

PRIMERGY RX600 S4 Server

Operating manual

Edition April 2008

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Certified documentation according to DIN EN ISO 9001:2000

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 9001:2000.

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1 Preface

The PRIMERGY RX600 S4 server is an Intel-based server for mid-size and large companies. The server is suitable for use as a file server and also as an application, information or Internet server. It is used as a rack model.

Thanks to its highly developed hardware and software components, the server offers a high level of data security and availability. These include hot-plug HDD modules, hot-plug system fans and power supply units, and also hot-plug PCI slots, the Server Management Software ServerView, "Prefailure Detection and Analysis" (PDA) and "Automatic Server Reconfiguration and Restart" (ASR&R).

Security functions in the BIOS-Setup and on the system board protect the data on the server against manipulation. Additional security is provided by the lockable rack door.

The server occupies 4 height units (HU) in the rack.

1.1 Concept and target groups for this manual

This operating manual describes how to install, set up and operate your server.

This operating manual is intended for those responsible for installing the hardware and ensuring that the system runs smoothly. It contains all the information you need to put your PRIMERGY RX600 S4 into operation.

To understand the various expansion options, you will need to be familiar with the fields of hardware and data transmission and you will require a basic knowledge of the underlying operating system.

1.2 Documentation overview

More information on your PRIMERGY RX600 S4 can be found in the following documents:

- “Quick Start Hardware - PRIMERGY RX600 S4” leaflet (only included as a printed copy)
- “Quick Start Software - Quick Installation Guide” leaflet (only included as a printed copy)
- “Safety notes and other important information” manual
- “Warranty” manual
- “Customer Self Service (CSS)” manual
- “Ergonomics” manual
- “Returning used devices” manual
- “Helpdesk” leaflet
- Technical manual for the system board D2244
- “PRIMERGY RX600 S4 Server Operating Manual”
- “PRIMERGY RX600 S4 Server Options Guide”
- “Fujitsu Siemens Computers Phoenix Trusted Core™ BIOS” manual
- “Integrated RAID for SAS User’s Guide”
- “ServerView RAID User’s Guide”
- “Integrated Mirroring User’s Guide”



PRIMERGY manuals are available in PDF format on the ServerBooks DVD. The ServerBooks DVD is part of the ServerView Suite supplied with every server.

The PDF files of the manuals can also be downloaded free of charge from the Internet. The overview page showing the online documentation available on the Internet can be found using the URL:

<http://manuals.fujitsu-siemens.com>. The PRIMERGY server documentation can be accessed using the *Industry standard servers* navigation option.

If you need a replacement copy of the ServerBooks DVD, send the details of your server to the following e-mail address: Reklamat-PC-LOG@fujitsu-siemens.com

Further sources of information:

- Manual for the monitor
- Documentation for boards and drives
- Documentation for your operating system
- Information files on your operating system

1.3 Features

Customer Self Service (CSS)

The Fujitsu Siemens Computers Customer Self Service (CSS) concept enables you to identify and replace the affected component yourself in the case of certain error scenarios.

In the CSS concept, you can replace the following components yourself in the event of an error:

- Hot-plug hard disk drives
- Hot-plug power supply units
- Memory modules
- System fans
- Expansion cards

For information on replacing these components, see chapter [“CSS components” on page 81](#).

CSS indicators on the control panel and on the back of the PRIMERGY server provide you with information if a CSS event arises (for more information on the behavior of these indicators, see chapter [“Starting up and operation” on page 55](#) and the "Customer Self Service (CSS)" manual on the ServerBooks DVD).

You can also fit your server with a ServerView Local Service Panel, which enables you to identify the type of component affected by the error directly on the server (for more information, see the "Customer Self Service (CSS)" manual on the ServerBooks DVD).

In addition, CSS errors are displayed in ServerView S2, the server management software from Fujitsu Siemens Computers.

In the event of errors, ServerView S2 refers you directly to the affected component and its order information in the Illustrated Spares catalog of the server in question.

System board

The features of the system board are described in the technical manual for the system board D2244 for the hardware and in the “BIOS Setup” for the firmware.

Hot-plug PCI slots

The server has three standard PCI slots and four hot-plug PCI slots. These hot-plug PCI slots allow installation and removal of boards during operation when the operating system supports this function (for further details see section “[Hot-plug expansion cards](#)” on page 97).

Hard disk drives

The server is equipped with a drive bay in which up to 8 SAS HDD modules can be inserted. Each HDD module can accommodate an SAS hard disk drive with a 2.5-inch format. The modules are connected to the SAS backplane wirelessly. This allows HDD modules to be plugged in or pulled out easily.

The hard disk system is designed for SAS with one channel for each hard disk drive.

If the server has the corresponding RAID configuration, HDD modules can also be replaced during operation.

An external SCSI interface is also offered optionally to allow external storage subsystems to be connected. You will find further information in the Options Guide.

Onboard SAS RAID controller

There is an onboard SAS RAID controller for operating eight SAS hard disk drives. RAID levels 0, 1, 5, 10 and 50 are supported.

A BBU backs up the memory contents also in the event of power failure (option).

Accessible drives/components

A number of mounting locations are available:

- An installation slot for a ServerView Local Service Display (standard)
- An installation slot for a slimline CD/DVD drive (option)
- A 5.25-inch bay for a magnetic tape drive (option)

The accessible drives/components integrated in this locations cannot be replaced during operation.

Power supply

The server has two hot-plug power supply units that automatically switch to a mains voltage of 110 V - 240 V. This ensures redundant power supply. If one power supply unit is defective, the other then guarantees unimpaired operation. The faulty power supply unit can be replaced during operation (for further details see section [“Replacing the hot-plug power supply unit” on page 82](#)).

Cooling

Each processor has a heat sink. Further cooling for the installed processors is provided by four hot-plug CPU fans (redundant configuration). Two CPU fans are mounted in each fan module.

Temperature sensors variably adjust the fans. If a temperature sensor fails or is removed, the CPU fans affected run at maximum speed so as to provide the greatest possible protection for the hardware. When the housing is open, **all** the CPU fans run at maximum speed.

If a CPU fan fails, unimpaired further operation is ensured. A defective fan module can be replaced during operation (for further details see [“Replacing hot-plug CPU fans” on page 84](#)).

The main memory is cooled by two fan units. Each fan unit consists of two separate hot-plug fans. If one fan in a redundant unit fails, the system is able to continue operating without limitations. If a fan fails, it can be replaced while the system is running (for further details see section [“Replacing hot-plug main memory fans” on page 86](#)).

High level of availability and data security

When memory data is accessed, 1-bit errors in the main memory are identified and automatically corrected with the ECC (Error Correcting Code) method. The patented memory scrubbing function regularly starts up the EDC mechanism (Error Detection Code) and thus ensures continuous data integrity.

The memory modules used support SDDC technology (Chipkill™), which further increases the effectiveness of memory error monitoring and correction.

Support is likewise provided for hot-spare memory technology, in which a memory bank is used like a replacement bank. If a memory module fails, the bank with the defective memory is automatically deactivated and the replacement bank is activated (provided it has been configured for appropriately in the BIOS). The deactivated memory bank is no longer used and the faulty memory module can be replaced at the next opportunity. In order to be able to use the hot-spare memory function, all occupied memory banks must have an identical memory configuration.

Memory modules can be protected against failure through mirroring (memory mirroring, requires two or four memory modules).

ASR&R (Automatic Server Reconfiguration and Restart) restarts the system in the event of an error and automatically "hides" the defective system components.

The PDA (Prefailure Detection and Analysis) technology from Fujitsu Siemens Computers analyzes and monitors all components that are critical for system reliability.

The onboard SAS controller supports the RAID levels 0, 1, 10, 5 and 50, thus increasing system availability and reliability.

Additional reliability is provided by the hot-plug HDD modules, fans, power supply units and expansion cards.

iRMC S2 with integrated service LAN port



The features of the iRMC S2 Advanced Video Redirection and Remote Storage are available as an option.

The iRMC S2 (integrated **R**emote **M**anagement **C**ontroller) is a BMC with integrated service LAN port and expanded functionality that was previously only available with additional plug-in cards. In this way, the iRMC S2 enables complete control of PRIMERGY servers, regardless of system status, and thus particularly the control of PRIMERGY servers that are in the “out-of-band” system status.

Major functions supported by the iRMC S2 include the following:

- Browser access via iRMC's own Web server
- Secure communication (SSH, SSL)
- Power Management for the managed server (depending on its system status)
- Power Consumption Management
- Connecting virtual drives as remote storage
- Text-based and graphic console bypass (Advanced Video Redirection)
- Command Line Interface (CLP)
- Simple, interactive or script-based iRMC S2 configuration
- Customer Self Service (CSS)
- iRMC-s own user management
- Multi-computer, global iRMC user administration using an LDAP Directory Service
- Automatic network configuration via DNS / DHCP
- Power supply of the iRMC S2 via the system standby supply
- Full-coverage alarm management
- System Event Log (SEL) reading and processing

More information about the iRMC S2 can be found in the “iRMC S2 - integrated Remote Management Controller” manual.

Server management

Server management is implemented using the ServerView software supplied combined with PDA (Prefailure Detection and Analysis) technology from Fujitsu Siemens Computers. PDA reports the threat of a system error or overload at an early stage, allowing preventive measures to be taken.

ServerView enables the management of all PRIMERGY servers in the network via a central console. The following key functions and others are supported by ServerView:

- Round-the-clock monitoring, regardless of server status
- High-performance, graphical console bypass (AVR) protected by HTTPS/SSL (128-bit)
- Remote storage via USB
- Remote power on (Wake On LAN)
- Automatic switch-off when the housing is opened (housing monitoring)
- Temperature monitoring of the CPU and the surrounding area
- Watchdog timer for Automatic Server Reconfiguration and Restart (ASR&R) in the event of failure of memory modules or processors
- Power monitoring
- End-of-life monitoring of fans with prompt notification before failure
- Watchdog timer for monitoring the operating system and applications with ASR&R

Further information on the ServerView server management is provided in the associated documentation.

ServerStart

You can configure the PRIMERGY server quickly and precisely with the ServerStart software provided. User-guided menus are available for installing the server operating system (for further details see section [“Configuring the server” on page 69](#)).

Service and support

PRIMERGY servers are service-friendly and modular, enabling quick and easy maintenance.

For easier and immediate recognition, handles and locks (touch points) are color coded. Blue touch points are for components that can be replaced without tools. Green touch points are for hot-plug components that can be replaced or inserted during operation without the need for tools (see also [“CSS components” on page 81](#)).

You can use the ServerView Local Service Display on the front panel of the server to check the status of the key system components at any time without opening the housing. Further information on ServerView Local Service Display is provided in the associated documentation.

For further information, please refer to the diagnosis LEDs on the hot-plug components (power supply unit, fans, expansion cards, HDD modules).

The Global Flash program supplied with the Fujitsu Siemens Computers utilities supports a fast remote BIOS update via the LAN interface; the BIOS can be updated locally via USB. The optional RemoteView remote testing and diagnostic system enables you to remotely maintain your server.

ServerView Remote Management

ServerView Remote Management is the remote management solution from Fujitsu Siemens Computers for PRIMERGY servers. ServerView Remote Management and the relevant hardware components integrated on the system board allow remote monitoring and maintenance as well as fast restoration of operation in the event of errors.

Remote monitoring and maintenance avoids time-consuming and costly on-site repairs and reduces service costs. This leads to a reduction in the total cost of ownership and an excellent return on investment for the remote management solution.



The administrator can access all system information and information from the sensors such as fan speeds or voltages via the iRMC S2's Web interface (see section [“iRMC S2 with integrated service LAN port” on page 13](#)). He can also start the text-based or graphic console bypass (Advanced Video Redirection, AVR) and get information about remote storage.



The features of the iRMC S2 Advanced Video Redirection and Remote Storage are available as an option.

1.4 Notational conventions

The following notational conventions are used in this manual:

<i>Text in italics</i>	indicates commands or menu items.
“Quotation marks”	indicate names of chapters and terms that are being emphasized.
▶	describes activities that must be performed in the order shown.
 CAUTION!	pay particular attention to texts marked with this symbol. Failure to observe this warning may endanger your life, destroy the system or lead to the loss of data.
	indicates additional information, notes and tips.

1.5 Technical data

Electrical data (hot-plug power supply unit)

Rated voltage range	110 V - 240 V
Frequency	50 Hz - 60 Hz
Rated current with basic configuration	1.6 A (240 V)
Max. rated current	5.0 A (240 V)
Effective power	1150 W
Apparent power	1195 VA
Heat dissipation	4140 KJ/h (3924 BTU)
Main power fuse	16 A
Protection class	I

Compliance with regulations and standards

Product safety and ergonomics	IEC 60950-1 / EN 60950-1, UL/CSA 60950-1, CNS 14336 / GB 4943 / EN 50371
Electromagnetic compatibility	
Interference emissions	EN 55022 class A; FCC class A; CNS 13438 class A; VCCI class A; AS/NZS CISPR 22 class A; GB 9254 class A; GB 17625; ETSI EN 300 386 V1.3.1
Interference immunity	EN 55024, EN 300386
Harmonic current	EN 61000-3-2
Flicker	EN 61000-3-3
CE marking to EU directives	Low Voltage Directive 2006/95/EC (product safety) Electromagnetic compatibility 2004/108/EC
Environmental conditions	ETSI 300 019-2-3 Class 3.1 (T3.1)
Noise emission	ETSI 300 753 Class 3.1

Mechanical values

Width	482.6 mm
Depth	737.0 mm
Height	176.0 mm (4 HU)
Installation depth in rack	700.0 mm
Cable depth in rack	100.0 mm (1000 mm rack recommended)

Weight

Approx. 40 kg (depending on configuration).

Ventilation clearance

At least 200 mm on the front and rear.

Ambient conditions

Environment class 3K2 Environment class 2K2	EN 60721 / IEC 721 Part 3-3 EN 60721 / IEC 721 Part 3-2
Temperature: Operation (3K2) Transport (2K2)	10 °C 35 °C -25 °C 60 °C
Humidity	10% ... 85%

Condensation during operation must be avoided!

Noise level

Sound power level L_{WA_d} (ISO 9296)	< 7.0 B (standby) < 7.0 B(operation)
Sound pressure level at bystander position L_{pAm} (ISO 9296) (at < 23 °C)	< 55 dB (A) (standby) < 55 dB (A)(operation)

2 Overview of the installation steps

This chapter contains an overview of the steps necessary to install your server. Links guide you to sections where you can find more detailed information on the individual steps:

- ▶ At first, please take notice of the safety instructions in chapter [“Important information” on page 23](#) and following.
- ▶ Transport the server to the place where you want to install it.
- ▶ Unpack all parts, check the contents of the package for visible transport damage and check whether the items delivered match the details on the delivery note (see section [“Unpacking the server” on page 38](#)).
- ▶ Make sure that all necessary manuals (see [“Documentation overview” on page 8](#)) are available; print out the PDF files if required.
- ▶ Fit the server in the rack (see section [“Rack installation/removal of server” on page 39](#)).
- ▶ Wire the server. Follow the instructions in the sections [“Connecting devices to the server” on page 49](#) and [“Notes on connecting/disconnecting cables” on page 54](#).
- ▶ Connect the server to the mains (see section [“Connecting the server to the mains” on page 52](#)).
- ▶ Familiarize yourself with the controls and indicators on the front and rear of the server (see section [“Controls and indicators” on page 55](#)).

Overview of the installation steps

- ▶ Configure the server and install the desired operating system and applications. Here you can choose from two possibilities:
 - Remote configuration and installation with ServerStart:

The ServerStart disc 1 supplied allows you to conveniently configure the server and install the operating system.

Details on how to operate ServerStart, as well as some additional information, can be found in the “ServerView Suite - ServerStart” manual, supplied as a PDF file.

Configuration information can also be found in section [“Configuration with ServerStart” on page 70](#).
 - Local configuration and installation with or without ServerStart (see section [“Configuration with ServerStart” on page 70](#) or section [“Configuration without ServerStart” on page 71](#)).

3 Important information

In this chapter you will find essential information regarding safety when working on your server.

3.1 Safety instructions



The following safety instructions are also provided in the manual “Safety notes and other important information”.

