

PRIMERGY RX200 S5

Operating Manual

Comments... Suggestions... Corrections...

The User Documentation Department would like to know your opinion of this manual. Your feedback helps us optimize our documentation to suit your individual needs.

Feel free to send us your comments by e-mail to manuals@ts.fujitsu.com .

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.

cognitas. Gesellschaft für Technik-Dokumentation mbH
www.cognitas.de

Copyright and Trademarks

Copyright © 2009 Fujitsu Technology Solutions GmbH.

All rights reserved.

Delivery subject to availability. The right to technical modification is reserved.

All hardware and software names used are trade names and/or trademarks of their respective manufacturers.

Contents

1	Preface	7
1.1	Concept and target groups for this manual	7
1.2	Documentation overview	8
1.3	Features	10
1.4	Notational conventions	20
1.5	Technical data	21
2	Installation steps, overview	23
3	Important information	25
3.1	Safety instructions	25
3.2	CE conformity	32
3.3	Transporting the server	32
3.4	Notes on installing in the rack	33
3.5	Environmental protection	34
4	Hardware installation	37
4.1	Unpacking the server	38
4.2	Installing/removing the server in/from the rack	39
4.2.1	Rack system requirements	39
4.2.2	Installation in PRIMECENTER/DataCenter Rack	43
4.2.3	Installation in 3rd party racks	48
4.3	Connecting devices to the server	50
4.4	Connecting the server to the mains	52
4.4.1	Using the cable clamp	53
4.5	Notes on connecting/disconnecting cables	54

Contents

5	Starting up and operation	55
5.1	Controls and indicators	55
5.1.1	Front of server	55
5.1.2	Rear of server	60
5.1.3	Indicators of the hot-plug system fans	64
5.2	Switching the server on and off	65
5.3	Configuring the server	67
5.3.1	Configuring the onboard SATA controller	67
5.3.2	Configuring the SAS/SATA RAID controller	67
5.3.3	Configuring the server and installing the operating system with the ServerView Installation Manager	68
5.3.4	Configuring the server and installing the operating system without ServerView Installation Manager	69
5.4	Cleaning the server	70
6	Property and data protection	71
6.1	BIOS Setup security functions	71
7	Troubleshooting and tips	73
7.1	Power-on indicator remains unlit	73
7.2	Server switches itself off	74
7.3	Screen remains blank	74
7.4	Flickering stripes on monitor screen	75
7.5	No screen display or display drifts	75
7.6	Incorrect date and time	76
7.7	System will not boot	76
7.8	Hard disk drive error messages at system boot	76
7.9	Added drive reported as defective	77
7.10	Error message on screen	77
8	CSS components	79

8.1	Hot-plug components	79
8.1.1	Hot-plug power supply units	80
8.1.1.1	Remove the dummy module	80
8.1.1.2	Installing the hot-plug power supply unit	81
8.1.1.3	Replacing the hot-plug power supply unit	82
8.1.2	Hot-plug hard disk drives	83
8.1.2.1	HDD module and dummy module	84
8.1.2.2	Handling hard disk drives and HDD modules	85
8.1.2.3	Removing/installing the dummy module	86
8.1.2.4	Installing the HDD module	87
8.1.2.5	Removing the HDD module	88
8.1.3	Replacing a hot-plug fan	90
8.1.3.1	Opening/closing the fan cover	91
8.1.3.2	Exchanging the fan	92
8.2	Replacement of non-hot-plug components	94
8.2.1	Opening the server	94
8.2.2	Replacing a memory module	96
8.2.2.1	Removing the air cowl	96
8.2.2.2	Identifying a defective CSS component	97
8.2.2.3	Removing a defective memory module	98
8.2.2.4	Installing a new memory module	99
8.2.2.5	Fitting the air cowl	100
8.2.3	expansion card, replacing	101
8.2.4	Closing the server	105
Index		107

1 Preface

The PRIMERGY RX200 S5 rack server is a universal and high-performance platform designed for a whole range of application areas in data center and server farm concepts. The ultra-compact rack server is ideal for web services and solutions such as caching, gateway and firewall applications. Other application areas include front-end solutions (tier 1) in modern multi-tier configurations, and e-mail service and appliance solutions.

The PRIMERGY RX200 S5 offers a balanced architecture that incorporates next generation main memory (DDR3) and I/O technologies (PCIe Gen2). The backplane is already provided for SAS 2.0 and 6 Gbit/s SAS and the chipset prepared for the next generation of 6-core processors. High performance, scalability, impressive reliability and excellent extension options are combined in a powerful design.

The Cool-safe™ cooling concept with improved air flow cooling technology (honeycomb design) ensures the highest possible performance of the processors at work; at the same time, the system is extremely reliable thanks to the reduced heat dissipation.

The highly compact server occupies just one height unit (HU) in the rack.

1.1 Concept and target groups for this manual

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

This operating manual is intended for those responsible for installing the hardware and ensuring that the system runs smoothly. It contains all the information you need to put your PRIMERGY RX200 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 RX200 S5 can be found in the following documents:

- “Quick Start Hardware - PRIMERGY RX200 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 D2786
- “PRIMERGY RX200 S5 Server Operating Manual”
- “PRIMERGY RX200 S5 Server Options Guide”
- “D2786 BIOS Setup Utility for RX200 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 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
- Hot-plug system fan
- Memory modules
- expansion cards

For information on replacing these components, see chapter [“CSS components” on page 79](#).

CSS indicators on the control panel and on the back of the PRIMERGY server provide you with information if a CSS event arises (for more information on the behavior of these indicators, see chapter [“Starting up and operation” on page 55](#) and the "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 D2786 for the hardware and in the BIOS Setup manual for the firmware.

TPM (optional)

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 flexibly expanded via two external slots (two PCIe Gen2 x8). PCIe Gen2 doubles the bandwidth of currently existing PCIe busses and allows improved system performance.

There is a third slot (PCIe Gen2 x4) that is internal and designed for an optional SAS/SATA RAID controller.

Hard disk drives

The server can be equipped with a maximum of 6 (variant with DVD slot) or 8 SAS/SATA HDD modules.

Each HDD module can accommodate an 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 or pulled out easily.

Four SATA hard disk drives can be controlled by the onboard SATA controller. To control further SATA hard disk drives, an additional RAID controller must be installed.

SAS hard disk drives require an additional 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 67](#).

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 SAS/SATA RAID controller” on page 67](#).

- 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 SAS/SATA RAID controller” on page 67](#).



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 variant with a maximum of 6 HDD modules provides a bay for a DVD drive.

The DVD drive installed here cannot be replaced during operation.

USB ports

The three USB ports on the front of server support activities carried out by the service technician. The maximum length of the external cable are three meters.

Power supply

The basic configuration of the server includes a hot-plug power supply unit, which automatically sets itself to a mains voltage in the range of 100 V - 127 V oder 200 V - 240 V. As an option, the power supply can be expanded with an extra power supply unit to create a redundant power supply. If a power supply unit fails, the redundant configuration assures continued operation. The defective power supply unit can be replaced during operation (for further details see section [“Hot-plug power supply units” on page 80](#)).

Cooling

The Cool-safe™ cooling concept with improved air flow cooling technology (honeycomb design) ensures the highest possible performance of the processors at work; at the same time, the system is extremely reliable thanks to the reduced heat dissipation.

Each processor has a heat sink. Further cooling for the installed processors is provided by six fan units (redundant). If **one fan in a** redundant unit fails, the system is able to continue operating without limitations. If a fan fails, it can be replaced while the system is running (for further details see section [“Replacing a hot-plug fan” on page 90](#)).

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 ECC mechanism, ensuring continuous data integrity.

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

Memory Mirroring is also supported (requires four, eight or twelve memory modules). Memory Mirroring is roughly comparable to RAID level 1 for hard disk arrays. Memory modules are protected against failure by mirroring. The basic configuration requires four identical memory modules in two different banks.

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 Analysing) technology from Fujitsu Technology Solutions analyzes and monitors all components that are critical for system reliability.

A RAID controller supports different RAID levels and increase the availability and data security of the system.

The hot-plug HDD modules provide additional protection.

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 67](#)).

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 PRIMERGY RX200 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 16). 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 (hot-plug power supply unit)

Rated voltage range	100 V - 127 V oder 200 V - 240 V
Frequency	50 Hz - 60 Hz
Rated current with basic configuration	100 V - 240 V / 6 A - 3 A
Max. rated current	100 V - 240 V / 10 A - 5 A
Effective power	459 W
Apparent power	466 VA
Heat dissipation	1652 kJ/h (1566 btu/h)
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 values

Width	431 mm
Depth	765 mm
Height	43 mm bzw. 1 HE
Installation depth in rack	728 mm
Cable depth in rack	200 mm (1000 mm rack recommended)

Weight

Approx. 18 kg (depending on configuration).

Ventilation clearance

At least 200 mm on the front and rear.

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

Sound power level L_{WAAd} (ISO 9296)	< 6.6 B (standby) < 7.4 B (operation)
Sound pressure level at adjacent workstation L_{pAm} (ISO 9296)	< 49 dB (A) (standby) < 57 dB (A) (operation)

2 Installation steps, overview

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

- ▶ First of all, it is essential that you familiarize yourself with the safety information in chapter „[Important information](#)“ auf Seite 25.
- ▶ 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](#)“ auf Seite 38).
- ▶ The server includes loose parts. Keep these parts in a safe place. They are designed to be used for installing optional components at a later time.
- ▶ Transport the server to the place where you want to set it up.
- ▶ Make sure that you have all necessary manuals (see „[Documentation overview](#)“ auf Seite 8); print out the PDF files if required.
- ▶ Fit the server in the rack (see section „[Installing/removing the server in/from the rack](#)“ auf Seite 39).
- ▶ Wire the server. Follow the instructions in sections „[Connecting devices to the server](#)“ auf Seite 50 and „[Notes on connecting/disconnecting cables](#)“ auf Seite 54.
- ▶ Connect the server to the mains (see section „[Connecting the server to the mains](#)“ auf Seite 52).
- ▶ Familiarize yourself with the controls and indicators on the front and rear of the server (see section „[Controls and indicators](#)“ auf Seite 55).

- ▶ 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](#)“ auf Seite 68.

- 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](#)“ auf Seite 68 or section „[Configuring the server and installing the operating system without ServerView Installation Manager](#)“ auf Seite 69).

i 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 information

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

3.1 Safety instructions



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

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



CAUTION!

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

Before starting up



CAUTION!

