unit is optional. In the case of SE700 and SE500 an HNC provides the LAN connections for the SU /390.
- Rack console and KVM switch
- Application Unit (AU)
Optionally up to 20 AUs can be operated on the SE server for customer applications. An x86-based AU permits operation under Linux, Windows or VMware.
- Peripherals (storage)
- Optional hardware components:
 - Up to two ETERNUS JX40 disk storage systems can optionally be integrated into the rack to back up the user data and connected to an SU x86 or AU. Further disk storage systems (e.g. ETERNUS DX) can optionally be connected via Fibre Channel.
 - ETERNUS LT40 S2 tape libraries with LTO drives can optionally be integrated into the rack to back up the user data and connected to an SU x86 or AU. Further tape libraries (e.g. ETERNUS CS HE and Scalar i500, i6000, 10000) can optionally be connected via Fibre Channel.

All components of the SE server are integrated into a joint rack (depending on the configuration, further racks are optionally possible). Information on the current hardware configuration of your SE server is displayed by the SE Manager in the *Hardware* → *HW Inventory* menu (see the "Operation and Administration" manual [5]).

Detailed information on the installation data, in particular on the dimensions and weights, is provided in the data sheet "FUJITSU Server BS2000 SE Series".

See the product site for the relevant server at <http://www.fujitsu.com/uk>:

- ▶ Go to *Products* → *Servers* → *BS2000* → FUJITSU Server *BS2000* and select SE700, SE500 or SE300.

3.1.1 Rack of the SE server

SE300

The figure below shows how the basic rack of the SE300 is equipped with the components of the basic configuration and with optional components.

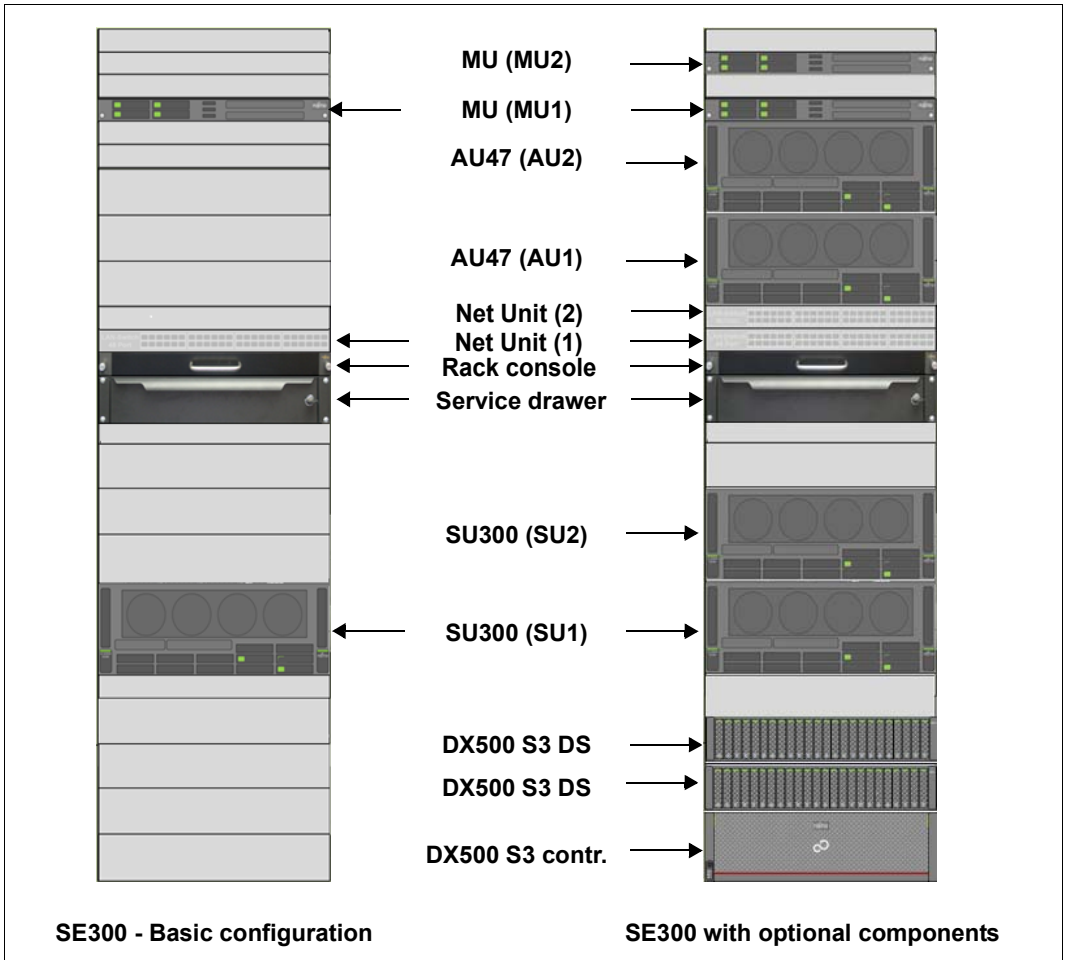


Figure 2: System components SE300 and SE300B

3.1.2 Expanded maintenance and operational functions

The equipment maintenance feature of the SE server is designed to prevent fault events occurring. The Management Unit monitors the hardware status of the Management Unit, Server Unit(s) and Application Unit(s). Detected faults are displayed in the SE Manager and reported to the vendor's Support Center via remote service.

The use of basic software V6.2A and higher results in enhanced functionality: At every Management Unit, the SE Manager shows the hardware status of all Management Units, Server Units and Application Units of the respective SE server configuration. Accordingly, in the case of a Management Cluster the Units of the involved SE Servers are monitored.

**CAUTION!**

You are forbidden from repairing components of the server yourself. Maintenance and repair of the server components are performed solely by Customer Support. If a fault occurs, please always contact Customer Support.

Detailed information on the monitoring functions is provided in the "Operation and Administration" manual [5].

4 Racks

4.1 Basic rack

The components of the SE server are integrated into the basic rack, a 19-inch standard rack. In the case of the SE700 and SE500 the control panel is located on the front (see [section “Control panel \(on the SE700 and SE500\)” on page 44](#)). If the basic rack is not longer adequate for larger configurations, extension racks can be used.



Figure 4: Basic rack of the SE server

4.2 Extension rack

The extension rack is a 19-inch standard rack which accommodates additional components for which there is no more space in the basic rack.



Figure 5: SE server with an extension rack (e.g. SE700 and SE700B)

In all an SE server can comprise four racks.

4.3 Power supply

The devices in the racks are supplied with power over power distribution units (PDUs).

SE700 and SE500

By default a basic rack contains four PDUs, each with 8 x C13 outlets.

Each PDU is connected to the in-house power grid with CEE connectors 32A blue. For redundancy reasons, two phases are required. Two of the four CEE connectors are connected to each phase.

SE300

The power distribution units to be installed in the SE300 basic rack and in the extension racks can be selected. The following three types of PDU can be installed:

- PDU with 10 x C13 outlets, CEE connector 16A blue
- 3-phase PDU with 3 x 8 x C13 outlets, CEE connector 16A red
- PDU with 8 x C13 outlets, CEE connector 32A blue

4.3.1 Connection of the power cables

Most of the hardware components in the SE server rack do not incorporate any switches which disconnect them from the power source. Consequently the power cables of the hardware components must be attached or detached when it is necessary to connect or disconnect the components from the power source.



Figure 6: Example of a power distribution unit as used in the rack



CAUTION! **Equipment damage**

- All work on the power supply must be conducted by Customer Support.
- Connect each power cable to a grounded service outlet located within the operator's reach.
- The power cables must be connected in such a manner that the power consumption of the rack components does not exceed the maximum rated current of the circuit's fuse and the maximum permissible current of the fuses in the power distribution unit in the rack.
- Free sockets in the power distribution unit may not be used to connect other devices. The total permissible current for a power distribution unit could be exceeded if other devices were connected.
If you have addition requirements, please contact Customer Support.

5 Controls

5.1 Rack console

The rack console contains the following in a compact 19" slide-in housing (1 HU):

- A fold-out 17" TFT color LCD monitor with a control panel and screen menu
- A keyboard with US/international assignment with an integrated number pad
- A touchpad with a scroll bar
- Left and right mouse buttons

Monitor, keyboard and touchpad are protected in the slide-in module.

The rack console serves as the local console:

- Entries from the rack console are normally transferred to the Management Unit. Outputs to the rack console normally come from the Management Unit, depending on the setting of the console switch, see [section "Console switch" on page 43](#).
- After you have logged in on the local console, you can call the SE Manager via the local desktop's browser.

Safety instructions

- Pull the rack console slowly toward you until the slide rails lock. If the slide rails are not locked, the rack console can move unexpectedly. Be careful not to catch your fingers when you pull or push on the slide module or when you open or close the LCD, etc.
- Do not apply any strong force to the rack console when it is pulled out or when the monitor is opened and being used.
- Do not press strongly on the monitor's screen, scratch it with sharp objects, or bring magnetic objects near it. Doing so can damage the monitor.
- Note that the corners of the open device can be dangerous if bumped into. Always be careful when the device is open.
- We recommend that you store the rack console in the rack when not in use.

Sliding the rack console out of the rack



- ▶ Loosen the finger screws (1)
- ▶ Pull the rack console while you hold the handle (2) until it locks into place.

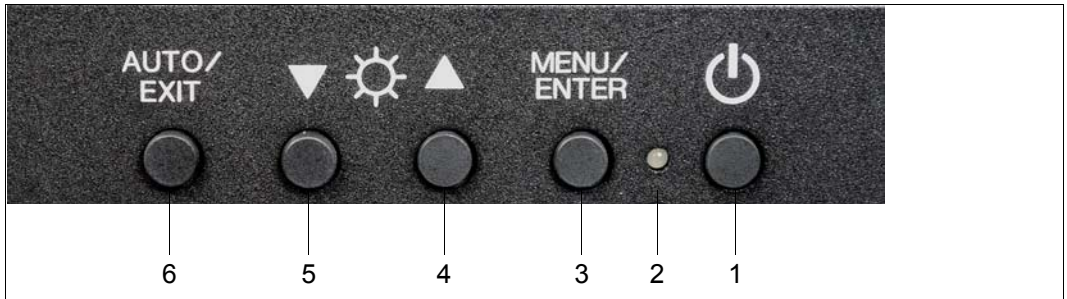
Opening the rack console



- ▶ Use the handle to push the cover of the Rack Console up until the monitor is open at an angle of 110 degrees.