This device meets the relevant safety regulations for IT equipment. If you have any questions about whether you can install the server in the intended environment, please contact your sales outlet or our customer service team.



CAUTION!

- The actions described in this manual should only be performed by technical specialists.
- Repairs to the device that do not relate to CSS failures must only be carried out by service personnel. Please note that unauthorized interference with the system will void the warranty and exempt the manufacturer from all liability.
- Any failure to observe the guidelines in this manual, and any improper repairs could expose the user to risks (electric shock, energy hazards, fire hazards) or damage the equipment.

Before starting up



CAUTION!

- During installation and before operating the device, observe the instructions on environmental conditions for your device (see [“Technical data” on page 17](#)).
- If the server has been moved from a cold environment, condensation may form both inside and on the outside of the machine.

Wait until the server has acclimatized to room temperature and is absolutely dry before starting it up. Material damage may be caused to the server if this requirement is not met.

- Only transport the server in the original packaging or in packaging that protects it from impacts and jolts.

Installation and operation



CAUTION!

- This unit should not be operated in ambient temperatures above 35 °C.
- If the unit is integrated into an installation that draws power from an industrial power supply network with an IEC309 connector, the power supply's fuse protection must comply with the requirements for non-industrial power supply networks for type A connectors.
- The unit automatically adjusts itself to a mains voltage in a range of 110 V - 240 V. Ensure that the local mains voltage lies within these limits.
- This device must only be connected to properly grounded shock-proof sockets or insulated sockets of the rack's internal power supply with tested and approved power cables.
- Ensure that the device is connected to a grounded shockproof socket close to the device.

**CAUTION!**

- Ensure that the power sockets on the device and the grounded shock-proof sockets are freely accessible.
- The On/Off button or the main power switch (if present) does not isolate the device from the mains power supply. To disconnect it completely from the mains power supply, unplug all network power plugs from the grounded shockproof sockets.
- Always connect the server and the attached peripherals to the same power circuit. Otherwise you run the risk of losing data if, for example, the server is still running but a peripheral device (e.g. memory subsystem) fails during a power outage.
- Data cables must be adequately shielded.
- The EN 50173 and EN 50174-1/2 standards apply for LAN cabling. The minimum requirement is the use of a category 5 screened LAN cable for 10/100 Mbps Ethernet, or a category 5e cable for Gigabit Ethernet. The requirements from the ISO/IEC 11801 specification must also be met.
- Route the cables in such a way that they do not create a potential hazard (make sure no-one can trip over them) and that they cannot be damaged. When connecting the server, refer to the relevant instructions in this manual.
- Never connect or disconnect data transmission lines during a storm (risk of lightning strike).
- Make sure that no objects (e.g. jewelry, paperclips etc.) or liquids can get inside the server (risk of electric shock, short circuit).
- In emergencies (e.g. damaged casing, controls or cables, penetration of liquids or foreign bodies), switch off the server immediately, remove all power plugs and contact your sales outlet or customer service team.

**CAUTION!**

- Proper operation of the system (in accordance with IEC 60950-1/ EN 60950-1) is only ensured if the casing is completely assembled and the rear covers for the installation slots have been fitted (electric shock, cooling, fire protection, interference suppression).
- Only install system expansions that satisfy the requirements and rules governing safety and electromagnetic compatibility and those relating to telecommunication terminals. If you install other expansions, they may damage the system or violate the safety regulations. Information on which system expansions are approved for installation can be obtained from our customer service center or your sales outlet.
- The components marked with a warning notice (e.g. lightning symbol) may only be opened, removed or exchanged by authorized, qualified personnel. Exception: hot-plug power supply units/CCS components can be replaced.
- The warranty is void if the server is damaged during installation or replacement of system expansions.
- Only set screen resolutions and refresh rates that are specified in the operating manual for the monitor. Otherwise, you may damage your monitor. If you are in any doubt, contact your sales outlet or customer service center.

Batteries



CAUTION!

- Incorrect replacement of batteries may lead to a risk of explosion. The batteries may only be replaced with identical batteries or with a type recommended by the manufacturer (see the technical manual for the system board).
- Do not throw batteries into the trash can. They must be disposed of in accordance with local regulations concerning special waste.
- The battery must be disposed of in accordance with local regulations concerning special waste.
- Replace the lithium battery on the system board in accordance with the instructions in the technical manual for the system board.
- All batteries containing pollutants are marked with a symbol (a crossed-out garbage can). In addition, the marking is provided with the chemical symbol of the heavy metal decisive for the classification as a pollutant:

Cd Cadmium

Hg Mercury

Pb Lead

Working with CDs/DVDs and CD/DVD drives

When working with devices with CD/DVD drives, these instructions must be followed.



CAUTION!

- Only use CDs/DVDs that are in perfect condition in your server's CD/DVD drive, in order to prevent data loss, equipment damage and injury.
- Check each CD/DVD for damage, cracks, breakages etc. before inserting it in the drive.

Note that any additional labels applied may change the mechanical properties of a CD/DVD and cause imbalance.

Damaged and imbalanced CDs/DVDs can break at high drive speeds (data loss).

Under certain circumstances, sharp CD/DVD fragments can pierce the cover of the CD/DVD drive (equipment damage) and can fly out of the device (danger of injury, particularly to uncovered body parts such as the face or neck).



You can prevent mechanical damage and damage to the CD/DVD drive, as well as premature CD/DVD wear, by observing the following suggestions:

- Only insert CDs/DVDs in the drive when needed and remove them after use.
- Store the CDs/DVDs in suitable sleeves.
- Protect the CDs/DVDs from exposure to heat and direct sunlight.

Laser information

The CD/DVD drive complies with IEC 60825-1 laser class 1.



CAUTION!

The CD/DVD drive contains a light-emitting diode (LED), which under certain circumstances produces a laser beam stronger than laser class 1. Looking directly at this beam is dangerous.

Never remove parts of the CD/DVD drive casing!

Modules with Electrostatic-Sensitive Devices

Modules with electrostatic-sensitive devices are identified by the following sticker:

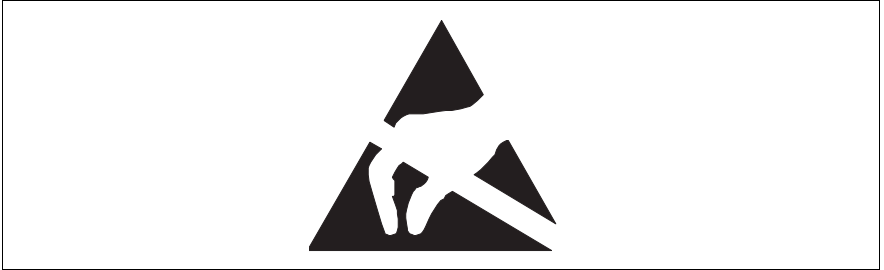


Figure 1: ESD label

When you handle components fitted with ESDs, you must always observe the following points:

- Switch off the system and remove the power plugs from the power outlets before installing or removing components with ESDs.
- You must always discharge static build-up (e.g. by touching a grounded object) before working with such components.
- Any devices or tools that are used must be free of electrostatic charge.
- Wear a suitable grounding cable that connects you to the external chassis of the system unit.
- Always hold components with ESDs at the edges or at the points marked green (touch points).
- Do not touch any connectors or conduction paths on an ESD.
- Place all the components on a pad which is free of electrostatic charge.




For a detailed description of how to handle ESD components, see the relevant European or international standards (EN 61340-5-1, ANSI/ESD S20.20).

Other important information:

- During cleaning, observe the instructions in section [“Cleaning the server” on page 71](#).
- Keep this operating manual and the other documentation (such as the technical manual, CD) close to the device. All documentation must be included if the equipment is passed on to a third party.

3.2 CE conformity

 The system complies with the requirements of the EC directives 2004/108/EC regarding “Electromagnetic Compatibility” and 2006/95/EC “Low Voltage Directive”. This is indicated by the CE marking (CE = Communauté Européenne).

3.3 FCC Class A Compliance Statement

If there is an FCC statement on the device, then:

The following statement applies to the products covered in this manual, unless otherwise specified herein. The statement for other products will appear in the accompanying documentation.

NOTE:

This equipment has been tested and found to comply with the limits for a “Class A” digital device, pursuant to Part 15 of the FCC rules and meets all requirements of the Canadian Interference-Causing Equipment Standard ICES-003 for digital apparatus. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in strict accordance with the instructions, may cause harmful interference to radio communications. However, there is no warranty that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Fujitsu Siemens Computers is not responsible for any radio or television interference caused by unauthorized modifications of this equipment or the substitution or attachment of connecting cables and equipment other than those specified by Fujitsu Siemens Computers. The correction of interferences caused by such unauthorized modification, substitution or attachment will be the responsibility of the user.

The use of shielded I/O cables is required when connecting this equipment to any and all optional peripheral or host devices. Failure to do so may violate FCC and ICES rules.

WARNING:

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

3.4 Transporting the server

**CAUTION!**

Only transport the server in its original packaging or in packaging that protects it from impacts and jolts. Do not unpack the server until it is at its installation location.

If you need to lift or transport the server, ask other people to help you.

Never lift or carry the device by the handles on the front panel.

3.5 Notes on installing in the rack



CAUTION!

- **For safety reasons, at least two people are required to install the rack model because of its weight and size.**
- Never lift the server into the rack using the handles on the front panel.
- When connecting and disconnecting cables, observe the relevant instructions in the “Important Information” chapter of the technical manual for the corresponding rack. The technical manual is supplied with the corresponding rack.
- When installing the rack, make sure that the anti-tilt mechanism is correctly fitted.
- For safety reasons, no more than one unit may be removed from the rack at any one time during installation and maintenance work.
- If several units are simultaneously removed from the rack, there is a risk that the rack could tip over.
- The rack must be connected to the power supply by an authorized specialist (electrician).
- If the rack model is integrated into an installation that draws power from an industrial power supply network with an IEC309 type connector, the power supply's fuse protection must comply with the requirements for non-industrial power supply networks for the type A connector.

3.6 Environmental protection

Environmentally-friendly product design and development

This product has been designed in accordance with the Fujitsu Siemens Computers standard for “environmentally friendly product design and development”. This means that key factors such as durability, selection and labeling of materials, emissions, packaging, ease of dismantling and recycling have been taken into account.

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

Energy-saving information

Devices that do not need to be constantly switched on should be switched off until they are needed as well as during long breaks and after completion of work.

Packaging information

Do not throw away the packaging. You may need it later for transporting the system. If possible, the equipment should only be transported in its original packaging.

Information on handling consumables

Please dispose of printer consumables and batteries in accordance with the applicable national regulations.

In accordance with EU directives, batteries must not be disposed of with unsorted domestic waste. They can be returned free of charge to the manufacturer, dealer or an authorized agent for recycling or disposal.

All batteries containing pollutants are marked with a symbol (a crossed-out garbage can). They are also marked with the chemical symbol for the heavy metal that causes them to be categorized as containing pollutants:

Cd Cadmium

Hg Mercury

Pb Lead

Labels on plastic casing parts

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

Returns, recycling and disposal



The device must not be disposed of with domestic waste. This device is labeled in compliance with European directive 2002/96/EC on waste electrical and electronic equipment (WEEE).

This directive sets the framework for returning and recycling used equipment and is valid across the EU. When returning your used device, please use the return and collection systems available to you. Further information can be found at www.fujitsu-siemens.com/recycling.

Details regarding the return and recycling of devices and consumables within Europe can also be found in the “Returning used devices” manual, via your local Fujitsu Siemens Computers branch or from our recycling center in Paderborn:

Fujitsu Siemens Computers
Recycling Center
D-33106 Paderborn

Tel. +49 5251 8 18010

Fax +49 5251 8 18015

4 Hardware installation



CAUTION!

- Follow the safety instructions in the chapter [“Important information” on page 23](#).
- Do not expose the server to extreme environmental conditions (see [“Ambient conditions” on page 19](#)). Protect the server from dust, humidity and heat.
- Make sure that the server is acclimatized for the time indicated in this table before putting it into operation.

Temperature difference (°C)	Minimum acclimatization time (hours)
5	3
10	5
15	7
20	8
25	9
30	10

Table 1: Acclimatization time

In [table “Acclimatization time”](#), the temperature difference refers to the difference between the operating environment temperature and the temperature to which the server was exposed previously (outside, transport or storage temperature).

4.1 Unpacking the server



CAUTION!

Follow the safety instructions in chapter [“Important information” on page 23](#).

The server must always be lifted or carried by at least two people.

Do not unpack the server until it is at its installation location.

- ▶ Transport the server to the place where you want to set it up.
- ▶ Unpack all individual parts.
Keep the original packaging in case you want to transport the server again.
- ▶ Check the delivery for any damage during transport.
- ▶ Check whether the items delivered match the details on the delivery note.

The product name and serial number of the product can be found on the identification rating plate.

- ▶ Notify your supplier immediately should you discover that the items delivered do not correspond to the delivery note.

4.2 Rack installation/removal of server



CAUTION!

- Follow the safety instructions and the rack installation instructions in chapter “[Important information](#)” on page 23.
- At least two people are needed to position the server into/out of the rack.
- The rack may tip over if more than one unit is removed at the same time.

Rack requirements

The rack systems from Fujitsu Siemens Computers (PRIMECENTER Rack, DataCenter Rack) ideally support installation of PRIMERGY server systems. Installation in the currently standard rack systems of various manufacturers (3rd party rack) is possible in so far as they support the

EIA-310-D standard for 19 inch racks.



The Classic Rack is not supported for the PRIMERGY RX600 S4.

To accommodate the ventilation concept and ensure proper ventilation, any unused areas in the rack must be sealed using dummy covers.

The power is supplied via the multiple socket outlets fitted in the rack.

The main features of the rack systems from Fujitsu Siemens Computers are as follows:

PRIMECENTER Rack

- In connection with so-called assembly brackets frontally bolted telescopic rails or sliding rails.

Two of these assembly brackets and/or the sliding rails are provided with a linear alignment possibility to ensure also an adjustment to different rack depths.

- Enhanced cable management in the lateral rack area.

DataCenter Rack

- Directly laterally bolted telescopic rails or sliding rails (except within the rear left area where a support bracket is used).
- Enhanced cable management in the lateral rack area.

The mounting of the rails in the different racks is described in the next sections.

Installation of the cable management is described in detail in the Technical Manual for the respective rack.

