PRIMERGY TX150
Server System

Operating Manual

Edition November 2003

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.

Fax forms for sending us your comments are included in the back of the manual.

There you will also find the addresses of the relevant User Documentation Department.

Certified documentation according 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

This manual is printed on paper treated with chlorine-free bleach.

Contents

1 Introduction

The PRIMERGY TX150 server is an Intel-based server for small and medium-sized networks and can be used as floorstand or as rack model. A floorstand model can be converted into a rack model using an optional conversion kit.

The PRIMERGY TX150 server offers a high level of reliability and availability through highly developed hardware and software components. These includes hot-swapable hard disk drive modules, optional hot-plug power supply units, the server management software *ServerView*, Prefailure Detection and Analysing (PDA) and Automatic Server Reconfiguration and Restart (ASR&R).

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

The rack model occupies 5 height units in the rack.

1.1 Overview of the Documentation

PRIMERGY manuals are available in PDF format on the ServerBooks CD. The ServerBooks CD is part of the ServerStart Bundle delivered with each server system.

The PDF files for the manuals can also be downloaded free of charge from the Internet. The overview page showing the online documentation available in the Internet can be found via the URL: *http://manuals.fujitsu-siemens.com* (click intel based server/PRIMERGY ServerBooks).

Concept and Target Group of this Manual

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

This operating manual is intended for those responsible for installing the hardware and operating the system. The manual contains all the information required for mounting and operating your PRIMERGY TX150.

To understand the different expansion options, you need a knowledge of hardware and data transmission, as well as basic knowledge of the operating system used.

Additional components of the server documentation

To the PRIMERGY TX150 documentation set belong the following additional manuals:

- "Safety and Ergonomics" manual (print version delivered together with the system, PDF file available on the *ServerBooks* CD)
- "Warranty" manual (print version delivered together with the system, PDF file available on the *ServerBooks* CD)
- Technical Manual for the system board D1501 (PDF file available on the *ServerBooks* CD)
- "D1501 Setup Utility for PRIMERGY TX150" manual (PDF file available on the *ServerBooks* CD)
- "ServerStart Bundle" includes the *ServerStart* CD, the *ServerBooks* CD and the print version of the manual „ServerStart Bundle". The PDF file of the manual is also available on the *ServerBooks* CD.
- "Adaptec HostRAID User's Guide" (PDF file available on the *ServerBooks* CD)

If you need a backup of the *ServerBooks*-CD send the details of your server via email address: *Reklamat-PC-LOG@fujitsu-siemens.com*.

Further sources of information

- technical manual for the rack
- manual for the monitor
- server management manual *ServerView*
- manual for the Remote Test and Diagnostic System *RemoteView*
- in the documentation for the boards and drives
- operating system documentation
- information files of your operating system

(see also "Related Publications" on page 87)

1.2 Features

System board

The features of the system board (D1501) can be found in the technical manual of the system board for the hardware and in the „D1501 Setup Utility for PRIMERGY TX150“ for the firmware (see “Related Publications” on page 87).

Hard disk drives

The server has a drive cage which can accommodate up to four ULTRA-320-SCSI hard disk drive modules. Each hard disk drive module (HDD module) can accommodate an SCSI hard disk drive with an SCA (Single Connector Attachment) interface and a maximum height of 1 inch. The module is connected to the SCSI backplane without cables via the SCA interface. This allows hard disk modules to be simply plugged in or pulled out.

The hard disk drives can be controlled by the onboard controlled or by a RAID controller. If the server has a RAID controller and a corresponding RAID configuration, the HDD modules can be exchanged during operation (hot-swap).

A HDD extension box can be installed optionally (with a maximum of three HDD modules). Controlling of the hard disk drives in the extension box requires an additional RAID controller.

SCSI controller with HostRAID functionality

For operating the four hard disks a 1-channel Ultra320 SCSI controller with HostRAID functionality is available. In addition to the SCSI functions HostRAID offers RAID functionality for the internal disk configuration (HostRAID: level 0, 1, 10).

To configure HostRAID the controller has its own RAID-Select Utility. For further information see “Adaptec HostRAID User’s Guide“ on the *ServerBooks* CD (choose *Controllers* from the menu).

Zero Channel RAID (ZCR) controller (option)

Optionally a ZCR controller (PCI card) can be installed. In addition to RAID levels 0, 1, 10 ZCR controller offers the possibility to configure also RAID-5 or RAID-50. ZCR controller utilizes the onboard controller using a special integrated logic.

