

PRIMERGY TX200 S5

Operating Manual

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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 TX200 S5 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 available as a floorstand or rack model. The floorstand model can be converted to a rack model using an optional conversion kit.

Due to its advanced hardware and software components, the PRIMERGY TX200 S5 server offers a high level of data security and availability. These components include hot-plug HDD modules, optional hot-plug power supply units, optional redundant system fans, the Server Management ServerView Suite, 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 intrusion detection and the completely lockable chassis of the floorstand model or the lockable rack door.

The rack model occupies 5 height units 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 TX200 S5 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 TX200 S5 can be found in the following documents:

- "Quick Start Hardware - PRIMERGY TX200 S5" leaflet (only included as a printed copy)
- "Quick Start Software - Quick Installation Guide" DVD booklet (only included with the PRIMERGY ServerView Suite as a printed copy)
- "Safety notes and other important information" manual
- "Warranty" manual
- "PRIMERGY ServerView Suite Local Service Concept - LSC" manual
- "Returning used devices" manual
- "Helpdesk" leaflet
- Technical manual for the system board D2709
- "PRIMERGY TX200 S5 Server Operating Manual"
- "PRIMERGY TX200 S5 Server Options Guide"
- "D2709 BIOS Setup Utility for TX200 S5" manual



PRIMERGY manuals are available in PDF format on the PRIMERGY ServerView Suite DVD 2. The PRIMERGY ServerView Suite DVD 2 is part of the PRIMERGY ServerView Suite supplied with every server.

If you no longer have the ServerView Suite DVDs, you can obtain the relevant current versions using the order number U15000-C289.

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.ts.fujitsu.com>. The PRIMERGY server documentation can be accessed using the *Industry standard servers* navigation option.

Further sources of information:

- PRIMERGY Abbreviations and Glossary on the PRIMERGY ServerView Suite DVD 2
- Manual for the monitor
- Documentation for the boards and drives
- Operating system documentation
- Information files in your operating system

1.3 Performance features

Customer Self Service (CSS)

The Fujitsu Technology Solutions 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 87.

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 "[Installation and operation](#)" on page 61 and the "PRIMERGY ServerView Suite Local Service Concept - LSC" manual on the PRIMERGY ServerView Suite DVD 2).

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 "PRIMERGY ServerView Suite Local Service Concept - LSC" manual on the PRIMERGY ServerView Suite DVD 2).

In addition, CSS errors are displayed in the ServerView Operations Manager, the server management software from Fujitsu Technology Solutions.

In the event of errors, the ServerView Operations Manager 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 D2709 for the hardware and in the BIOS Setup manual for the firmware.

Trusted Platform Module (TPM)

A Trusted Platform Module (TPM) for safer storage of keys can be implemented as an option. This module enables programs from third party manufacturers to store key information (e.g. drive encryption using Windows Bitlocker Drive Encryption).

The TPM is activated via the BIOS system (for more information, refer to the Fujitsu Technology Solutions BIOS manual).



CAUTION!

- When using the TPM, note the program descriptions provided by the third party manufacturers.
 - You must also create a backup of the TPM content. To do this, follow the third party manufacturer's instructions. Without this backup, if the TPM or the system board is faulty you will not be able to access your data.
 - If a failure occurs, please inform your service about the TPM activation before it takes any action, and be prepared to provide them with your backup copies of the TPM content.

Slots for expansion cards

The server can be expanded flexibly via six slots (one 32-bit PCI, two PCIe Gen2 x8, and three PCIe Gen2 x4).

PCIe Gen2 doubles the bandwidth of currently existing PCIe busses and allows improved system performance.

Hard disk drives

The server is shipped with one of the following drive cages:

- For up to four 3.5-inch SAS/SATA hard disk drives:

Up to four SAS/SATA HDD modules can be used in the drive cage. Each HDD module can accommodate a SAS/SATA hard disk drive with a maximum height of 1 inch. The module is connected to the SAS/SATA backplane wirelessly. This allows HDD modules to be plugged in and pulled out easily.

As an option, a hard disk extension box (with a maximum of two SAS/SATA HDD modules) can be installed (see section "[Accessible drives](#)" on [page 14](#)).



Up to four SATA hard disk drives are controlled by the onboard SATA controller. An additional SAS/SATA RAID controller must be installed to control additional SATA hard disk drives or SAS hard disk drives.

Hybrid configurations of SAS and SATA HDD modules within **one** drive cage are not supported.

- For up to eight 2.5-inch SAS/SATA hard disk drives:

Up to eight SAS/SATA HDD modules can be used in the drive cage. Each HDD module can accommodate an SAS/SATA hard disk drive with a 2.5-inch format. The modules are connected to the SAS/SATA backplane wirelessly. This allows HDD modules to be plugged in or pulled out easily.

As an option, a hard disk extension box (with a maximum of eight SAS/SATA HDD modules) can also be installed (see section "[Accessible drives](#)" on [page 14](#)).



Up to eight SAS/SATA hard disk drives are controlled by the SAS/SATA RAID controller already installed. The hard disk extension box for 2.5-inch SAS hard disk drives requires an additional SAS/SATA RAID controller.

Hybrid configurations of SAS and SATA HDD modules are not supported.

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

Onboard SATA controller

A 6-port SATA controller is integrated on the system board; up to four SATA hard disk drives can be connected to the controller. The LSI Embedded MegaRAID software (SATA Software RAID) supports RAID levels 0, 1 and 10.

For more information on configuring the controller, see section "[Configuring the onboard SATA controller](#)" on page 75.

SAS/SATA RAID controller

The server is available with the following SAS/SATA RAID controllers for operating the internal SAS/SATA hard disk drives:

- Modular RAID 0/1 controller with "Integrated Mirroring Enhanced" (SAS IME)

RAID levels 0, 1 and 1E are supported for internal hard disk drive configurations.

For more information on configuring the controller, see section "[Configuring the onboard SATA controller](#)" on page 75.

- Modular RAID 5/6 controller with "MegaRAID functionality" (SAS MegaRAID)

RAID levels 0, 1, 10, 1E, 5, 50, 6 and 60 are supported for internal hard disk drive configurations. As an option, a battery backup unit (BBU) can save the memory content even if the power fails. Cache memory sizes of 256 Mbyte and 512 Mbyte are available.

For more information on configuring the controller, see section "[Configuring the onboard SATA controller](#)" on page 75.



Further information on SAS/SATA RAID controllers is provided in the "Modular RAID Controller Installation Guide" (on PRIMERGY ServerView Suite DVD 2 under *Industry Standard Servers - Expansion Cards - Storage Adapters - LSI RAID / SCSI Controllers*).

Further information on other SAS/SATA RAID controllers (e.g. for operating external SAS/SATA hard disk drives or tape drives) is available on PRIMERGY ServerView Suite DVD 2 under *Industry Standard Servers - Expansion Cards - Storage Adapters - LSI RAID / SCSI Controllers*.

Accessible drives

The server has three 5.25-inch bays that can be used in various ways:

The individual bays can be equipped with any 3.5-inch drives (height:1.6 inch).

You can install a multibay (DVD-LSD/LSP) in the top bay. You can install a slimline DVD drive and the ServerView Local Service Display or ServerView Local Service Panel in the multibay (DVD-LSD/LSP).

The following expansion boxes are also available depending on the hard disk configuration selected:

- With one drive cage for up to two 3.5-inch SAS hard disk drives:

You can install an extension box for up to two 3.5-inch SAS hard disk drives in the two bottom bays. This box has bays for a slimline DVD drive, the ServerView Local Service Display/ServerView Local Service Panel, and up to two 3.5-inch SAS hard disk drives.

- With a drive cage for up to eight 2.5-inch SAS/SATA hard disk drives:

You can install an extension box for up to eight 2.5-inch SAS/SATA hard disk drives in the two bottom bays.



The HDD extension box for 2.5-inch SAS/SATA hard disk drives requires an additional SAS/SATA RAID controller.



Please note the following:

- A DVD drive must have been installed in order to operate the server.
- The accessible drives cannot be replaced during operation.
- Access to the accessible drives may have to be free in order to operate tape drives (see "[Access to the accessible drives \(floorstand model\)](#)" on page 61).

Power supply

In its basic configuration the server has a permanently installed power supply unit or a hot-plug power supply unit that adjusts automatically to any mains voltage in the range 100 V - 240 V. Besides the hot-plug power supply unit, a second hot-plug power supply unit can be installed optionally to serve as a redundant power supply. If one power supply unit fails, the second power supply unit in the redundant configuration ensures operation can continue uninterrupted. The faulty power supply unit can be replaced during operation (for further details see section "[Hot-plug power supply units \(optional\)](#)" on [page 88](#)).

Cooling

In the standard configuration the server is cooled by two system fans and one power supply fan.

In the optional, redundant configuration the server is cooled by four system fans (two double fans) and one or two power supply fans. If one of the four system fans fails, one of the two predetermined fans (system fan 3 and system fan 4, see the "Options Guide" for the system) increases its power to ensure that the server is cooled properly.

High level of availability and data security

When memory data is accessed, 1-bit errors are identified in the main memory and automatically corrected with the error correcting code (ECC) method. The patented memory scrubbing function regularly starts up the EDC mechanism, ensuring continuous data integrity.

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

Memory modules can be protected against failure by mirroring (Memory Mirroring). Memory Mirroring is roughly comparable to RAID level 1 for hard disk arrays. The basic configuration requires two identical memory modules in two different banks.

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 during the next system maintenance. In order to be able to use the hot-spare memory function, all occupied memory banks be equipped with identical 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 Technology Solutions analyzes and monitors all components that are critical for system reliability.

Optional RAID controllers support RAID levels 0, 1 and 5 and increase system availability.

The hot-plug HDD modules provide additional availability.

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 S2-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 (CLI)
- Simple, interactive or script-based iRMC S2 configuration
- Customer Self Service (CSS)
- iRMC S2-s own user management
- Multi-computer, global iRMC S2 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" user's guide (on the PRIMERGY ServerView Suite DVD 2 under *Industry Standard Servers - Software - PRIMERGY ServerView Suite - Out-Of-Band Management*).