- During installation and before operating the device, observe the instructions on environmental conditions for your device (see [section "Technical data" on page 21](#)).
- 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 - 127 V oder 200 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:

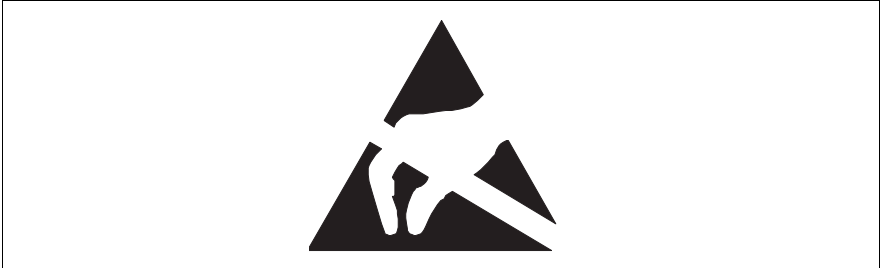


Figure 1: ESD label

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 70](#).
- Keep this operating manual and the other documentation (such as the technical manual, CD) close to the device. All documentation must be included if the equipment is passed on to a third party.

3.2 CE conformity

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

3.3 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.

3.4 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.

3.5 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 Hardware installation



CAUTION!

- Follow the safety instructions in the chapter [“Important information” on page 25](#).
- Do not expose the server to extreme environmental conditions (see [“Ambient conditions” on page 22](#)). 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 information” on page 25](#).

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 Installing/removing the server in/from the rack



CAUTION!

- Follow the safety instructions in chapter “[Important information](#)” on page 25 and section “[Notes on installing in the rack](#)” on page 33.
- At least two people are needed to position the server into/out of the rack.
- The rack can tip over when more than one unit is removed.
- The server may not occupy the top height unit of the rack (38 HU/42 HU PRIMECENTER Rack and/or DataCenter Rack), as otherwise boards or fans cannot be replaced even with the plug-in module fully extended.

4.2.1 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 2 on page 41](#)):

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

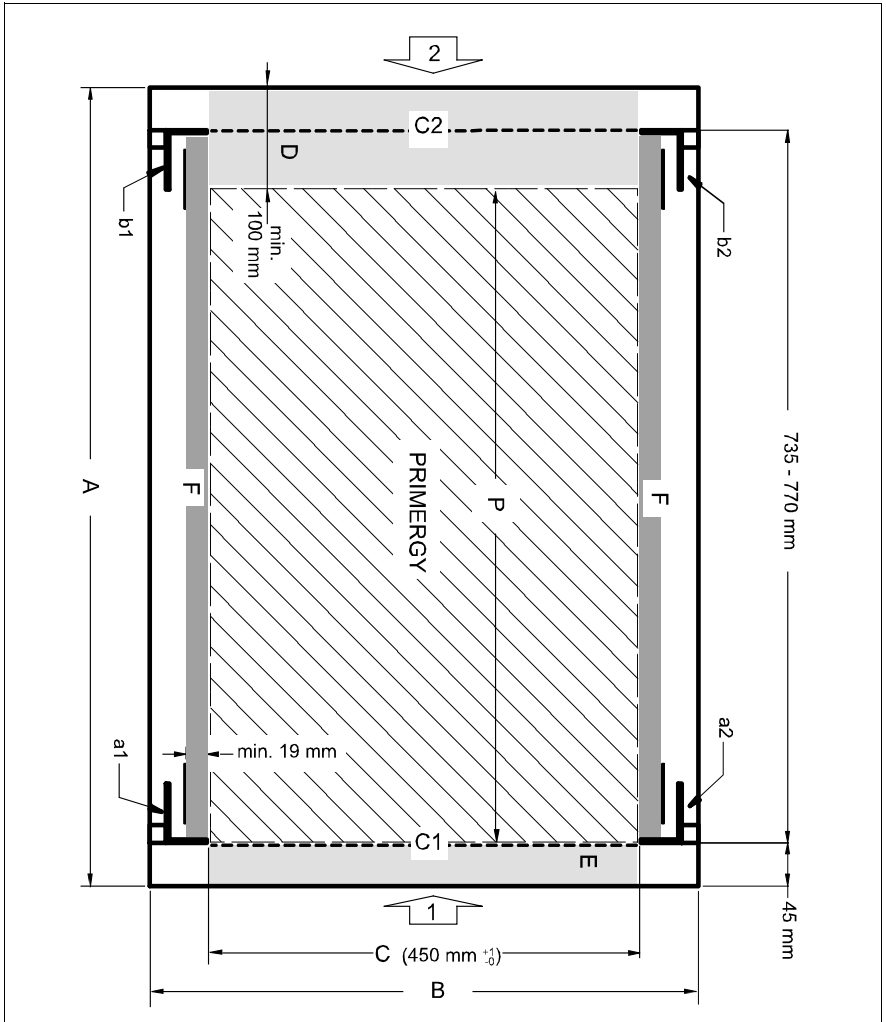


Figure 2: Mechanical requirements

- You must ensure that the safety mechanisms on the server, e.g. stoppers or retaining systems, are functioning correctly.

- The shape of the rack support uprights must ensure that the 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.

4.2.2 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



General information is provided in the Technical Manual for the PRIME-CENTER and/or DataCenter Rack.

Fitting the support bracket

When mounting the left telescopic rail in the PRIMECENTER/DataCenter Rack, the supplied support bracket must first be mounted on the rear left support upright flush with the bottom edge of the device.

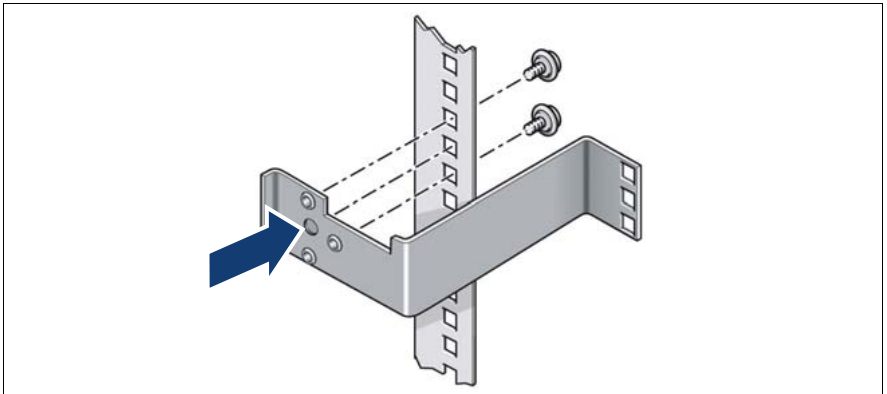


Figure 3: Fitting the support bracket

- ▶ Position the support bracket at the corresponding height on the rear left support upright, (place knob in the corresponding hole and secure it as described in the Technical Manual for the rack in question).

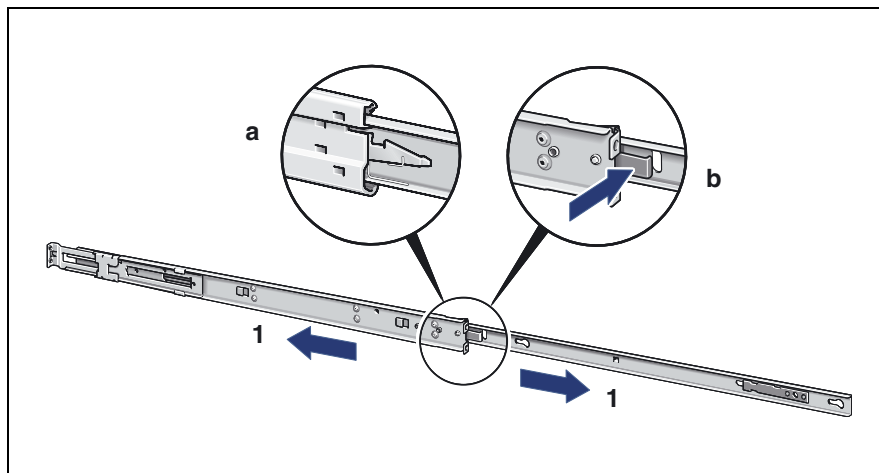
Removing the outer telescopic rail

Figure 4: Removing the outer telescopic rail

- ▶ Extend the telescopic rail fully (1).
- ▶ Unlock the outer telescopic rail and remove it.

With fully-extendable rails (a): Press the locking lever to release the server rail.

With partially extendable rails (b): Press the release spring to release the server rail.

- ▶ Repeat the steps with the second telescopic rail.

Installing the support systems

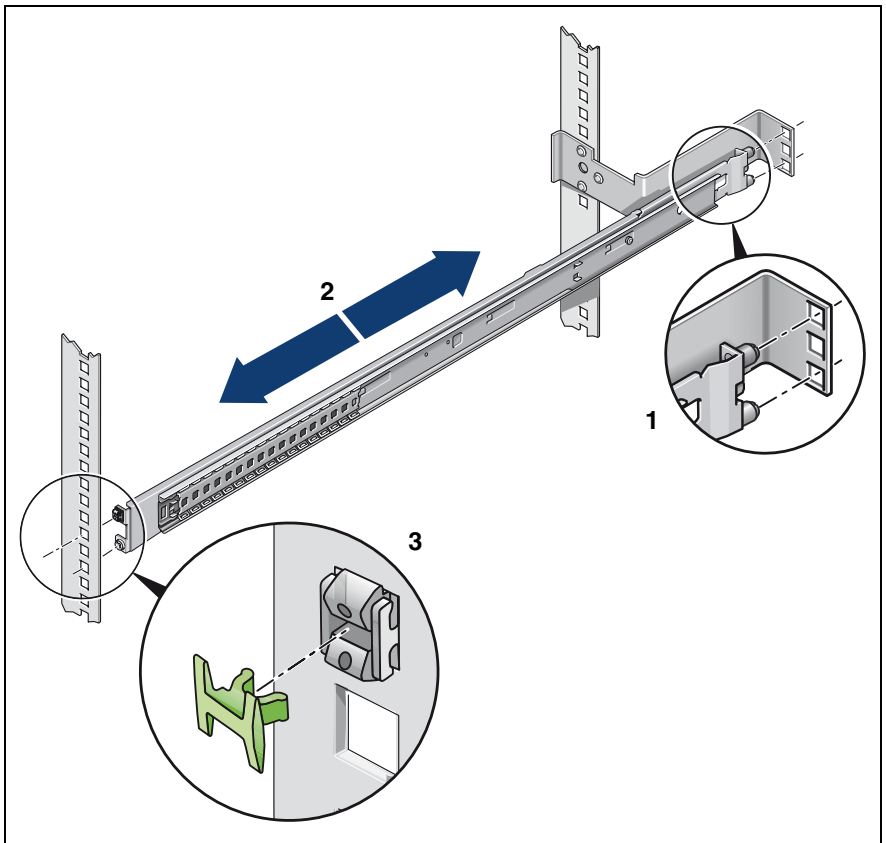


Figure 5: Fit the left support system in the PRIMECENTER/DataCenter rack

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

Preparing the server

Figure 6: Preparing the server

- ▶ Place the outer telescopic rails on the sides of the server (see arrow 1 in [figure 6](#)). Slide the outer telescopic rails backward to secure them (see arrow 2 in [figure 6](#)).