Accessible drives

A 3,5-inch floppy disk drive (1.44 MB) and three locations for the installation of accessible drives (CD-ROM, DVD-ROM, CD burner or tape drive) are available. The accessible drives cannot be replaced during operation.

Alternatively, two of these locations can be used to install the optional HDD extension box. As a result these locations are then no longer available for accessible drives.

Power supply

In its basic configuration level the server has a fixed power supply unit or on/two hot-plug power supply unit(s) that adjusts automatically to any power voltage in the range from 100 - 127 V and/or 200 - 240 V. As an option, the standard power supply can be upgraded to a redundant power supply (two hot-plug power supply units). If one power supply unit fails, the second power supply unit of the redundant configuration ensures unimpaired continued operation. The defective power supply unit can be replaced during operation (hot-plug).

High level of availability and reliability

When memory data are accessed, 1-bit errors in the main memory are recognized and automatically corrected with the ECC (Error Correcting Code) method.

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

The PDA (Prefailure Detection and Analyzing) technology from Fujitsu Siemens Computers analyzes and monitors all components important for system reliability.

Optional add-in RAID controllers support RAID Levels 5 and 50 and increase system availability and reliability.

The hot-swapable HDD modules provide additional protection.

Server management

Server management is implemented with the aid of the supplied *ServerView* software and PDA (Prefailure Detection and Analyzing) technology from Fujitsu Siemens. PDA reports early the threat of a system error or overloading so that preventative measures can be taken.

ServerView enables the management of all PRIMERGY servers in the network via a central console. Here *ServerView* supports the following functions:

- Remote startup (Wakeup On LAN)
- Intrusion detection
- Temperature monitoring of the CPU and the surrounding area
- Watchdog timer for Automatic Server Reconfiguration and Restart (ASR&R) in the event of failure of memory modules or processors
- Power monitoring
- End-of-life monitoring of the fans with timely notification before a failure
- Watchdog timer for operating system monitoring and application monitoring with ASR&R

Further information on the *ServerView* server management is provided in the associated documentation (see “Related Publications” on page 87).

ServerStart

You can configure the PRIMERGY server quickly and precisely with the *ServerStart* software provided. User-guided menus are available for installing the server operating systems.

Service and support

PRIMERGY server are service-friendly and modular, thus enabling quick and simple maintenance. The flash EPROM programme supplied with the Fujitsu Siemens utilities supports fast BIOS Update. The *RemoteView* Remote Test and Diagnosis System allows the PRIMERGY TX150 Server to be maintained from remote locations. A Remote Service Board (RSB) can be used in conjunction with *RemoteView*. Together they facilitate a remote diagnosis for system analysis, remote configuration, and remote restart should the operating system or hardware fail.

1.3 Notational Conventions

The following notational conventions are used in this manual:

Italics	indicate commands, menu items or software programmes.
“Quotation marks”	indicate names of chapters and terms that should be emphasized.
►	text which follows this symbol describes activities that must be performed in the order shown.
 **CAUTION!**	pay particular attention to text marked with this symbol. Failure to observe this warning may endanger your life, damage the server, or lead to loss of data.
	supplementary information, remarks, and tips follow this symbol.

Table 1: Notational Conventions

1.4 Technical Data

Electrical Data (standard and redundant power supply)

Rated voltage range	100 -127 V / 200 - 240 V
Rated frequency	50 Hz - 60 Hz
Rated current in basic configuration:	100 V - 127 V / 1.8 A 200 V - 240 V / 0.8 A
Max. rated current:	100 V - 127 V / 4.5 A 200 V - 240 V / 2.0 A
Rated power	350 W
Apparent power	370 VA
Thermal dissipation	1200 kJ/h
Building fuse	16 A
Protection class	I

Compliance Standards

Product safety and ergonomics	IEC 60950 / EN 60950 / UL 60950 3rd. Ed., CAN/CSA C22.2 No. 60950 3rd. Ed.
Electromagnetic Compatibility	FCC class A VCCI class A AS/NZS 3548 class A CNS 13438
Emitted interference	EN 55022 class A
Harmonic current	EN 61000-3-2 JEIDA
Flicker	EN 61000-3-3
Noise immunity	EN 55024
CE label according to EU directives	Low-Voltage Directive 73/23/EEC Electromagnetic Compatibility 89/336/EEC (Product safety)

Mechanical Values

	Floorstand Model	**Rack Model**
Width	205 mm	482 mm (front panel)
Total Depth	605 mm	642 mm (with Handle)
Installation Depth	---	607 mm
Height	444 mm (with feet)	221 mm or 5HU

Weight

approx. 21-28 kg (depending on the configuration)

Ventilation Clearance

at least 200 mm on the front and on the rear side

Environmental Conditions

Environment class 3K2 Environment class 2K2	DIN EN 60721(IEC 721) section 3-3 DIN EN 60721(IEC 721) section 3-2
Temperature: Operation (3K2) Transport (2K2)	 10 °C .... 35 °C -25 °C .... 60 °C
Relative humidity	10%...85%

Condensation during operation must be avoided.