Monitor operating panel

The operating panel is at the bottom right of the monitor.



- (1) **Power button**
Press this button to turn on the power to the monitor, or, if the power is already on, to turn off the power to the monitor.
- (2) **Power LED**
This LED lights up green when the power to the monitor is on, and lights orange when the monitor is in energy-saving mode. The light goes off when the monitor is turned off.
- (3) **MENU/ENTER button**
Press this button to open the menu, to select an item to be adjusted, and to save an adjusted setting.
- (4) **UP button**
Press this button to select the right-hand item or to increase the value.
- (5) **DOWN button**
Press this button to select the left-hand item or to increase the value.
- (6) **AUTO/EXIT button**
Press this button to close the menu, to cancel the selection of an item to be adjusted, to cancel an adjusted setting, or to perform automatic adjustment.



It is possible to directly adjust the screen brightness by pressing the UP or DOWN button when the menu is not displayed.

It is possible to perform automatic adjustment (position and focus) by pressing the AUTO/EXIT button.

Menu control

- ▶ Press the MENU/ENTER button (3).
The main menu is opened. The menu item selected is highlighted.
 - ▶ Use the UP and DOWN keys (4 and 5) to go to the required menu item.
 - ▶ Select an item with the MENU/ENTER button (3). The list entry selected is highlighted.
 - ▶ Use the MENU/ENTER button (3) and the UP and DOWN buttons (4 and 5) to add the settings to the list entries selected.
 - ▶ Confirm each of your settings by pressing the MENU/ENTER button (3).
 - ▶ Quit the list entry, the menu item and the menu using the AUTO/EXIT button (6).

Switching the monitor on

- ▶ Press the power button (1) to turn the monitor on.

Notes on the LCD Display

- While the on-screen display may shift, blink, or otherwise be disturbed just after the power is turned on or the OS starts up/shuts down, this does not indicate a machine failure, and the device may be used normally.
- While 1280 × 1024 is the native full-screen resolution, the LCD display is full screen for all resolutions.
For resolutions other than 1280 × 1024, characters may be blurred and the thickness of thin lines can be uneven.
This is because the full-screen display is made by digital interpolation of the low-res output, not by physical magnification. This is not a machine failure, and the device may be used normally.
- Although there might be some always-off dots or some always-on dots, this is accepted as it is a natural characteristic of LCDs, not as a fatal imperfection. So use this device normally.

Keyboard operations

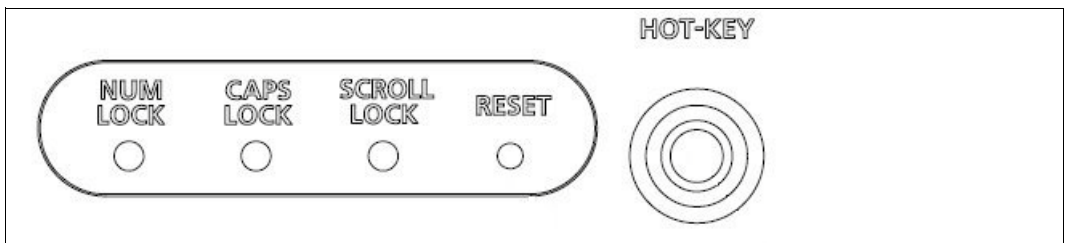
Using the Fn key on the compact layout keyboard of this device allows functions equivalent to a full keyboard.

- By pressing both the Fn key and a key with underscored characters, you can use the function indicated by the characters (for example, Scr Lk, Prt Sc, and SysRq).
- When the Num Lock LED is lit, the functions indicated by the enclosed characters shown on some keys are enabled.



HOT-KEY and RESET key

The following indicators and buttons are located on the right above the keyboard.



HOT-KEY Pressing the HOT-KEY (outputs the code of the CTRL key twice) causes the menu of the connected console switch to be called.

RESET Resets the keyboard and pointing device on this device.

Pointing device operations

When you operate the pointing device, touch or tap lightly on the touchpad surface.

Moving the pointer

Slide your finger lightly on the touchpad surface in the direction you want to move the cursor.

Single clicking

Lightly tap the touchpad surface once, or click the left button once.

Double clicking

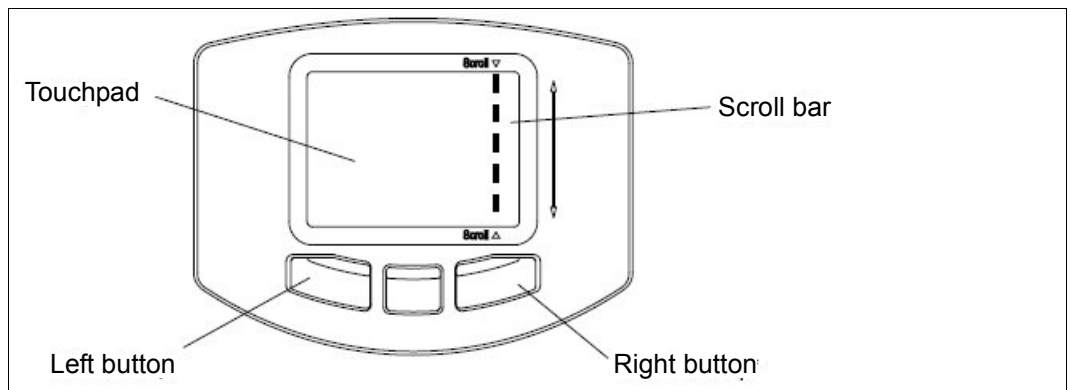
Lightly tap the touchpad surface twice, or click the left button twice.

Dragging

Lightly tap the touchpad surface twice and without releasing your finger from the touchpad surface, slide your finger to move the cursor to the desired position, and then release your finger from the surface. Or, while holding down the left button, slide your finger to move the cursor to the desired position, and then release your finger from the touchpad surface.

Scrolling

Slide your finger up or down along the right edge of the touchpad surface to scroll up or down the screen.



Notes on the pointing device

The pointing device does not work correctly if you operate it in the following ways:

- Operating the pointing device with a gloved finger
- Operating the pointing device with a pen, ballpoint pen, or pencil
- Operating the pointing device with two or more fingers
- Operating the pointing device while something is on the touchpad
- Operating the pointing device while water drops are on the touchpad surface, while condensation is formed on the touchpad surface, or with a wet finger

If the touchpad surface or your finger is wet, dry or wipe water well before you use the touchpad.

Do not use a pointed metal object such as a pen. Doing so may damage the touchpad surface.

Switching the monitor off

- ▶ Press the monitor power button (see “Power button” on page 35) to turn off the monitor.

Closing the monitor



- ▶ Make sure that the front USB connector (1) is empty before closing the monitor. It is not envisaged for use with the SE server.
- ▶ Use the handle (2) to push the cover of the Rack Console carefully down until it clicks into place.

Sliding the rack console into the rack



- ▶ Press the buttons (1) to release the rack console.
- ▶ Use the handle to slide the rack console into the rack until it clicks into place (2).
- ▶ Tighten the finger screws (3)

Troubleshooting

No image is displayed on the monitor:

Symptom	Cause	Action
The power LED is out.	The power is not turned on.	Press the power button.
	The monitor does not function correctly after being turned on.	Notify Customer Support.
The power LED is orange. Or, when the MENU/SELECT button is pressed, the message "Signal Going to Sleep" is displayed.	The server is in standby mode.	
	The monitor is incorrectly connected to the server.	Notify Customer Support.
The power LED lights but no image is displayed on the monitor.	The rack console was turned on after the server was turned on.	Turn on the device at the same time as or before you turn on the server.
	The monitor is incorrectly connected to the server.	Notify Customer Support.
The screen flickers.	The monitor is incorrectly connected to the server.	Notify Customer Support.

The monitor display looks strange:

Symptom	Cause	Action
Grid screen that flickers.	The monitor is unfocused.	Adjust the focus of the monitor.
Vertical stripes are visible.	Monitor adjustment is not correct.	Adjust the clock, and then adjust the display position.
Sometimes no images are displayed on the monitor.	The monitor is incorrectly connected to the server.	Notify Customer Support.
Letter weights are different across the monitor.	Focus or clock adjustment is not correct.	Adjust the clock, and then adjust the display position.

Monitor cannot be adjusted:

Symptom	Cause	Action
Automatic adjustment using the AUTO/EXIT button does not work and the following message is not displayed: "AUTO Processing"	Automatic adjustment was performed with an extremely dark monitor background/image.	Make the monitor image as bright as possible, and then press the AUTO/EXIT button to redo automatic adjustment.

5.2 Console switch

The monitor, keyboard and mouse port of the integrated rack console are connected to the corresponding ports on the integrated units (Management Unit, Server Unit x86, HNC, and Application Unit) and thus attached to one of them.

By default, the rack console is attached to the first Management Unit.

The console switch is usually a digital 8-port KVM switch. The KVM switch is integrated into the rack in a vertical position and therefore does not require the installation of a height unit.

In the maximum configuration, 5 KVM ports (2 x MU and 3 x SU x86) are occupied in the SE300, and 8 KVM ports (2 x MU, 4 x HNC and 2 x SU x86) in the SE500/SE700.

If more AUs are to be integrated into the SE server, the KVM switch can be replaced with a different KVM switch with 16 or 32 ports.

5.3 Control panel (on the SE700 and SE500)

At the front of the basic rack on the SE700 and SE500, a control panel is located on the outside. The control panel is connected to the service processor (SVP) of the SU700 / SU500 of the SE server.

Further information on the SU700 and SU500 is provided in the "Server Unit /390" Operating Manual [2].