Server management

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

The ServerView Operations Manager enables the management of all PRIMERGY servers in the network via a central console. The ServerView Operations Manager supports the following functions:

- 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)
- Intrusion detection in the floorstand model
- Temperature monitoring of the CPU and the surrounding area
- Monitoring of PCI bus loading
- Detailed status and error reports for bus systems, processors and main memory
- Watchdog timer for Automatic Server Reconfiguration and Restart (ASR&R) in the event that memory modules or processors fail
- 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 Operations Manager is provided in the associated documentation.

ServerView Installation Manager

You can configure the PRIMERGY server quickly and precisely with the ServerView Installation Manager software provided. User-guided menus are available for installing the server operating system (for further details see section "[Configuring the server](#)" on page 75).

Service and support

PRIMERGY servers are easy to maintain and modular, thus enabling quick and simple maintenance.

The handles and locks (touch point) used to exchange components are colored green to ensure simple and immediate recognition.

In order to prevent the components from being damaged by incorrect handling when they are being installed and removed, the areas of all components that can be touched without damaging them are also marked green.

PRIMERGY diagnostic LEDs fitted on the system board show which component (memory module, processor, fan or expansion card) is not functioning properly.

The Flash EPROM program supplied with the Fujitsu Technology Solutions utilities supports a fast BIOS update.

With the iRMC S2 (integrated Remote Management Controller) on the system board, the PRIMERGY TX200 S5 server can also be maintained and serviced remotely. This enables remote diagnosis for system analysis, remote configuration and remote restart should the operating system or hardware fail.

ServerView Remote Management

ServerView Remote Management is the remote management solution from Fujitsu Technology Solutions 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 17](#)). 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.

More information about the iRMC S2 can be found in the "iRMC S2 - integrated Remote Management Controller" user's guide (on the PRIMERGY ServerView Suite DVD 2 under *Industry Standard Servers - Software - PRIMERGY ServerView Suite - Out-Of-Band Management*).

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

Rated voltage range	100 V - 240 V
Frequency	50 Hz - 60 Hz
Rated current with basic configuration	100 V oder 240 V / 1.3 A - 0.6 A
Max. rated current	100 V - 127 V oder 200 V - 240 V / 9.5 A - 4.0 A
Effective power	max. 461 W
Apparent power	max. 490 VA
Heat dissipation	1660 kJ/h (1573 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	FCC class A CNS 13438 class A; VCCI class A AS/NZS CISPR 22 class A / GB 9254 class A GB 17625
interference emissions	EN 55022 class A
Harmonic current	EN 61000-3-2
Flicker	EN 61000-3-3
interference immunity	EN 55024, EN 300386
CE marking to EU directives	Low Voltage Directive 2006/95/EC (product safety) Electromagnetic compatibility 2004/108/EC
Mechanical environmental conditions	EN 60721-3-3; class 3M2

Mechanical specifications

	Floorstand	Rack
Width (with anti-tilt bracket)	205 mm (306 mm)	486 mm
Total depth	615 mm	636 mm
Installation depth	-----	596 mm
Height	444 mm	5 HE

Weight

max. 36.8 kg (depending on configuration).

Ventilation clearance

At least 200 mm on the front and rear.

Maintenance area for the floorstand model

1.2 m² on the left side. Emergency access must be assured.

Ambient conditions

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

Condensation during operation must be avoided!

Noise level with standard fan and standard power supply units

Sound power level L_{WAd} (ISO 9296)	≤ 5.2 B (standby) ≤ 5.7 B (operating)
Sound pressure level at adjacent position L_{pAm} (ISO 9296)	≤ 34 dB (A) (standby) ≤ 36 dB (A) (operating)

Noise level with redundant system fans and redundant power supply

Sound power level L_{WAd} (ISO 9296)	≤ 5.5 B (standby) ≤ 5.9 B (operating)
Sound pressure level at adjacent position L_{pAm} (ISO 9296)	≤ 36 dB (A) (standby) ≤ 39 dB (A) (operating)

2 Installation steps, overview

This chapter contains an overview of the steps you need to carry out to install your server. Links take you to sections where you can find more detailed information about the respective steps:

- ▶ At first, please take notice of the safety instructions in chapter "[Important notes](#)" on page 27 and following.
- ▶ Unpack the system, 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 42).
- ▶ Transport the server to the place where you want to set it up.
- ▶ Make sure that you have all necessary manuals (see "[Documentation overview](#)" on page 8); print out the PDF files if required.
- ▶ Components that have been ordered additionally may be delivered loose with the server. Install these in the server as described in the supplied documentation.
- ▶ Set up the floorstand model (see section "[Setting up the floorstand model](#)" on page 43) or install the rack model in the rack (see section "[Installing/removing the rack model](#)" on page 45).
- ▶ Wire the server. Follow the instructions in sections "[Connecting devices to the server](#)" on page 55 and "[Notes on connecting/disconnecting cables](#)" on page 59.
- ▶ Connect the server to the mains (see section "[Connecting the server to the mains](#)" on page 56).
- ▶ Familiarize yourself with the controls and indicators on the front and rear of the server (see section "[Control and display elements](#)" on page 64).

Installation steps, overview

- ▶ Configure the server and install the desired operating system and applications. The following options are available:
 - Remote installation with the ServerView Installation Manager:

With the PRIMERGY ServerView Suite DVD 1 provided, you can configure the server and install the operating system in a convenient manner.

Details on how to operate the ServerView Installation Manager, as well as some additional information, are included in the "PRIMERGY ServerView Suite Installation Manager" user's guide (on PRIMERGY ServerView Suite DVD 2 under *Industry Standard Servers - Software - PRIMERGY ServerView Suite - Server Installation and Deployment*).

Configuration information can also be found in section "[Configuring the server and installing the operating system with the ServerView Installation Manager](#)" on page 76.
 - Local configuration and installation with or without the ServerView Installation Manager (see section "[Configuring the server and installing the operating system with the ServerView Installation Manager](#)" on page 76 or section "[Configuring the server and installing the operating system without the ServerView Installation Manager](#)" on page 77).



You will find more information on installing the server remotely or locally in the "PRIMERGY ServerView Suite Installation Manager" user's guide (on the PRIMERGY ServerView Suite DVD 2 under *Industry Standard Servers - Software - PRIMERGY ServerView Suite - Server Installation and Deployment*).

3 Important notes

This chapter provides safety instructions which you must observe when handling 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 shall be performed by technical specialists. A technical specialist is a person who is trained to install the server including hardware and software.
- Repairs to the device that do not relate to CSS failures shall be performed 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 [section "Technical data" on page 22](#)).
- 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 100 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 shockproof 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 Mbit/s 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: 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:

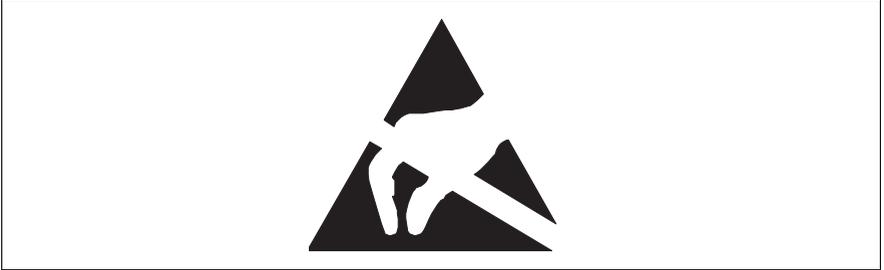


Figure 1: ESD label

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.

i 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 78](#).
- 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 ENERGY STAR



Products that have been certified compliant with ENERGY STAR and identified as such are in full compliance with the specification at shipping. Note that energy consumption can be affected by software that is installed or any changes that are made to the BIOS or energy options subsequently. In such cases, the properties guaranteed by ENERGY STAR can no longer be assured.

The "ServerView Operations Manager" user guide contains instructions for reading out measurement values, including those relating to current energy consumption and air temperatures. Either the Performance Monitor or the Task Manager can be used to read out CPU utilization levels.

3.3 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).

3.4 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 Technology Solutions 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 Technology Solutions. 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.

3.5 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.

3.6 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.

3.7 Environmental protection

Environmentally-friendly product design and development

This product has been designed in accordance with the Fujitsu Technology Solutions 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.ts.fujitsu.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 Technology Solutions branch or from our recycling center in Paderborn:

Fujitsu Technology Solutions
Recycling Center
D-33106 Paderborn

Tel. +49 5251 8 18010

Fax +49 5251 8 333 18010

4 Installing the hardware



CAUTION!

- Follow the safety instructions in the chapter "[Important notes](#)" on [page 27](#).
- Do not expose the server to extreme environmental conditions (see "[Ambient conditions](#)" on [page 23](#)). 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 the [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 notes" on page 27](#).

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 ID card.

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

4.2 Setting up the floorstand model



If you are not installing a PRIMERGY TX200 S5 floorstand model, skip this section and continue reading at [section "Installing/removing the rack model" on page 45](#).



CAUTION!

Follow the safety instructions in [chapter "Important notes" on page 27](#).

- ▶ Transport the server to the place where you want to set it up.
- ▶ Unpack the server (see [section "Unpacking the server"](#)).
- ▶ Set up the server.

Note that for safety reasons (danger of tipping) the anti-tilt bracket must be mounted on the back of the server (see [section "Mounting the anti-tilt bracket" on page 44](#)).



CAUTION!

- The device must be protected from direct sunlight.
 - The essential minimum clearance for servicing must be maintained (see ["Maintenance area for the floorstand model" on page 23](#)).
 - Access to the rear of the server must be assured so that other devices (e.g. memory subsystems) can be connected.
 - A clearance of at least 200 mm must be maintained in front of and behind the system to ensure proper ventilation.
 - The mains plug must be accessible easily and safely.
- ▶ Wire the server. Read the information in [section "Connecting devices to the server" on page 55](#) and [section "Notes on connecting/disconnecting cables" on page 59](#).
 - ▶ Connect the system to the mains (see [section "Connecting the server to the mains" on page 56](#)).

4.2.1 Mounting the anti-tilt bracket

i The anti-tilt bracket is only necessary for the redundant configuration (with two hot-plug power supplies).