Noise Level

Sound power level L_{WAd} (ISO 9296)	≤ 5.8 B (standby) ≤ 6.0 B (operation)
Sound pressure level at bystander position L_{pAm} (ISO 9296)	≤ 43 dB(A) (standby) ≤ 45 dB(A) (operating)

2 Installation Steps: Overview

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

- At first, please take notice of chapter “Important Notes” on page 11ff, especially of „Notes on Safety“.
- Unpack the system, check the contents of the package for visible transport damage and check whether the delivery agrees with the details in the delivery note (see section “Unpacking the Server” on page 24).
- Transport the server to the place where you want to set it up.
- Make sure all necessary manuals (see section “Overview of the Documentation” on page 1) are available; possibly print of the PDF files.
- Set up the floorstand model (see section “Setting Up the Floorstand Model” on page 25) or mounting the server into the rack (see section “Installing/Removing the Rack Model” on page 28).
- Cable the server. Please also refer to the section “Connecting Devices to the Server” on page 47 and section “Instructions on Connecting/ Disconnecting Cables” on page 51.
- Connect the system to the line voltage (see section “Connecting the Server to the Line Voltage” on page 49).
- Make yourself familiar with the operating and indicator elements on the front and on the rear side of the server (see section “Operating and Indicator Elements” on page 55).
- Configure and install the desired operating system and applications. To do so, you have the following possibilities:
  - Remote configuration and installation with *ServerStart*:

    With the *ServerStart*-CD provided, you can configure the server and install the operating system in a convenient manner.

    To find out how to operate *ServerStart* and for further information, refer to the corresponding booklet „ServerStart Bundle“.

    You find additional information for configuration section “Configuration with ServerStart” on page 62).
  - Local configuration and installation with or without *ServerStart* (see section “Configuration with ServerStart” on page 62 and/or section “Configuration without ServerStart” on page 63).

3 Important Notes

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

3.1 Notes on Safety

You will also find the following safety instructions in the manual entitled “Safety and Ergonomics“ which also includes other notes on ergonomics.

This device complies with the relevant safety regulations for data processing equipment, including electronic office machines for use in an office environment.

If you have any questions, contact your sales outlet or our customer service centre.

CAUTION!

The actions described in these instructions should only be performed by technicians, service personnel or technical specialists. Equipment repairs should only be performed by qualified staff. Any failure to observe the guidelines in this manual could expose the user to risks (electric shock, fire hazards) and could also damage the equipment. Note that any unauthorized opening of the device will result in the invalidation of the warranty and exclusion from all liability.

Before setting up

CAUTION!

- During installation and before operating the device, observe the instructions on environmental conditions for your device (see section “Technical Data” on page 6).
- If the device is brought in from a cold environment, condensation may form both inside and on the outside of the machine.

  Before operating the device, wait until it is absolutely dry and has reached approximately the same temperature as the installation site. Failure to observe these guidelines can lead to material damage of the device.
- Transport the device only in the original packaging or in a packaging which protects it from knocks and jolts.

Installation and operation

CAUTION!

- If the rack model is integrated in an installation that receives power from an industrial (public) power supply network with the IEC309 connector, the (public) power supply protection must comply with the requirements for the non-industrial (public) power supply networks for the type A connector.
- The server automatically adjusts to a mains voltage between 100 - 127 V and/or 200 - 240 V. The server may be place in operation only, if the mains voltage range set on the server corresponds to the local mains voltage.
- This device has a safety tested power cable and must only be connected to a properly grounded power socket.
- Ensure that the power socket on the device or the grounded mains outlet is freely accessible.
- The power switch does not disconnect the device from the mains voltage. To completely disconnect it from the mains voltage, the power plug must be removed from the power socket.
- Always connect the device and the attached peripherals to the same power circuit. Otherwise you run the risk of losing data if, for example, the central processing unit is still running but the peripheral device (e.g. storage subsystem) has failed during a power outage.

CAUTION!