The physical layout of the control panel is shown in the figure below:

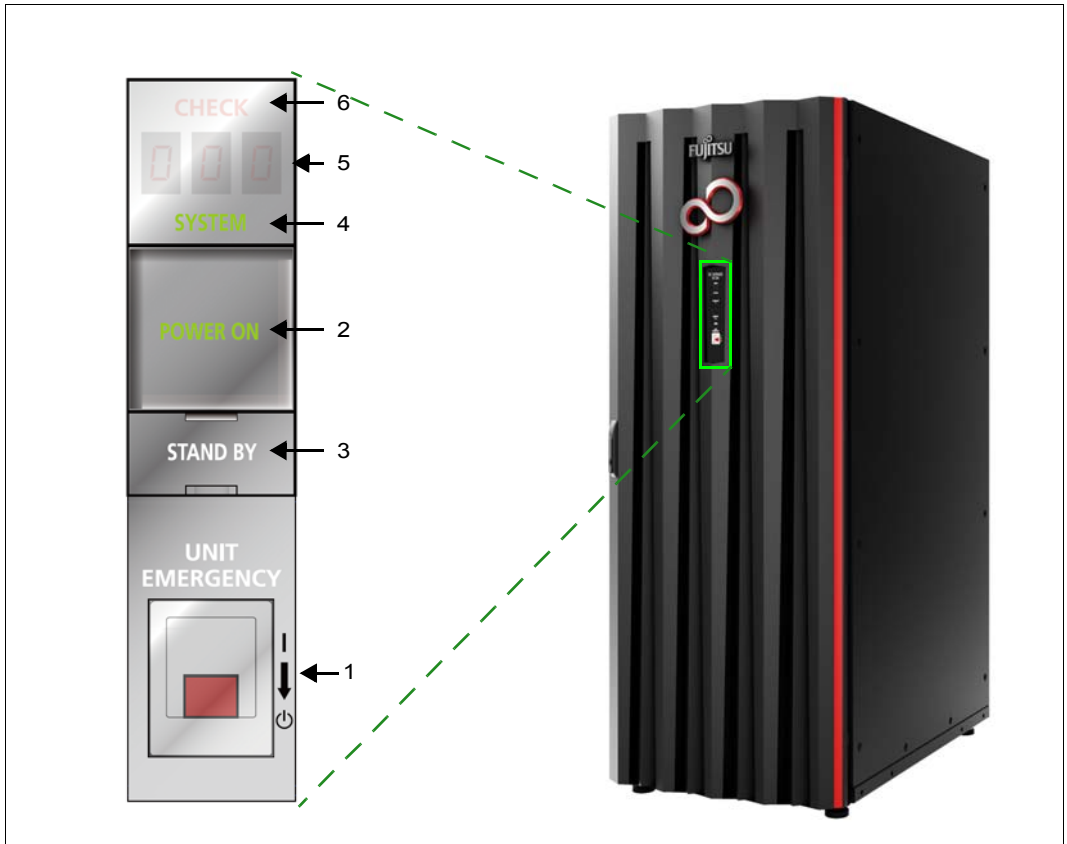


Figure 7: Operating panel on the rack of the SE700 / SE700B and SE500 / SE500B

The control panel contains the following controls and displays (please refer to the numbers in the figure):

1. **UNIT EMERGENCY** switch
The UNIT EMERGENCY switch switches the SU /390 off.
2. **POWER ON** button with lamp
Switches the Server Unit on. When the SU /390 is switched on, POWER ON lights up green.
3. **STAND-BY** button
Switches the SU /390 off, but not currentless (power supply units in standby mode).
4. **SYSTEM** lamp
Displays whether the CPUs of the SU /390 are active.
5. **CHECK** lamp
Shows whether a fault has occurred.
6. **STATUS** indicator
Supplies detailed information on the hardware status.

The function of the displays and controls in the operating panel is described in the sections below.

5.3.1 Function of the displays

POWER ON

Lights up green after the system power controller has completed the power-up sequence without error. In the standby status the indicator flashes.

SYSTEM

Lights up green when the CPU(s) is/are in operation.

CHECK

Lights up red when the SVP has detected a hardware malfunction or a fault in the power supply of the SU /390. In the event of a fault a buzzer sounds at the same time.

STATUS indicator

Depending on the POWER ON indicator, this indicator is switched on and displays details of the hardware status with a three-character alphanumeric display.

The display changes as sequences are executed. If the display finally stops at a particular value not equal to "000", this must be interpreted as the error code for a problem. In this case Customer Support should be contacted.

POWER ON	STATUS indicator	Hardware status
Does not light up	Does not light up	Power failure
Does not light up	b00 through bFF	Power supply units are being initialized.
Flashing	Does not light up (in maintenance mode CE0)	Standby mode
Lights up	001 through 010	Power-on sequence is active.
Lights up	100 through 399	System is being initialized.
Lights up	000	System initialization completed.
Lights up	500 through 599	System stop initiated.
Lights up	010 through 001	Power-off sequence is active.
Lights up or does not light up (depending on the STATUS)	Begins with A	The entire /390 system (CPU box, AROMA, CHE boxes) or parts of it have been switched off because of a fault (power supply or operating temperature). Or an important function of the SVP has been stopped and a detailed error code cannot be displayed on the SVP console.
Lights up	EEE	Another error has occurred. A detailed error code is displayed on the SVP console.

Table 1: STATUS indicator

5.3.2 Function of the keys and switches

5.3.2.1 UNIT EMERGENCY switch

The UNIT EMERGENCY switch switches the system off as quickly as possible when an emergency or disaster occurs. The Server Unit is switched off immediately when the switch is pressed.

This switch should only be used in the utmost emergency. If there is still time, the system should be switched off normally using the STAND-BY key.



CAUTION!

There is a risk of data loss. When the UNIT EMERGENCY switch is pressed, system data can no longer be written back.

After it has been pressed, the UNIT EMERGENCY switch is mechanically locked. POWER ON can only be used again to switch the system on when the lock has been canceled by Customer Support.



CAUTION!

Danger of fire and electric shock

After the UNIT EMERGENCY has been pressed, some of the circuits remain live! Only some of the circuits are switched off. Switch off the fuses in the power distribution cabinet to eliminate this danger.

Procedure in the event of an emergency power-off:

1. Pull out and remove the protective cover of the UNIT EMERGENCY switch.
2. Move the switch down (from position **I** to position **0**).

5.3.2.2 POWER ON key

This key initiates the sequential power-on of the power supplies of the entire /390 system (/390-CPU, AROMA, CHE boxes). They are powered on independently of an automatic power-on/off function.

IMPL (Initial Micro Program Load) is then performed. The system is ready when POWER ON lights up and the status indicator displays 000.

When POWER ON IPL is configured, the operating system is then loaded (see SVP frame LOAD PRESET1, "Server Unit /390" Operating Manual [2]).

Before pressing the POWER ON key, check whether the following requirements are met:

1. POWER ON is flashing and the status indicator displays nothing. When all displays are off and the status indicator displays nothing, the power supply of the Server Unit is switched off. In this case switch the fuses in the power distribution cabinet on to supply the Server Unit with power.

2. The status indicator displays no error code. If an error code is displayed, notify Customer Service of this error code.

Press the POWER ON key to begin powering up the system. The power-up sequence begins. POWER ON lights up and the status indicator displays a sequence from 001 through 399 while powering up.

The system is ready when POWER ON lights up and the status indicator displays 000. If the status indicator displays an error code, an error occurred while powering up. In this case notify Customer Service of this error code.

5.3.2.3 STAND-BY key

This key is used to switch off the power supply of the entire /390 system. It is switched off independently of an automatic power-on/off function.



CAUTION!

There is a risk of data loss. When standby mode is switched to (using the key or the SVP frame), it is not guaranteed that system data can be written back. Terminate applications which are running beforehand and shut down the operating system.



IMPORTANT!

In standby mode some of the circuits remain live!

Press the STAND-BY key to initiate system power-off. The power-off sequence begins. While the system is powering off, the status indicator displays a sequence from 501 through 599. When the Server Unit is switched off, POWER ON flashes and the status indicator display is empty.

Instead of using the key, the system can also be switched to standby using the SVP frame (AU4) POWER STAND-BY/IMPL. See the "Server Unit /390" Operating Manual [2].

6 Management Unit

An autonomous server, known as the "Management Unit" (MU), is integrated into the rack for central operation and administration using the SE Manager and for monitoring the units.

On the SE700 and SE500 the MU provides the SKP functionality to operate the SU /390.

The MU is also the carrier system for further add-on software such as StorMan, ROBAR, openSM2, and openUTM.

On the SE700 and SE500 redundancy of the SKP functionality can be achieved by installing a second MU.

The main memory, internal disks, power supply units, and fans are redundant in design. The internal disks, power supply units, and fans 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.

The M2000 software is preinstalled ex works.

Detailed information on operating the Management Unit is provided in the "Operation and Administration" manual [5].

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

- ▶ Go to *Products* → *Servers* → *BS2000* → FUJITSU Server *BS2000* and select SE700, SE500 or SE300.