For rack systems from other manufacturers:

3rd party rack

Certain general conditions must be met:

- Installation dimensions (see also figure [2 on page 41](#)):
 - 1 Front of rack
 - 2 Rear of rack
 - A Rack depth (comparison PRIMECENTER Rack 940/1000/1100 mm)
 - B Rack width (comparison PRIMECENTER Rack 700 mm)
 - C Clearance for 19" installation level
 - C1 Front 19" installation level
 - C2 Rear 19" installation level
 - D Cable routing area (cable area depth) and ventilation
 - E Space for front panel and ventilation
 - F Space for right and left support systems
 - P PRIMERGY rack installation depth
 - a1 Front left support upright
 - a2 Front right support upright
 - b1 Rear left support upright
 - b2 Rear right support upright

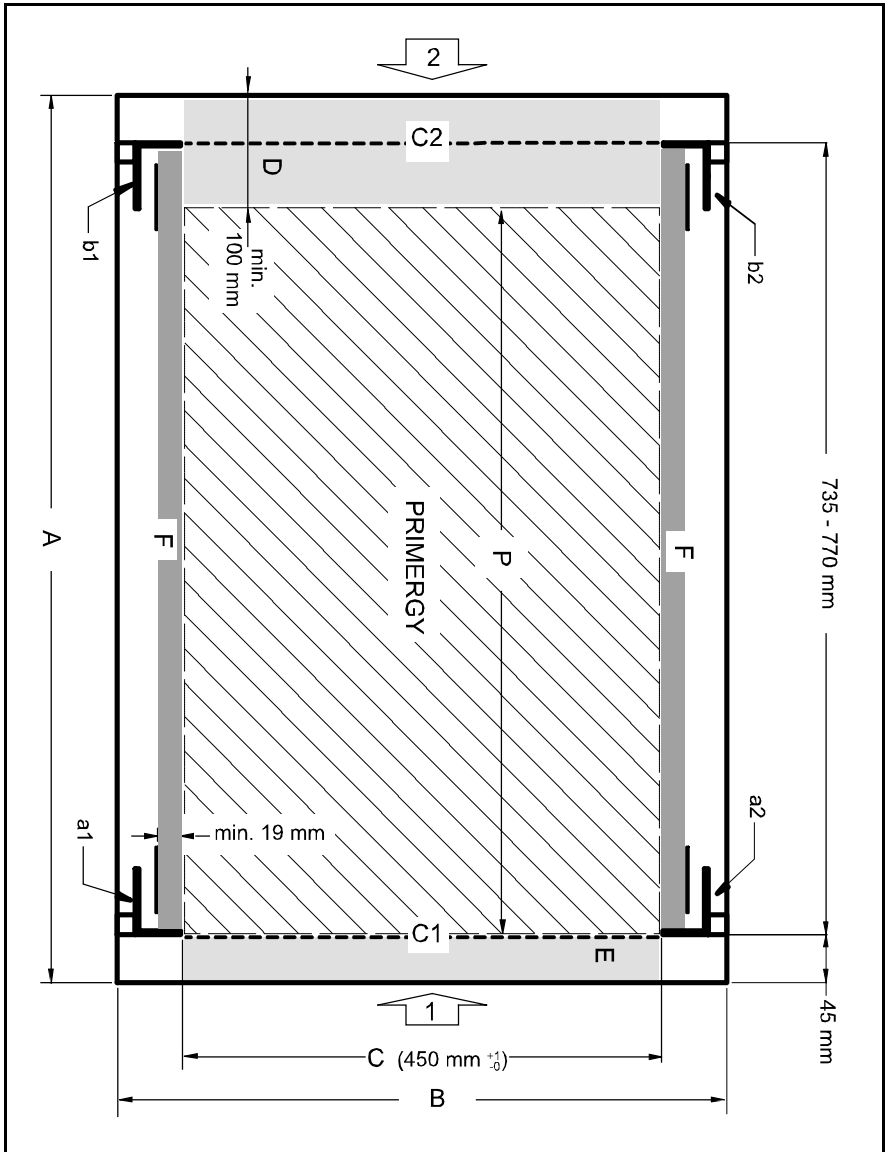


Figure 2: Mechanical requirements

- You must ensure that the safety mechanisms on the server, e.g. stoppers or retaining systems, are functioning correctly.
- The shape of the rack support uprights must ensure that the rails can be bolted to the front.
- Frontally bolted telescopic rails or sliding rails.

The rails have a linear alignment feature to ensure that they can be adjusted to different rack depths.

- No support of the cable management (delivered with the mounting kit).
- Climatic conditions.

An unobstructed air intake in the rack front and air discharge in the rear cover of the rack are essential for ventilation of the installed server.

In principle the ventilation concept envisages that the necessary cooling is achieved by the horizontal self-ventilation of the installed devices (air flow from the front to the rear).

- Power supply:

For installation in 3rd party racks, you must ensure that the appropriate socket strips are present.

4.2.1 Mounting in the PRIMECENTER Rack

For mounting the server in the PRIMECENTER Rack the following parts are necessary:

- a support bracket with two M5x10 screws including centering disks
- a rack mount kit, comprising two telescopic rails (left/right), completely mounted
- eight M5 centering fasteners (two each for front and rear, two each left and right)

i You can find general information regarding server installation in the rack in the technical manual for the PRIMECENTER rack.

When mounting the left telescopic rail in the PRIMECENTER Rack, the supplied support bracket must first be mounted on the rear left support upright.

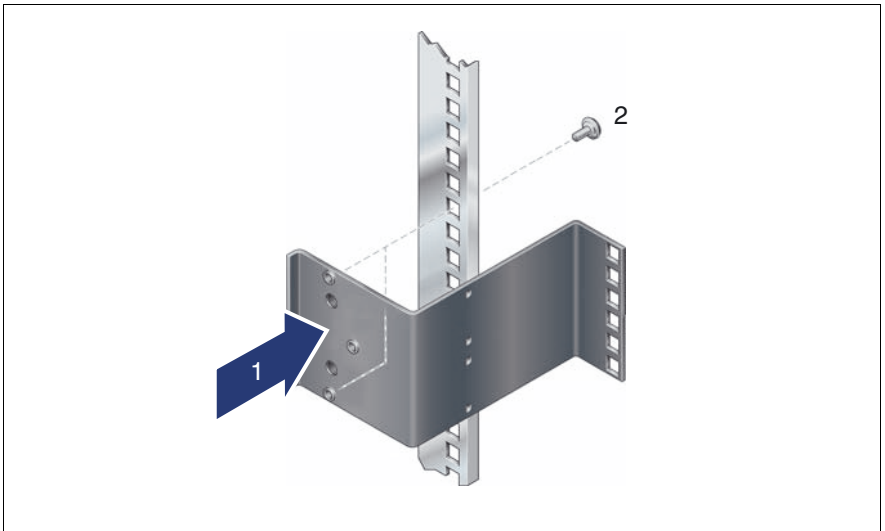


Figure 3: Mounting the support bracket to the left rear support upright

- ▶ Position the support bracket at the corresponding height on the rear left support upright (1).
Place the knobs in the corresponding holes.
- ▶ Fasten the support bracket with the two supplied centering fasteners M5 (2).

i For better orientation the height units are marked on the support uprights.

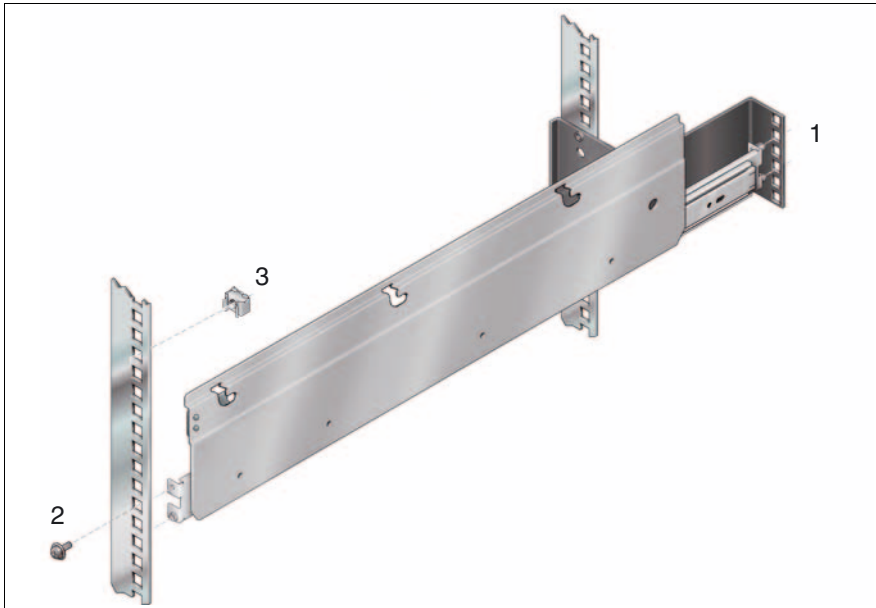


Figure 4: Mounting the telescopic rails in the PRIMECENTER Rack

- ▶ Position the left vario support system with mounted telescopic rail (1) on the support bracket (insert retaining bolts).
- ▶ Press the left rail together until its front end passes behind the front left support upright, then release.
- ▶ Fasten the rod with a screw (M5) to the left front support upright (2).

i No nuts are required to secure the telescopic rails as the fixing holes on the rails are threaded.

- ▶ Insert the cage nut at the height of the server's knurled screw in the left front support upright (3).
- ▶ Repeat the steps for the right vario support system with mounted telescopic rail (fastened to the front and rear right support upright).
- ▶ Insert the cage nut at the height of the server's knurled screw in the right front support upright.

- ▶ Fit the PRIMECENTER Rack cable management as described in the technical manual for the PRIMECENTER Rack.
- ▶ Insert the server (see section [“Inserting the server” on page 46](#)).
- ▶ Route the cables once the server has been inserted, as described in the Technical Manual for the PRIMECENTER Rack.

4.2.2 Installation in the DataCenter Rack

See section [“Mounting in the PRIMECENTER Rack” on page 43](#).

4.2.3 Installation in 3rd party racks

See section [“Mounting in the PRIMECENTER Rack” on page 43](#).

4.2.4 Inserting the server



CAUTION!

At least two people are needed to position the server in the rack.

- ▶ Fully extend the fitted telescopic rails. They must click into place so that they can no longer be moved.



Figure 5: Inserting the server

- ▶ Lift the server onto the right and left system support rod and press it into the corresponding recesses on the upper edges of both system support rods with the three screw fasteners right and left.

The following steps can then be carried out by one person only.

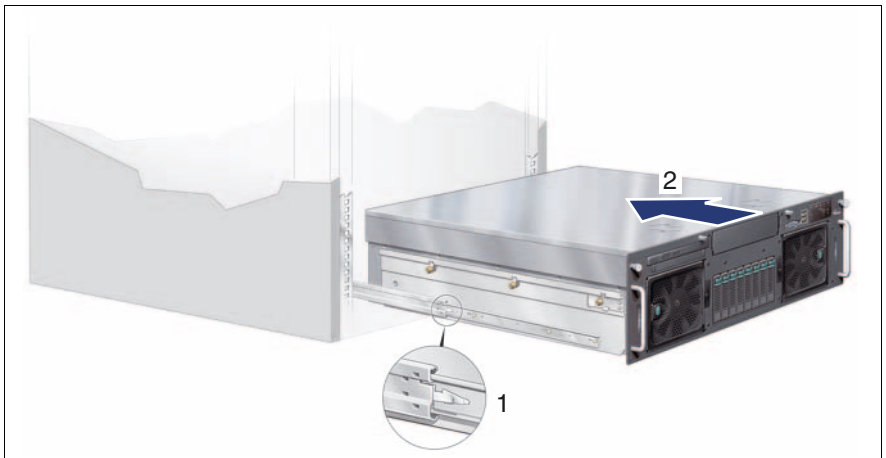


Figure 6: Unlock telescopic rails and push server into the rack

- ▶ Press the safety catch (1) on the outside of the two rails upwards in the direction of the arrow and push the server into the rack in the direction of the arrow (2).

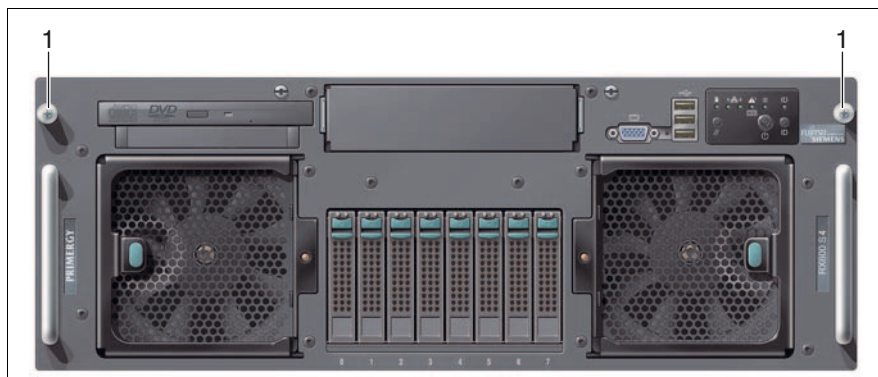


Figure 7: Securing the server

- Place the cage nuts for fastening the front panel in the corresponding holes of the front support uprights and fasten the server using two knurled screws (1).

To remove the server, follow this procedure in reverse. When removing the server, make sure that the two system support rods (see figure 5 on page 46) are pulled out parallel right and left.

4.3 Connecting devices to the server

The ports for external devices are on the front and rear of the server. The additional ports available on your server depend on the expansion cards installed (e.g. optional SCSI port).

i Some of the devices that can be connected may require special software, e.g. drivers (see the documentation for the connected device).

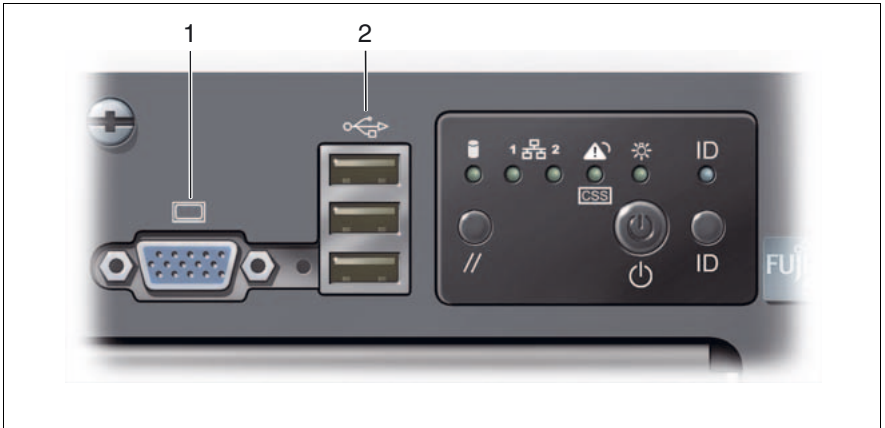


Figure 8: Ports on the front

On the front of the server are a monitor port (1) and three USB ports (2).

i The two monitor ports on the front and rear (see figure 9 on page 50) can only be used alternatively; the port not used is automatically deactivated.

The standard ports on the rear are marked with symbols, and some are color-coded:

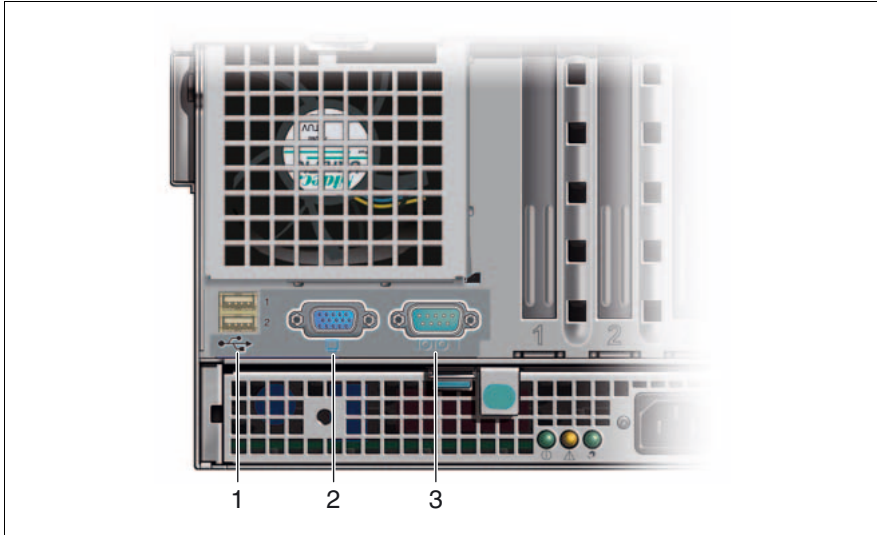


Figure 9: Ports on the left side of the rear

1	2 x USB ports	3	Serial port COM1 (turquoise)
2	Monitor port (blue)		

There are further ports at the rear right, see figure 10.

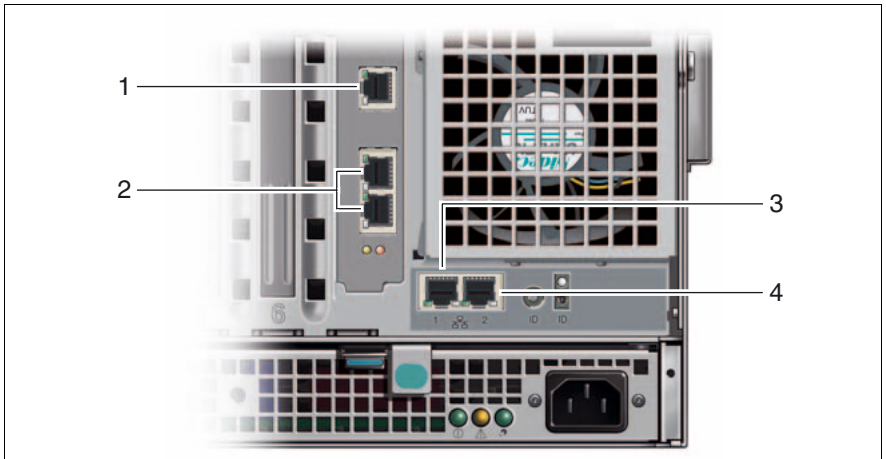


Figure 10: Ports on the right side of the rear

1	Service LAN port	3	LAN port 1
2	2 x LAN ports	4	LAN port 2

► Connect the data cables to the server and peripherals.