Figure 2: Mounting the anti-tilt bracket

- ▶ Place the server on the anti-tilt bracket.
- ▶ Fasten the anti-tilt bracket using the two knurled screws (1).

4.3 Installing/removing the rack model



CAUTION!

- Please observe the safety information and notes on rack mounting in [chapter "Important notes" on page 27](#).
- Several people are needed to install / remove the server in the rack.
- The rack can tip over if more than one unit is pulled out.
- The server must not occupy the top height unit of the rack (38 HU/42 HU PRIMECENTER rack and/or DataCenter rack), as otherwise boards or system fans cannot be replaced even with the plug-in module fully extended.

4.3.1 Rack system requirements

The rack systems from Fujitsu Technology Solutions, PRIMECENTER Rack and DataCenter Rack, support the installation of PRIMERGY servers. Installation in most current rack systems from other manufacturers (3rd party racks) is also supported.

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.

PRIMECENTER/DataCenter Rack

The main features of the rack systems from Fujitsu Technology Solutions are as follows:

- Support systems that can be mounted without tools
The support systems have a linear alignment feature to ensure that they can be adjusted to different rack depths.

- 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.

3rd party racks

Certain general conditions must be met:

- Installation dimensions (see the dimensions shown in [figure 3 on page 47](#)):
 - 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

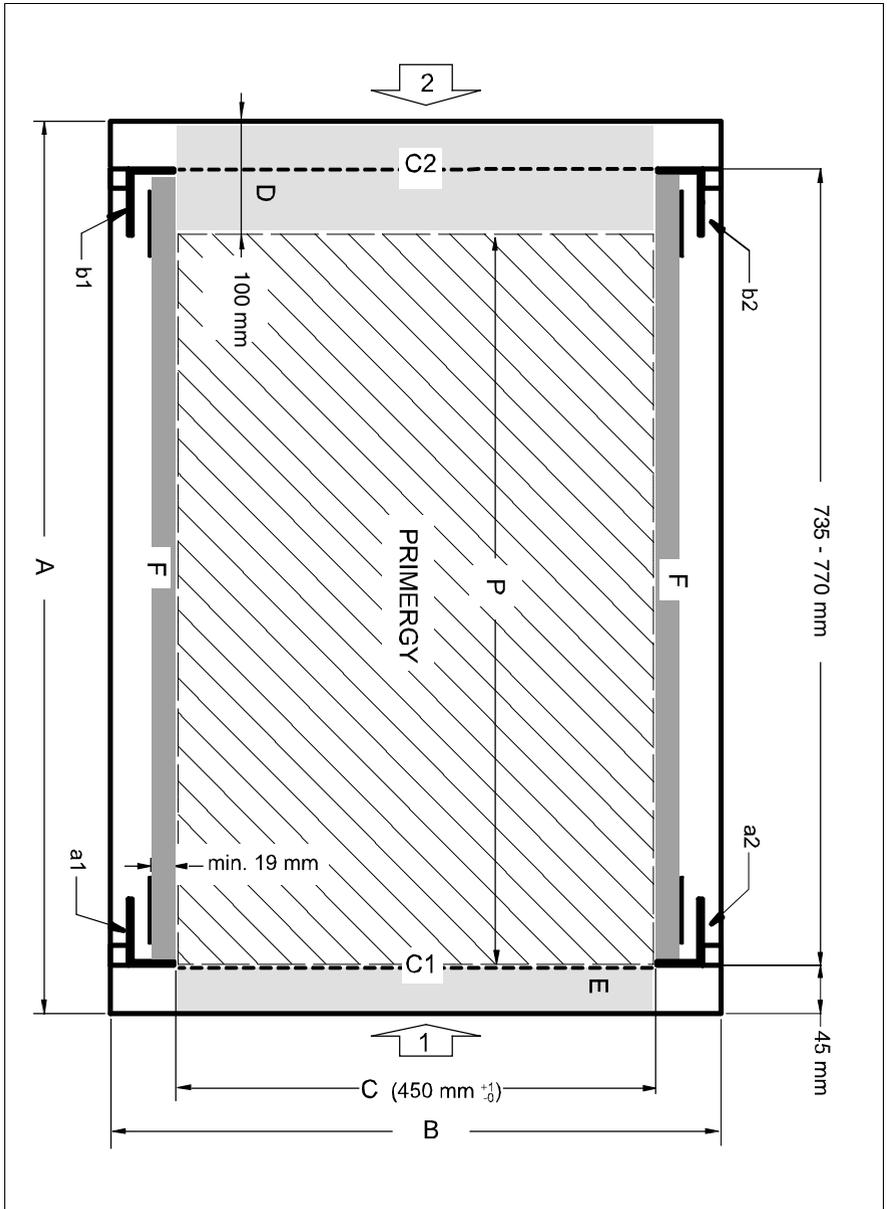


Figure 3: Mechanical requirements

- 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 support systems can be bolted to the front.

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

- No cable management support (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 general, the ventilation concept ensures 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.

4.3.2 Installation in PRIMECENTER/DataCenter rack

For installation in a PRIMECENTER/DataCenter rack, the following parts are required:

- Support bracket
- one support system on the left and one on the right
- M5 centering fixtures (screws with integrated plugwashers)



- The descriptions and figures in this section refer to the current support system.
- General information regarding server installation in the rack is included in the technical manual for the appropriate rack.

Fitting the support bracket

When mounting the left support system in the corresponding rack, the supplied support bracket must first be mounted flush with the underside of the device on the rear left support upright.

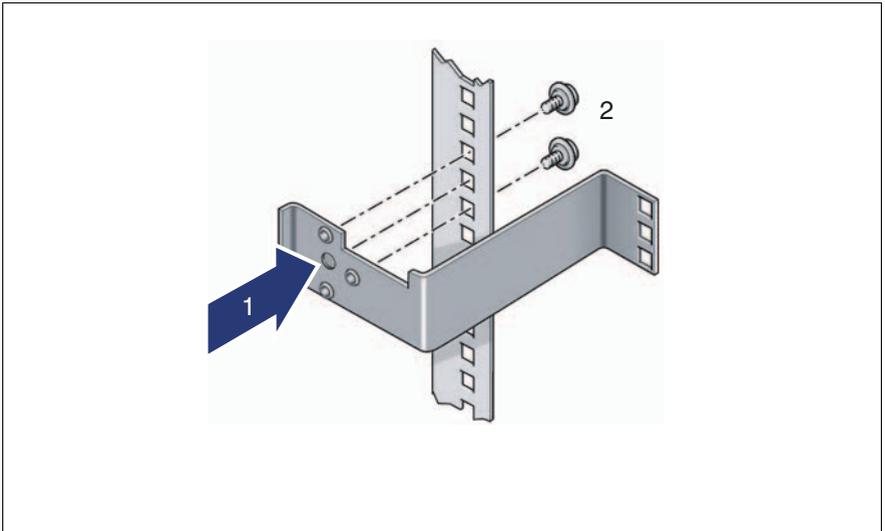


Figure 4: Fitting the support bracket

- ▶ Position the support bracket at the corresponding height on the rear left support upright, (place knob in the corresponding hole) (1) and secure it with the two supplied M5 centering fixtures (2).

Installing the support systems

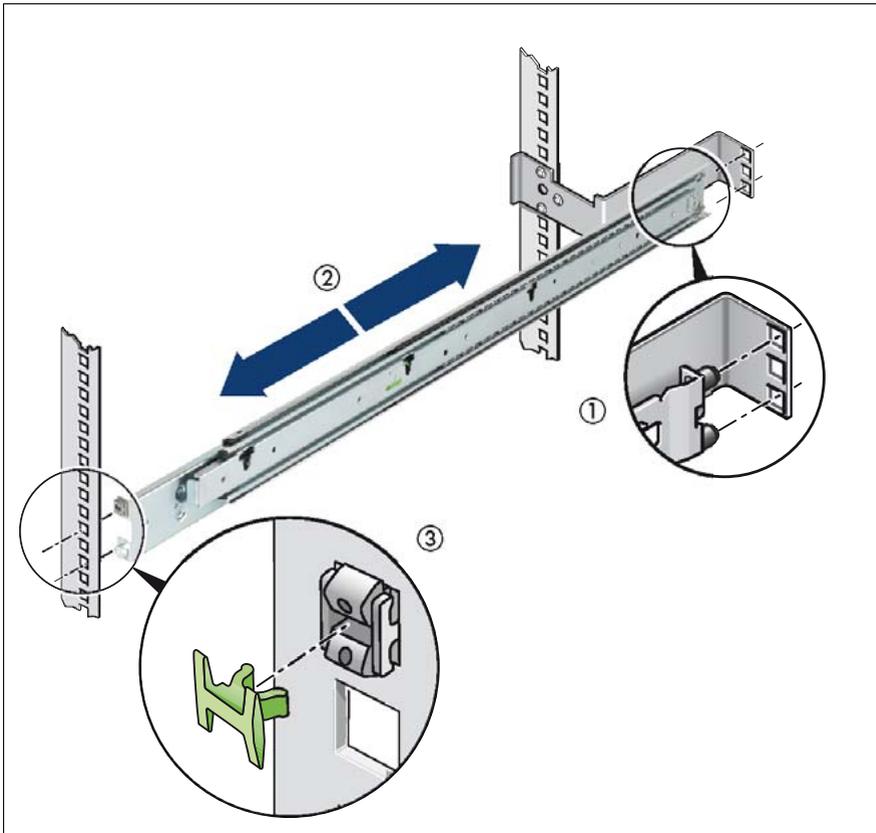


Figure 5: Fit the left support system in the PRIMECENTER/DataCenter rack

- ▶ Position the left support system in the support bracket (insert retaining bolts) - see (1).
- ▶ Clamp the left-hand support system (2) between the front left support upright and the support bracket by pressing the support system together, positioning it on the front support upright and releasing it again. The support system automatically adjusts to the rack depth.

i The support system no longer has to be fixed to the front support upright because the easy lock engages and ensures a firm fit.

- ▶ Insert (3) the safety lock into the easy lock (snap fit).

**CAUTION!**

Ensure that the safety lock has been inserted before the server is inserted!