6.1 Front of the MU



Figure 8: Management Unit (MU) - front of a MU M1



Figure 9: Management Unit (MU) - front of a MU M2

Indicators on the front panel of MU M1

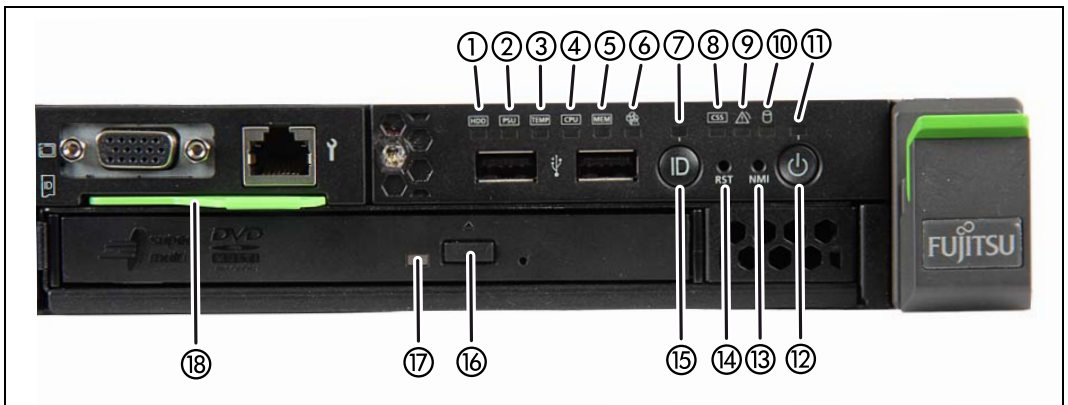


Figure 10: MU M1 (front panel)

1	HDD fault indicator	10	HDD activity indicator
2	Power supply 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 MU M2

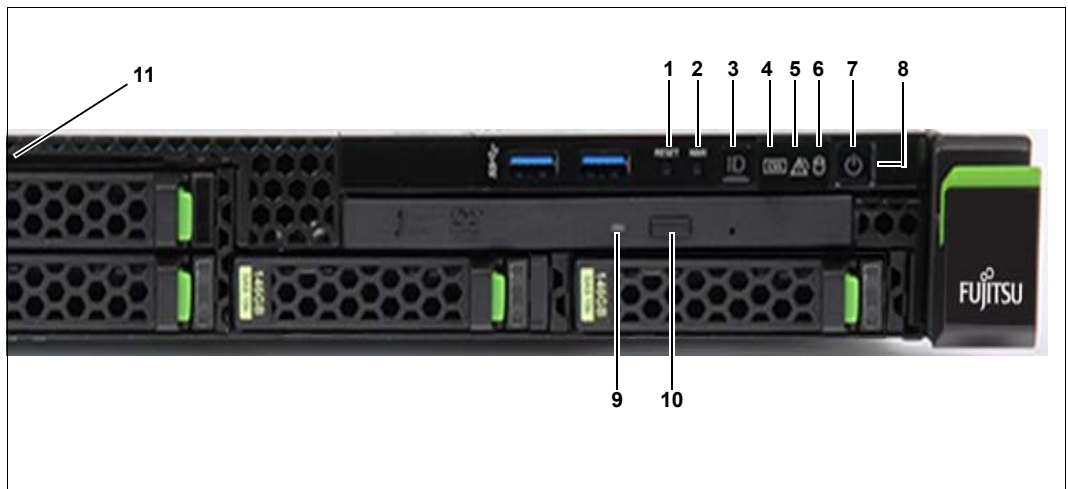


Bild 11: MU M2 (front panel)

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

The DVD-RW drive is used by Customer Support to install and update the M2000 software. Use of the USB interfaces is reserved for Customer Support.

You can pull the ID card 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.

Controls

ID

Identification (ID) button

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

On/Off button



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

When the MU 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 MU.



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 MU is switched off but line voltage is present. After the power cables have been connected, it takes about 60 seconds until the MU is in standby mode.

Lights up yellow during power up delay.



If the MU 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 MU is switched on.

Flashes green when the MU 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 MU 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 when this happens.

ID

ID indicator (blue)

Lights up blue when MU 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 10 on page 50](#) and [figure 11 on page 51](#).

Hard disk drive control indicators



Figure 12: Front - Detailed view: Indicators on a hard disk module

1	<p>HDD BUSY (green)</p> <ul style="list-style-type: none"> - Lights up: HDD in active phase - Does not light up: HDD inactive
2	<p>HDD FAULT (orange) (in conjunction with a RAID controller)</p> <ul style="list-style-type: none"> - 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).

6.2 Rear of the MU



Figure 13: Management Unit (MU) - rear of a MU M1



Figure 14: Management Unit (MU) - rear of a MU M2

The [figure 13](#) and [figure 14](#) show the rear of a MU M1 and MU M2 with PCIe slots which are not equipped.

ID/CSS/Global error indicator

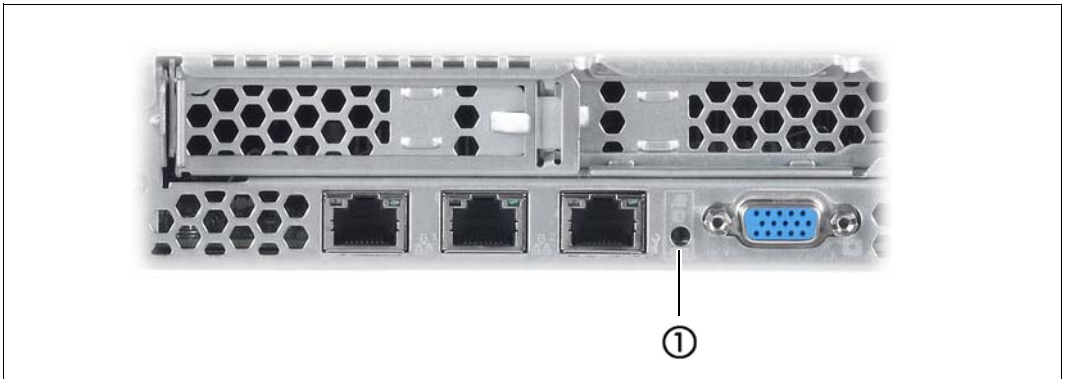


Figure 15: ID/CSS/Global error indicator (MU M1)

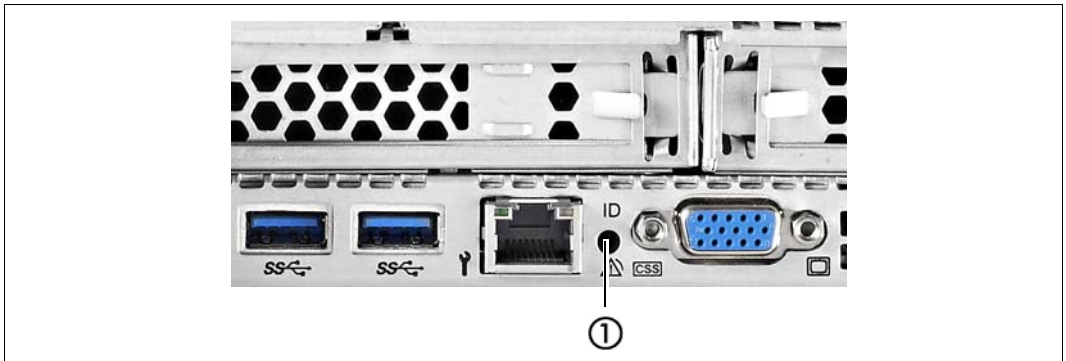


Bild 16: ID/CSS/Global error indicator (MU M2)

1	ID/CSS/Global error indicator
---	-------------------------------

ID ID indicator (blue)

Lights up blue when the MU 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 iRMCS4 web interface, and the status can be reported to the ServerView Operations Manager and the iRMCS4.

CSS CSS and Global error indicator (yellow/orange)



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

- Do not light up when the MU 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

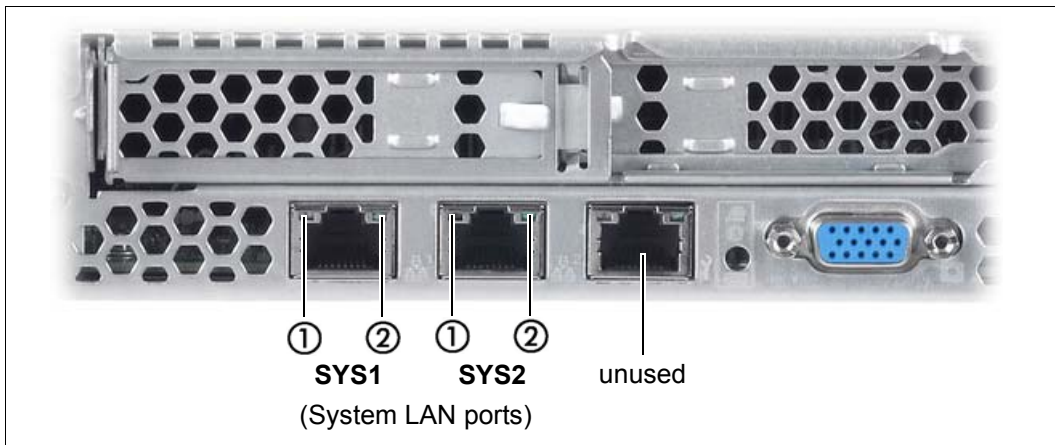


Figure 17: LAN indicators (MU M1)

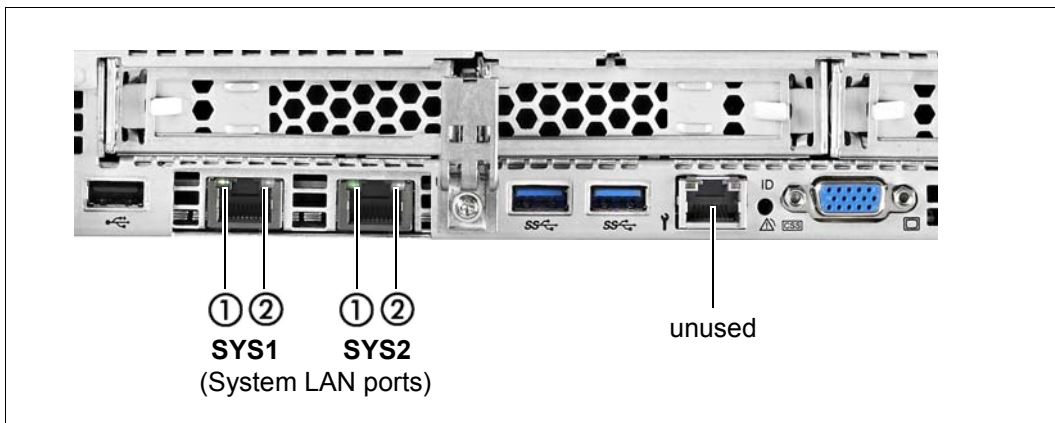


Figure 18: LAN indicators (MU M2)

1	LAN speed	<p>Lights up green 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.</p>
2	LAN connection/transfer	<p>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.</p>