Inserting the server

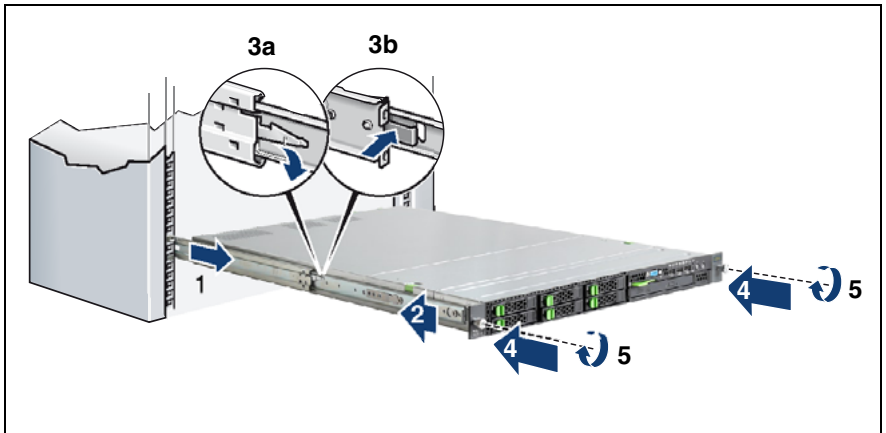


Figure 7: Inserting the server




CAUTION!

Ensure that the safety lock has been inserted **before** the server is inserted (see [figure 5 on page 45](#)).



CAUTION!

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

- ▶ Extend the interior telescopic rails completely to the front (1).
 -  They must click into place so that they can no longer be moved.
- ▶ Insert the prepared server into the protruding interior telescope rails (2) until the rails engage.
- ▶ Release the locking mechanism of both rails - see (3a) for fully extending rails and (3b) for partially extending rails.
- ▶ Push the server as far as it will go into the rack (4).
- ▶ Fasten the server to the rack (5) 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.

4.2.3 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.

- ▶ Remove the outer telescopic rail as described in [page 44 \(figure 4\)](#).

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 45](#).
- ▶ Mount the server (see [“Preparing the server” on page 46](#)) 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 45](#)).

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 45](#).
- ▶ Mount the server (see [“Preparing the server” on page 46](#)) 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 45](#)).

4.3 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 options and expansion cards installed.

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

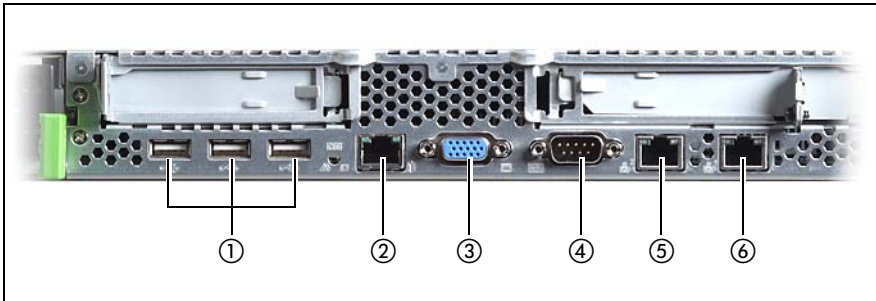


Figure 8: Ports on the rear

1	USB ports	4	Serial port COM
2	service LAN port	5	LAN port 2
3	Monitor port (blue)	6	LAN port 1 (shared with service)

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

- ▶ Connect the desired devices to the server.

4.4 Connecting the server to the mains

In its basic configuration level the server has 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 continued operation of the server.



CAUTION!

The installed power supply units automatically set themselves to a mains voltage in the range of 100 V - 127 V oder 200 V - 240 V. Make sure that your local mains voltage is within the correct range.

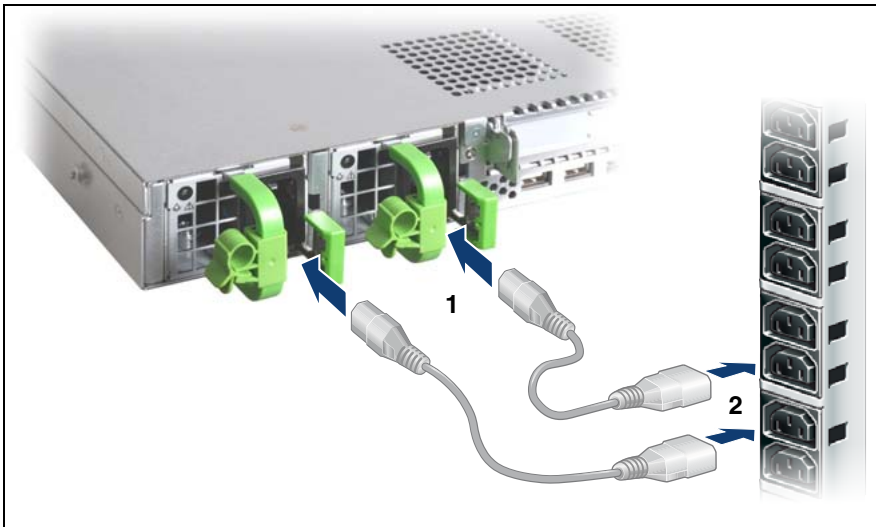


Figure 10: Connecting the server to the mains

- ▶ Connect the power cord to the server power supply unit (1).
- ▶ Connect the mains connector to an outlet on the rack's socket strip (2) (see also Technical Manual for the rack).



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 connected to two different phases.

4.4.1 Using the cable clamp

Alternatively, you can secure the power cables in a cable clamp to ensure that the insulated connectors cannot be disconnected from the server accidentally.



Figure 11: Cable clamp

- ▶ Pull the cable clamp up (1).
- ▶ Thread the power cable through the cable clamp.
- ▶ Press the cable clamp down until it engages to secure the cable.

4.5 Notes on connecting/disconnecting cables



CAUTION!

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

Never connect, or disconnect cables during a thunderstorm.

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

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

Connecting cables

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

Disconnecting cables

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

5 Starting up and operation



CAUTION!

Please note the safety instructions in [Kapitel „Important information“ auf Seite 25](#)

5.1 Controls and indicators

5.1.1 Front of server

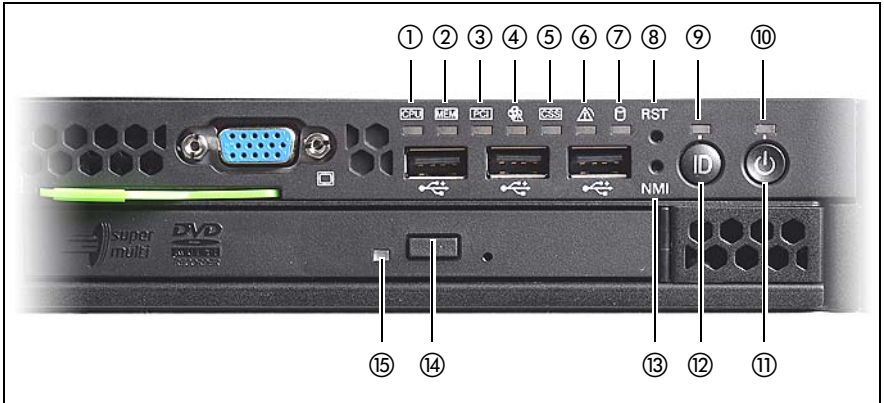


Figure 12: controls and indicators on the front

1	CPU error indicator	9	ID indicator
2	Memory error indicator	10	power-on indicator
3	PCI error indicator	11	On/Off button
4	Fan error indicator	12	ID button
5	CSS indicator	13	NMI button
6	Global Error indicator	14	Open/close DVD drive
7	hard disk activity indicator	15	CD/DVD drive activity indicator
8	reset button		

Controls



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.

Indicators on the control panel



Power-on indicator (three colors)

Lights orange when the server is switched off but mains voltage is present.

Lights up yellow during power up delay.



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

You can set the power up delay (in seconds) in the *BIOS-setup* in the *Server Menu* menu with Power Cycle Delay .

Lights up green when the server is switched ON.

Flashes green when the server has been switched on and is in standby mode.



Hard disk activity indicator (green)

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



Global Error indicator (orange)

- **Lights up orange** if a prefailure error was detected that requires (precautionary) service intervention.
- **Flashes orange** if an error was detected that requires service intervention.
- **Does not light up** when 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 \(CSS\)“ auf Seite 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.

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

Lights up green when the storage medium is being accessed.

Hard disk drive indicators



Figure 13: Indicators on the 2.5-inch HDD module

1	<p>HDD BUSY (green)</p> <ul style="list-style-type: none"> – Lights up: HDD in active phase – Does not light: HDD inactive (drive inactive)
2	<p>HDD FAULT (orange)</p> <p>(in conjunction with a RAID controller)</p> <ul style="list-style-type: none"> – Does not light: no HDD error – Lights up: HDD Faulty or Rebuild Stopped (drive defective, needs replacing, a rebuild process was stopped or the HDD module is not correctly inserted) – Slow flashing: HDD Rebuild (the data is being restored after changing a drive) – Fast flashing: HDD Identify – Four fast blinks/pause: HDD Predicted Fault – Two fast flashes/pause: HDD Hot Spare (Hot spare drive active. The corresponding drive has failed).