- ▶ Repeat the above steps for the right-hand support system (with the front and rear right support uprights).
- ▶ Fit the PRIMECENTER/DataCenter rack cable management as described in the technical manual for the corresponding rack.
- ▶ Fit the cage nuts for securing the server in the corresponding catches on the right and left support uprights.
- ▶ Insert the server (see [section "Installation in PRIMECENTER/DataCenter rack" on page 52](#)).

Inserting the server

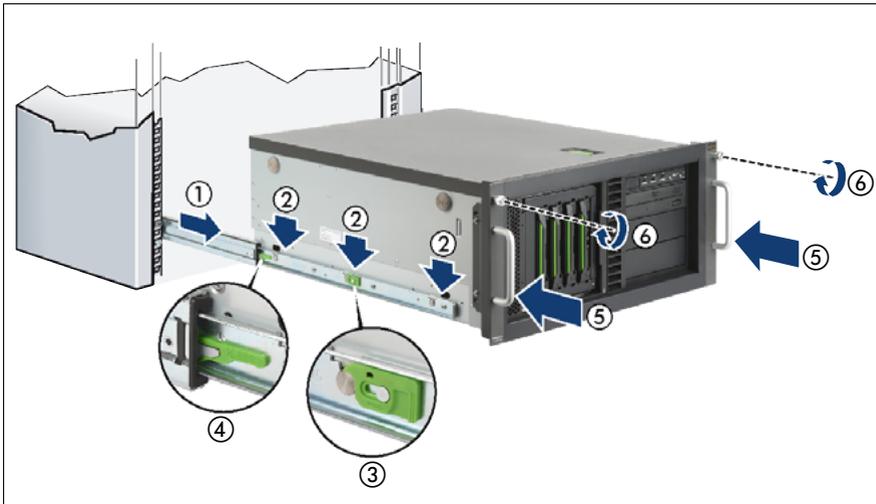


Figure 6: Inserting the server

**CAUTION!**

Ensure that the safety lock has been inserted **before** the server is inserted (see [figure 5 on page 50](#)).

**CAUTION!**

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

- ▶ Extend the telescopic rails completely to the front (1).
 -  They must click into place so that they can no longer be moved.
- ▶ Lower the server from above onto the projecting telescopic rails (2). As you do this, the locking bar (3) engages.
- ▶ Push the locking mechanism of both telescopic rails up (4).
- ▶ Push the server as far as it will go into the rack (5).
- ▶ Fasten the server to the rack (6) using the two knurled screws (front panel).
- ▶ Route the cables as described in the technical manual for the rack in question with the server pushed in.

4.3.3 Installation in 3rd party racks

 The support systems from Fujitsu Technology Solutions are suitable for use in any 3rd party racks for standard servers (installation depth 714 - 785 mm) without restrictions.

- ▶ Refer to the manual from the rack manufacturer for details of the mechanical installation and the climatic conditions.



CAUTION!

When installing in 3rd party racks, it must be ensured that an air flow from the front to the back of the rack is guaranteed.

- ▶ Fit the required original parts (support bracket or cable management system).



Under certain circumstances, you will not be able to use some of the parts from the rack installation kit supplied - you will need to use original 3rd party rack parts instead.

Racks with installation depth of 735 mm

The lengths of the telescopic rails do not need to be adjusted with respect to each other for the installation in rack systems with 735 mm installation depth.

- ▶ Secure the support systems as described in section "[Installing the support systems](#)" on page 50.
- ▶ Mount the server (see "[Inserting the server](#)" on page 52) and route the cables as described in the original manual of the rack..



CAUTION!

Ensure that the safety lock has been inserted **before** the server is inserted (see [figure 5 on page 50](#)).

Racks with installation depth smaller/greater than 735 mm

The support systems can be used for installation depths of 714 - 785 mm. The spring element of the support system is used to adjust the length as required.

- ▶ Secure the support systems as described in ["Installing the support systems" on page 50](#).
- ▶ Mount the server (see ["Inserting the server" on page 52](#)) and route the cables as described in the original manual of the rack..

**CAUTION!**

Ensure that the safety lock has been inserted **before** the server is inserted (see [figure 5 on page 50](#)).

4.4 Connecting devices to the server

The ports for external devices are on the rear of the server. The additional ports available on your server depend on the expansion cards installed.

The standard ports are indicated by symbols and color coding.

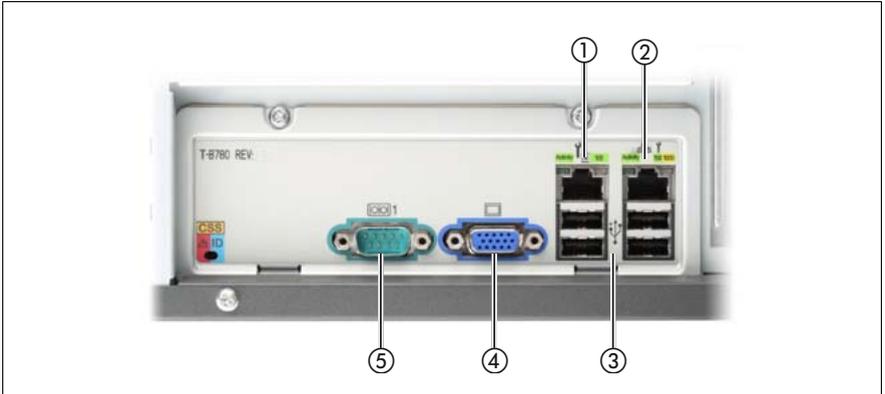


Figure 7: Connection panel on the rear

1	LAN port 1 (service LAN)
2	LAN port 2
3	USB ports (black)
4	Monitor port (blue)
5	Serial port COM1 (turquoise)

The corresponding indicators are explained in [section "Rear of server" on page 69](#).

i Some of the devices connected require special software (e.g. drivers) (see documentation for the connected device).

► Connect the devices.

Three additional USB ports are located on the front of the server (see [figure 13 on page 64](#)).

Connecting the monitor

- ▶ Connect the monitor to the standard port of the server (see figure 7 on page 55).
- ▶ Connect the power cable of the monitor to a grounded mains outlet of the in-house mains and/or to the mains socket strip of the rack.

**CAUTION!**

The rated current for the monitor is indicated on the technical data label on the monitor or in the operating manual for the monitor.

4.5 Connecting the server to the mains

In the basic configuration, the server has a fixed power supply unit.

As an option, this power supply unit can be replaced with a hot-plug power supply unit. A second hot-plug power supply unit can be added to ensure a redundant power supply. If a defect occurs in one power supply unit, the other power supply unit ensures unimpaired further operation.

**CAUTION!**

The server adjusts itself automatically to a mains voltage in the range 100 V - 240 V. Make sure that your local mains voltage is within this range.



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

In this case the two power supply units are directly connected either to two different phases or two different power circuits of the in-house mains.

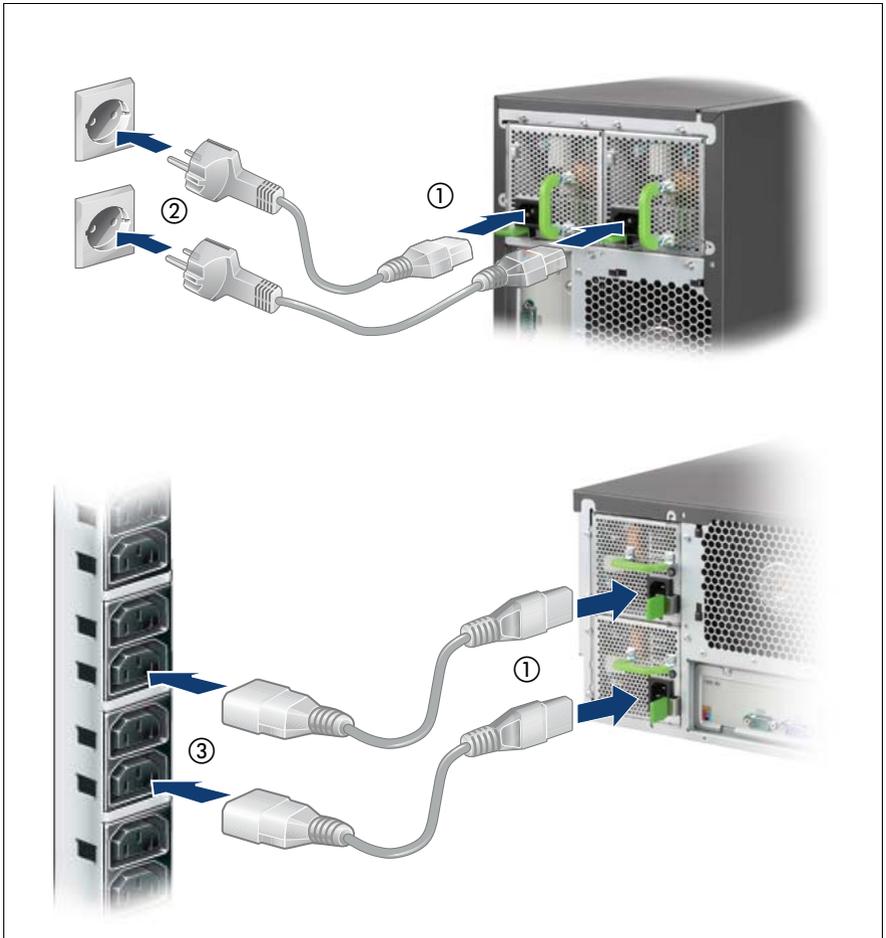


Figure 8: Connecting the server to the mains

- ▶ Connect the power cord to the server power supply unit (1).
- ▶ Connect the mains plug to a grounded mains outlet (2) in the in-house power supply network or a power outlet of the socket strip (3) in the rack (see technical manual for the rack).

4.5.1 Using cable ties

As an option, you can secure the power cable using a cable tie to ensure that the insulated connector cannot be disconnected from the server accidentally. The cable tie is included in the accessories pack that is delivered together with the server.