Indicator on hot-plug power supply unit

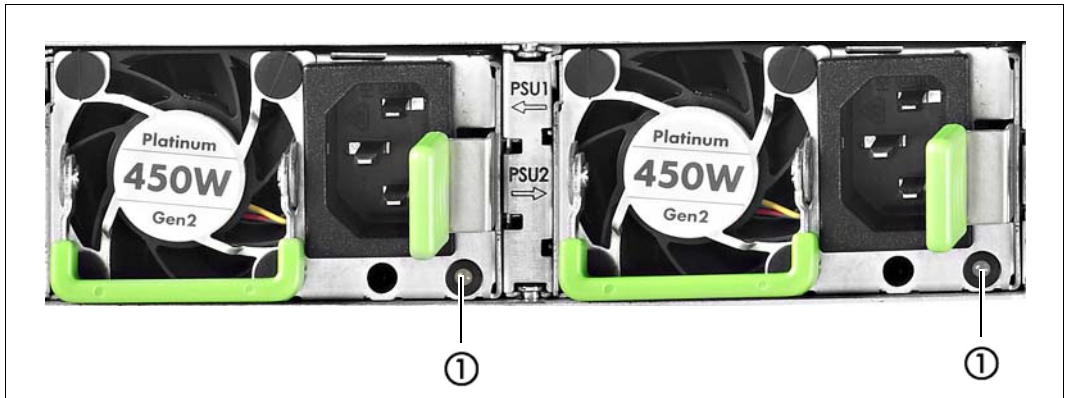


Figure 19: Indicator on hot-plug power supply unit

1	<p>Indicator on hot-plug power supply unit (two colors)</p> <ul style="list-style-type: none"> – Flashes green when the MU is switched off, but line voltage is present (standby mode). – Lights up green when the MU is switched on and functioning properly. – Flashes orange when a predictable error has been detected, but the power supply unit is still running. ¹⁾ – Flashes orange in the case of OCP/OVP or when the power supply unit's fan 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 MU M1 to MU M2.

PCIe slot assignment on an MU M1

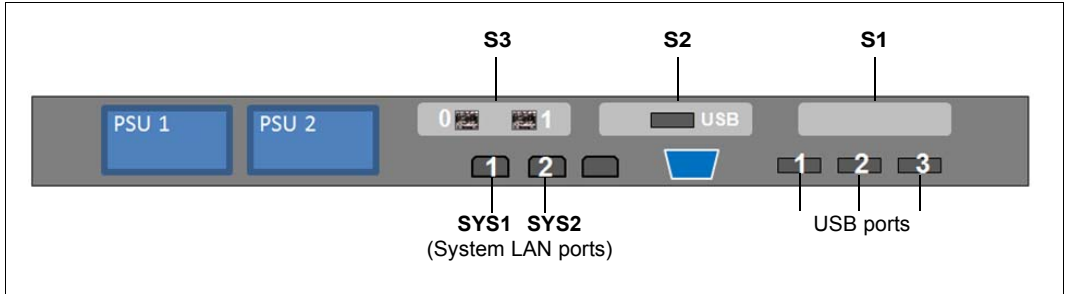


Figure 20: Principle of PCIe slot assignment at the rear of the device (MU M1)

The figure shows the PCIe slots of the MU M1 on an SE700. On the various model series of the SE server, the PCIe slots of an MU M1 are assigned as follows:

PCIe slot	SE700	SE500	SE300
S1	Not assigned.	Not assigned.	Not assigned.
S2	USB card	USB card	Not assigned.
S3	FibreChannel card	FibreChannel card	Not assigned.

Tabelle 2: PCIe slot assignment on an MU M1

The MU M1 can be equipped with a second FibreChannel card in the free PCIe slot S1. Accordingly, two more ports are available for the ROBAR connection and cluster functionality.

PCIe slot assignment on the MU M2

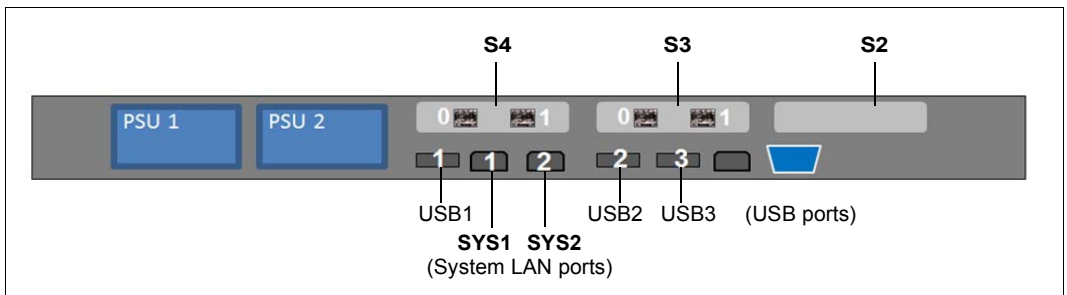


Bild 21: Principle of PCIe slot assignment at the rear of the device (MU M2)

The figure shows the PCIe slots of the MU M2 on an SE700B. On the various model series of the SE server, the PCIe slots of an MU M2 are assigned as follows:

PCIe slot	SE700B	SE500B	SE300B
S2	Not assigned.	Not assigned.	Not assigned.
S3	FibreChannel card	FibreChannel card	Not assigned.
S4	FibreChannel card	FibreChannel card	Not assigned.

Table 3: PCIe slot assignment on an MU M2

The MU M2 can be equipped with another FibreChannel card in the free PCIe slot S2. Accordingly, two more ports are available for the ROBAR connection and cluster functionality.

7 Net Unit

The Net Unit implements the connection of the units to the networks of the SE server and to private customer networks. The Net Unit can be designed with redundancy in the interest of protection against failure.

The Net Unit contains the following components:

- Switches
A redundant Net Unit has redundant switches (by default in the case of SE700 and SE500).
- Optional port extension
A redundant Net Unit can be complemented by a redundant port extension to increase the number of redundant LAN ports.
- HNC in the SE700 and SE500
The HNC connects the Server Unit /390 with the LAN. Up to 4 HNCs are possible.

Future extensions of the Net Unit will support up to 10 Gbps.

7.1 Switches

One switch is used in the basic configuration of the SE server SE300. By default the SE servers SE700 and SE500 have two redundant switches.

Brocade ICX 6450 models are employed.

- ICX 6450-24 with
 - 24 copper ports (10/100/1000 Mbps)
 - 4 optical ports (SFP+; 1 oder 10 Gbps uplink ports, stacking-capable)
- ICX 6450-48 with
 - 48 copper ports (10/100/1000 Mbps)
 - 4 optical ports (SFP+; 1 oder 10 Gbps uplink ports, stacking-capable)



Currently maximum transfer speeds of up to 1 Gbps are supported. Future extensions of the Net Unit will support up to 10 Gbps.

7.1.1 Front

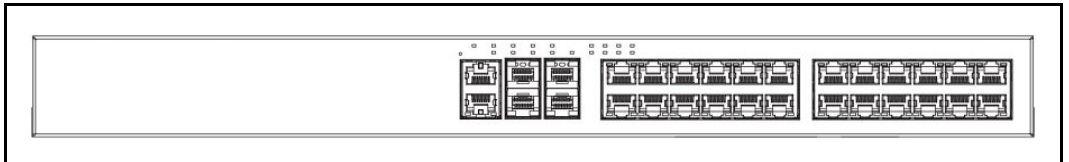


Figure 22: Net Unit (ICX 6450-24) - front

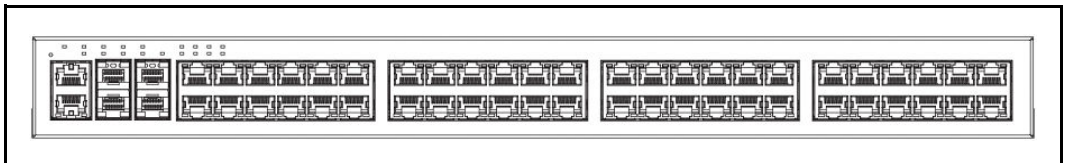


Figure 23: Net Unit (ICX 6450-48) - front

7.1.2 Network and management interfaces

Each Brocade ICX 6450 model has a reset button and the following management interfaces on the front:

- Console management interface (serial RJ45 port, by default connected to the USB port of the MU)
- Out-of-band management interface (RJ45 port, by default not used)

On 24-port models the management interfaces are arranged at the center on the front, and on 48-port models on the left-hand side at the front (see the figures below).

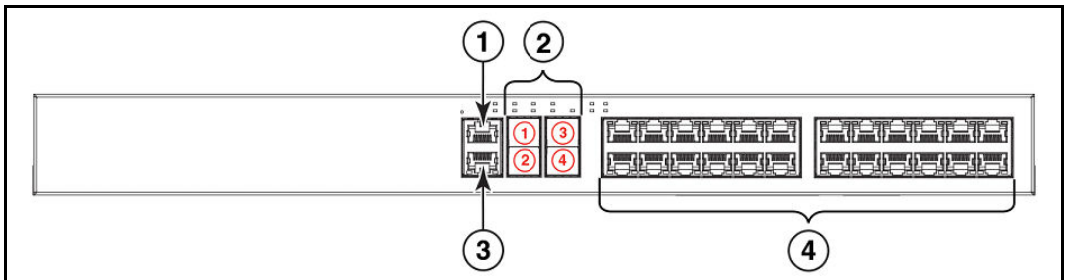


Figure 24: Network and management interfaces (ICX 6450-24)

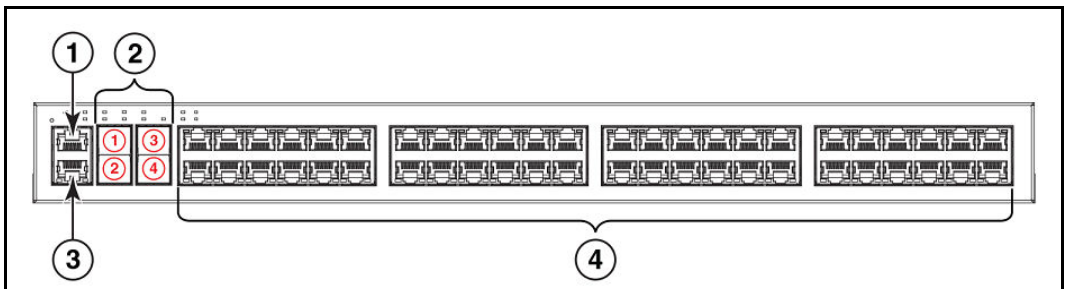


Figure 25: Network and management interfaces (ICX 6450-48)

Explanation:

1. Console management port
2. Slot 2 (SFP and SFP + uplink or stacking-capable ports)
3. Out-of-band management port
4. Slot 1 with 24 or 48 ports (10/100/1000 Mbps)

7.1.3 LED indicators for ports, system and power status

On Brocade ICX 6450 models LEDs indicate the status of the ports, of the system, and the power status of the device.