- Data cables must be adequately shielded to avoid interference.
- To the LAN wiring the requirements apply in accordance with the standards EN 50173 and EN 50174-1/2. As minimum requirement the use of a protected LAN line of category 5 for 10/100 MBps Ethernet, and/or of category 5e for Gigabit Ethernet is considered. The requirements of the specification ISO/IEC 11801 are to be considered.
- When you set up the floorstand model with hot-plug power supply units you should ensure that the supplied anti-tilt bracket is correctly fitted to prevent tilting.
- Route the cables in such a way that they do not form a potential hazard (make sure no-one can trip over them) and that they cannot be damaged. Refer to the relevant notes in the operating manual when connecting the device.
- No data transmission cable should be connected or disconnected during a thunderstorm (lightning hazard).
- Make sure that no objects (such as bracelets or paper clips) fall into or liquids spill into the device (risk of electric shock or short circuit).
- In emergencies (e.g. damaged casing, elements, or cables, penetration of liquids or foreign matter), switch off the device immediately, remove the power connector from the grounded power socket, and contact your customer service centre.
- Proper operation of the device (in accordance with IEC 60950/DIN EN 60950) is only ensured if the casing is completely assembled and the rear covers for the installation openings have been put in place (electric shock, cooling, fire protection, interference suppression).
- Install only system expansions that satisfy the requirements and rules governing safety and electromagnetic compatibility and relating to telecommunications terminal equipment. If you install other expansions, you may damage the system or violate the safety regulations and regulations governing RFI suppression. Information on which system expansions are suitable can be obtained from the customer service centre or your sales outlet.

CAUTION!

- The components (e.g. power supply) marked with a warning label (e.g. lightning symbol) may only be opened, removed, or exchanged by authorized, qualified personnel. The hot-swap or hot-plug components are exceptions to this rule.
- The warranty is invalidated if the device is damaged during the installation or replacement of system expansions.
- You may set only those resolutions and refresh rates specified in the ”Technical data“ section of the monitor description. Otherwise, you may damage your monitor. If you are in any doubt, contact your sales outlet or customer service centre.

Batteries

CAUTION!

- Incorrect replacement of batteries may lead to a risk of explosion. The battery may only be replaced with an identical battery or with a type recommended by the manufacturer (see the technical manual for the system board under “Related Publications” on page 87).
- Do not throw batteries into the trashcan. They 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 (see “Related Publications” on page 87).
- 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

Notes on Handling CDs and CD-/DVD-ROM Drives

CAUTION!

- Use only CDs in proper condition in the CD-/DVD-ROM drive of your server to prevent data loss, damage to the device and injuries.
- Therefore, check each CD for damage, cracks, breakage etc. before inserting it in the drive.

  Please note that any additional labels applied may change the mechanical properties of a CD and cause imbalance.

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

  Under certain conditions sharp-edged pieces of broken CDs can penetrate the cover of the drive (damage to the device) and be thrown out of the device (danger of injury, particularly on uncovered body parts such as the face or neck).

You protect the CD-/DVD-ROM drive and prevent mechanical damage, as well as premature wearing of the CDs, by observing the following suggestions:

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

Note on the Laser

The CD-ROM drive contains a laser diode classified according to IEC 825-1:1993:LASER CLASS 1.

Modules with Electrostatic Sensitive Devices:

Electrostatic-sensitive components may be identified by the following sticker:

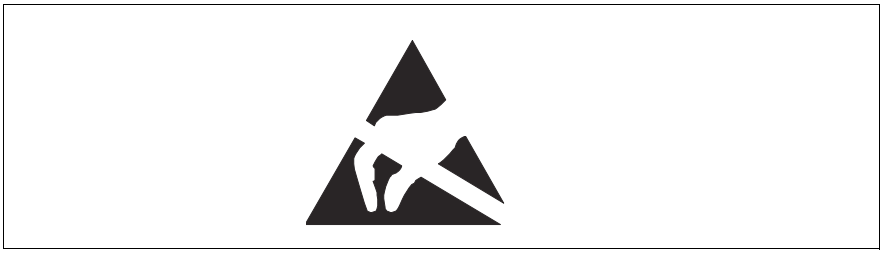

Figure 1: ESD label

When you handle components fitted with ESDs, you must observe the following points under all circumstances:

- You must always discharge static build up (e.g. by touching a grounded object) before working.
- The equipment and tools you use must be free of static charge.
- Remove the power plug from the power socket before inserting or removing components containing ESDs.
- Always hold components with ESDs by their edges.
- Do not touch any exposed pins or conductors on a component.
- Use a grounding cable designed for this purpose to connect yourself to the system unit as you install components.
- Place all components on a static-safe base.

i You will find a detailed description for handling ESD components in the relevant European or international standards (EN 61340-5-1, ANSI/ESD S20.20).