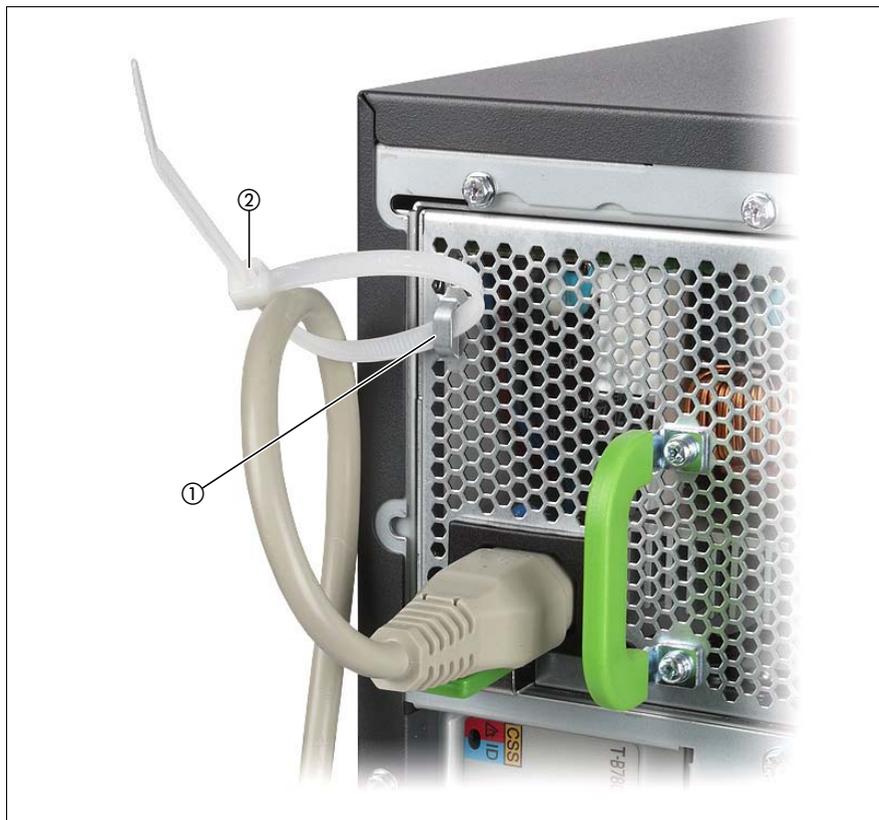


Figure 9: Using cable ties

- ▶ Thread the cable tie through the eye (1).
- ▶ Pull the cable tie tight to secure the power cable.

The insulated connector cannot now be disconnected from the server accidentally.



You can loosen the cable tie by opening the small locking lever (2).

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 Installation and operation



CAUTION!

Follow the safety instructions in chapter "[Important notes](#)" on page 27.

5.1 Access to the drives

5.1.1 Access to the accessible drives (floorstand model)



Figure 10: Removing the drive cover and snapping it into the hard disk drive cover

- ▶ Unlock the server (1).
- ▶ Remove the drive cover (2).
- ▶ Place the drive cover on the hard disk cover (3).



Please note the following when operating with tape drives:

If the system is programmed to eject the media automatically, the accessible drives must not be obstructed.

The drive cover is replaced and the server locked in the reverse order.



Figure 11: Removing the drive cover from the hard disk drive cover

- ▶ Carefully pull out on the green release lever (1) and lift off the drive cover (2).

5.1.2 Access to the HDD modules (floorstand model)



Figure 12: Removing the hard disk cover

- ▶ Unlock the server (1).
- ▶ Remove the hard disk cover (2).

The hard disk drive cover is replaced and the server locked in the reverse order.

5.2 Control and display elements

5.2.1 Front of server

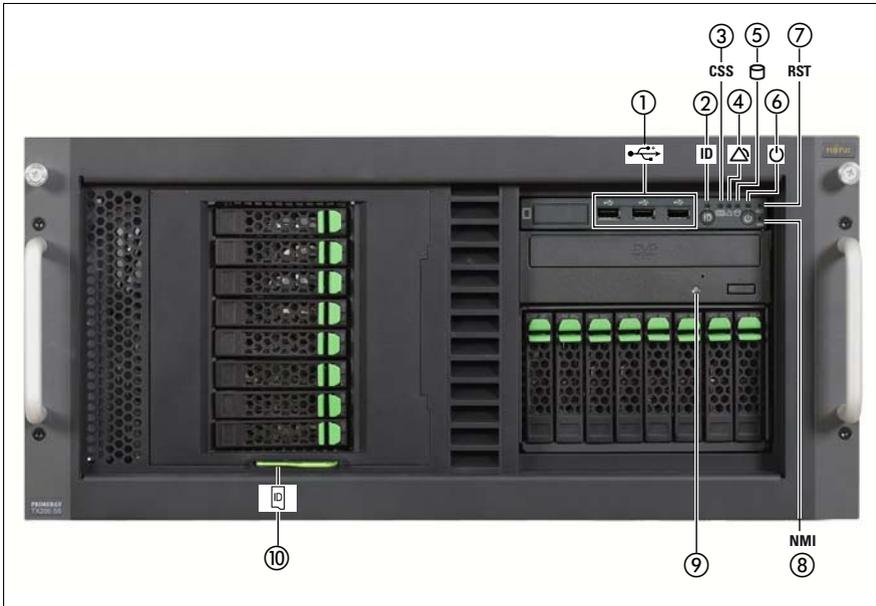


Figure 13: Front of server (example: rack model)

1	3 x USB ports	6	power-on indicator / On/Off button
2	ID indicator / ID button	7	reset button
3	CSS indicator	8	NMI button
4	Global Error indicator	9	DVD drive activity indicator
5	hard disk activity indicator	10	ID card

5.2.1.1 ID card

You can pull out the ID card as far as it will go and push it back in again.

The ID card contains various system information, such as the product name, serial number, order number, MAC addresses and DNS name.

5.2.1.2 Control elements



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).

NMI NMI button



CAUTION!

Do not press! Risk of loss of data! The NMI button may only be used by service.

RST Reset button

Pressing the reset button reboots the system.



CAUTION!

Risk of loss of data!

ID ID button

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

5.2.1.3 LEDs on the control panel



Power indicator (two-color)

Glows green when the server is switched on.

Lights up orange when the server is switched OFF, but mains voltage is present (standby mode).



Hard disk activity indicator (green)

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



Global Error indicator (orange)

- **Lights up orange** if a prefailure event has been detected that requires (precautionary) service intervention.
- **Flashes orange** if an error was detected that requires service intervention.
- **Does not light up** if there is no critical event.

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

The indicator also lights up in standby mode.

You can find more details on the indicated errors in the System Event Log (SEL), on the ServerView Local Service Panel, in the ServerView Operations Manager or via the iRMC S2's Web interface.

CSS CSS indicator (yellow)

- **Lights up yellow** if a prefailure event was detected for a CSS component that you can fix yourself (for reasons of precaution) with the CSS concept.
- **Flashes yellow** if an error was detected that you can fix yourself with the CSS concept.
- **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.

The indicator also lights up in standby mode.

For more information on the CSS concept, see "[Customer Self Service \(CSS\)](#)" on page 10.

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 the ServerView Operations Manager and the iRMC S2 Web interface and its status reported to the ServerView Operations Manager and the iRMC S2.

5.2.1.4 Indicators on the drives**DVD drive activity indicator**

Lights up green when the storage medium is being accessed.

Hard disk drive indicators



Figure 14: Indicators on the 3.5 inch and 2.5 inch HDD modules

1	<p>HDD BUSY (green)</p> <ul style="list-style-type: none"> – Lit: HDD in active phase (drive active, drive being accessed) – Does not light: HDD inactive
2	<p>HDD FAULT (orange)</p> <p>(in conjunction with a RAID controller)</p> <ul style="list-style-type: none"> ● SAS server variant <ul style="list-style-type: none"> – Does not light: no HDD error – Lit: HDD Faulty (drive defective/needs replacing, drive failed, drive deactivated by software 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 ● SATA server variant <ul style="list-style-type: none"> – Does not light: no HDD error – Lit: HDD Faulty or Rebuild Stopped (drive defective and must be replaced, a rebuild process was stopped or the module is not correctly inserted) – Slow flashing: HDD Rebuild (the data is being restored after changing a drive) – Fast flashing: HDD Identify

5.2.2 Rear of server

5.2.2.1 Indicators on the connection panel

CSS, Global Error and ID indicators



Figure 15: Indicators on the connection panel: CSS, Global Error and ID indicators

1	CSS, Global Error and ID indicators (yellow, orange and blue)
---	---



Global Error indicator (orange)

- **Lights up orange** if a prefailure event has been detected that requires (precautionary) service intervention.
- **Flashes orange** if an error was detected that requires service intervention.
- **Does not light up** if there is no critical event.

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

The indicator also lights up in standby mode.

You can find more details on the indicated errors in the System Event Log (SEL), on the ServerView Local Service Panel, in the ServerView Operations Manager or via the iRMC S2's Web interface.

CSS CSS indicator (yellow)

- **Lights up yellow** if a prefailure event was detected for a CSS component that you can fix yourself (for reasons of precaution) with the CSS concept.
- **Flashes yellow** if an error was detected that you can fix yourself with the CSS concept.
- **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.

The indicator also lights up in standby mode.

For more information on the CSS concept, see "[Customer Self Service \(CSS\)](#)" on page 10.

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 the ServerView Operations Manager and the iRMC S2 Web interface and its status reported to the ServerView Operations Manager and the iRMC S2.