Port status LED indicator

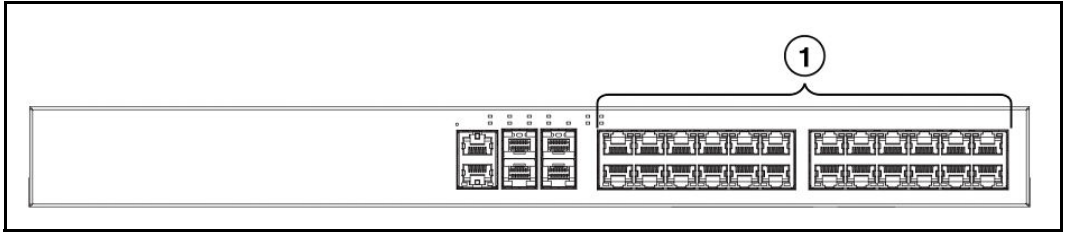


Figure 26: Port status LED indicator (ICX 6450-24)

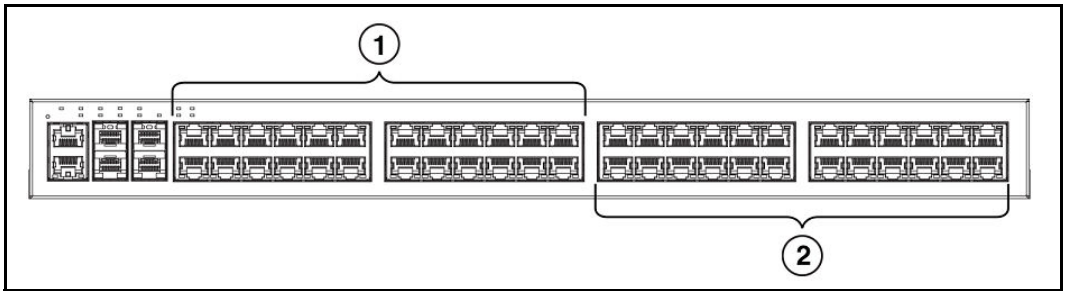


Figure 27: Port status LED indicator (ICX 6450-48)

(1) or (1) and (2) display the ports with status LEDs.

The following status indicators are possible:

LED	Display and meaning
Ethernet	<ul style="list-style-type: none">– Lights up green and flashes when the port is transferring and receiving data packets.– Does not light up when no connection to a remote port exists.
SFP/SFP+(X1-X4)	<ul style="list-style-type: none">– Lights up green when the port is transferring 10 Gbps. Lights up green and flashes when data packets are being transferred and received.– Lights up yellow when the port is transferring 1 Gbps. Lights up yellow and flashes when data packets are being transferred and received.– Does not light up when no connection to a remote port exists.
Out-of-band management port (2 LEDs)	<ul style="list-style-type: none">– Not used

Table 4: Meaning of the port status LED indicator

System status LED indicator

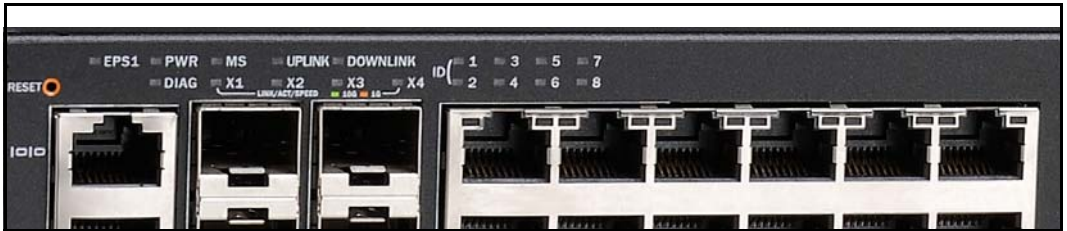


Figure 28: System status LED indicator

The information displayed by the system status LEDs is only relevant for the service technician. Information on the status of the Net Unit which is relevant for the customer is displayed by the SE Manager in the main menu *Hardware* → *IP networks*.

Power status LED indicator

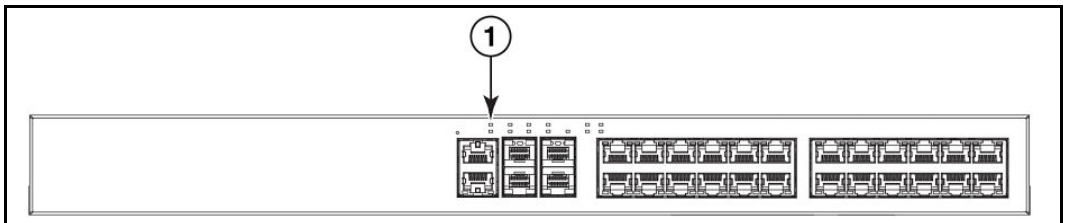


Figure 29: Power status LED indicator (IXC 6450-24)

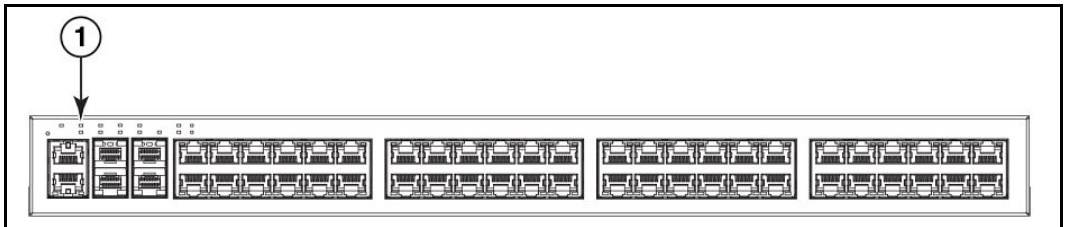


Figure 30: Power status LED indicator (IXC 6450-48)

(1) shows the power status LED.

The following status indicators are possible:

LED	Display and meaning
PWR (Power)	<ul style="list-style-type: none"> – Does not light up when no power is supplied. – Lights up green when the internal power supply (PSU) is functioning normally. – Lights up yellow when the internal power supply has failed and power is being supplied from an external power supply (EPS).

Table 5: Meaning of the power status LED indicator

7.1.4 Threshold values for the operating temperature

The device determines the speed of the fans autonomously. The speed cannot be set from the outside. The table below shows the temperature threshold values which result in the fan speed increasing.

By default the threshold value for a warning is 10 degrees Celsius lower than the critical threshold value. As soon as the temperature exceeds the high-limit temperature threshold (TB), the fan operates at maximum speed. When a lower threshold value is fallen below, the fan speed is reduced.

Model	Low-limit temperature TA (°C)	High-limit temperature TB (°C)	Critical (shutdown) temperature TC (°C)
IXC 6450-24	66	71	83
IXC 6450-48	64	69	76

Table 6: Temperature threshold values

7.2 Extension of the Net Unit

7.2.1 Redundant Net Unit

A redundant Net Unit has two redundant switches. The SE servers SE700 and SE500 have one redundant Net Unit in the basic configuration. The redundant Net Unit is optional for the SE300.

On a redundant Net Unit the ports are monitored, and when an active uplink port fails, the remaining port is switched to. When the LAN segment concerned fails, the downtime is consequently reduced to the switchover time.

7.2.2 Port extension

On the SE servers SE700 and SE500 the redundant Net Unit can be enhanced by a redundant port extension, i.e. with two switches, meaning that in the maximum configuration 96 redundant LAN ports are available.

On the SE300 the port extension is possible if the Net Unit is redundant in design.

Further information on port extension is provided in the "Additive Components" Operating Manual [4].

7.2.3 HNC (High Speed Net Connect) on the SE700 / SE500

The High-speed Network Connect (HNC for short) connects the Server Unit /390 with the LAN. Furthermore, as net client the HNC permits access to the Net-Storage.

The SE servers SE700 and SE500 therefore incorporate an HNC in their basic configuration.

Redundancy of the HNC is an optional feature. Up to four HNCs can be integrated.

Further information on the HNC is provided in the "Server Unit /390" Operating Manual [2].

8 Switching the server on and off

8.1 Switching the SE300 on and off

Normally the Management Unit, Server Unit and Application Units are switched on and off via remote administration PCs, see the information in the “Quick Guide” [7].

This chapter describes the actions for switching these units on/off which can be performed directly on the SE server SE300 as an alternative to switching it on/off remotely.

Further information on this subject and also on the subjects IPL, console and SE Manager is provided in the “Operation and Administration” manual [5].

8.1.1 Switching off in an emergency

The SE300 complies with the relevant safety regulations for IT equipment, including electrical office equipment.

In an emergency all the hardware components must immediately be disconnected by cutting off the power distribution units from the power source (e.g. when the housing or power cable is damaged or liquid or foreign material gets into the equipment).

**CAUTION!**

Operation of the SE server SE300 is then terminated ungracefully and abruptly. Notify Customer Support.

If despite the emergency there is still time enough, you can also switch off Server Unit(s), Application Unit(s) and Management Unit manually via the operating panel at the front of the unit (for the MU see [figure 10 on page 50](#), and for the SU and AU see the "Server Unit x86" [3] and "Additive Components" Operating Manuals [4]). Optional hardware components have their own On/Off switches or are switched on/off automatically together with the Server Unit (e.g. ETERNUS JX40, see "Additive Components" [4]).

**CAUTION!**

These do not disconnect the hardware components completely from the power source. To cut the entire system off from the power source, you must disconnect the power distribution units from the power source. Notify Customer Support.