5.1.2 Rear of server

CSS, Global Error and ID indicators

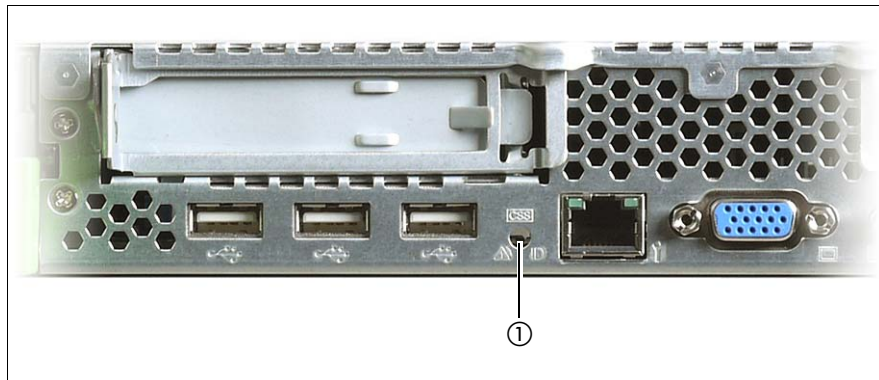


Figure 14: ID/CSS/Global Error indicator

1	Global Error/CSS/ID indicator
---	-------------------------------



Global Error indicator (orange)

- **Lights up orange** if a prefailure error was detected that requires (precautionary) service intervention.
- **Flashes orange** if an error was detected that requires service intervention.
- **Does not light up** when 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 \(CSS\)](#)“ auf Seite 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

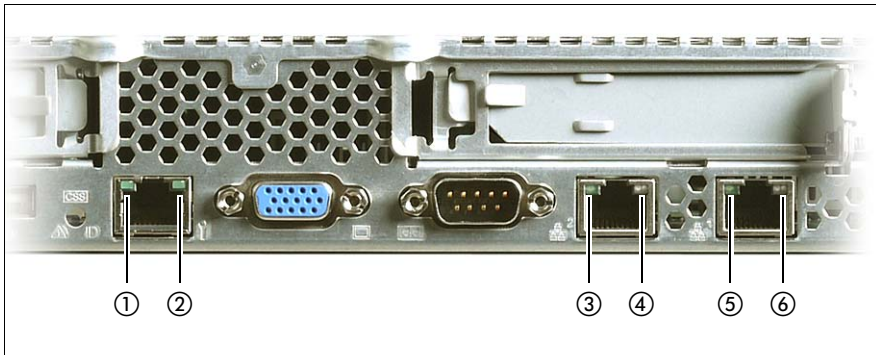


Figure 15: LAN indicators

1	<p>LAN activity indicator (service LAN) 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) 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) 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) 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>
5	<p>LAN activity indicator (LAN shared with service) 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>
6	<p>LAN transfer rate indicator (LAN shared with service) 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>

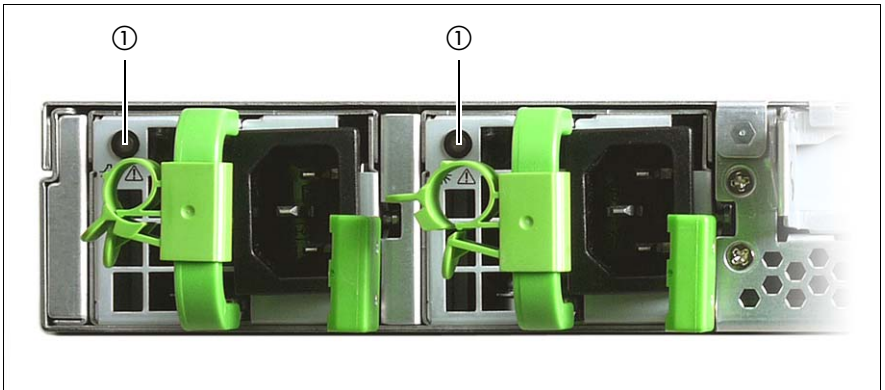
Indicator on hot-plug power supply unit

Figure 16: Indicator on hot-plug power supply unit

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>Flashes orange when a predictable error has been detected, but the power supply unit is still running.</p> <p>Flashes orange if no mains voltage is present or the power supply unit has failed.</p>
---	--

5.1.3 Indicators of the hot-plug system fans

A fan status indicator (LED on the system board) is assigned to each system fan. The status indicators are not visible unless the housing is open. The respective LED is set with commands in Server Management.

LED	Meaning
lights green	Fan is operational.
lights orange	Possible fan failure (rotation speed less than 70% of the original speed) or fan failure

5.2 Switching the server on and off



CAUTION!

If nothing appears on the screen but flickering stripes after switching on the server, switch the server off immediately (see section „[Flickering stripes on monitor screen](#)“ auf Seite 75).

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

Switching the server on

The power-on indicator (item 10 in [Bild 12 auf Seite 55](#)) lights orange.

– Starting up for the first time:

- ▶ Press the On/Off button (item 11 in [Bild 12 auf Seite 55](#)).

The Power-on indicator (item 10 in figure [12 auf Seite 55](#)) lights up green.

- ▶ Insert the ServerView Suite DVD 1 into the DVD drive.
- ▶ Follow the on-screen instructions (see also section „[Configuring the server and installing the operating system with the ServerView Installation Manager](#)“ auf Seite 68 or section „[Configuring the server and installing the operating system without ServerView Installation Manager](#)“ auf Seite 69).

– System already installed:

- ▶ Press the On/Off button (item 5 in figure [12 auf Seite 55](#)).

Power-on indicator (item 6 in figure [12 auf Seite 55](#)) lights green.

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

Switching the server off

Power-on indicator (item 10 in [Bild 12 auf Seite 55](#)) lights green.

- ▶ Shut down the operating system properly.

The server is automatically switched off. The power-on indicator lights up orange.



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

Other On/Off options

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

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

The server is switched ON or OFF at a time specified in the ServerView Operations Manager.

- **Ring indicator**

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

- **Wake On LAN (WOL)**

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

- **After power failure**

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

- **Power button override**

The system can be switched off (hard power off) by holding down the On/Off button (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.



5.3 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.


5.3.1 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.

5.3.2 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.

5.3.3 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](#)“ auf Seite 70.

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

Configuring the onboard SATA controller

Configure the controller as described in section „[Configuring the onboard SATA controller](#)“ auf Seite 67.

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

Configure the controller as described in section „[Configuring the SAS/SATA RAID controller](#)“ auf Seite 67.

Configure SAS/SATA RAID controller with "MegaRAID functionality"

Configure the controller as described in section „[Configuring the SAS/SATA RAID controller](#)“ auf Seite 67.

Installing the operating system

- ▶ Insert the 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.

5.4 Cleaning the server



CAUTION!

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

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

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

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

Clean the keyboard and the mouse with a disinfecting cloth.

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

6 Property and data protection

The lockable rack door protects the server against unauthorized access.

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

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 information](#)“ auf Seite 25.

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 D2786 system board) or contact our customer service team.

7.7 System will not boot

The system will not boot after installing a new hard disk drive.

SAS configuration incorrect

- ▶ Check the settings for the hard disk drives (*SAS Device Configuration*) and the additional settings in the SAS configuration menu.

7.8 Hard disk drive error messages at system boot

Various hard disk drive error messages may appear when the system is rebooted. These error messages are caused by modifications in the selected RAID configuration.

RAID controller configuration incorrect

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

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

7.9 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“ auf Seite 83](#)).

7.10 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 "Customer Self Service (CSS)" manual on the ServerView Suite DVD 2.

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



CAUTION!

Follow the safety instructions in the chapter „[Important information](#)“ auf [Seite 25](#).

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



A redundant power supply can be created by installing a second hot-pluggable power supply unit (optional). If one power supply unit fails, the other unit ensures operation can continue. The defective power supply unit can be replaced without interrupting operation.

8.1.1.1 Remove the dummy module

The mounting location for the second hot-plug power supply unit contains a dummy module. This dummy module must be removed before installing a second power supply unit.

- ▶ Push the green catch to the left.
- ▶ Pull the dummy module out of its slot by the handle.



CAUTION!

Store the dummy module in a safe place. If the power supply unit is removed and not replaced with a new unit, the dummy module must be reinstalled due to cooling, to comply with applicable EMC regulations (regulations on electromagnetic compatibility) and to protect against fire.

8.1.1.2 Installing the hot-plug power supply unit

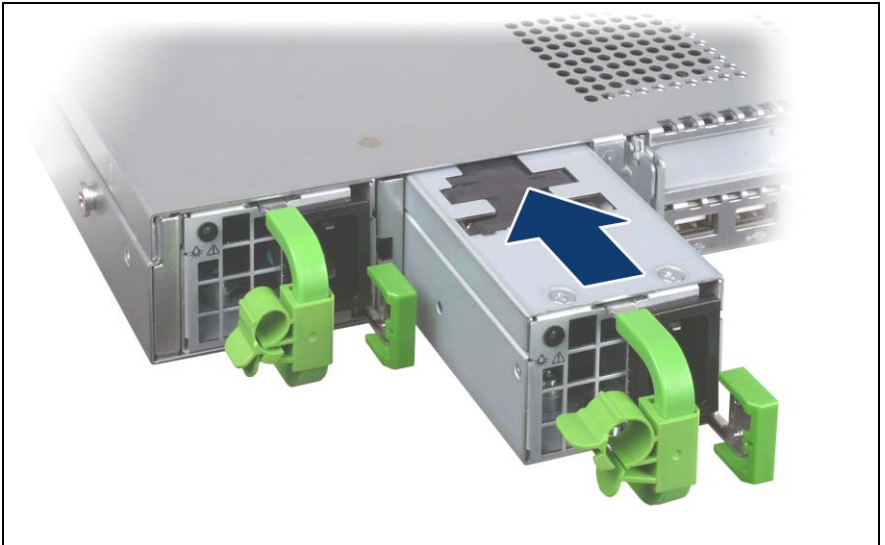


Figure 17: Installing the power supply unit

- ▶ Slide the new power supply unit into the empty slot until it clicks into place.



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 (see section [„Connecting the server to the mains“](#) auf Seite 52).

8.1.1.3 Replacing the hot-plug power supply unit



CAUTION!

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

- ▶ Remove the cable of the defective power supply unit.

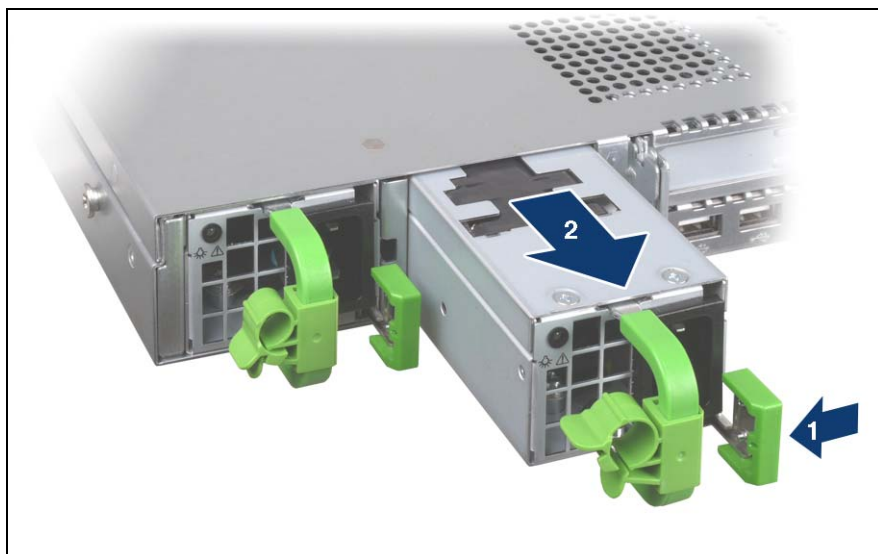


Figure 18: Unlocking and removing the power supply unit

- ▶ Push the green catch to the left (1).
- ▶ Pull the power supply unit out of its mounting location (2) by the handle.
- ▶ Install the new power supply unit in the empty mounting location (see section „Installing the hot-plug power supply unit“ auf Seite 81).
- ▶ Connect the newly installed power supply unit (see section „Connecting the server to the mains“ auf Seite 52).