Connect keyboard and mouse via USB. There are no separate PS/2 ports for them.

4.4 Connecting the server to the mains

The server has two hot-plug power supply units. This ensures redundant power supply. If one power supply unit is defective, the other then guarantees unimpaired operation. Each hot-plug power supply unit can be replaced during operation (see “[Replacing the hot-plug power supply unit](#)” on page 82).



CAUTION!

The server is automatically set to a mains voltage in the range 110 V - 240 V. Make sure that your local mains voltage is within this range.



Figure 11: Connecting the server to the mains

- ▶ Connect the insulated connectors of the power cables to the server's two power supply units (1).
- ▶ Connect the power plugs to the insulated sockets of the mains socket strip in the rack (2).



A phase redundancy in the power supply of the server can be set up as two hot-plug power supply units are installed.

In this case, each of the power supply units is either connected to two different phases or to two separate circuits of the internal power supply network.

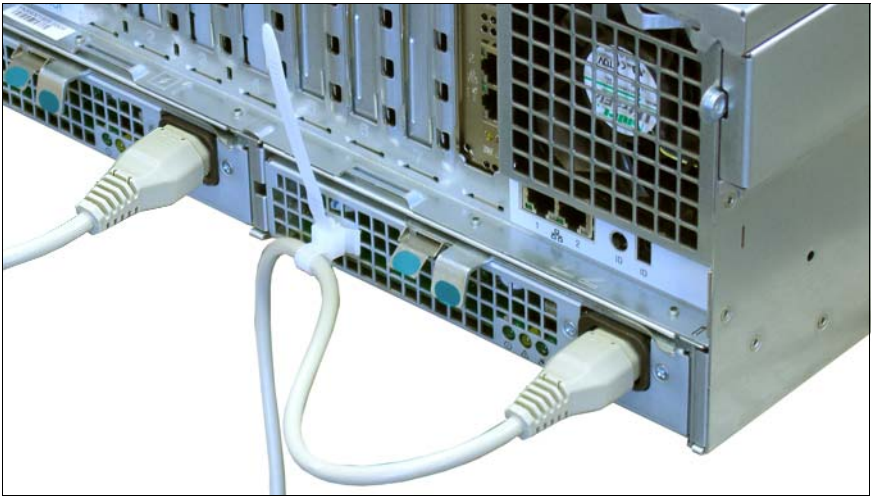


Figure 12: Securing the power cord in the cable clamp

- ▶ Secure the power cords in the cable clamps so the insulated connectors cannot be disconnected from the server accidentally.

4.5 Connecting the monitor

- ▶ Plug the data cable for the monitor into the monitor port on the server. Alternatively, the monitor port at the front or the rear of the server can be used.
- ▶ Connect the power cable of the monitor to a grounded mains outlet of the in-house mains and/or into the mains socket strip of the rack.

4.6 Notes on connecting/disconnecting cables



CAUTION!

Always read the documentation supplied with the device you wish to connect.

Never connect, or disconnect cables during a thunderstorm.

Never pull on a cable when disconnecting it. Always take hold of the cable by the plug.

Follow the sequence described below to connect or disconnect external devices to or from the server:

Connecting cables

- ▶ Turn off all power and equipment switches.
- ▶ Disconnect all power plugs from the grounded shockproof sockets.
- ▶ Connect all cables to the server and peripherals.
- ▶ Plug all data communication cables into the utility sockets.
- ▶ Plug all power cables into the grounded shockproof sockets.

Disconnecting cables

- ▶ Turn off all power and equipment switches.
- ▶ Disconnect all power plugs from the grounded shockproof sockets.
- ▶ Unplug all data communication cables from the utility sockets.
- ▶ Disconnect the relevant cables from the server and all the peripherals.

5 Starting up and operation



CAUTION!

Follow the safety instructions in chapter [“Important information”](#) on page 23.

5.1 Controls and indicators

5.1.1 Front of server

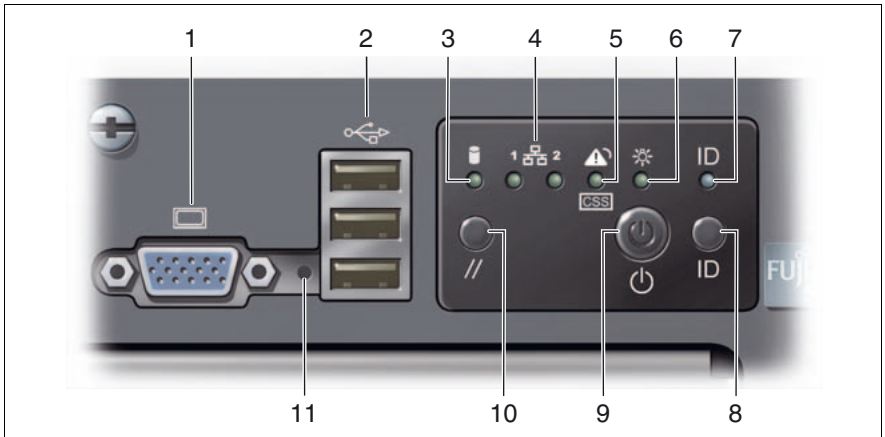


Figure 13: Front - detailed view: port and control panel

1	Monitor port	7	ID indicator
2	3 x USB ports	8	ID button
3	Hard disk activity indicator	9	On/Off button
4	2 x LAN activity indicator	10	Reset button
5	CSS/Global Error indicator	11	NMI button
6	Power-on indicator		

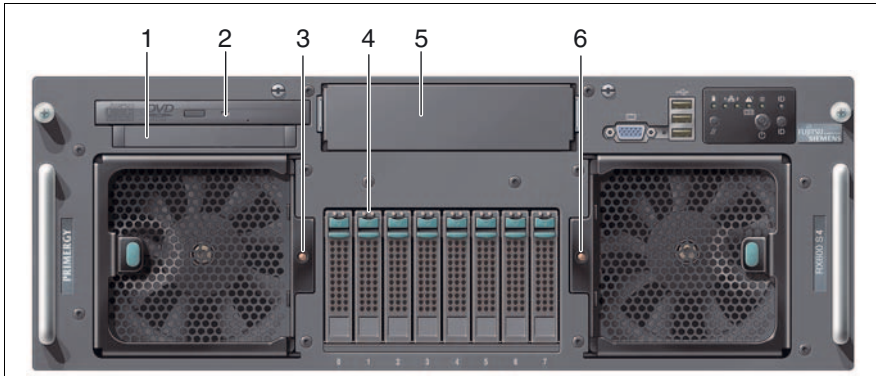


Figure 14: Front - overall view

1	ServerView Local Service Display	4	Hard disk drive indicators
2	CD/DVD drive activity indicator	5	Accessible drive (optional)
3	Fan indicator	6	Fan indicator

5.1.1.1 Controls

NMI NMI button



Do not press! The NMI button may only be used by service personnel.

// Reset button

Pressing the reset button reboots the system.



On/Off button

When the system is switched off, it can be switched on again by pressing the On/Off button. When the system is operating, pressing the On/Off button will switch off the system.



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

ID ID button

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

5.1.1.2 Indicators on the control panel

Hard disk activity indicator (green/orange)

Lights up or flashes green if one of the SAS hard disk drives controlled by the SAS Controller is being accessed.

Lights up or flashes orange if an error or another event has occurred (see [“Indicators on the HDD modules” on page 60](#)).



LAN activity indicator (green) for the LAN ports 1 and 2 at the rear

Flashes during a LAN transfer.



The display is synchronous with the LAN indicators on the rear of the server (see [“LAN indicators” on page 62](#)).

CSS CSS/Global Error indicator (yellow/orange)

Generally, the three possible states of this indicator have the following meanings:

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

For more details on the indicated errors, you can consult the System Event Log (SEL), the ServerView Local Service Display, ServerView S2 or the ServerView Remote Management via iRMC's own Web server.

Depending on the color, the states „light up“ and „flash“ have the following meanings:

- CSS (yellow)

Lights up yellow if a prefailure event was detected for a CSS component.

Flashes yellow if an error was detected that you can fix yourself with the CSS concept (see [“Customer Self Service \(CSS\)” on page 9](#)).

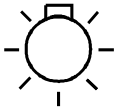
- Global Error (orange)

Lights up orange if a prefailure event was detected for a non-CSS component.

Flashes orange if an error was detected for a service incident.

- CSS/Global Error (yellow/orange)

Lights up and/or flashes alternately yellow and/or orange if several prefailure events and/or errors were detected at the same time (see above).



Power-on indicator (green/orange)

Lights up green when the server is switched on and ready.

Flashes green when the server is switched on and is in sleep mode (ACPI state S1).

Lights up orange when the server is switched off (ACPI state S5).

Does not light when the server is switched off.

ID ID indicator (blue)

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

The ID indicator can also be activated via ServerView S2 and its status reported to ServerView S2.

5.1.1.3 Indicators on the accessible drives/components

CD/DVD drive activity indicator

Lights up green when the storage medium is being accessed.

ServerView Local Service Display

You can use the slot mechanism to pull out the ServerView Local Service Display from the server housing and read the information. Press the front of the module to release the lock.

You can also pivot the ServerView Local Service Display down by an angle of 120° from its normal position. This makes reading easier when the server is located very high in the rack.

Further information on using the ServerView Local Service Display is provided in the "LocalView" manual.

5.1.1.4 Indicators on the HDD modules



Figure 15: Indicators on an HDD module

1	<p>HDD BUSY (green)</p> <ul style="list-style-type: none"> – Lights up: HDD in active phase – Does not light: HDD inactive (drive inactive)
2	<p>HDD FAULT (orange)</p> <ul style="list-style-type: none"> – Does not light: 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 drive) – Fast flashing: HDD Identify – Four fast blinks/pause: HDD Predicted Fault (probable drive error) – Two fast flashes/pause: HDD Hot Spare (hot-spare drive active) The corresponding drive has failed).

If a hard disk drive continuously indicates an error, the drive should be replaced as soon as possible. This can be done during operation (see [“Hot-plug hard disk drives” on page 89](#)).

5.1.1.5 Indicator on the fan modules



Figure 16: Fan status indicator (right fan module)

The server has two fan modules each with two hot-plug system fans. The fan status indicator (1) visible at the front relates to **both** fans in a module.

Fan indicator	Meaning
does not light	Both fans in that fan module are OK.
lights orange	At least one fan is defective. That fan module has to be replaced (see “Replacing hot-plug CPU fans” on page 84).

5.1.2 Rear of server

5.1.2.1 LAN indicators

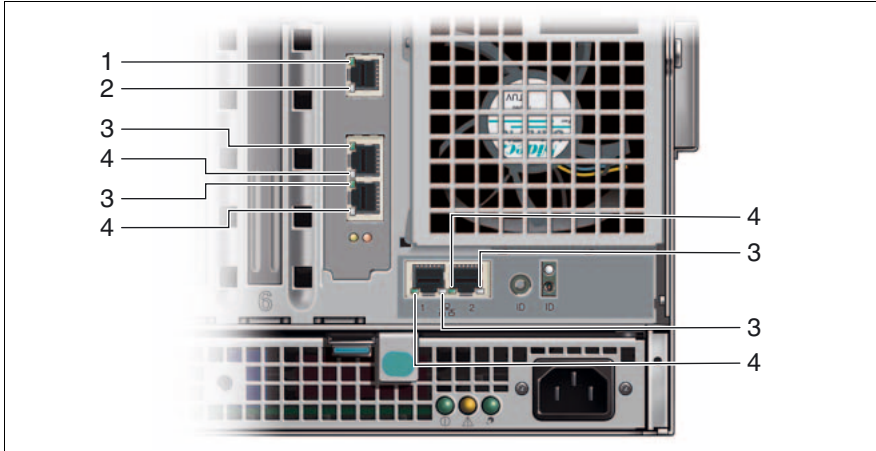


Figure 17: LAN indicators (rear right)

1	<p>LAN activity indicator (service LAN)</p> <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>
2	<p>LAN transfer rate indicator (service LAN)</p> <p>Lights up green for a LAN transfer rate of 100 Mbps. Does not light up for a LAN transfer rate of 10 Mbps.</p>
3	<p>LAN activity indicator (standard LAN)</p> <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>
4	<p>LAN transfer rate indicator (standard LAN)</p> <p>Lights yellow for a LAN transfer rate of 1 Gbps. Lights up green for a LAN transfer rate of 100 Mbps. Does not light up for a LAN transfer rate of 10 Mbps.</p>

i The LAN activity indicators are synchronous with the LAN indicators on the front of the server (see [“Indicators on the control panel”](#) on page 57).

5.1.2.2 CSS indicator

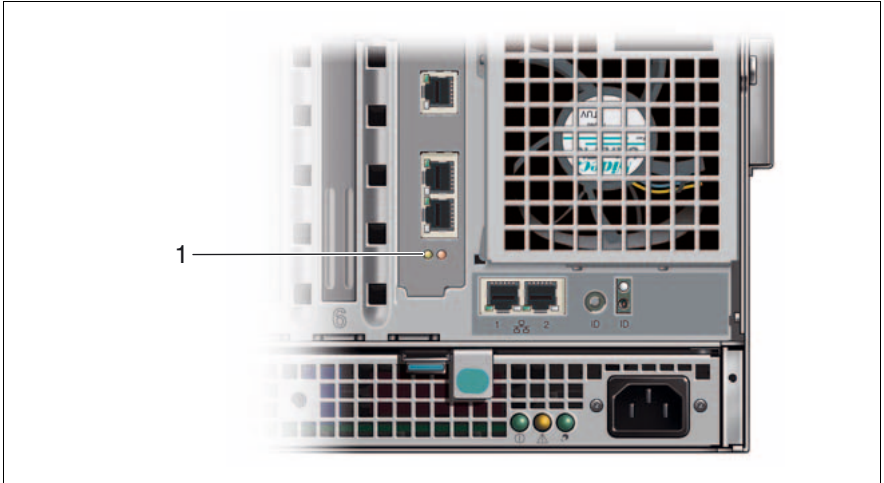


Figure 18: CSS indicator (rear right)

1 CSS indicator (yellow)

Does not light up when the system is OK. No service incident or critical event has occurred.

Flashes yellow if an error occurred that you can fix yourself with the CSS concept (see [“Customer Self Service \(CSS\)”](#) on page 9). For more details on the error, you can consult the ServerView Local Service Display or ServerView S2.

Lights up yellow if a prefailure event was detected for a CSS component. Details of the event can be found in the System Event Log or using ServerView. The indicator also lights up in standby mode.