LAN indicators

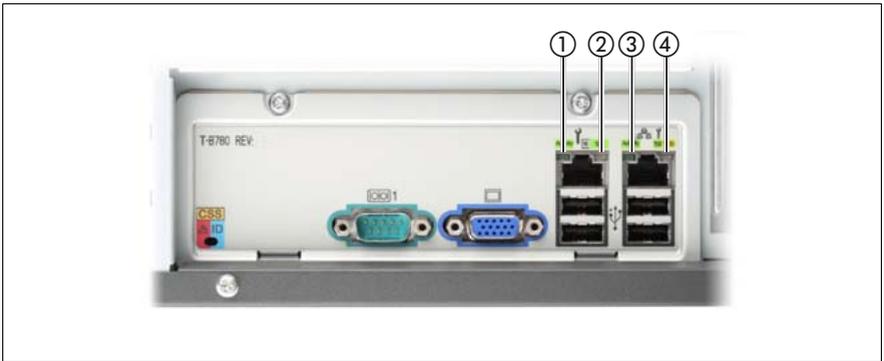


Figure 16: Indicators on the connection panel: LAN indicators

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 Mbit/s. Does not light up for a LAN transfer rate of 10 Mbit/s.</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 Gbit/s. Lights up green for a LAN transfer rate of 100 Mbit/s. Does not light up for a LAN transfer rate of 10 Mbit/s.</p>

i Depending on the settings in the BIOS, the standard LAN port may also be used as a service LAN port. You will find further information in the "D2709 BIOS Setup Utility for PRIMERGY TX200 S5" manual.

5.2.2.2 Indicators on the hot-plug power supply unit



Figure 17: Indicators on the hot-plug power supply units

1	<p>Indicator on hot-plug power supply unit (two colors)</p> <p>Flashes green when the server is switched off, but mains voltage is present (standby mode).</p> <p>Lights up green when the server is switched on and functioning properly.</p> <p>Lights up orange if the power supply unit has failed.</p>
---	---

5.3 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 81).

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

Switching the server on

The power-on indicator (see figure [13 on page 64](#)) lights up orange (standby mode).

– Starting up for the first time:

- ▶ Press the On/Off button (see figure [13 on page 64](#)).
- ▶ Insert ServerView Suite DVD 1 in the DVD drive.
- ▶ Follow the on-screen instructions (see also section "[Configuring the server and installing the operating system with the ServerView Installation Manager](#)" on page 76 or section "[Configuring the server and installing the operating system without the ServerView Installation Manager](#)" on page 77).

– System already installed:

- ▶ Press the On/Off button.

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



In the case of configurations with a large memory size, the boot process may be prolonged and the screen may remain dark for about 20 seconds.

Switching the server off

Power-on indicator lights up green.

- ▶ 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 control signal for power button override.

Other On/Off options

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

- **Timer-controlled switch-on/off**

Using the ServerView Operations Manager or iRMC S2, you can configure that the server is switched on/off controlled by timer.

- **Ring indicator**

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

- **Wake up 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 on the settings in the BIOS or in iRMC S2).

- **Power button override**

The system can be switched off by pressing and holding down the On/Off button (for approximately 4 - 5 seconds).



CAUTION!

There is a risk that data may be lost.

- **iRMC S2**

iRMC S2 offers various options for switching the server on and off, e.g. via the *Power On Off* page of the iRMC S2 Web interface.

5.4 Configuring the server

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

-  Make sure that the power saving functions are disabled in the *Power* menu of the BIOS Setup during operation.

5.4.1 Configuring the onboard SATA controller

A 6-port SATA controller is integrated on the system board. You can configure the onboard SATA controller either before or during installation with the ServerView Installation Manager. Using the ServerView Installation Manager is recommended.

-  The controller has its own configuration utility. For further information, refer to the "Embedded MegaRAID Software User's Guide" (on the PRIMERGY ServerView Suite DVD 2 under *Industry Standard Servers - Expansion Cards - Storage Adapters - LSI RAID / SCSI Controllers*).
-  Descriptions of operating systems not covered in the controller manual are provided in the corresponding readme files on the driver CDs.
-  To control SAS hard disk drives an additional SAS/SATA RAID controller is necessary (see the following section).

5.4.2 Configuring the SAS/SATA RAID controller

The server has a SAS/SATA RAID controller with "Integrated Mirroring Enhanced" functionality or "MegaRAID functionality". You can configure the SAS/SATA RAID controller either before or during installation with the ServerView Installation Manager. Using the ServerView Installation Manager is recommended.

-  The controller makes a separate utility available for IME configuration. For further information, refer to the "Integrated RAID for SAS User's Guide" (on the PRIMERGY ServerView Suite DVD 2 under *Industry Standard Servers - Expansion Cards - Storage Adapters - LSI RAID / SCSI Controllers*).

A separate utility is available to the controller for MegaRAID configuration. For further information, refer to the "SAS Software User's Guide" (on the PRIMERGY ServerView Suite DVD 2 under *Industry Standard Servers - Expansion Cards - Storage Adapters - LSI Configuration Software*).

Further information on modular RAID controllers is provided in the "Modular RAID Controller Installation Guide" (on the PRIMERGY ServerView Suite DVD 2 under *Industry Standard Servers - Expansion Cards - Storage Adapters - LSI RAID / SCSI Controllers*).



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

5.4.3 Configuring the server and installing the operating system with the ServerView Installation Manager

Using the ServerView Installation Manager on the PRIMERGY ServerView Suite DVD 1 provided, you can conveniently configure the server and install the operating system. This includes configuring the server-specific settings using the ServerView Configuration Manager and configuring the RAID controller using the **ServerView RAID Manager**.

Advantages of the ServerView Installation Manager

- Wizard assisted configuration of your server hardware and disk arrays
- Wizard assisted installation of all leading server operating systems
- Wizard-assisted 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 the ServerView Installation Manager and for further information, refer to the associated manual.

If you are using the ServerView Installation Manager, 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 78.

5.4.4 Configuring the server and installing the operating system without the ServerView Installation Manager

Configure onboard SATA controller

Configure the controller as described in section "[Configuring the onboard SATA controller](#)" on page 75.

Configure SAS/SATA RAID controller with "Integrated Mirroring Enhanced"

Configure the controller as described in section "[Configuring the onboard SATA controller](#)" on page 75.

Configure SAS/SATA RAID controller with "MegaRAID functionality"

Configure the controller as described in section "[Configuring the onboard SATA controller](#)" on page 75.

Installing the operating system

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

5.5 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

The floorstand model is protected against unauthorized opening by a lock. Apart from this, the server is also fitted with an intrusion detection switch which enables the ServerView Operations Manager program to detect and log any removal of the left cover or housing cover and the cover for the HDD modules.

To prevent it being removed from its location, the floorstand model can be secured to a fixed object with a steel cable running through a clip on the back.

The rack model is protected against unauthorized access by a lockable rack door.

To protect the system and data internally against unauthorized access, you can activate the security functions of the BIOS Setup.

6.1 BIOS Setup security functions

The *Security* menu in BIOS Setup offers various options for protecting your data from unauthorized access. By combining these options, you can also 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 on the PRIMERGY ServerView Suite DVD 2.

7 Troubleshooting and tips



CAUTION!

Follow the safety instructions in the "Safety notes and other important information" manual and in chapter ["Important notes" on page 27](#).

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 Operations Manager, 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 D2709 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 documentation for the relevant components and programs on the PRIMERGY ServerView Suite DVD 2.

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 "PRIMERGY ServerView Suite Local Service Concept - LSC" manual on the PRIMERGY ServerView Suite DVD 2.



CAUTION!

Follow the safety instructions in the chapter ["Important notes" on page 27](#).

In the PRIMERGY TX200 S5 server, the following components are considered to be CSS components:

- Hot-plug components
 - Hot-plug power supply units
 - Hot plug hard disk drives

You can expand or replace the hot-plug components during operation.

- Non-hot-plug components
 - Memory modules
 - System fan
 - expansion cards

These components can be changed by you in the event of an error. Expansions and upgrades may only be carried out by authorized specialist personnel. These operations are described in the "Options Guide".

8.1 Hot-plug components

This section describes how to handle hot-plug components and 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 Hot-plug power supply units (optional)

With two hot-plug power supply units installed, if a defect occurs in one power supply unit, the other power supply unit ensures unimpaired further operation. The defective power supply unit can be replaced without interrupting operation.

8.1.1.1 Replacing the hot-plug power supply unit



Figure 18: Unlocking and removing the power supply unit



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.

- ▶ Remove the power cable from the installed power supply unit.
- ▶ Push the green catch in the direction of the arrow (1) while pulling the power supply unit out of its mounting location (2) by the handle.
- ▶ Slide the new power supply unit into the empty slot until the locking mechanism engages.



Make sure that the power supply unit engages correctly in the slot 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.

8.1.2 Hot-plug hard disk drives

The hard disk drives which can be ordered for the PRIMERGY TX200 S5 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 may 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.



CAUTION!

Hybrid operation using both SAS and SATA hard disk drives within one drive cage is not supported.

8.1.2.1 3.5-inch HDD module and dummy module



Figure 19: 3.5-inch HDD module and dummy module

1	Dummy module
2	Tabs for unlocking the dummy module
3	HDD module (installation frame with hard disk drive installed)
4	Indicators HDD Busy (LED green) HDD Fault (LED orange) For description see section "Hard disk drive indicators" on page 68.
5	Handle for locking and unlocking the HDD module
6	Button for locking and unlocking the handle
7	Ridge for applying a sticker with the current drive name and drive size

8.1.2.2 2.5-inch HDD module and dummy module

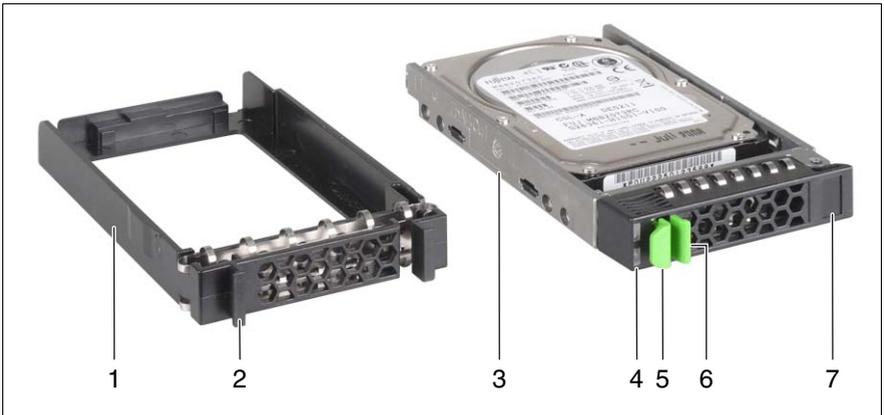


Figure 20: 2.5-inch HDD module and dummy module

1	Dummy module
2	Tabs for unlocking the dummy module
3	HDD module (installation frame with hard disk drive installed)
4	Indicators HDD Busy (LED green) HDD Fault (LED orange) For description see section "Hard disk drive indicators" on page 68.
5	Handle for locking and unlocking the HDD module
6	Button for locking and unlocking the handle
7	Ridge for applying a sticker with the current drive name and drive size

8.1.2.3 Handling hard disk drives and HDD modules

Hard disk drives incorporated in the HDD modules are highly sensitive electromagnetic 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.