8.1.2 Switching the SE server on

The following hardware components must be switched on in this order:

1. Switch on the optional hardware components

- ▶ Switch on the ETERNUS LT40 S2 tape library using the On/Off switch at the front (see the "Additive Components" Operating Manual [4]).
- ▶ Switch on any other connected hardware components.



The ETERNUS JX40 S2 disk storage system is switched on automatically on a Server Unit when the Server Unit is switched on.

2. Switch on the MU

The power-on indicator (item 11 in [figure 10 on page 50](#)) lights up orange (POWER STAND-BY).

- ▶ Switch on the rack console by pulling out and folding out the monitor, see [page 33](#).
- ▶ Press the On/Off switch on the MU (item 12 in [figure 10 on page 50](#)).

The power-on indicator lights up green. The MU switches itself on, conducts a system test and starts the M2000 software. This takes a little time. Finally, on the rack console you see the login window for the Linux desktop of the local console.

- ▶ Call the SE Manager, e.g. after logging in on the local console via the browser of the Linux desktop (in the "Computer" menu in the task bar) or via an administration PC (default), see the "Operation and Administration" manual [5].

You can also switch on the MU remotely via the iRMC of the MU, see the "Operation and Administration" manual [5].

3. Switch on the Server Unit


Before the Server Unit is switched on, the status indicator lights up orange.

- ▶ Switch on the Server Unit by pressing the On/Off switch.

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.

 The controls and indicators of the Server Unit are described in the "Server Unit x86" Operating Manual [3].


Further optional Server Units are switched on in the same way.

4. Switch on the optional Application Units

Before an Application Unit is switched on, the status indicator lights up orange (POWER STAND-BY).

- ▶ Switch on the Application Unit by pressing the On/Off switch.

The power-on indicator lights up green. The Application Unit switches on, conducts a system test and starts the operating system.

 The controls, indicators and further on/off options for the AU are described in the "Additive Components" Operating Manual [4].

Further optional Application Units are switched on in the same way.

8.1.3 Switching the SE server off

The following hardware components must be switched off in the specified order.



CAUTION!

This does not disconnect the hardware components completely from the power source (POWER STAND-BY). To cut the entire system off from the power source, you must disconnect the power distribution units from the power source. Notify Customer Support.

1. Switch off the optional Application Units

Before an Application Unit is switched off, the power-on indicator lights up green.

- ▶ Terminate the customer applications and the operating system properly.

The Application Unit is switched off automatically and enters standby mode. The status indicator lights up orange. Check this before continuing.



If the operating system does not automatically switch off the Application Unit, hold the On/Off switch down for at least four seconds.

Alternatively, as the administrator or AU administrator you can switch the Application Unit off using the SE Manager (menu *Hardware* → *Units* [→ <se server>] (*SE*<model>), *Units* tab, *Switch off* symbol), see the "Operation and Administration" manual [5].



The controls, indicators and further on/off options for the AU are described in the "Additive Components" Operating Manual [4].

Further Application Units are switched off in the same way.

2. Switch off the Server Unit

- ▶ 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), 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.

Before the Server Unit is switched off, the power-on indicator lights up green, and after it has been switched off, it lights up orange. Check this before continuing.



The controls and indicators of the Server Unit are described in the "Server Unit x86" Operating Manual [3].

Further Server Units are switched off in the same way.

3. Switch off the MU

- ▶ Switch off the MU using the SE Manager (menu *Hardware* → *Units* [→ <se server>] (*SE*<model>), *Units* tab, *Switch off* symbol), see the “Operation and Administration” manual [5]

Before the MU is switched off, the power-on indicator lights up green, and after it has been switched off, it lights up orange (item 11 in [figure 10 on page 50](#)). Check this before continuing.

4. Switch off the optional hardware components

- ▶ Switch off the ETERNUS LT40 S2 tape library using the On/Off switch on the front (see the "Additive Components" Operating Manual [4]).
- ▶ Switch off any other connected hardware components.



The ETERNUS JX40 S2 disk storage system connected to a Server Unit is switched off automatically when the Server Unit is switched on/off.

8.2 Switching the SE700 / SE500 on and off

Normally the Management Unit, Server Unit and Application Unit are switched on and off via remote administration PCs, see the information in the “Quick Guide” [7].

This chapter describes the actions for switching these units on/off which can be performed directly on the SE server SE700 or SE500 as an alternative to switching it on/off remotely.

Further information on on this subject and also on the subjects IPL, console and SE Manager is provided in the “Operation and Administration” manual [5].

8.2.1 Switching off in an emergency

The SE700 and SE500 comply with the relevant safety regulations for IT equipment, including electrical office equipment.

In an emergency the devices must immediately be switched off (e.g. when the housing or power cable is damaged or liquid or foreign material gets into the equipment).

This can be done by pressing the POWER STAND-BY button on the server's control panel or by pressing the UNIT EMERGENCY switch. Pressing the UNIT EMERGENCY switch causes an abbreviated power-off routine to be started.

The UNIT EMERGENCY switch is at the bottom of the control panel (see [figure 31 on page 76](#)).

Pressing the POWER STAND-BY button or UNIT EMERGENCY switch does not disconnect the system completely from the power source (POWER STAND-BY). To cut the entire system off from the power source, you must switch off/remove the fuses from the customer's in-house installation.

Please then notify Customer Support.

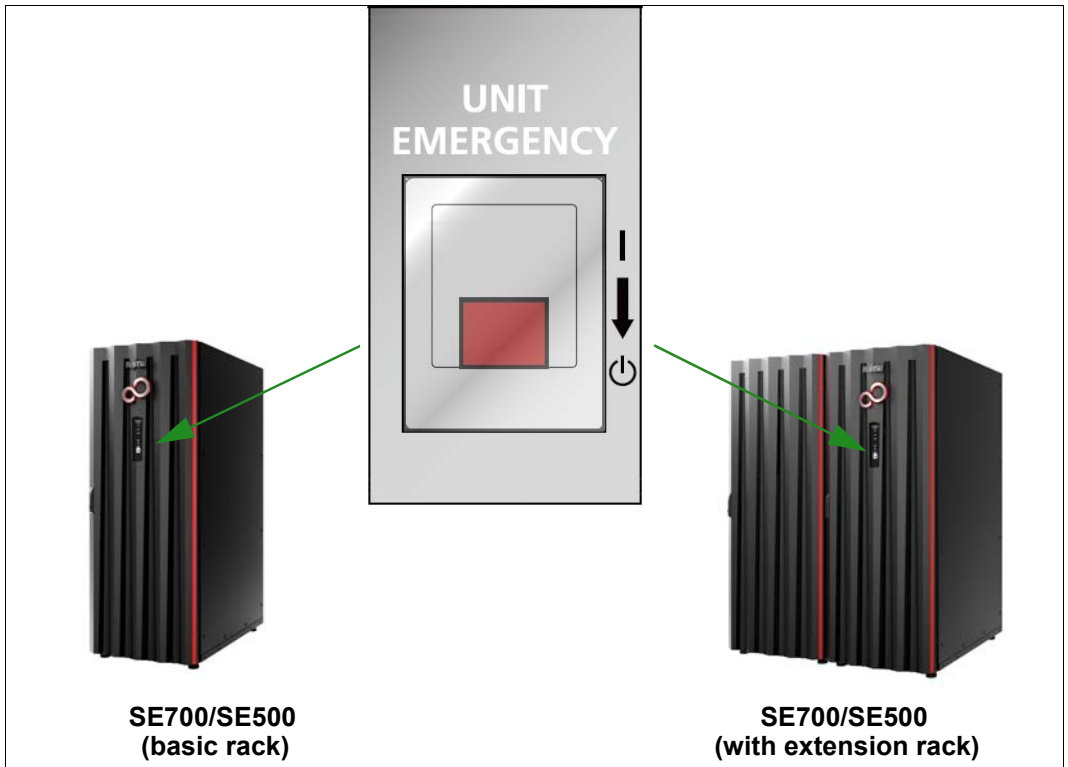


Figure 31: UNIT EMERGENCY switch on the SE700 or SE500

8.2.2 Switching the SE server on

The figure below shows the hardware involved in switching the Server Unit /390 on/off.

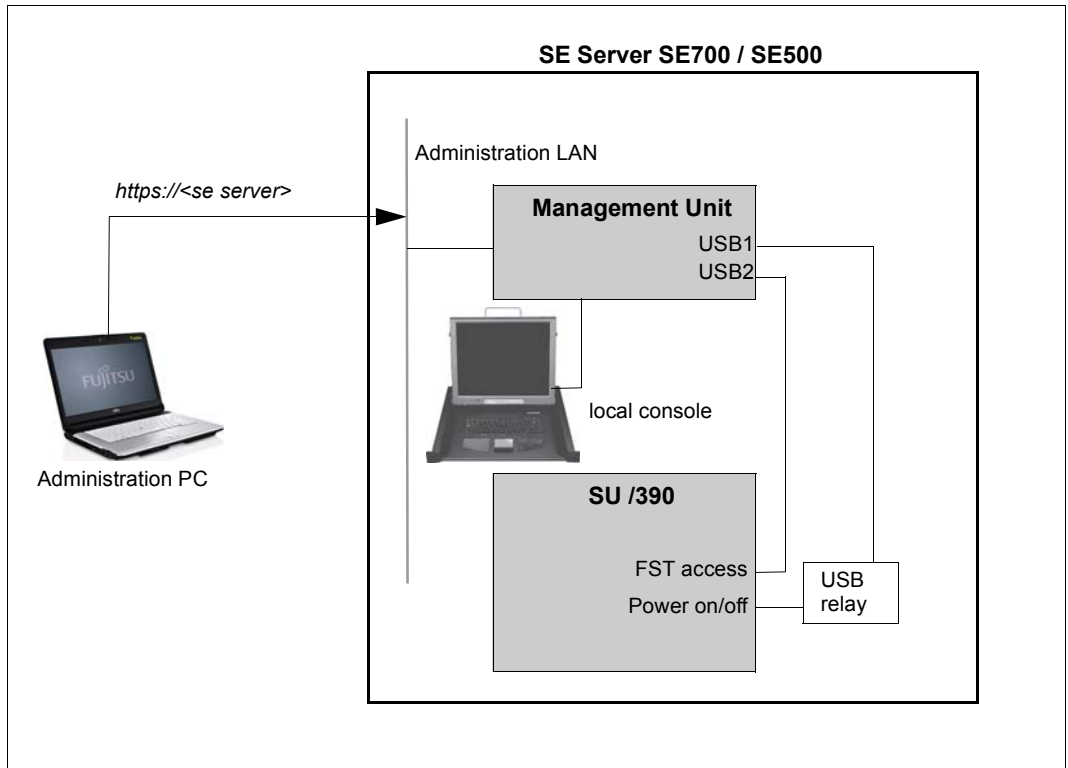


Figure 32: Hardware involved in switching the Server Unit /390 on/off

Detailed information on switching the hardware on/off using the SE Manager is provided in the "Operation and Administration" manual [5].