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

5.1.2.3 Global Error indicator

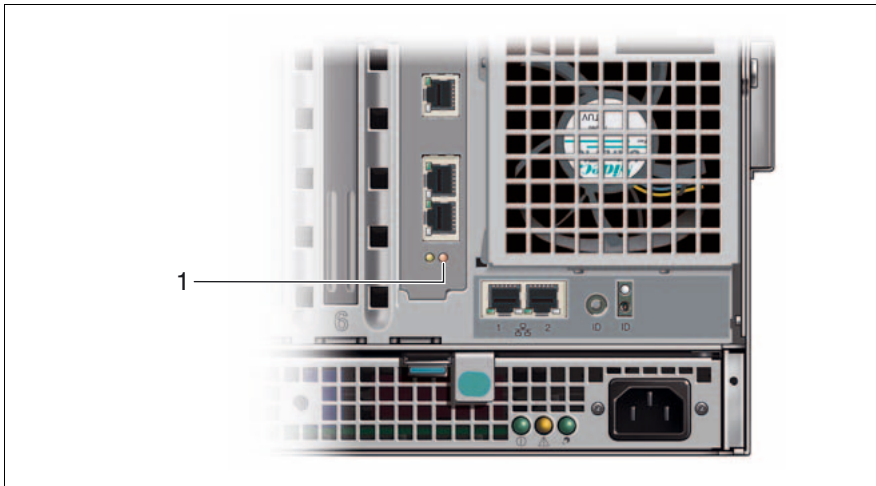


Figure 19: Global Error indicator (rear right)

1	<p>Global Error indicator (orange)</p> <p>Does not light up when the system is OK. No service incident or critical event has occurred.</p> <p>Flashes orange when a critical event has occurred. Details of the event can be found in the BIOS Setup, in the System Event Log or using ServerView. The indicator also flashes in standby mode.</p> <p>Lights up orange if a prefailure event was detected for a non-CSS component. Details of the event can be found in the System Event Log or using ServerView. The indicator also lights up in standby mode.</p> <p>If the event is still acute after a power failure, the indicator is activated after the restart.</p>
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5.1.2.4 ID indicator and ID button

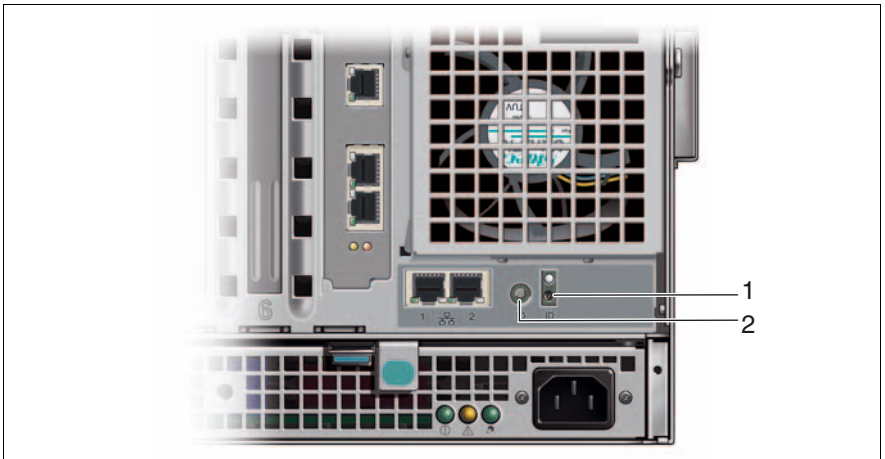


Figure 20: ID indicator and ID button (rear right)

1	<p>ID indicator (blue)</p> <p>Lights up blue when the system has been selected by pressing the ID button (2). To deactivate, press the button again.</p> <p>The ID indicator can also be activated via ServerView and its status reported to ServerView.</p>
2	<p>ID button</p> <p>Lights up synchronously on the front and rear of the server when the ID button is pressed.</p>

5.1.2.5 Indicators on the hot-plug power supply units

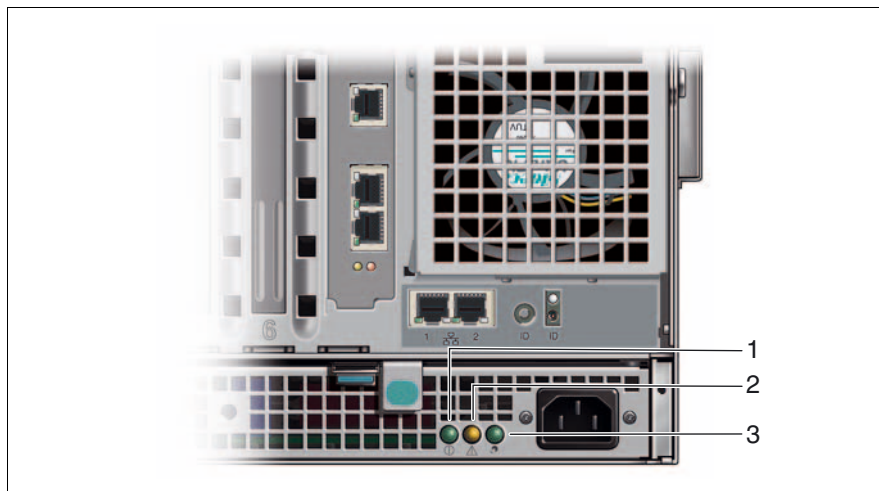


Figure 21: Indicators on the power supply units (right power supply unit)

1	Switch-on indicator (green) Lights up when the server is switched on.
2	Fault indicator (orange) Lights up if there is a fault in the power supply unit.
3	Power indicator (green) Lights up if network connection has been established.

In normal server operation, LED 1 and 3 light up permanently, LED 2 does not light up. As soon as LED 2 indicates a fault by lighting up, the affected power supply unit should be replaced as soon as possible. This can be done during operation (see [“Replacing the hot-plug power supply unit” on page 82](#)).

5.2 Switching the server on and off



CAUTION!

It nothing appears on the screen but flickering stripes after switching on the server, switch the server off immediately (see chapter “[Troubleshooting and tips](#)” on page 75).

The On/Off button does not disconnect the server from the mains. To completely disconnect it from the mains voltage, remove the power plugs from the sockets.

Switching the server on

The power-on indicator at the front does not light up (item 6 in figure [13 on page 55](#)). The power indicator on the power supply units lights up if the server is connected to the mains (item 3 in figure [21 on page 66](#)).

– Starting up for the first time:

- ▶ Press the On/Off button (item 9 in figure [13 on page 55](#)).
Power-on indicator lights up green.
- ▶ Insert ServerStart disc 1 in the DVD drive.
- ▶ Follow the on-screen instructions (see also section “[Configuration with ServerStart](#)” on page 70 or section “[Configuration without ServerStart](#)” on page 71).

– System already installed:

- ▶ Press the On/Off button (item 9 in figure [13 on page 55](#)).
Power-on indicator lights up green.

The server is switched on, performs a system test and boots the operating system.

Switching the server off

The power-on indicator lights up green (item 6 in figure [13 on page 55](#)).

- ▶ Shut down the operating system properly.

The server is switched off automatically and goes into standby mode. The power-on indicator lights up orange.



If the operating system does not switch the server off automatically, press the On/Off button for at least four seconds and/or send a corresponding control signal.

Other On/Off options

Besides the On/Off button, the server can be switched ON and OFF in the following ways:

- Specified **switch-on time/switch-off time**

The server is switched ON or OFF at a time specified in the ServerView program

- **Ring Indicator**

The server is switched on by an internal or external modem.

- **Wake On LAN (WOL)**

The server is switched on by a command via the LAN (Magic Packet).

- **After power failure**

The server automatically reboots following a power failure (depending of the settings in the BIOS).

- **Power button override**

The server can be switched off immediately by pressing and holding the On/Off button (approx. 4-5 sec.).



CAUTION!


There is a risk that data may be lost.

- **IPMI**

The server is switched on from an IPMI console (via the COM1 serial interface or the RJ45 LAN interface).

5.3 Configuring the server

This section contains information about configuring the server and installing the operating system.


-  Make sure that the energy saving functions are disabled in the BIOS Setup during server operation.

5.3.1 Configuring onboard SAS RAID controller

You can configure the RAID either before or during ServerStart. Using ServerStart is recommended.

The onboard SAS RAID controllers are configured either with the WEBBIOS Configuration Utility (call with CTRL-H during BIOS POST) or with the ServerStart disc 1 using ServerViewRAID.

More information can be found in the controller documentation on the ServerBooks DVD under “Controllers”.

-  Descriptions of operating systems not covered in the RAID controller manual are provided in the corresponding readme files on the driver CDs.

5.3.2 Configuration with ServerStart

The ServerStart disc 1 supplied allows you to conveniently configure the server and install the operating system. Menu-guided configuration includes server configuration with the SCU and RAID controller configuration with ServerViewRAID.

The ServerStart advantages

- Automatic configuration of your server's hardware and disk arrays.
- Installation assistance for all leading server operating systems.
- Creation of configuration files for unattended installation of several PRIMERGY servers with identical hardware configurations.
- Installation of drivers and additional software.



The software that can be installed depends on your server's hardware configuration. This configuration is detected automatically.



Descriptions of operating systems not covered in the RAID controller manual are provided in the corresponding readme files on the driver CDs.

To find out how to operate ServerStart and for further information, refer to the associated manual.

If you are using ServerStart, you can skip the following section on how to configure the server and install the operating system. Continue from section [“Cleaning the server” on page 71](#).

5.3.3 Configuration without ServerStart

Configuring onboard SAS RAID controller

Configure the controller as described in section [“Configuring onboard SAS RAID controller”](#) on page 69.

Installing the operating system

- ▶ Insert the CD for the operating system you want to install.
- ▶ Reboot the server.
- ▶ Follow the instructions on screen and in the manual for the operating system.

If your server is equipped with a RAID controller, please read how to install the desired operating system in the related manual.

5.4 Cleaning the server



CAUTION!

Switch the server off and disconnect the power plugs from the grounded shockproof sockets.

Do not clean any interior parts yourself; leave this job to a service technician.

Do not use any cleaning agents that contain abrasives or may corrode plastic.

Ensure that no liquid enters the system. Ensure that the ventilation areas of the server and the monitor are clear.

Clean the keyboard and the mouse with a disinfecting cloth.

Wipe the server and monitor casing with a dry cloth. If particularly dirty, use a cloth that has been moistened in a mild domestic detergent and then carefully wrung out.

6 Property and data protection

6.1 Mechanical access protection

The lockable rack door protects the server against unauthorized access.

6.2 BIOS Setup security functions

The *Security* menu in BIOS Setup offers various options for protecting your data from unauthorized access. For example, you can assign passwords for users and administrators. By combining these options you can achieve optimum protection for your system.



A detailed description of the *Security* menu and how to assign passwords can be found in the BIOS Setup documentation of the system board D2244 on the PRIMERGY ServerBooks DVD.

7 Troubleshooting and tips



CAUTION!

Follow the safety instructions in the “Safety notes and other important information” manual and in chapter [“Important information” on page 23](#).

If a fault occurs, attempt to resolve it using the measures described:

- in this chapter,
- in the documentation for the connected devices,
- in the help systems of the software used.

If you fail to correct the problem, proceed as follows:

- ▶ Make a list of the steps performed and the circumstances that led to the fault. Also make a list of any error messages that were displayed.
- ▶ Switch off the server.
- ▶ Contact our customer service team.

7.1 Power-on indicator remains unlit

The power-on indicator remains dark after you switch on your device.

Power cable incorrectly connected

- ▶ Make sure that the power cable(s) is/are correctly connected to the server and the grounded socket(s).

Power supply overloaded

- ▶ Disconnect the server power plug(s) from the power socket(s).
- ▶ Wait a few seconds before you plug it/them into the grounded socket(s) again.
- ▶ Switch on your server.

7.2 Server switches itself off

Server Management has detected an error

- ▶ Check the error list or the ErrorLog file in the ServerView program, and attempt to eliminate the error.

7.3 Screen remains blank

Monitor is switched off

- ▶ Switch on your monitor.

Screen has gone blank

- ▶ Press any key on the keyboard.
or
- ▶ Deactivate screen saver. Enter the appropriate password.

Brightness control is set to dark

- ▶ Set the brightness control on the monitor to light. For detailed information, refer to the operating manual supplied with your monitor.

Power cable or monitor cable not connected

- ▶ Switch off the monitor and the server.
- ▶ Check whether the power cable is properly connected to the monitor and to the grounded socket.
- ▶ Check whether the monitor cable is properly connected to the server and monitor (if it is plugged in with a connector). If a separate graphics card is installed in the server, then the monitor cable must be connected to the graphics card.
- ▶ Switch on the monitor and the server.

7.4 Flickering stripes on monitor screen



CAUTION!

Switch off the server immediately. Risk of damaging the server.

Monitor does not support the set horizontal frequency

- ▶ Find out which horizontal frequency your monitor screen supports. You will find the horizontal frequency (also known as line frequency or horizontal deflection frequency) in the documentation for your monitor.
- ▶ Refer to the documentation for your operating system or the software for the screen controller for details of how to set the correct horizontal frequency for your monitor, and follow the procedure accordingly.

7.5 No screen display or display drifts

The wrong horizontal frequency or resolution has been selected for the monitor or for the application program.

- ▶ Find out which horizontal frequency your monitor screen supports. You will find the horizontal frequency (also known as line frequency or horizontal deflection frequency) in the documentation for your monitor.
- ▶ Refer to the documentation for your operating system or the software for the screen controller for details of how to set the correct horizontal frequency for your monitor, and follow the procedure accordingly.

7.6 Incorrect date and time

- ▶ Set the date and time in the operating system or in the BIOS Setup under the *Main* menu, using *System Date* and *System Time* respectively.



Note that the operating system may affect the system time. For example, the operating system time may deviate from the system time under Linux, and would overwrite the system time in the default setting on shutdown.

If the date and time are still wrong after the server has been switched off and back on again, replace the lithium battery (for a description refer to the Technical Manual for the D2244 system board) or contact our customer service team.

7.7 Drives reported as “dead” when starting system

RAID controller configuration incorrect

- ▶ Check and correct the settings for the drives using the RAID controller utility.

Further information is provided in the manual for the RAID controller.

7.8 Added drive reported as defective

RAID controller is not configured for this drive

The drive was probably installed when the system was switched off.

- ▶ Reconfigure the RAID controller for the drive using the corresponding utility. Information is provided in the documentation for the RAID controller.

or

- ▶ Remove and reinstall the drive while the system is switched ON.

If the hard disk drive continues to be shown as defective, then replace it (see [“Hot-plug hard disk drives” on page 89](#)).

7.9 Error message on screen

The meaning of the error message is explained in the manual for the BIOS Setup and in the documentation for the relevant components and programs on the PRIMERGY ServerBooks DVD.

8 CSS components

This chapter describes how to handle CSS components and how to identify defective CSS components and replace them yourself.



Further information on the CSS concept is provided in the “Customer Self Service (CSS)” manual on the ServerBooks DVD.

Upgrades, updates and replacement of non-CSS components are described in the “Options Guide” or in the service supplement and may only be performed by authorized specialist personnel.



CAUTION!

Follow the safety instructions in the chapter [“Important information” on page 23](#).

8.1 Hot-plug components

This section describes how to handle the hot-plug components and/or how to modify your server hardware (e.g. adding/replacing hot-plug power supply units or hot-plug HDD modules).

The hot-plug procedure increases the availability of system operation and guarantees a high degree of data integrity and failsafe performance.

8.1.1 Replacing the hot-plug power supply unit

The server has two hot-plug power supply units. This ensures redundant power supply. If one power supply unit fails, the other unit ensures operation can continue uninterrupted. The defective power supply unit can be replaced online.



CAUTION!

When replacing a **non-defective** hot-plug power supply unit in a non-redundant configuration (only **one** power supply unit), the server **must** be switched off first.



Figure 22: Unlocking and removing the power supply unit

- ▶ Remove the cable of the defective power supply unit.
- ▶ Briefly press the green point (1).
This releases the locking lever.
- ▶ Rotate the locking lever in the direction of the arrow (2).
- ▶ Completely remove the defective power supply unit at the locking lever from the slot (3).



CAUTION!

Never leave the slot for the power supply unit empty for more than two minutes during operation. Otherwise, excessive temperatures could damage system components.

- ▶ Slide the new power supply unit with open locking lever into the empty slot until it clicks into place.
- ▶ Press the locking lever on the housing until it engages.



Make sure that the new power supply unit engages correctly in the mounting location and is locked in position.

This is the only way to prevent the power supply unit from sliding out of its mountings and being damaged during transportation.

- ▶ Connect the newly installed power supply unit.

If everything is functioning correctly, the green LEDs 1 and 3 (see [“Indicators on the hot-plug power supply units” on page 66](#)) at the rear of the power supply unit will now light up.

8.1.2 Replacing hot-plug CPU fans

The server has two pairs of redundant hot-plug CPU fan (2+2). Each pair of fans is mounted in a fan module that is accessible from the front of the server.

A possible fan fault is reported by the CSS indicator lighting up on the front and rear of the server or displayed on the ServerView Local Service Display (for more information about the behavior of these indicators, see chapter [“Starting up and operation” on page 55](#) and the "Customer Self Service (CSS)" manual on the ServerBooks DVD).