8.1.2.4 Floorstand: removing the hard disk cover

For a floorstand server you make the HDD modules accessible by removing the hard disk cover:



Figure 21: Removing the hard disk cover

- ▶ Unlock the server (1).
- ▶ Remove the hard disk cover (2).

The hard disk drive cover is replaced and the server locked in the reverse order.

8.1.2.5 Removing/installing the dummy module

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

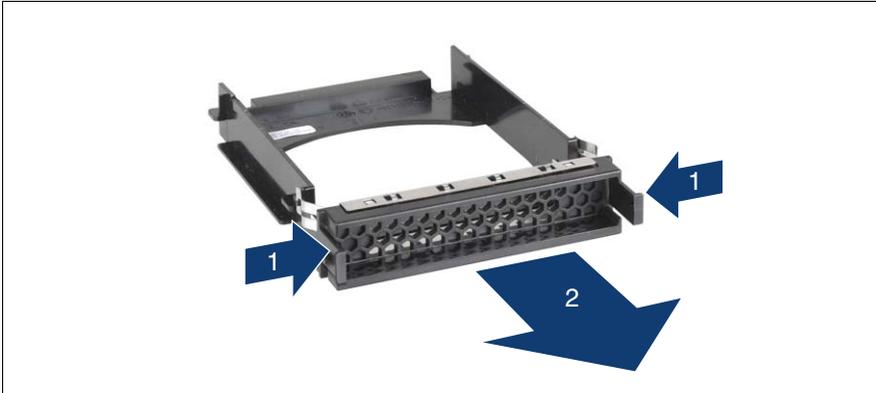


Figure 22: Removing/installing the dummy module (example: 3.5-inch dummy module)

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

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



CAUTION!

Keep the dummy module for future use. 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.

8.1.2.6 Installing the HDD module

Unlocking the HDD module

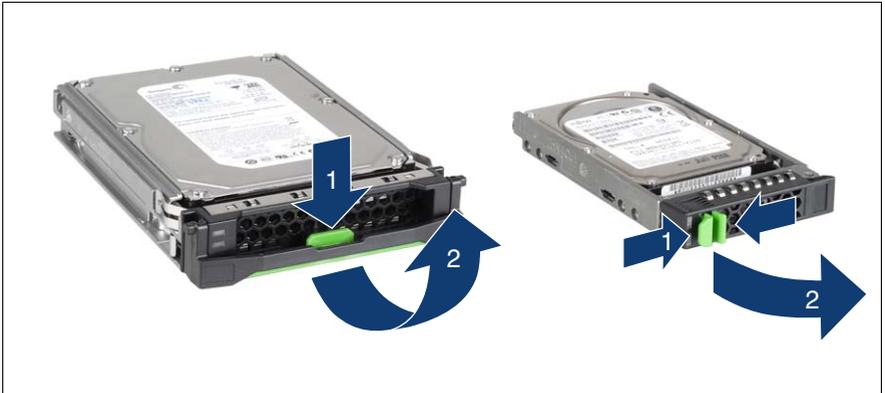


Figure 23: Unlocking the 3.5-inch and 2.5-inch HDD modules

- ▶ 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



Figure 24: Installing the 3.5-inch and 2.5-inch HDD modules

- ▶ Unlock the HDD module as described in section "[Unlocking the HDD module](#)" on page 95.
- ▶ Carefully push the HDD module into the empty slot (1) until it stops.
- ▶ Push the handle of the HDD module as far as it will go in the direction of the arrow (2) until the locking mechanism is engaged.

8.1.2.7 Removing the HDD module



CAUTION!

- Only remove a HDD module during operation if the drive is not currently being accessed. Observe the control LEDs for the corresponding HDD modules (see ["Hard disk drive indicators" on page 68](#)).
- 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 or 6.

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 95](#).
- ▶ 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 ["Installing the HDD module" on page 95](#).

**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.

8.2 Replacement of non-hot-plug components

If a defective non-hot-plug component is detected (for more information, see chapter ["Installation and operation" on page 61](#) and the "PRIMERGY ServerViewSuite Local Service Concept - LSC" manual on the PRIMERGY ServerView Suite DVD 2), proceed as follows:

- ▶ Exit all applications and shut down the server properly (see section ["Switching the server on and off" on page 73](#)).
- ▶ Pull all power connectors out of the power outlets.
- ▶ If the model is a rack model, remove the server from the rack (see section ["Installing/removing the rack model" on page 45](#)) and place the server on a table, for example.
- ▶ Open the server (see section ["Opening the housing" on page 99](#)).
- ▶ Press the Indicate CSS button on the system board (see the technical manual for the system board D2709).

The PRIMERGY Diagnostic LED of the defective CSS component lights up orange, thereby indicating which CSS component (memory module, fan or expansion card) on the system board must be replaced (see technical manual for the system board D2709).

8.2.1 Opening the server and identifying the defective CSS component

8.2.1.1 Opening the housing



CAUTION!

The device can be seriously damaged if it is opened without authorization or if repairs are attempted by untrained personnel.

It is essential to observe the safety instructions in chapter "[Important notes](#)" on page 27.



Figure 25: Opening the housing (example: floorstand model)

- ▶ Pull the locking lever as far as it will go (1)
This pushes the side cover backward (2).
- ▶ Remove the side cover (3).

8.2.1.2 Removing system fan 2 (and 4)

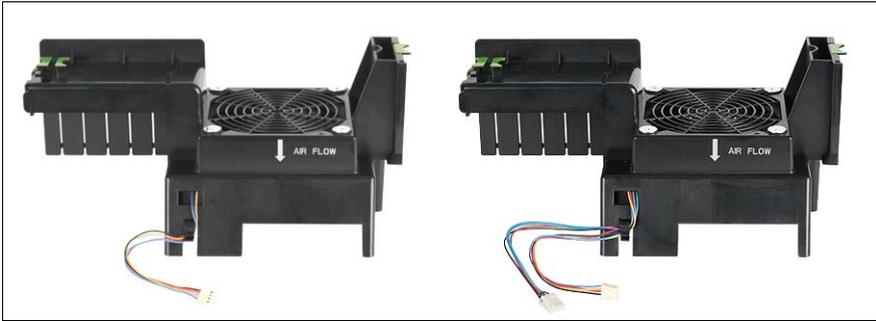


Figure 26: System fan 2 and system fan 2&4

The standard system fan 2 has just one fan cable; the redundant system fan 2&4 (double fan) has two fan cables (as two fans are integrated internally).

The procedure for installing and removing both system fans is identical except for connecting the fan cables.



Figure 27: Example: Removing system fan 2&4

- ▶ Disconnect the fan cable from the connector FAN2 (if there is a second fan cable, disconnect this from FAN4) on the system board (see the technical manual for the system board D2709 on the PRIMERGY ServerView Suite DVD 2).
- ▶ Press the two green locks of the air duct together (1).
- ▶ Press the green lock of the air duct in the direction of the arrow (2).
- ▶ Lift the air duct with the integrated system fan 2 (and 4) up and out (3).

8.2.1.3 Removing system fan 1 (and 3)

- ▶ Remove system fan 2 (and 4) (see ["Removing system fan 2 \(and 4\)" on page 100](#)).



Figure 28: System fan 1 and system fan 1&3

The standard system fan 1 is shorter and has just one fan cable; the redundant system fan 1&3 is taller (as 2 fans are integrated internally) and has two fan cables.

The procedure for installing and removing both system fans is identical except for connecting the fan cables.

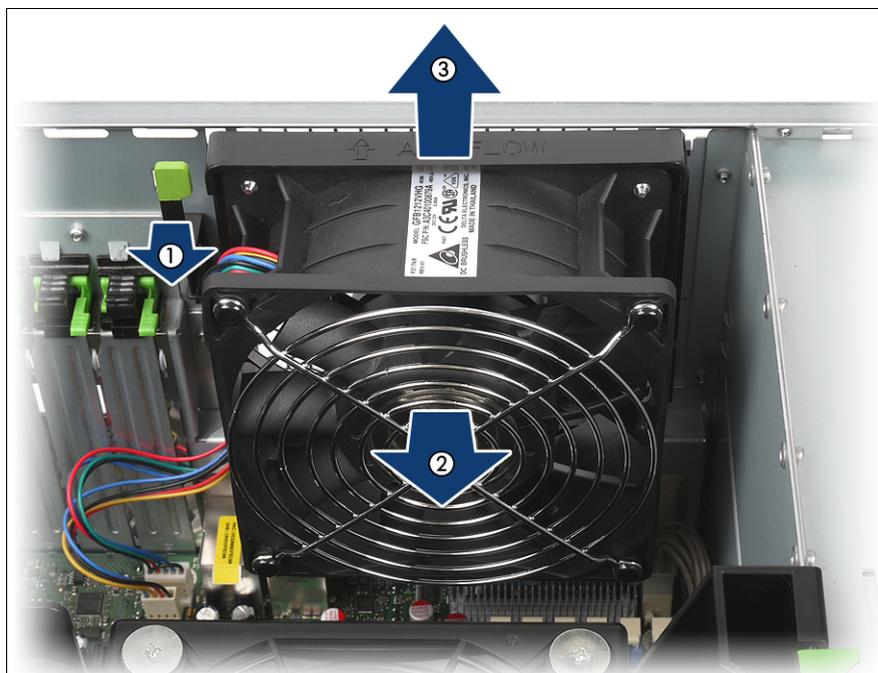


Figure 29: Example: Removing system fan 1 & 3

- ▶ Disconnect the fan cable from the connector FAN1 on the system board (if there is a second fan cable, disconnect this from FAN3).
- ▶ Push the locking lever in the direction of the arrow (1).
- ▶ Pull system fan 1 (and 3) in the direction of the arrow (2) to disengage the four hooks.
- ▶ Take system fan 1 (and 3) out (3).