8.1.2 Hot-plug hard disk drives

Up to eight 2.5-inch SAS/SATA hard disk drives can be installed in the PRIMERGY RX200 S5 server.

The hard disk drives which can be ordered for the PRIMERGY RX200 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 is not supported.

8.1.2.1 HDD module and dummy module

The hard disk drives which can be ordered for the PRIMERGY RX200 S5 are supplied already mounted in an installation frame so that defective 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.

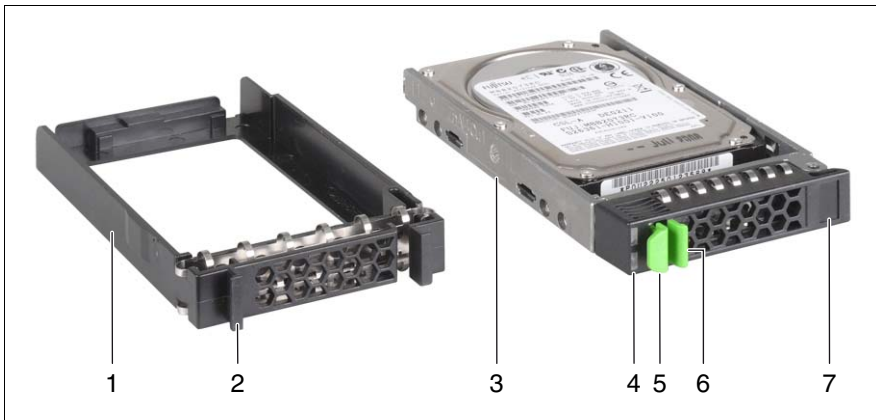


Figure 19: 2.5-inch HDD module and dummy module

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 “ auf Seite 59.
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

8.1.2.2 Handling hard disk drives and HDD modules

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

Observe the following rules to prevent such problems occurring:

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



CAUTION!

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

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

Table 2: Acclimatization times for HDD modules

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

8.1.2.3 Removing/installing the dummy module

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

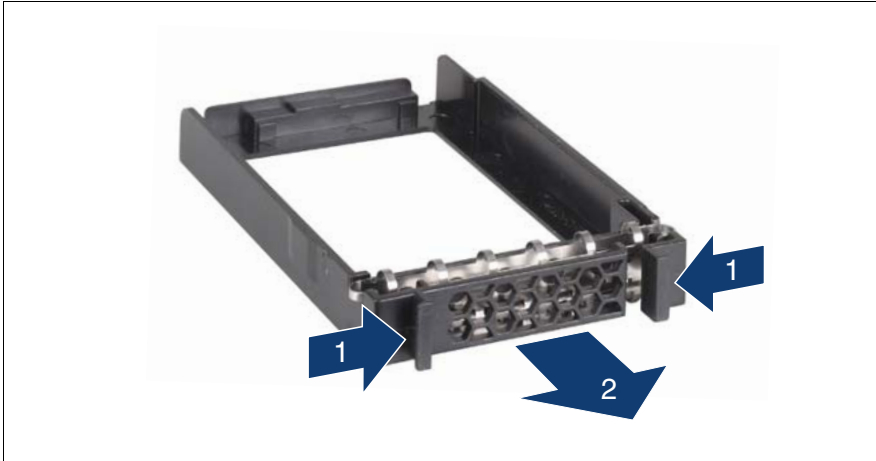


Figure 20: Removing/installing the 2.5-inch dummy module

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

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



CAUTION!

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

8.1.2.4 Installing the HDD module

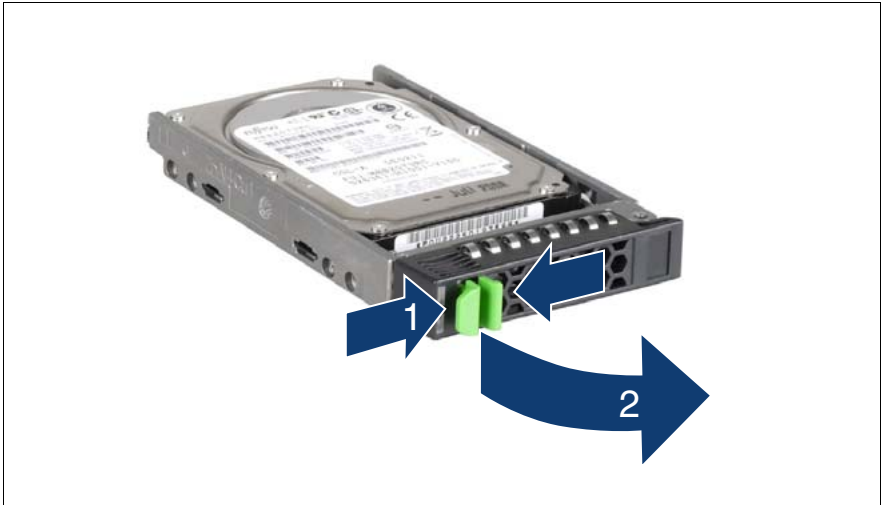


Figure 21: Unlocking the 2.5-inch HDD module

► Release the locking mechanism as follows:

1. Press the two green tabs of the locking lever together (1).
2. Push the handle of the HDD module fully in the direction of the arrow (2). The HDD module is now unlocked.



Figure 22: Installing the 2.5-inch HDD module

- ▶ Carefully push the HDD module into the empty slot (1) until it stops.
- ▶ Push the handle completely (2) until the locking mechanism engages.

8.1.2.5 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“ auf [Seite 59](#)).
- 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, 10, 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 „[Installing the HDD module](#)“ auf Seite 87.
- ▶ 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](#)“ auf Seite 87.

**CAUTION!**

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

8.1.3 Replacing a hot-plug fan



CAUTION!

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

It is essential to observe the safety instructions in chapter „Important information“ auf Seite 25.

In order to replace a defective fan, it is necessary to open the fan cover, because the fans are not directly accessible.

The server is equipped with six fan units. Each fan unit consists of two separate hot-plug fans.

A possible fan fault is reported by the CSS indicator lighting up on the front and rear of the server (for more information about the behavior of these indicators, see chapter „Starting up and operation“ auf Seite 55 and the "Customer Self Service (CSS)" manual on the ServerView Suite DVD 2).

When the fan cover is open, the faulty fan can be identified by the corresponding LED (see figure 24 auf Seite 92) and can be replaced while the system is running.

8.1.3.1 Opening/closing the fan cover



CAUTION!

The fan cover must be replaced as soon as possible for purposes of cooling, to comply with EMC regulations (regulations regarding electromagnetic compatibility) and to prevent fires. The fan cover must not remain open for longer than 15 minutes.

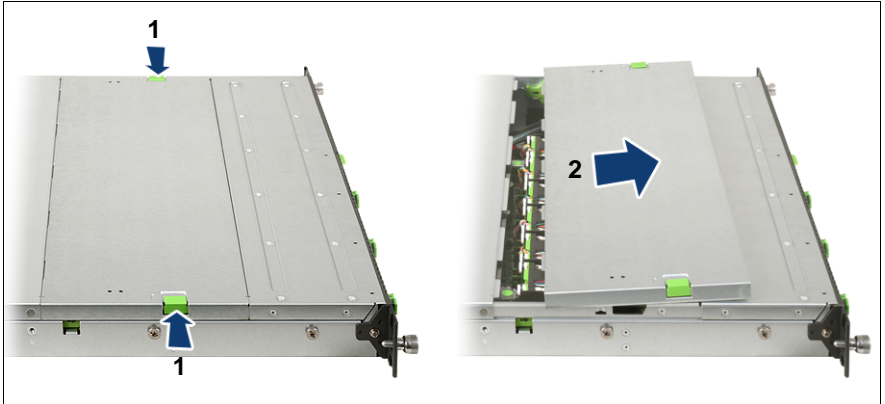


Figure 23: Opening the fan cover

- ▶ Push the two green buttons in the direction of the arrow (1), pull the fan cover forward slightly and then lift it up and off.

To close, place the fan cover on its mounting and press it onto the housing until it clicks into place

8.1.3.2 Exchanging the fan

- ▶ Open the fan cover (see section „[Opening/closing the fan cover](#)“ auf [Seite 91](#)).

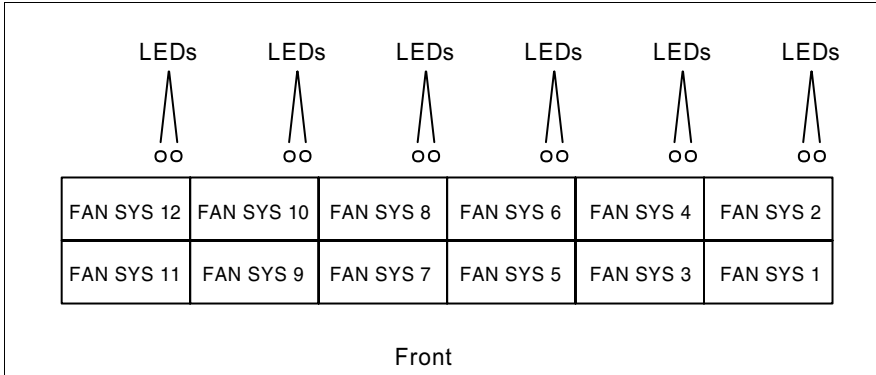


Figure 24: Arrangement of fans and the corresponding indicators

- ▶ Use the LED (lights up orange) to identify the defective fan.

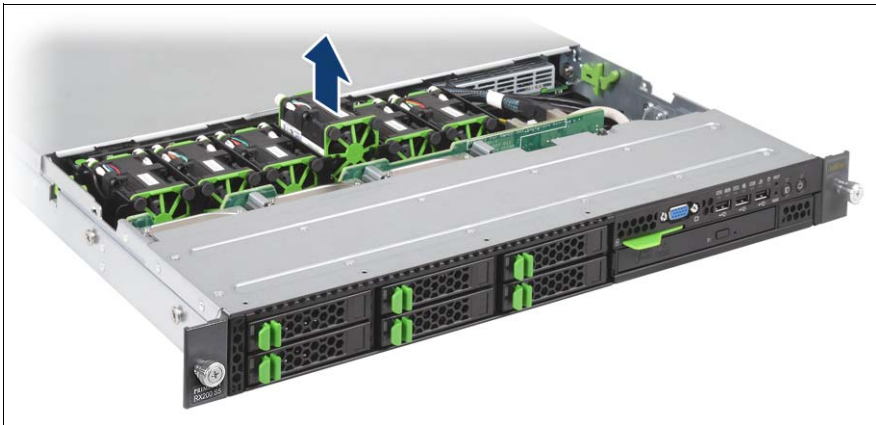


Figure 25: Removing the fan

- ▶ Take hold of the fan unit by the green edges and lift it out of the housing.
- ▶ Set the fan unit down on the **outside** of the server.