A CPU fan failure is reported by the CSS indicator flashing on the front and rear of the server or displayed on the ServerView Local Service Display (for more information about the behavior of these indicators, see chapter [“Starting up and operation” on page 55](#) and the "Customer Self Service (CSS)" manual on the ServerBooks DVD). The fan failure is also reported by the indicator on the fan module in question (see [“Indicator on the fan modules” on page 61](#)).

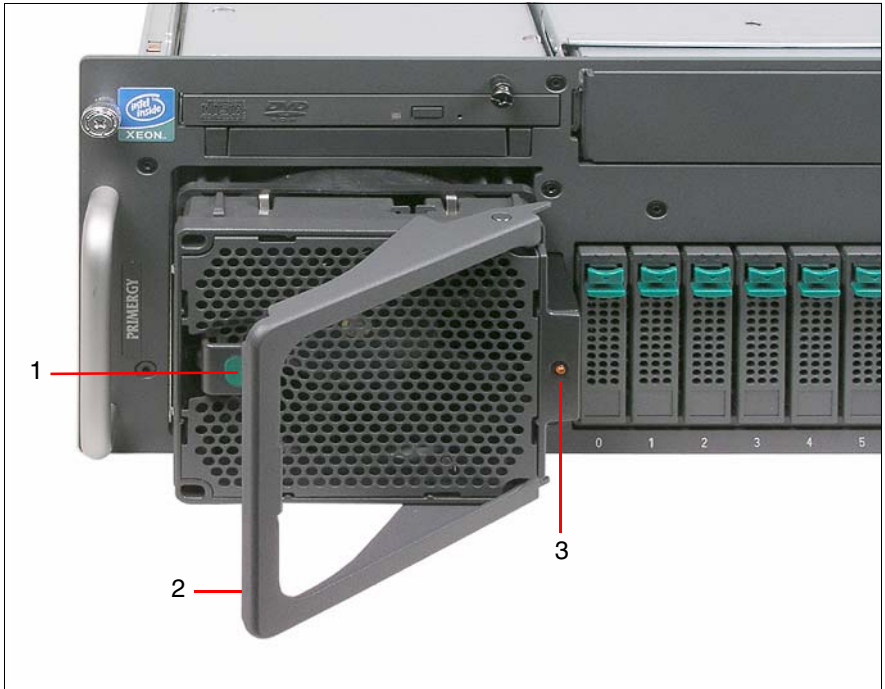


Figure 23: Unlocking fan module left and removing it

- ▶ Briefly press the green point (1).
The handle (2) is released.
Use the handle to pull out the defective fan module.



CAUTION!

Never leave the fan module slot empty for more than two minutes during operation. Otherwise, excessive temperatures could damage system components.

- ▶ Insert the new fan module in the empty slot and press the handle until it engages.

The new fan module is tested by Server Management. The LED (3) then either does not light at all (fan is OK) or lights up orange (fan is not OK).

8.1.3 Replacing hot-plug main memory fans



CAUTION!

The actions described in this section may only be performed by personnel with the appropriate technical training. Any unauthorized openings and improper repairs could expose the user to risks (electric shock, fire hazards) and could also damage the equipment.

Please observe the safety information in [chapter "Important information" on page 23](#).

The server has two redundant fan units (1+1). Each fan unit consists of two separate hot-plug fans. The fans are only accessible when the server is open.

A possible fan fault is reported by the CSS indicator lighting up on the front and rear of the server or displayed on the ServerView Local Service Display (for more information about the behavior of these indicators, see [chapter "Starting up and operation" on page 55](#) and the "Customer Self Service (CSS)" manual on the ServerBooks DVD).

A fan failure is reported by the CSS indicator flashing on the front and rear of the server or displayed on the ServerView Local Service Display (for more information about the behavior of these indicators, see [chapter "Starting up and operation" on page 55](#) and the "Customer Self Service (CSS)" manual on the ServerBooks DVD).

When the server is open, the faulty fan can be identified by the corresponding LED (see [figure 24 on page 87](#)) and can be replaced while the system is running.

- ▶ Open the housing cover (see “Opening/closing the housing” on page 114).

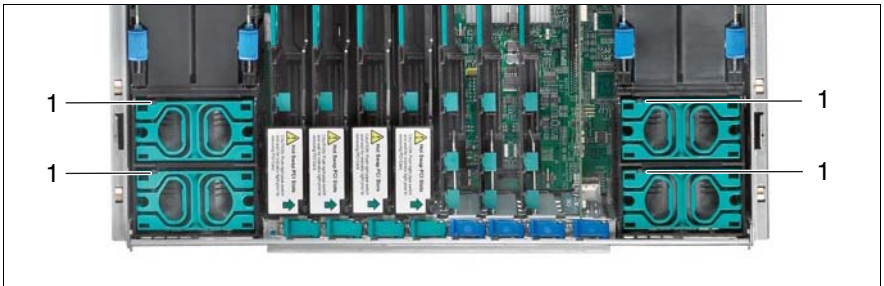


Figure 24: Diagnostic LED on main memory fan

- ▶ Use the diagnostic LED (1) to identify the faulty fan.
The diagnostic LED lights up/flashes orange.

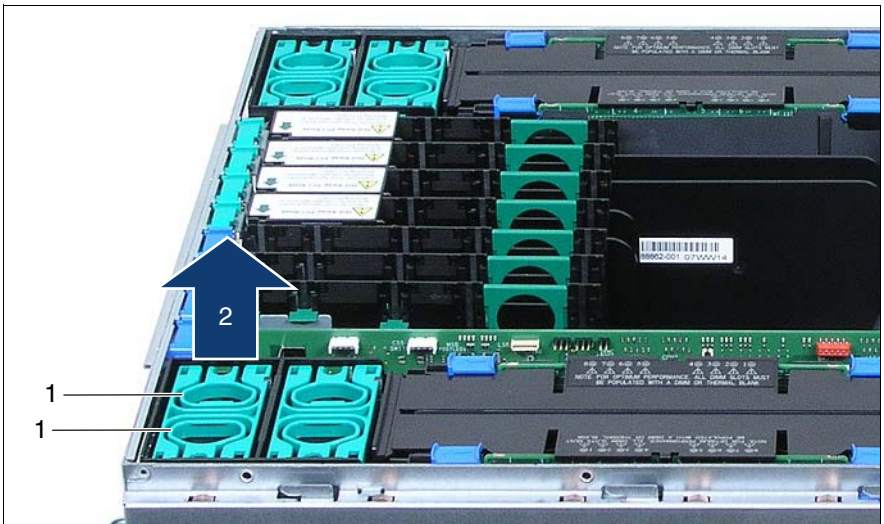


Figure 25: Exchanging the fan

- ▶ Take hold of the fan by the green touch points (1) and lift it out of the housing (2).
- ▶ Set the fan down on the **outside** of the server.

**CAUTION!**

Never set a removed/defective fan down inside the server. Risk of short circuit!

Mounting is performed in the reverse order.



The new fans are measured with explicit commands in Server Management. Depending on the result, the corresponding LED is set to orange (fan is not in order).

- ▶ Close the housing cover (see [“Opening/closing the housing” on page 114](#)).

8.1.4 Hot-plug hard disk drives

Up to eight hot-plug hard disk drives can be installed in the PRIMERGY RX600 S4 Server.

The hard disk drives which can be ordered for the PRIMERGY RX600 S4 are supplied already mounted in an installation frame so that defective hard disk drives can be replaced and new drives can be added during operation. The hard disk drive and installation frame together make up the HDD module.



CAUTION!

- The hard disk drive must not be removed from the installation frame by anyone except a service technician.
- The HDD modules (drives) must all be marked clearly so that they can be put back in their original places after an upgrade. If this is not done, existing data can be lost.
- The hot-plug function is only possible in conjunction with a corresponding RAID configuration.

Further information about the RAID configuration or RAID level can be found in the RAID controller documentation.

8.1.4.1 Handling hard disk drives and HDD modules

Hard disk drives incorporated in the HDD modules are highly sensitive electro-magnetic devices and must be handled with great care. Incorrect handling can cause partial or total failure of the hard disk drives. These failures can result in data errors and to a loss of data or to total corruption of the hard disk drive.

Observe the following rules to prevent such problems occurring:

- Only store and transport HDD modules within the limits stipulated in the specification.
- When transporting HDD modules (even over short distances), always use the original packaging (ESD label).
- Never expose HDD modules to a temperature shock. Avoid the formation of condensation inside and on the outside of the hard disk drive.



CAUTION!

The HDD module must be acclimatized in its operating environment for an acclimatization time before it is started up for the first time.

Temperature difference (°C) (operating environment/ outside)	Minimum acclimatization time (hours)
5	3
10	5
15	7
20	8
25	9
30	10

Table 2: Acclimatization times for HDD modules

- Always set the HDD module down carefully, with the large surface facing downwards to prevent it from tipping over.

8.1.4.2 Removing/installing the dummy module

Free slots are provided with dummy modules. Remove the dummy module before installing an additional HDD module.

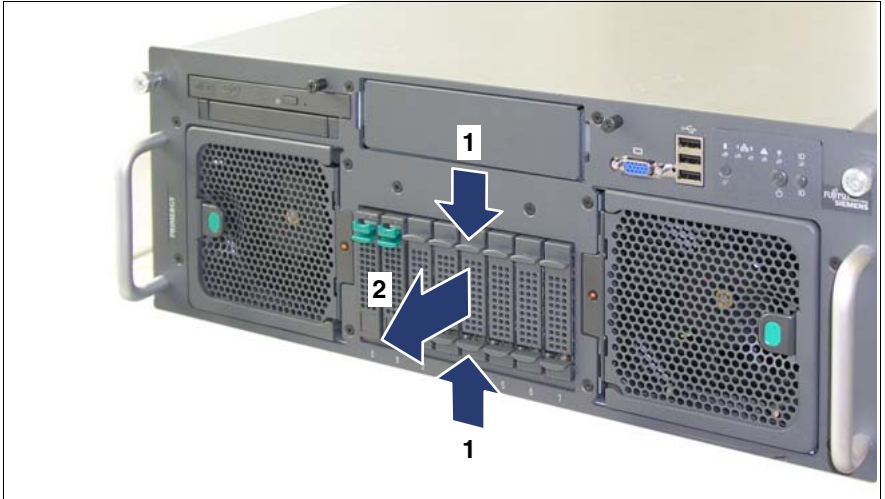


Figure 26: Removing the dummy module

- ▶ Press both tabs on the dummy module together until the locking mechanism disengages (1).
- ▶ Pull the dummy module out of the bay (2).

To install a dummy module, follow the same procedure in reverse order.



CAUTION!

Store the dummy module in a safe place. If you have removed a HDD module and do not install a new one in its place, put the dummy module back in its place for cooling, to comply with EMC regulations (regulations regarding electromagnetic compatibility), and for protection against fire. Ensure that the dummy module engages correctly in the bay.

8.1.4.3 Installing/removing the HDD module

Unlocking the HDD module

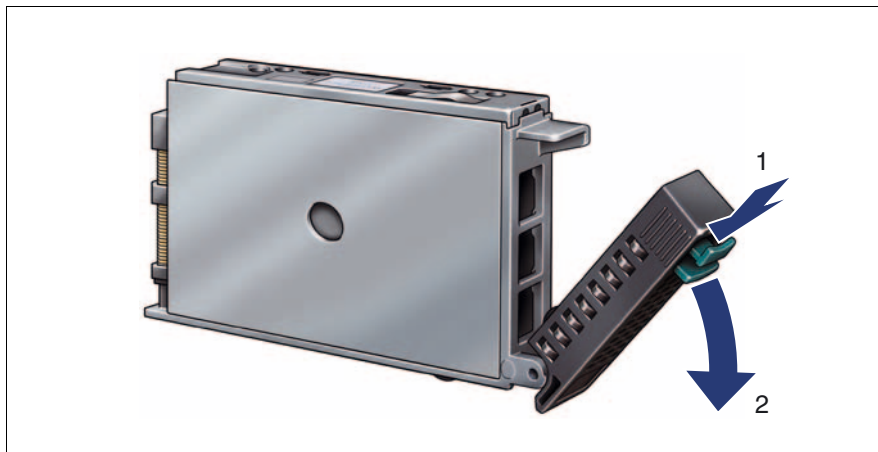


Figure 27: Unlocking the HDD module

- ▶ Release the locking mechanism by pressing the locking button (1).
- ▶ Push the handle of the HDD module fully in the direction of the arrow (2).
The HDD module is now unlocked.

Installing the HDD module

- ▶ Unlock the HDD module as described in section [“Unlocking the HDD module”](#) on page 92.

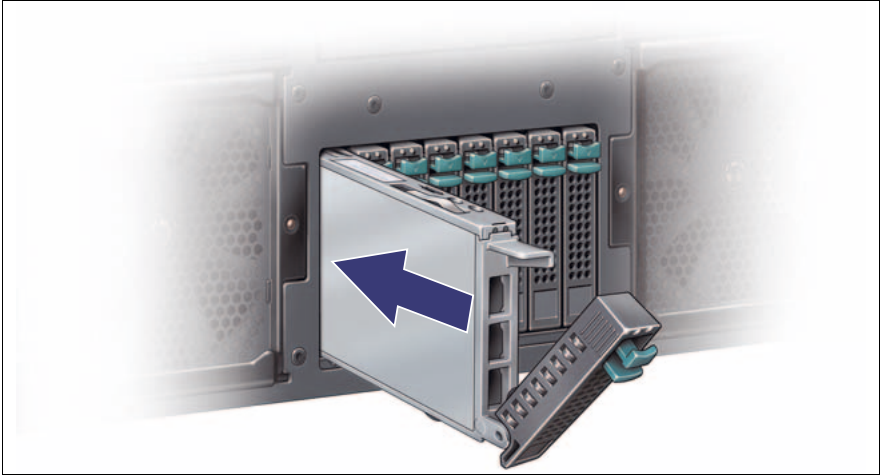


Figure 28: Pushing the HDD module into the slot

- ▶ Carefully push the HDD module into the empty slot until it stops.

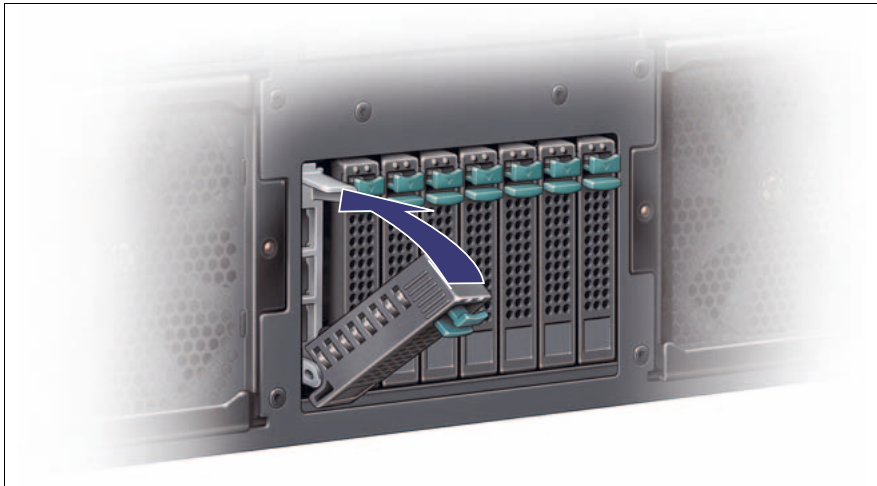


Figure 29: Lock the HDD module

- ▶ Push the handle completely until the locking mechanism engages.

Removing the HDD module



CAUTION!

- Only remove an HDD module during operation if the drive is not currently being accessed. Observe the control LEDs for the corresponding HDD modules (see [“Indicators on the HDD modules” on page 60](#)).
- Under no circumstances should you remove a HDD module while the system is in operation if you are not sure that the hard disk drive is operated by a RAID controller and belongs to a disk array that is operating in RAID level 1, 5, 10 or 50.

A HDD module can only be replaced during operation in conjunction with a corresponding RAID configuration.

- All HDD modules (drives) must be uniquely identified so that they can be reinstalled in their original mounting locations later. If this is not done, existing data can be lost.