The following hardware components must be switched on in the specified order.

1. Switch on the optional hardware components

- ▶ Switch on the ETERNUS LT40 S2 tape library using the On/Off switch at the front (see the "Additive Components" Operating Manual [4]).
- ▶ Switch on any other connected hardware components.

2. Switch on the MU

The power-on indicator (item 11 in [figure 10 on page 50](#)) lights up orange (POWER STAND-BY).

- ▶ Switch on the rack console by pulling out and folding out the monitor, see [page 33](#).
- ▶ Press the On/Off switch on the MU (item 12 in [figure 10 on page 50](#)).

The power-on indicator lights up green. The MU switches itself on, conducts a system test and starts the M2000 software. This takes a little time. Finally, on the rack console you see the login window for the Linux desktop of the local console.

- ▶ Call the SE Manager, e.g. after logging in on the local console via the browser of the Linux desktop (in the “Computer” menu in the task bar) or via an administration PC (default), see the “Operation and Administration” manual [5].

Redundant MUs are switched on in the same way.

You can also switch on the MU remotely via the iRMC of the MU, see the “Operation and Administration” manual [5].

3. Switch on the Server Unit SU /390

- ▶ 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), see the “Operation and Administration” manual [5].

Alternatively you can switch the Server Unit on by pressing the POWER ON button on the server's control panel (see [page 44](#)). The system is ready when the status indicator on the server's control panel displays no further error codes.

Then you can call an SVP console window in the SE Manager and start the BS2000 system using PROGRAM LOAD FRAME: DETAIL-1.

When a POWER ON IPL is configured, the BS2000 system is loaded automatically (using AUXILIARY FRAME: LOAD PRESET1).

Alternatively the IPL can also be initiated in the SE Manager (see the menu *Systems* → [<se server> (*SE*<model>) →] <unit> (*SU*</390>) → *BS2000 operation mode*, “Operation and Administration” manual [5]).



The control panel and SVP frames of the Server Unit are described in the “Server Unit /390” Operating Manual [2].

4. Switch on the optional Server Units x86

Before the Server Unit is switched on, the status indicator lights up orange.

- ▶ Switch on the Server Unit by pressing the On/Off switch.

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.



The controls and indicators of the Server Unit are described in the "Server Unit x86" Operating Manual [3].

Further Server Units x86 are switched on in the same way.

5. Switch on the optional Application Units

Before an Application Unit is switched on, the status indicator lights up orange (POWER STAND-BY).

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

Alternatively, switch on the Application Unit by pressing the On/Off switch.

The power-on indicator lights up green. The Application Unit switches on, conducts a system test and starts the operating system.



The controls, indicators and further on/off options for the AU are described in the "Additive Components" Operating Manual [4].

Further Application Units are switched on in the same way.

8.2.3 Switching the SE server off

Figure [figure 32 on page 77](#) shows the hardware involved in switching the Server Unit /390 on/off.

The following hardware components must be switched off in the specified order.



CAUTION!

This does not disconnect the hardware components completely from the power source (POWER STAND-BY). To cut the entire system off from the power source, you must disconnect the power distribution units from the power source. Notify Customer Support.

1. Switch off the Application Units

Before the Application Unit is switched off, the power-on indicator lights up green.

- ▶ Terminate the customer applications and the operating system properly.

The Application Unit is switched off automatically and enters standby mode. The status indicator lights up orange. Check this before continuing.



If the operating system does not automatically switch off the Application Unit, hold the On/Off switch down for at least four seconds.

Alternatively, as the administrator or AU administrator you can switch the Application Unit off using the SE Manager (menu *Hardware* → *Units* [→ <se server>] (*SE*<model>), *Units* tab, *Switch off* symbol), see the “Operation and Administration” manual [5].



The controls, indicators and further on/off options for the AU are described in the “Additive Components” Operating Manual [4].

Further Application Units are switched off in the same way.

2. Switch off the Server Unit SU /390

- ▶ 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), 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.

Before the Server Unit is switched off, the power-on indicator lights up green, and after it has been switched off, it lights up orange. Check this before continuing.

Alternatively you can switch the Server Unit off by pressing the STAND-BY button on the server's control panel (see [page 44](#)) or via the SVP console (menu item POWER STAND-BY in AUXILIARY FRAME: POWER STAND-BY/IMPL). The BS2000 system should already have been shut down.



The control panel and SVP frames of the Server Unit are described in the "Server Unit /390" Operating Manual [2].

3. Switch off the Server Units x86

- ▶ 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), 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.

Before the Server Unit is switched off, the power-on indicator lights up green, and after it has been switched off, it lights up orange. Check this before continuing.



The controls and indicators of the Server Unit are described in the "Server Unit x86" Operating Manual [3].

Further Server Units x86 are switched off in the same way.

4. Switch off the MU

- ▶ Switch off the MU using the SE Manager (menu *Hardware* → *Units* [→ <se server>] (*SE*<model>), *Units* tab, *Switch off* symbol), see the "Operation and Administration" manual [5]

Before the MU is switched off, the power-on indicator lights up green, and after it has been switched off, it lights up orange (item 11 in [figure 10 on page 50](#)). Check this before continuing.

Redundant MUs are switched off in the same way.

5. Switch off the optional hardware components

- ▶ Switch off the ETERNUS LT40 S2 tape library using the On/Off switch on the front (see the "Additive Components" Operating Manual [4]).
- ▶ Switch off any other connected hardware components.

9 Environmental protection and service

The Fujitsu servers have a long life expectancy, not only because of the excellent expansion options they offer, but also because of the quality of the products.

As technology continues to develop, however, ever greater volumes of data will need to be processed. More and more demands are being placed on storage capacity, speed and computer system design. So when you eventually want to replace your server with a newer model and dispose of the old device, we can also offer you support in this area.

Recycling old computer equipment is already a tradition at Fujitsu: We have been redeeming and reusing old computer systems for many years now. Even at the design stage, particular emphasis is placed on the reusability of components and materials

Your server is manufactured to the greatest possible extent from environmentally friendly materials that can be fully recycled.

Read on through the next sections for a brief look at some of the measures we have introduced in an effort to protect the environment as well as our tips and suggestions for environmentally friendly handling of your system.

Environmentally friendly product design and development

This product has been designed in accordance with the guideline “environmentally friendly product design and development” of FUJITSU.

This means that the designers have taken into account critical factors such as durability, selection of materials and coding, emissions, packaging, the ease with which the product can be dismantled and the extent to which it can be recycled.

This saves resources and thus reduces the harm done to the environment.

Note on saving energy

If your device does not have to remain switched on permanently, only switch it on when you are ready to use it and then switch it off again during long breaks and when you finish your work.

Note on dealing with consumables

Please dispose of printer consumables and batteries in accordance with local government regulations.

Note on labeling plastic housing parts

Please avoid sticking your own labels on plastic housing parts wherever possible, since this makes it difficult to recycle them.

Take-back, recycling and disposal

Servers which are no longer required should first be used for other purposes before disposal or recycling is considered.

FUJITSU is a pioneer in matters of environmentally friendly computers and has been certified as providing environmental management in accordance with DIN EN ISO 14001. This also includes taking back your server and remarketing it or recycling it in an environmentally friendly manner.

To return your used server to FUJITSU, please contact

- your sales representative or
- a branch of FUJITSU.

An offer will be submitted to you here or your server will be recycled free of charge at our remarketing and recycling center.

Service

If you have any complaints in relation to missing parts or incomplete delivery, please contact the FUJITSU complaints department:

Email: RLC@ts.fujitsu.com
Tel.: +49 (0) 3634 / 330 - 1758
Fax: +49 (0) 3634 / 330 - 1814

If you have questions on operation or if problems occur, please contact your local FUJITSU Customer Support, in Germany under:

Tel.: +49 (0) 89 3564 80 000

You can find all service numbers on the FUJITSU support pages:

<http://support.ts.fujitsu.com/IndexContact.asp?OpenTab=servicedesk>

Abbreviations

APCS	Automatic Power Control System
AROMA-P	Automatic and Remote Operation Manager
AU	Application Unit
CD	Compact Disk
DVD	Digital Versatile Disk
DVD-RW	Digital Versatile Disk - Read and Write
ECC	Error Correcting Code
EDC	Error Detection Code
ESD	Electrostatically Sensitive Device
FC	Fibre Channel
HBA	Host Bus Adapter
HDD	Hard Disk Drive
HNC	High-speed Net Connect
HU	Height Unit
ID	IDentifier
iRMC	Integrated Remote Management Controller
ISDN	Integrated Services Digital Network
IP	Internet Protocol
IT	Information Technology
LAN	Local Area Network
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LTO	Linear Tape Open
NMI	Non Maskable Interrupt
MU	Management Unit
OCP	Operator Control Panel
PCI	Peripheral Component Interconnect

Abbreviations

RAID	Redundant Array of Disks
RMU	Remote Management Unit
RH	Relative Humidity
SAN	Storage Area Network
SAS	Serial Attach SCSI
SCSI	Small Computer System Interface
SU	Server Unit
SU /390	Server Unit /390
SU x86	Server Unit x86
USB	Universal Serial Bus
UPS	Uninterruptible Power Supply

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**
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