**CAUTION!**

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

Mounting is performed in the reverse order.

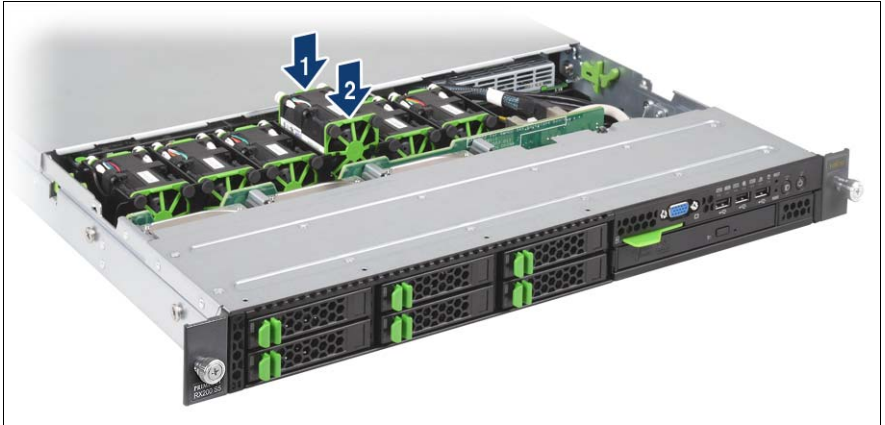


Figure 26: Installing the fans

When installing a new fan, **first** press down the side where the connections are (1), and **then** press down the front (2).



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

- ▶ Return the fan cover to its position (see section [„Opening/closing the fan cover“ auf Seite 91](#)).

8.2 Replacement of non-hot-plug components

When a defective non-hot-plug component is detected (for more information, see chapter „Starting up and operation“ auf Seite 55 and the "Customer Self Service (CSS)" manual on the ServerView Suite DVD 2), proceed as follows:

- ▶ Exit all applications and shut down the server properly (see section „Switching the server on and off“ auf Seite 65).
- ▶ Pull all power plugs out of the insulated sockets of the rack's internal power supply.
- ▶ Remove the server from the rack (see section „Installing/removing the server in/from the rack“ auf Seite 39) and put the server on a table, for example.

8.2.1 Opening the server

You must remove the fan cover before removing the housing cover:

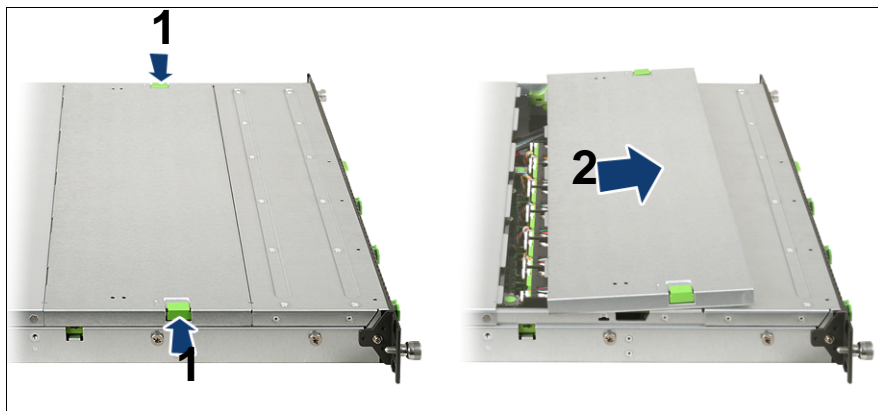


Figure 27: Opening the fan cover

- ▶ Push the two green buttons (1) in the direction of the arrow and lift the fan cover up and off.

- ▶ Use the two green locking levers to unlock the housing cover.

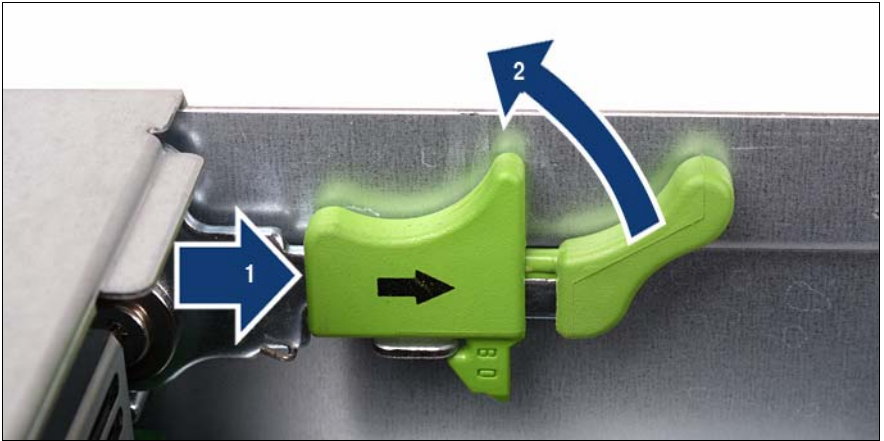


Figure 28: Using the locking levers

- ▶ Push the green locking levers in the direction of the arrow as shown (1) and then move them up (2), so that the housing cover is pushed backward slightly.
- ▶ Lift off the housing cover upwards.

8.2.2 Replacing a memory module

8.2.2.1 Removing the air cowl

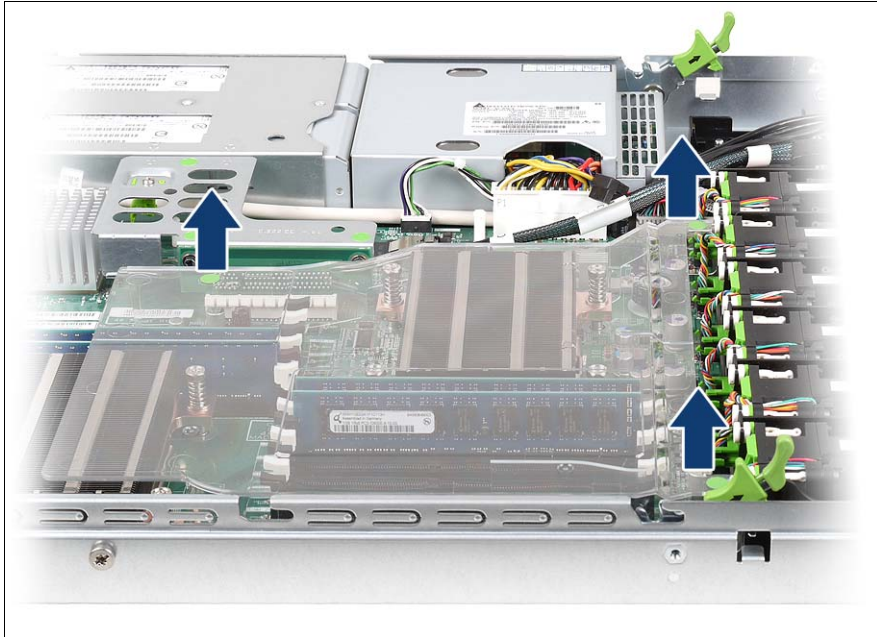


Figure 29: Taking off the air cowl.

- Lift the air cowl and remove it.

8.2.2.2 Identifying a defective CSS component

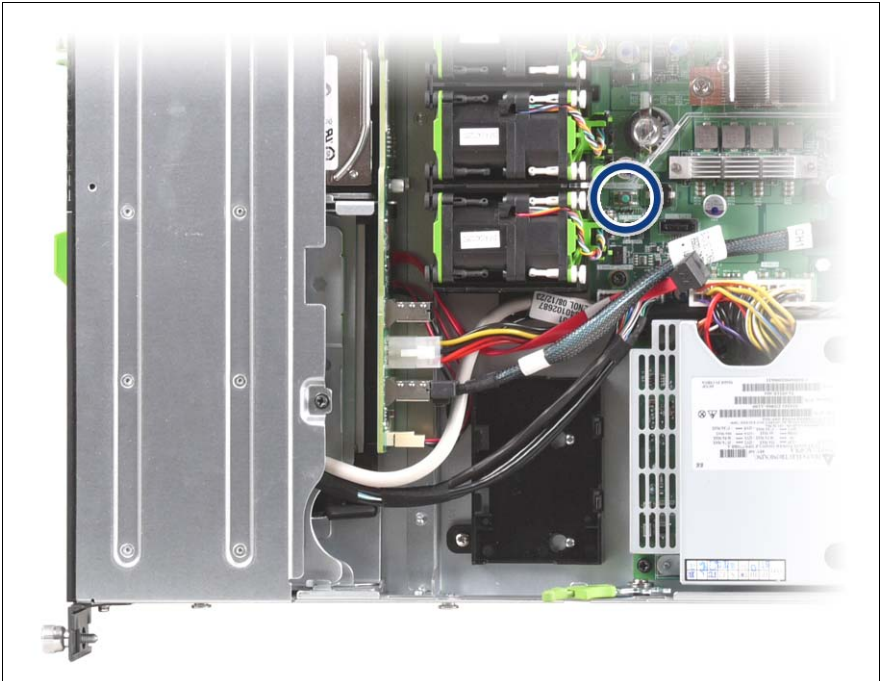


Figure 30: Indicate CSS button

- ▶ Press the Indicate CSS button.

The PRIMERGY Diagnostic LED of the defective CSS component lights up, indicating which CSS component (in this case: memory module) on the system board needs replacing.

8.2.2.3 Removing a defective memory module

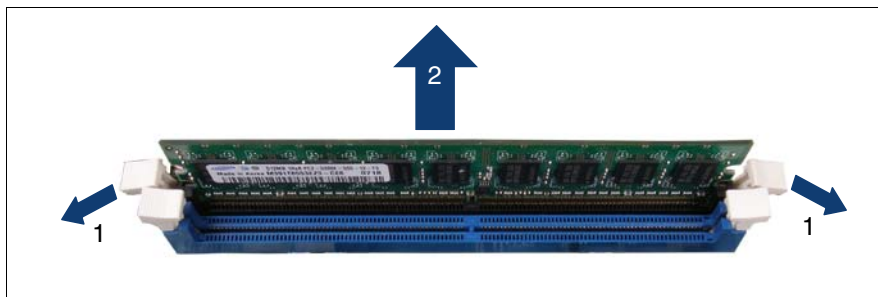


Figure 31: Removing a memory module

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

8.2.2.4 Installing a new memory module

**CAUTION!**

Please note the equipping rules in the technical manual for the system board D2786.