If you want to remove a HDD module during operation, proceed as follows:

- ▶ If you want to remove a HDD module that is not defective, the drive must be first set to "Offline" via the software (RAID controller configuration software).
- ▶ Unlock the HDD module as described in section [“Unlocking the HDD module” on page 92](#).
- ▶ Pull the HDD module out a few centimeters.
- ▶ Wait for at least 60 seconds.



This period is necessary for the RAID controller to recognize that a HDD module has been removed and for the hard disk drive to come to a stop.

- ▶ Pull the HDD module out completely.

- ▶ Install the new HDD module, as described in [“Unlocking the HDD module” on page 92](#) and [“Installing the HDD module” on page 93](#).

**CAUTION!**

If you have removed a HDD module and do not install a new one in its place, put the dummy module back in its place for cooling, to comply with EMC regulations (regulations regarding electromagnetic compatibility), and for protection against fire. Ensure that the dummy module engages correctly in the bay.

8.1.5 Hot-plug expansion cards



CAUTION!

The actions described in this section may only be performed by personnel with the appropriate technical training. Any unauthorized openings and improper repairs could expose the user to risks (electric shock, fire hazards) and could also damage the equipment.

Please observe the safety information in [chapter “Important information” on page 23](#).



CAUTION!

Each slot in the server must have either an expansion card or a dummy module. A dummy module comprises a retaining plate with an attached removal tool.

The following operations are possible during operation:

- Replacement of expansion cards (see [“Removing a hot-plug expansion card” on page 98](#) and [“Installing a hot-plug expansion card” on page 103](#))



Only expansion cards of the same type and with the same settings may be exchanged. If the expansion cards do not match, the new expansion card will not be commissioned.

- Adding more expansion cards (see [“Removing a dummy module” on page 102](#) and [“Installing a hot-plug expansion card” on page 103](#))
- ▶ You should read the accompanying documentation supplied with the expansion card beforehand.

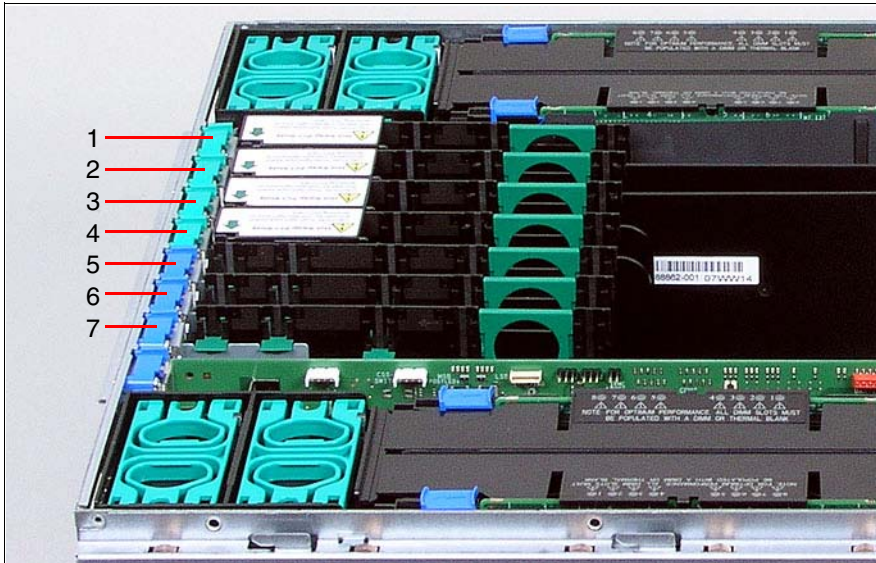


Figure 30: Slots with and without hot-plug functionality



Slots 1 - 4 (green locks) are hot-plug slots.

Slots 5 - 7 (blue locks) are slots without hot-plug functionality. The server must be switched off before expansion cards are replaced or inserted in these slots. The procedure is described in the Options Guide / Service Supplement.

8.1.5.1 Removing a hot-plug expansion card

- ▶ Open the housing cover (see [“Opening/closing the housing” on page 114](#)).
- ▶ If required by the operating system (e.g. Windows 2000), start the PCI hot-plug software. You will find information about this in the readme file on the ServerStart Disc 1.



Figure 31: Deactivating, unlocking and removing the board

- ▶ Deactivate the expansion card using either the relevant PCI hot-plug software or by pressing the optical waveguide (1).
- ▶ Wait until the optical waveguide (1) no longer lights up.
The slot is now zero potential.
- ▶ If necessary, remove all cables from the expansion card.
- ▶ Open the expansion card lock by lifting it up (2).
The expansion card is now mechanically unlocked.
- ▶ Hold the removal tool by the green handle and pull it out of the PCI slot together with the expansion card (3).



Do not pull on the expansion card itself.

Removing expansion card from the removal tool



CAUTION!

When removing the expansion card from the removal tool, pay particular attention to the engaging hooks that fasten the board to the removal tool (see figure 32 on page 100). Do not lift them by more than approx. 1 mm, in other words only as far until the expansion card is released. Otherwise you could damage the engaging hooks.

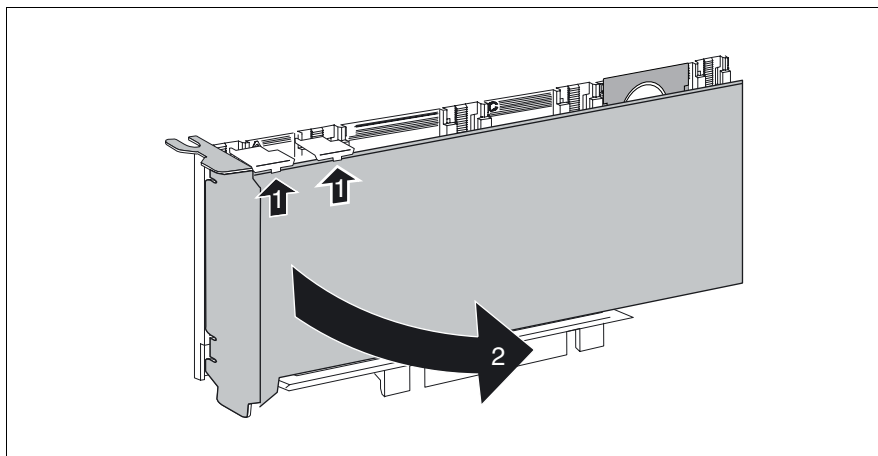


Figure 32: Removing the expansion card from the removal tool

- ▶ Lift the green movable engaging hooks no **more than approx. 1 mm** (1) until the expansion card is completely released.
- ▶ Take the expansion card out (2) and put it aside.

Removing engaging hooks

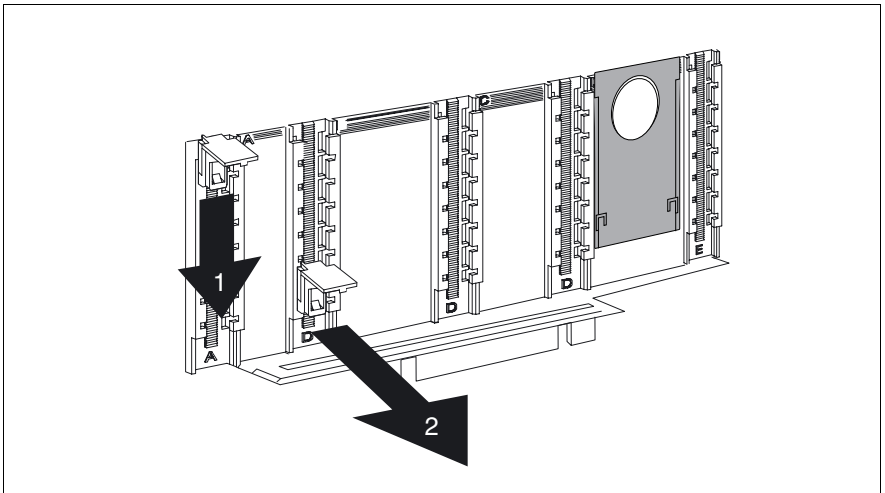


Figure 33: Removing engaging hooks from the removal tool

- ▶ Push the green engaging hooks down in the direction of the arrow (1) until they disengage from the removal tool.
- ▶ Remove the engaging hooks (2) and keep them in a safe place.
- ▶ To insert a new expansion card, continue with section [“Installing a hot-plug expansion card”](#) on page 103.



CAUTION!

If you remove an expansion card and do not insert a replacement, you will have to use a dummy module for better cooling, to comply with applicable EMC regulations (regulations on electromagnetic compatibility) and to protect against fire. Ensure that the dummy module engages correctly in the slot.

8.1.5.2 Removing a dummy module

If a slot does not contain an expansion card, it is occupied by a dummy module. This is a retaining plate with an attached removal tool.

Before inserting an additional hot-plug expansion card, you will first have to remove the dummy module from its slot.

- ▶ Remove the housing cover (see [“Opening/closing the housing” on page 114](#)).
- ▶ Remove the dummy module in the same way as a PCI board (see [figure 32 on page 100](#)).

Removing the retaining plate from the removal tool

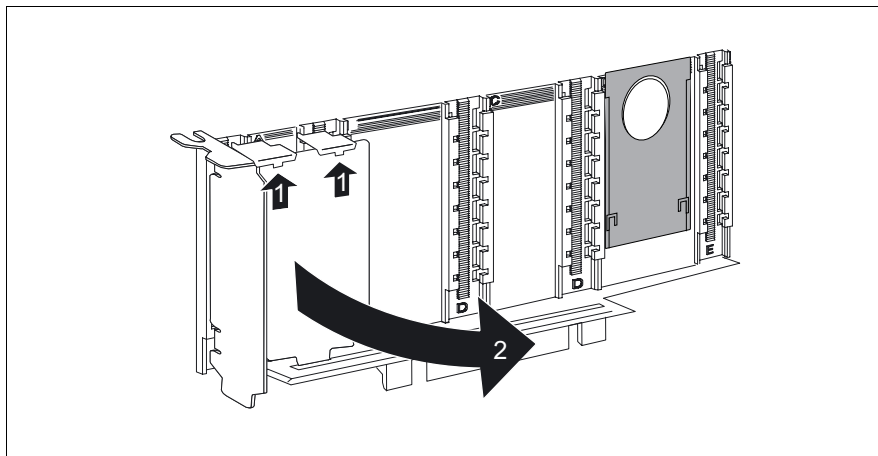


Figure 34: Removing the retaining plate from the removal tool



CAUTION!

When removing the retaining plate from the removal tool, pay particular attention to the engaging hooks that fasten it to the removal tool. Never lift the engaging hooks by more than approx. 1 mm, in other words only as far until the retaining plate is released. Otherwise you could damage the engaging hooks.

- ▶ Lift the green engaging hooks **no more than approx. 1 mm (1)** until the retaining plate is released.
- ▶ Take the retaining plate out (2) and put it aside.



Keep the retaining plate for future use.

- ▶ Push the engaging hooks down until they disengage from the removal tool (see [figure 33 on page 101](#)), and keep them in a safe place.

8.1.5.3 Installing a hot-plug expansion card

Inserting an expansion card in the removal tool

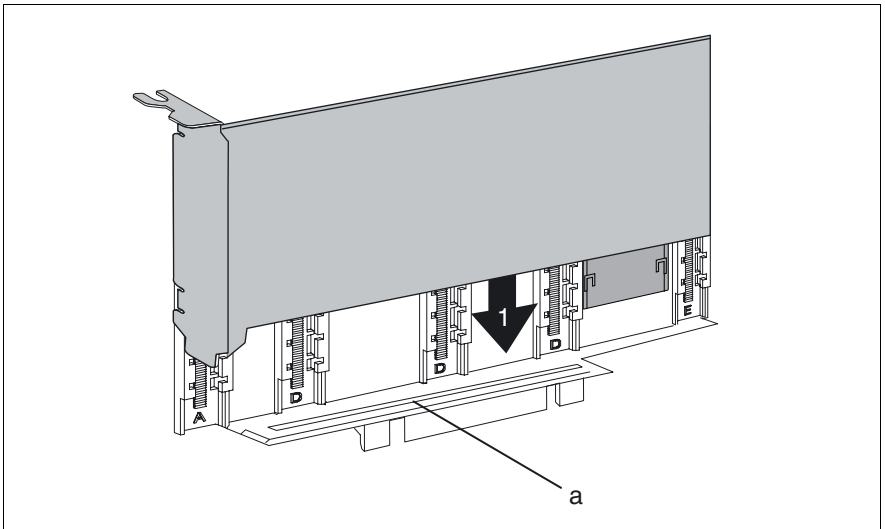


Figure 35: Inserting the new expansion card in the removal tool

- ▶ Insert the new expansion card in the provided slot (a) of the removal tool (1).



This step is not necessary for short and low-profile expansion cards.

- ▶ Insert the green engaging hooks in the rods and push them down until they engage in the upper edge of the expansion card.

**CAUTION!**

Make sure that the ports on the expansion card are not blocked by the engaging hooks.

Operating the expansion card

- ▶ Insert the expansion card fastened to the removal tool in the PCI slot.
- ▶ Close the slot lock (2) (see [figure 31 on page 99](#)) by folding it down. Make sure that the slot lock engages.
- ▶ If necessary, connect the cables on the expansion card.
- ▶ Activate the expansion card using either the relevant PCI hot-plug software or by pressing the optical waveguide (1, see [figure 31 on page 99](#)).

The optical waveguide flashes green. The slot is in an enable sequence.

- ▶ Wait until the optical waveguide is constantly green.

The slot is now powered on.



If the optical waveguide continues to flash, an error has occurred.

Remove the expansion card and repeat the procedure as described above.

- ▶ Close the housing cover (see [“Opening/closing the housing” on page 114](#)).

8.2 Replacement of non-hot-plug components

8.2.1 Replacing a memory module

**CAUTION!**

The actions described in this section may only be performed by personnel with the appropriate technical training. Any unauthorized openings and improper repairs could expose the user to risks (electric shock, fire hazards) and could also damage the equipment.

Please observe the safety information in [chapter "Important information" on page 23](#).

The system board has space for four memory boards (A, B, C and D), each of which can be equipped with up to eight memory modules. The slots for the main memory are suitable for 1 GB, 2 GB, 4 GB and 8 GB DDR2 / 533 or 667 MHz FBDIMM memory modules. This allows a maximum memory configuration of 256 GB.

The memory boards are only accessible when the server is open.

**CAUTION!**

Each slot on a memory board must be filled either with a memory module or a dummy module.

A possible memory module fault is reported by the CSS indicator lighting up on the front and rear of the server or displayed on the ServerView Local Service Display (for more information about the behavior of these indicators, see chapter ["Starting up and operation" on page 55](#) and the "Customer Self Service (CSS)" manual on the ServerBooks DVD).

A memory module failure is reported by the CSS indicator flashing on the front and rear of the server or displayed on the ServerView Local Service Display (for more information about the behavior of these indicators, see chapter ["Starting up and operation" on page 55](#) and the "Customer Self Service (CSS)" manual on the ServerBooks DVD).

The faulty memory module can be identified from the corresponding LED when the server is open (see figure [36 on page 106](#)).

- ▶ Open the server (see [“Opening/closing the housing”](#) on page 114).



Figure 36: Example: Diagnostic LEDs on memory board B

- ▶ Use the diagnostic LEDs (1-8) to identify the faulty memory module.
The diagnostic LED lights up/flashes orange and indicates the slot on the memory board (1-8) that is occupied by the faulty memory module.
- ▶ Make a note of which LED (1-8) on which memory board (A-D) is lit/flashing orange.
- ▶ Exit all applications and shut down the server properly (see section [“Switching the server on and off”](#) on page 67).
- ▶ Pull all power plugs out of the insulated sockets of the rack's internal power supply.