8.2.1.4 Identifying a CSS component

- ▶ Press the Indicate CSS button on the system board (see the technical manual for the system board D2709 on the PRIMERGY ServerView Suite DVD 2).

The PRIMERGY Diagnostic LED of the defective CSS component lights up orange, thereby indicating which CSS component (memory module, fan or expansion card) on the system board must be replaced (see technical manual for the system board D2709).

8.2.2 Replacing a memory module

8.2.2.1 Removing a defective memory module



Figure 30: 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).

8.2.2.2 Installing a new memory module



CAUTION!

Please note the equipping rules in the technical manual for the system board D2709.

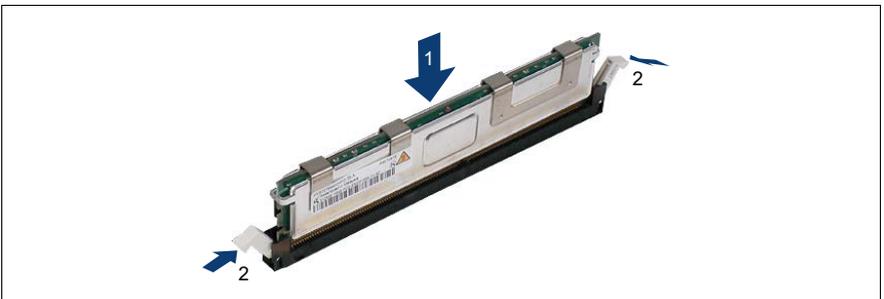


Figure 31: Inserting a memory module

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

8.2.3 Replacing the system fan



CAUTION!

Since the standard system fans 1 and 2 are not redundant, these system fans have to be replaced **immediately**.

If one of the four redundant system fans (1&3 and 2&4) fails, one of the two predetermined fans (system fan 3 and 4) increases its power to ensure that the server is cooled properly. The redundant system fans should be replaced as soon as possible.

8.2.3.1 Replacing system fan 2 (and 4)

- ▶ Remove the defective system fan 2 (and 4) (see "[Removing system fan 2 \(and 4\)](#)" on page 100).
- ▶ Install the new system fan 2 (and 4) (see "[Installing system fan 2 \(and 4\)](#)" on page 108).

8.2.3.2 Replacing system fan 1 (and 3)

- ▶ Remove the defective system fan 1 (and 3) (see "[Removing system fan 1 \(and 3\)](#)" on page 101).
- ▶ Install the new system fan 1 (and 3) (see "[Installing system fan 1 \(and 3\)](#)" on page 107).

8.2.4 expansion card, replacing

8.2.4.1 Removing a defective expansion card

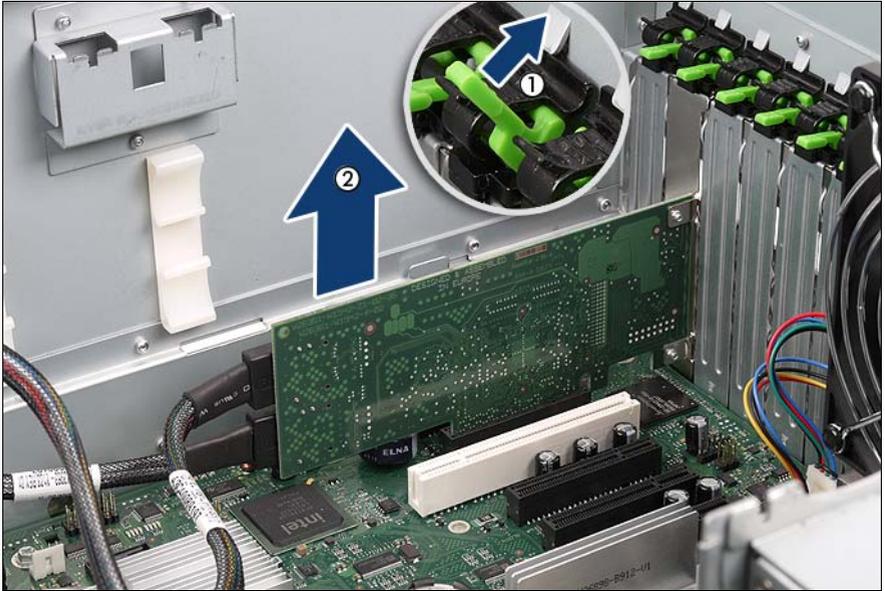


Figure 32: Removing a defective expansion card

- ▶ If necessary, remove the cables from the defective expansion card.
- ▶ Push the lever upwards (1).
- ▶ Press onto the clip and remove it.
- ▶ Pull the defective expansion card out of its slot (2).

8.2.4.2 Installing a new expansion card

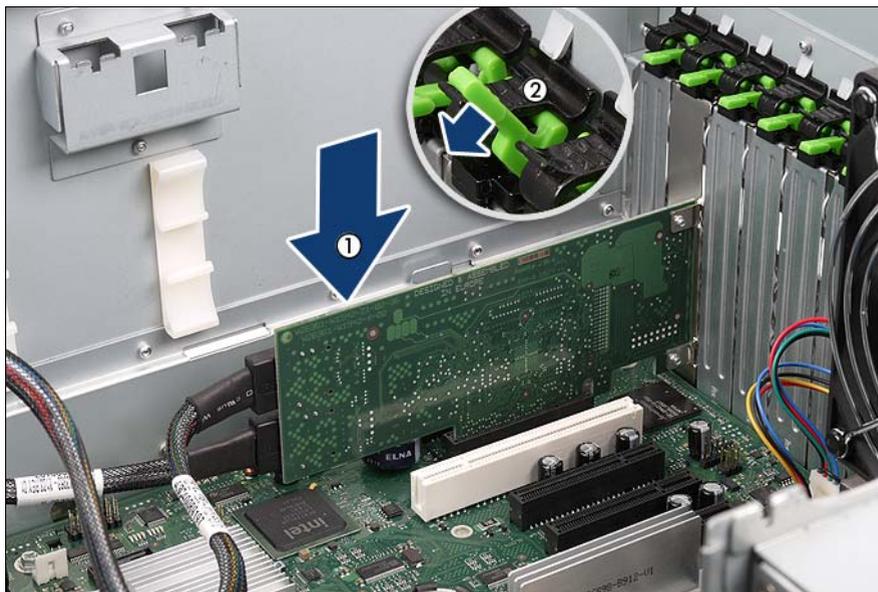


Figure 33: Installing a new expansion card

- ▶ Carefully press the new expansion card into the slot until it clicks into place (1).

Make sure that the lug on the slot cover clicks into place in the corresponding hole.

- ▶ Fit the clip onto the slot cover so that the pin fits into the hole.
- ▶ Push the clip under the metal nose until it clicks into place.
- ▶ Swing the lever (2) downwards into its locking position.
- ▶ If necessary, connect the cables to the expansion card.

8.2.5.2 Installing system fan 2 (and 4)

- ▶ Connect the fan cable to the connector FAN2 (if there is a second fan cable, connect this in FAN4) on the system board (see the technical manual for the system board D2709 on the PRIMERGY ServerView Suite DVD 2).



Figure 35: Installing system fan 2 (and 4)

- ▶ Carefully insert the air duct with the integrated system fan 2 (and 4) (1). Make sure that the locks (2) of the air duct engage in the housing bracket and in the recess of the fixing plate (standard power supply) or the power supply cage (redundant power supply).

8.2.5.3 Closing the housing

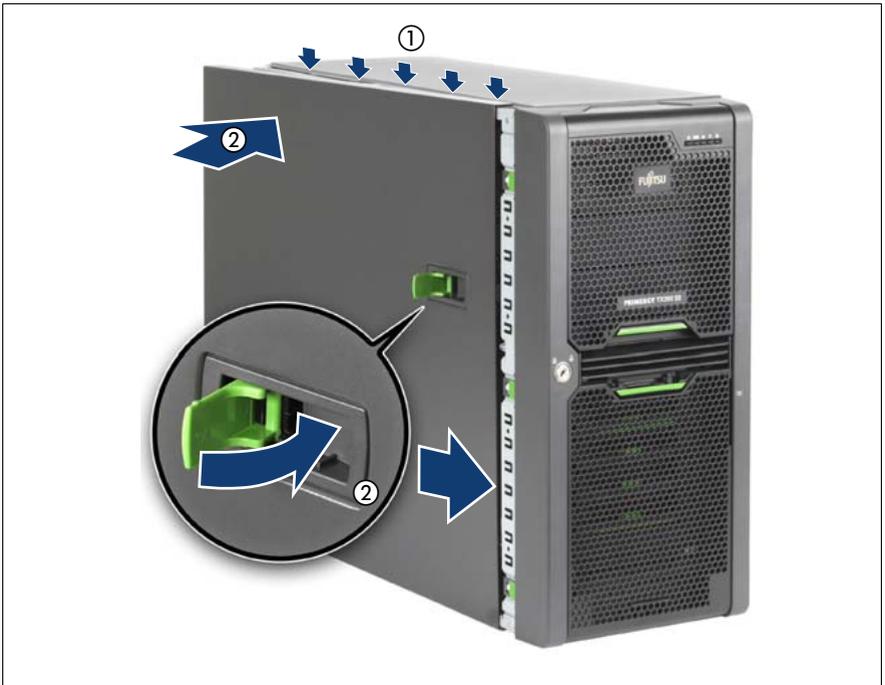


Figure 36: Closing the housing (example: floorstand model)

- ▶ Pull the locking lever as far as it will go and insert the side cover in the five recesses (see small arrows) of the housing (1).
- ▶ Press the side cover against the housing and at the same time push the locking lever shut (2).

Closing the locking lever pushes the side cover forwards and the hooks on the upper edge of the side cover engage.

- ▶ In the case of rack models, you still have to slide the server back into the rack (see section "[Installing/removing the rack model](#)" on page 45).
- ▶ Connect all power plugs to the power outlets.
- ▶ Press the On/Off button to start up the server.

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