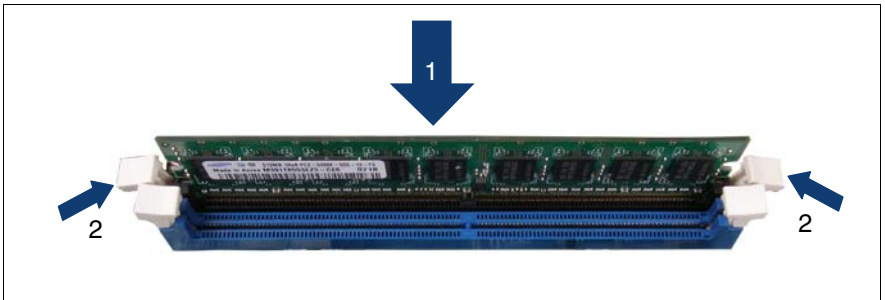


Figure 32: Inserting a memory module

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

Pay attention to the plug coding.

8.2.2.5 Fitting the air cowl

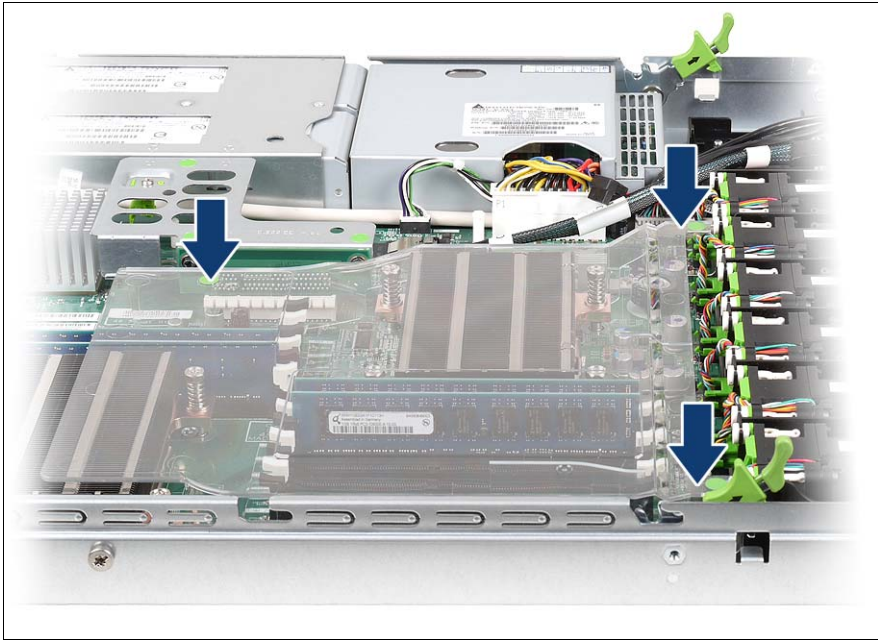


Figure 33: Fitting the air cowl

- ▶ Refit the air cowl.

8.2.3 expansion card, replacing

Identifying defective expansion cards

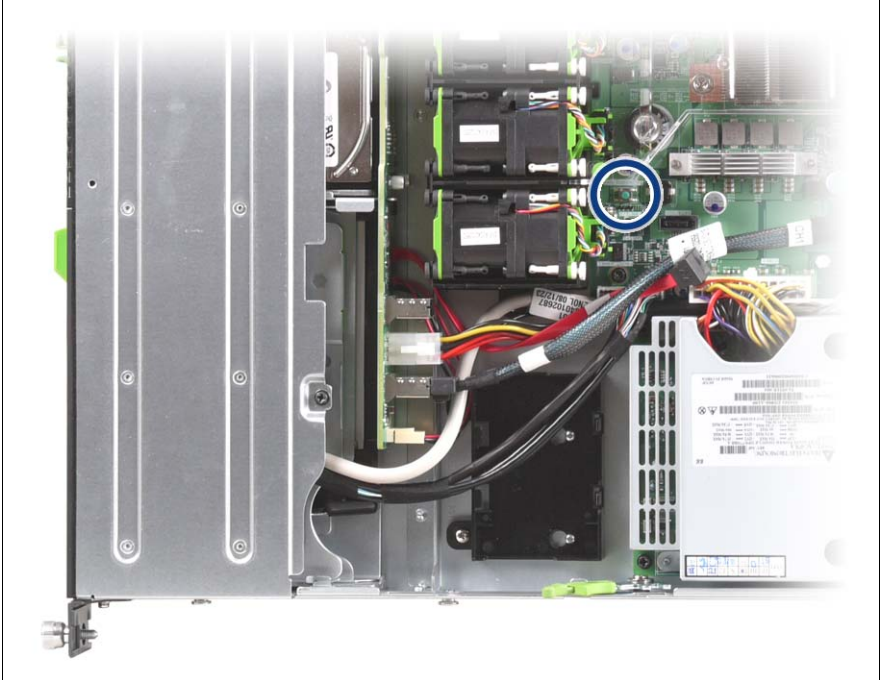


Figure 34: Indicate CSS button

- ▶ Press the Indicate CSS button.

The PRIMERGY Diagnostic LED of the defective CSS component lights up, indicating which CSS component (in this case: expansion card) on the system board needs replacing.



There is no indicator for bay #3 (RAID controller).

Removing the riser card holders

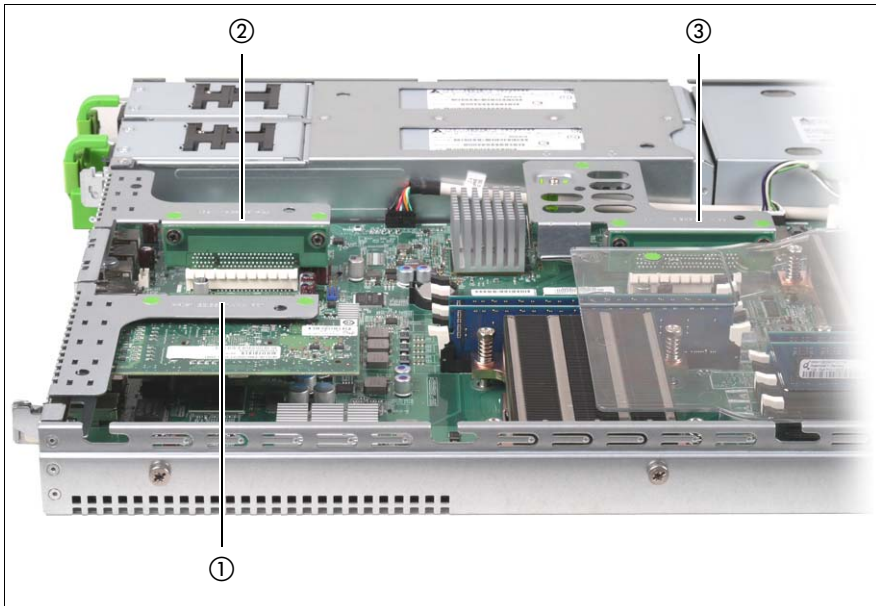


Figure 35: Position of riser card holders 1-3

- ▶ If necessary, disconnect the cables from the relevant expansion card.
- ▶ Pull the respective riser card holder up and out of the bay.

Removing a defective expansion card

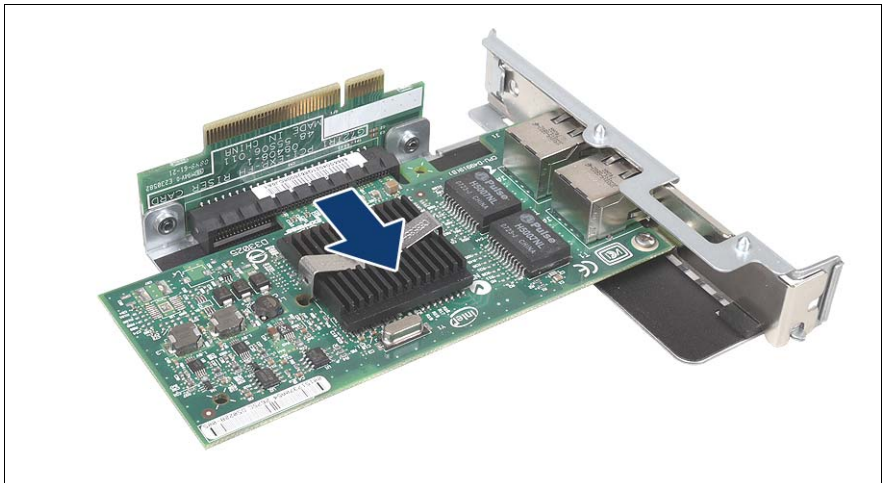


Figure 36: Removing a defective expansion card

- ▶ Pull the defective expansion card out of the riser slot (see arrow).

Installing an expansion card

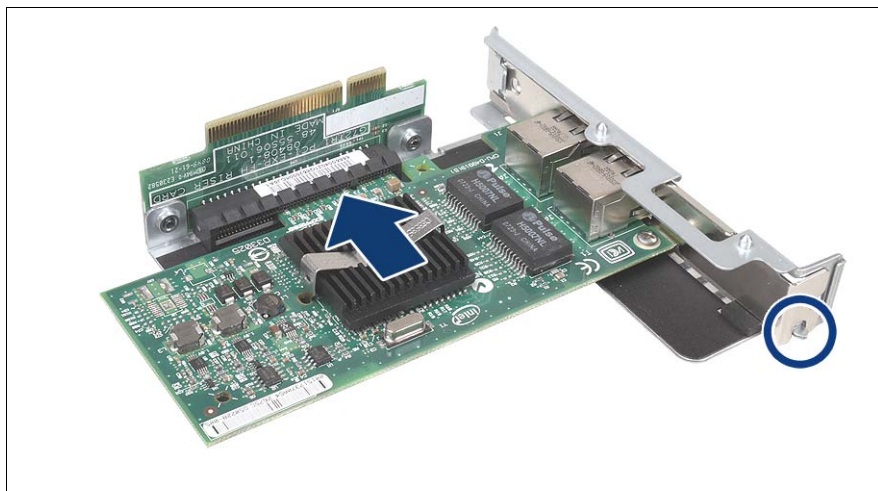


Figure 37: Riser card holder equipped with a controller

- ▶ Insert the expansion card in the slot of the riser card holder.