8.2.1.1 Removing the memory board in question

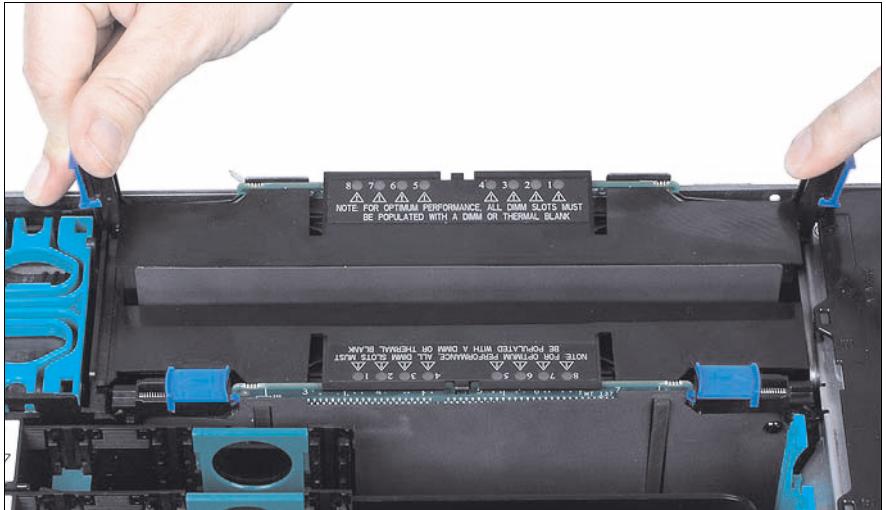


Figure 37: Example: Removing memory board A

- ▶ Unlock the memory board in question.
- ▶ Lift the memory board up and out.

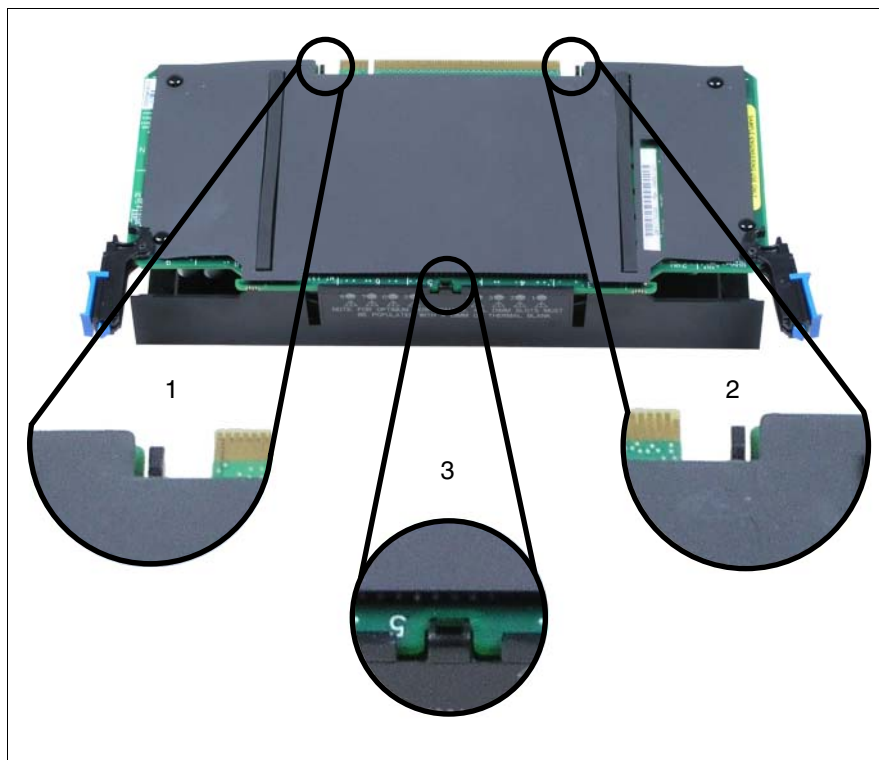


Figure 38: Removing the memory board cover

- ▶ Remove the cover on the memory board by pressing the marked tabs. First press tabs 1 and 2, then tab 3.

8.2.1.2 Removing a defective memory module

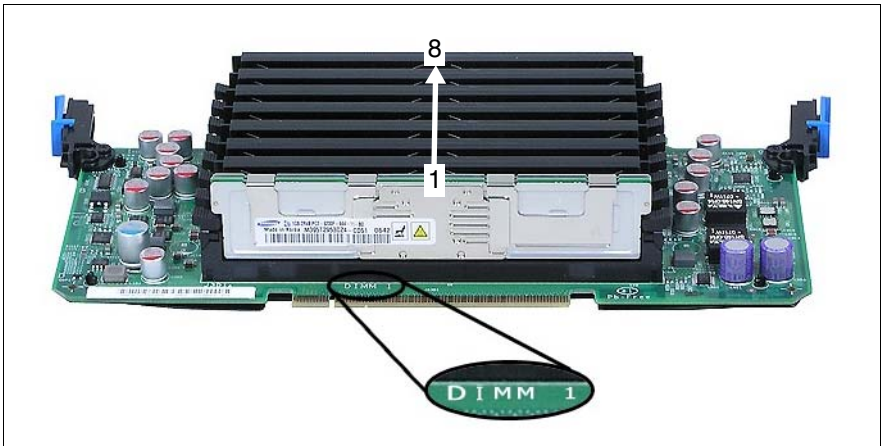


Figure 39: Identify the slot on the memory board

- ▶ Identify the slot with the defective memory module (see [page 106](#)).

The slots on the memory board are numbered 1 through 8 ("DIMM 1" to "DIMM 8").

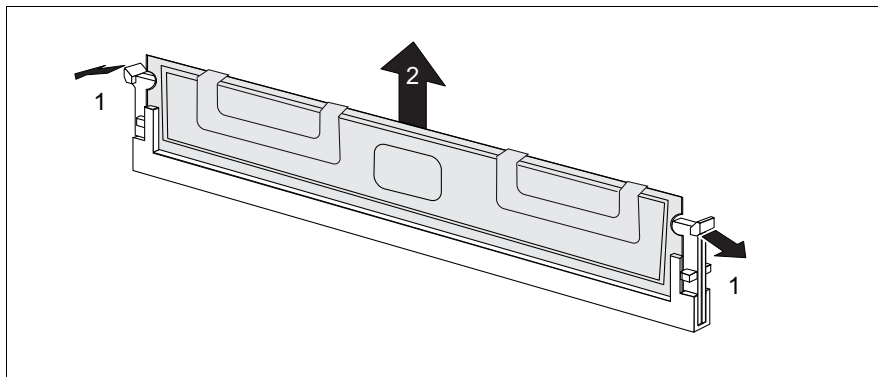


Figure 40: Removing a memory module

- ▶ Press the holders on either side of the mounting location concerned outward (1).
- ▶ Pull the defective memory module out of the slot (2).

8.2.1.3 Installing a new memory module

**CAUTION!**

The faulty memory module must only be replaced by an identical memory module.

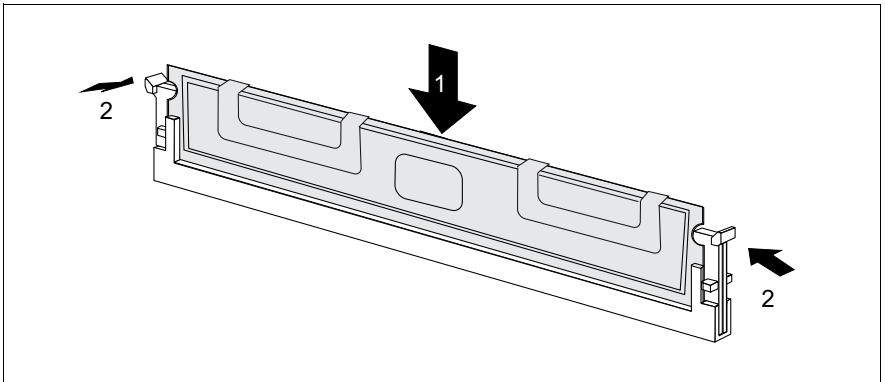


Figure 41: Inserting a memory module

- ▶ Carefully press the memory module into the slot (1) until the fastening tabs on both sides of it engage (2).

8.2.1.4 Reinstalling the memory board in question

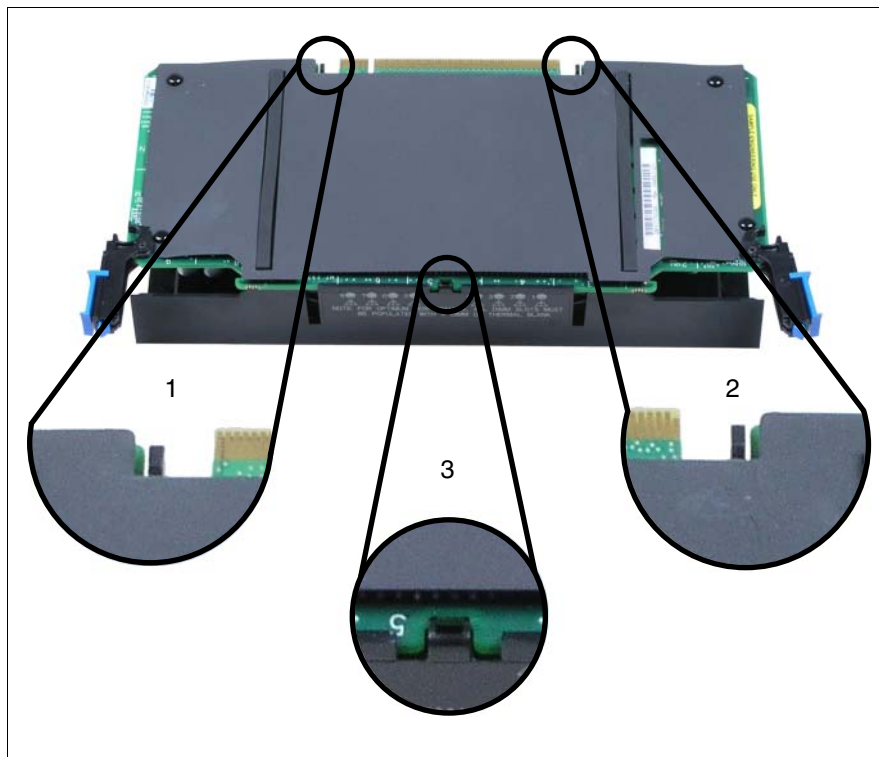


Figure 42: Placing the cover on the memory board

- ▶ Place the cover back on the memory board by pressing the marked tabs. First press tab 3, then tabs 1 and 2.

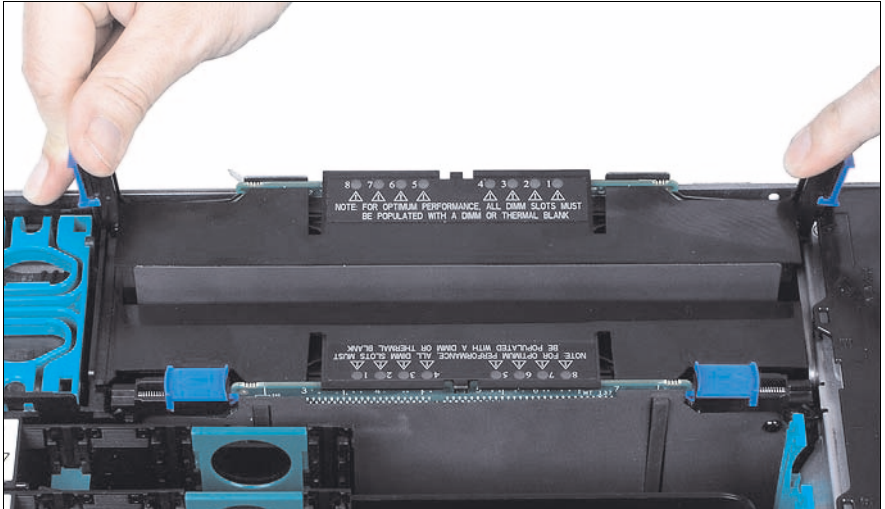


Figure 43: Example: Installing memory board A

- ▶ Slide the memory board down in the lateral guide channels until it engages in the slot.
- ▶ Make sure that the locks on the sides engage.

8.3 Opening/closing the housing



CAUTION!

The actions described in this section may only be performed by personnel with the appropriate technical training. Any unauthorized openings and improper repairs could expose the user to risks (electric shock, fire hazards) and could also damage the equipment.



CAUTION!

The housing cover must be replaced as soon as possible for purposes of cooling, to comply with EMC regulations (regulations regarding electro-magnetic compatibility) and to prevent fires.



Figure 44: Opening the housing

- To **open** the housing, release the two screws (1) at the front, push the cover back by approx. 1 to 2 cm and lift off the housing cover.
- To **close** it, put the cover on the housing and pull it forwards until the cover closes. Then tighten the two screws (1) at the front again.

Abbreviations

AC

Alternating Current

ACPI

Advanced Configuration and Power Interface

ANSI

American National Standards Institute

ASR&R

Automatic Server Reconfiguration and Restart

BBU

Battery Backup Unit

BIOS

Basic Input-Output System

BMC

Baseboard Management Controller

BTU

British Thermal Unit

CC

Cache Coherency

CD

Compact Disk

CD-ROM

Compact Disk-Read Only Memory

CHS

Cylinder Head Sector

CMOS

Complementary Metal Oxide Semiconductor

Abbreviations

COM

Communications

CPU

Central Processing Unit

CRU

Customer Replaceable Unit

CSS

Customer Self Service

DC

Direct Current

DIMM

Dual Inline Memory Module

DIP

Dual Inline Package

DMA

Direct Memory Access

DMI

Desktop Management Interface

DVD

Digital Versatile Disk

ECC

Error Checking and Correcting

ECP

Extended Capabilities Port

EEPROM

Electrically Erasable Programmable Read-Only Memory

EFI

Extensible Firmware Interface

EIA	Electronic Industries Alliance
EMP	Emergency Management Port
EPP	Enhanced Parallel Port
EMV	Elektromagnetische Verträglichkeit (electromagnetic compatibility)
EPROM	Erasable Programmable Read-Only Memory
ESD	ElectroStatic Discharge
FAT	File Allocation Table
FPC	Front Panel Controller
FRU	Field Replaceable Unit
FSB	Front Side Bus
GUI	Graphical User Interface
HDD	Hard Disk Drive
HSC	Hot-Swap Controller
HU	Height Unit

Abbreviations

I²C	Inter-Integrated Circuit
I/O	Input/Output
ICM	Intelligent Chassis Management
ID	Identification
IDE	Integrated Drive Electronics
IEC	International Electrotechnical Commission
IME	Integrated Mirroring Enhanced
IPMI	Intelligent Platform Management Interface
IRQ	Interrupt Request Line
LAN	Local Area Network
LBA	Logical Block Address
LCD	Liquid Crystal Display
LDL	Local Diagnostic LED
LED	Light Emitting Diode

LP	Low Profile
LUN	Logical Unit Number
LVD	Low-Voltage Differential SCSI
LWL	LichtWellenLeiter (fiber optic cable)
MRL	Manual Retention Latch
MMF	Multi Mode Faser
NMI	Non Maskable Interrupt
NTFS	New Technology File System
NVRAM	Non Volatile Random Access Memory
OS	Operating System
PCI	Peripheral Component Interconnect
PDA	Prefailure Detection and Analysis
PDF	Portable Data Format
POST	Power ON Self Test

Abbreviations

PS/2

Personal System/2

RAID

Redundant Arrays of Independent Disks

RAM

Random Access Memory

RoHS

Restriction of the Use of Certain Hazardous Substances (Waste from Electric and Electronic Equipment)

ROM

Read-Only Memory

RoMB

RAID on Mother Board

RSB

Remote Service Board

RTC

Real Time Clock

RTDS

Remote Test- und Diagnose-System

SAF-TE

SCSI Accessed Fault-Tolerance Enclosures

SAS

Serial Attached SCSI

SATA

Serial Advanced Technology Attachment

SBE

Single Bit Error

SCA

Single Connector Attachment

SCSI	Small Computer System Interface
SCU	System Configuration Utility
SDR	Sensor Data Record
SDRAM	Synchronous Dynamic Random Access Memory
SEL	System Event Log
S.M.A.R.T	Self-Monitoring, Analysis, and Reporting Technology
SMI	System Management Interrupt
SRU	Service Replaceable Unit
SSU	System Setup Utility
SVGA	Super Video Graphics Adapter
USB	Universal Serial Bus
VGA	Video Graphics Adapter
WEEE	Waste from Electric and Electronic Equipment
WOL	Wakeup on LAN

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