Make sure that the rear cover fits into the correct notch (see circle).

- ▶ If necessary, connect the cable to the expansion card and the other components.

Reinstalling the riser card holders

- ▶ Position the riser card holder over the relevant slot on the system board.
- ▶ Carefully push the riser card holder into the slot by pressing on the green points ("touch points").
- ▶ Close the server (see [Abschnitt „Closing the server“ auf Seite 105](#)), connect all power plugs to the power outlets and switch on the server.

8.2.4 Closing the server

- ▶ Place the housing cover on the server.
Make sure that each bolt is positioned in the corresponding nut.
- ▶ Push the housing cover forward as far as possible.
The housing cover must click into place.

Index

3rd party rack
installing in 48
requirements 40

A

accessible drives
DVD drive 13
acclimatization time 37, 85
Advanced Video Redirection 16
air cowl 96, 100
ambient conditions 22
articulated cable guide 46
ASR&R 15
availability 15
AVR 16

B

BIOS
security functions 71
BIOS update 18

C

cables
connecting 54
disconnecting 54
CD/DVD drive activity indicator 55
CE marking 21, 32
Chipkill 15
cleaning
keyboard 70
monitor 70
mouse 70
server 70
configuration, server 67
connecting cables 54
consumables 34
control panel 55
Controls 55
cooling, fan 14
correcting faults 73

CPU error indicator 55
CPU, fan 14
CSS indicator 55, 58, 60, 61

D

data protection 71
data security 15
DataCenter Rack
requirements 39
date, incorrect 76
delivery note 23, 38
devices, connecting to server 50
dimensions 22
disconnecting cables 54
disposal, devices 35
Drive
“dead” 76
drive
defective 77
indicators 58
dummy module, HDD module 86, 89
DVD drive 13
DVD drive activity indicator 58

E

ECC 15
EDC 15
electrical data 21
electromagnetic compatibility 21, 32
electrostatic-sensitive devices
(ESD) 31
EMC directive 21
EMC regulations 86, 89
environment class 22
environmental protection 34
Error
drive “dead” 76
error
drifting display on monitor 75
drive defective 77
incorrect date 76

- incorrect time [76](#)
 - no display on monitor [75](#)
 - power-on indicator does not light [73](#)
 - screen remains blank [74](#)
 - screen shows flickering stripes [75](#)
 - server switches itself off [74](#)
 - system does not boot [76](#)
 - Error Correcting Code [15](#)
 - Error Detection Code [15](#)
 - error message on screen [77](#)
 - ESD (electrostatic-sensitive devices) [31](#)
 - expansion card [11](#)
 - expansion cards [104](#)
- F**
- fan
 - CPU [14](#)
 - installing/removing [90](#)
 - power supply unit [14](#)
 - removing [92](#)
 - system [14](#)
 - fault
 - drifting display on monitor [75](#)
 - drive defective [77](#)
 - incorrect date [76](#)
 - incorrect time [76](#)
 - no display on monitor [75](#)
 - screen remains blank [74](#)
 - screen shows flickering stripes [75](#)
 - system does not boot [76](#)
 - Features [10](#)
 - flash EPROM [18](#)
- G**
- Global Error indicator [55, 57, 60](#)
 - global error indicator [55, 60](#)
 - graphics card [51](#)
- H**
- hard disk activity indicator [55, 57](#)
 - hard disk drive [12, 83](#)
 - handling [85](#)
 - indicator [59](#)
 - installation frame [83](#)
 - HDD BUSY indicator [59](#)
 - HDD FAULT indicator [59](#)
 - HDD module [15, 83](#)
 - acclimatization time [37, 85](#)
 - installation frame [87](#)
 - installing/removing [87](#)
 - hot-plug fan [90](#)
 - hot-plug hard disk drive [83](#)
 - hot-plug HDD module [15, 83](#)
 - hot-plug power supply unit [14, 52, 80](#)
 - housing, opening fan cover [91](#)
- I**
- ID button [55, 56](#)
 - ID card
 - product name [38](#)
 - serial number [38](#)
 - ID indicator [55, 58, 60, 61](#)
 - IME [13, 67](#)
 - indicators
 - CD/DVD drive activity [55](#)
 - CPU error [55](#)
 - CSS [55, 58, 60, 61](#)
 - DVD drive activity [58](#)
 - Global Error [55, 57, 60](#)
 - global error [55, 60](#)
 - hard disk activity [55](#)
 - hard disk drive [59](#)
 - HDD BUSY [59](#)
 - HDD FAULT [59](#)
 - ID [55, 58, 60, 61](#)
 - LAN activity [62](#)
 - LAN transfer rate [62](#)
 - memory error [55](#)
 - on power supply unit [63](#)
 - on server [55](#)
 - PCI error [55](#)
 - power-on indicator [55](#)
 - system error [57, 60](#)

- information, additional 9
- Installing
 - server 46
- installing in
 - 3rd party rack 48
 - PRIMECENTER Rack 43
- installing in the rack, notes 33
- Installing the operating system 69
- installing,server 39
- Integrated Mirroring Enhanced 13, 67
- integrated Remote Management Controller 16
- iRMC S2 16
- L**
- labels 35
- LAN activity indicator 62
- LAN transfer rate, indicator 62
- laser information 30
- light emitting diode (LED) 30
- lithium battery 29
- Low Voltage Directive 21, 32
- M**
- Main memory 96
- mains voltage, connecting server 52
- meaning of the symbols 20
- MegaRAID 13, 67
- memory error indicator 55
- Memory Mirroring, memory module 15
- memory module, Memory Mirroring 15
- memory scrubbing 15
- monitor
 - display drifts 75
 - no display 75
- monitor port 50
- N**
- NMI button 55, 56
- noise level 22
- notational conventions 20
- O**
- On/Off button 55, 56
- onboard SATA controller 12, 67
- opening, fan cover 91
- operation 55
- overload 17
- P**
- packaging 34, 38
- PCI error indicator 55
- PCI SAS controller, configuring 69
- PCIe Gen2 slot 11
- PDA 15, 17
- ports 50
 - monitor port 50
 - serial port 50
 - service LAN port 50
 - USB 14
 - USB port 50
- power supply unit
 - cable clamp 53
 - dummy module 80
 - hot-plug 52, 80
 - indicators 63
 - installing 81
 - redundant 52
 - replacing 82
- power supply, redundant 14, 52
- power-on indicator 55, 57
 - does not light 73
- PRIMECENTER Rack
 - installing in 43
 - requirements 39
- PRIMERGY Diagnostic LED 18
- product name 38
- property protection 71
- R**
- rack
 - requirements 39
- RAID controller is not configured for this drive 77
- RAID level 15

Index

- recycling devices 35
- redundancy
 - fan 14
 - power supply 14
- regulations and standards 21
- Remote Storage 16
- RemoteView 18
- removing
 - fan 92
 - server 39
- Requirements
 - DataCenter Rack 39
 - PRIMECENTER Rack 39
- requirements
 - 3rd party rack 40
- reset button 55, 56
- return of devices 35
- routing cables 46
- S**
- Safety instructions 25
- safety standards 21
- SAS IME controller 13
- SAS MegaRAID controller 13
- SAS/SATA RAID controller 13
 - configuring 67
- saving energy 34
- screen
 - error message 77
 - flickering 75
 - remains blank 74
 - shows flickering stripes 75
- serial number 38
- serial port 50
- Server
 - installing 46
- server
 - accessible drives 13
 - ambient conditions 22
 - configuration 18, 67
 - connecting external devices 50
 - connecting mains voltage 52
 - control panel 55
 - data protection 71
 - dimensions 22
 - electrical data 21
 - fitting in rack 39
 - indicators 55
 - installing 39
 - noise level 22
 - opening fan cover 91
 - operation 55
 - ports 50
 - product name 38
 - property protection 71
 - removing 39
 - routing cables 46
 - serial number 38
 - service 18
 - startup 55
 - switches itself off (error) 74
 - switching off 65
 - switching on 65
 - technical data 21
 - transport 32
 - unpacking 38
- server management 17
- ServerView Installation Manager 18, 68
- ServerView Operations Manager 17
 - supported functions 17
- ServerView Remote Management 19
- service
 - PRIMERGY Diagnostic LED 18
 - server 18
 - touch point 18
- service LAN port 16, 50
- slot, expansion card 11
- startup, server 55
- Support bracket 43
- switch off time, defining 66
- switch on time, defining 66
- switching off, server 65
- switching on, server 65
- system board
 - PRIMERGY Diagnostic LED 18
- system board, features 10

system does not boot [76](#)
system fan, redundant [14](#)

T

target group [7](#)
technical data [21](#)
telescopic rail [45, 46](#)
time, incorrect [76](#)
tips [73](#)
touch point
 service [18](#)
transport damage [23, 38](#)
transporting the server [32](#)
troubleshooting [73](#)

U

unpacking, server [38](#)
USB port [14, 50](#)
using the cable clamp [53](#)



Information on this document

On April 1, 2009, Fujitsu became the sole owner of Fujitsu Siemens Computers. This new subsidiary of Fujitsu has been renamed Fujitsu Technology Solutions.

This document from the document archive refers to a product version which was released a considerable time ago or which is no longer marketed.

Please note that all company references and copyrights in this document have been legally transferred to Fujitsu Technology Solutions.

Contact and support addresses will now be offered by Fujitsu Technology Solutions and have the format ...@ts.fujitsu.com.

The Internet pages of Fujitsu Technology Solutions are available at [http://ts.fujitsu.com/...](http://ts.fujitsu.com/)

and the user documentation at <http://manuals.ts.fujitsu.com>.

Copyright Fujitsu Technology Solutions, 2009

Hinweise zum vorliegenden Dokument

Zum 1. April 2009 ist Fujitsu Siemens Computers in den alleinigen Besitz von Fujitsu übergegangen. Diese neue Tochtergesellschaft von Fujitsu trägt seitdem den Namen Fujitsu Technology Solutions.

Das vorliegende Dokument aus dem Dokumentenarchiv bezieht sich auf eine bereits vor längerer Zeit freigegebene oder nicht mehr im Vertrieb befindliche Produktversion.

Bitte beachten Sie, dass alle Firmenbezüge und Copyrights im vorliegenden Dokument rechtlich auf Fujitsu Technology Solutions übergegangen sind.

Kontakt- und Supportadressen werden nun von Fujitsu Technology Solutions angeboten und haben die Form ...@ts.fujitsu.com.

Die Internetseiten von Fujitsu Technology Solutions finden Sie unter [http://de.ts.fujitsu.com/...](http://de.ts.fujitsu.com/), und unter <http://manuals.ts.fujitsu.com> finden Sie die Benutzerdokumentation.

Copyright Fujitsu Technology Solutions, 2009