Other important notes:

- When cleaning the device, please observe the relevant notes in the section section “Cleaning the Server” on page 64.
- Keep this Operating Manual safety and all additional documentation (e.g. Technical Manual, CD) together with the device. If you pass on the device to third parties, you should also pass on the complete documentation.

3.2 CE Certificate

CE The shipped version of this device complies with the requirements of the EEC directives 89/336/EEC ”Electromagnetic compatibility“ and 73/23/EEC ”Low voltage directive“. The device therefore qualifies for the CE certificate (CE=Communauté Européenne).

3.3 FCC Class A Compliance Statement

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

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

NOTE:

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

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

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

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

3.4 Transporting the Server

CAUTION!

Transport the server only in its original packaging or in a packaging which protects it from knocks and jolts. Do not unpack the server until you are done transporting.

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

Never lift or transport the server using the handles on the front panel.

3.5 Notes On Installing Into 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 notes in the chapter ”Important notes“ in the technical manual for the corresponding rack. The technical manual is supplied with the corresponding rack.
- Ensure that the anti-tilt bracket is correctly mounted when you set up the rack.
- For safety reasons only one unit may be withdrawn from the rack at a time when performing assembly or service work.
- If more than one unit is withdrawn from the rack at any one time, there is a danger that the rack will tilt forward.
- The power connection for the rack must be installed by an authorized technician (electrician).
- If the rack model is integrated in an installation that receives power from an industrial (public) power supply network with the IEC309 connector, the (public) power supply protection must comply with the requirements for the non-industrial (public) power supply networks for the type A connector.

3.6 Environmental Protection

Environmentally friendly product design and development

This product has been designed in accordance with standards for ”environmentally friendly product design and development“. This means that the designers have taken into account important criteria such as durability, selection of materials and coding, emissions, packaging, the ease with which the product can be dismantled and the extent to which it can be recycled.

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

Notes on saving energy

Devices that do not have to be on permanently should not be switched on until they need to be used and should be switched off during long breaks and on completion of work

Notes on packaging

Please do not throw away the packaging. We recommend that you do not throw away the original packaging in case you need it later for transporting your system unit. If possible, devices should be transported in their original packaging.

Notes on dealing with consumables

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

Do not throw lithium batteries into the household waste. They must be disposed of in accordance with local regulations concerning special waste.

Notes on labeling plastic housing parts

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

Take-back, recycling and disposal

For details on take-back and reuse of devices and consumables within Europe, contact your Fujitsu Siemens Computers branch office/subsidiary or our recycling centre in Paderborn:

Fujitsu Siemens Computers
Recycling Center
D-33106 Paderborn

Tel.: +49 5251 8 18010

Fax +49 5251 8 18015

4 Hardware Installation

CAUTION!

Please note the safety instructions in chapter “Important Notes” on page 11.

Do not expose the server to extreme environmental conditions (see section “Technical Data” on page 6). Protect it from dust, moisture, and heat.

The server must be acclimatized in its operating environment for an acclimatization 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 time

4.1 Installation Steps

The following installation steps are described in detail in other sections of this chapter:

- Unpacking the server (see next section “Unpacking the Server”).
- Setting up the floorstand model (see section “Setting Up the Floorstand Model” on page 25) or mounting the rack model into the rack (see section “Installing/Removing the Rack Model” on page 28) as shown in the layout arrangement created with System Architect.
- Cabling the server. Please also refer to the technical manual for the corresponding rack, the section “Connecting Devices to the Server” on page 47 and section “Instructions on Connecting/ Disconnecting Cables” on page 51.
- Connect the server to the power supply (see section “Connecting the Server to the Line Voltage” on page 49).

4.2 Unpacking the Server

CAUTION!

Please note the safety instructions in chapter “Important Notes” on page 11.

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

Do not unpack the server until all transport maneuvers are completed.

It is recommended to not throw away the original packaging material! It may be required for transportation at some later date.

- ► Unpack all the individual parts.
- ► Check the contents of the package for visible transport damage.
- ► Check whether the delivery agrees with the details in the delivery note.

The identification rating plate is located on the rear area on the server.

If you find transport damage or inconsistencies between the contents of the package and the delivery note, inform your supplier immediately!

4.3 Setting Up the Floorstand Model

CAUTION!

Please note the safety instructions in chapter “Important Notes” on page 11.

- Transport the server to the place where you want to set it up.
- Unpack the server (see section “Unpacking the Server” on page 24) and the HDD cover. The HDD cover is packed in a separate cardboard.

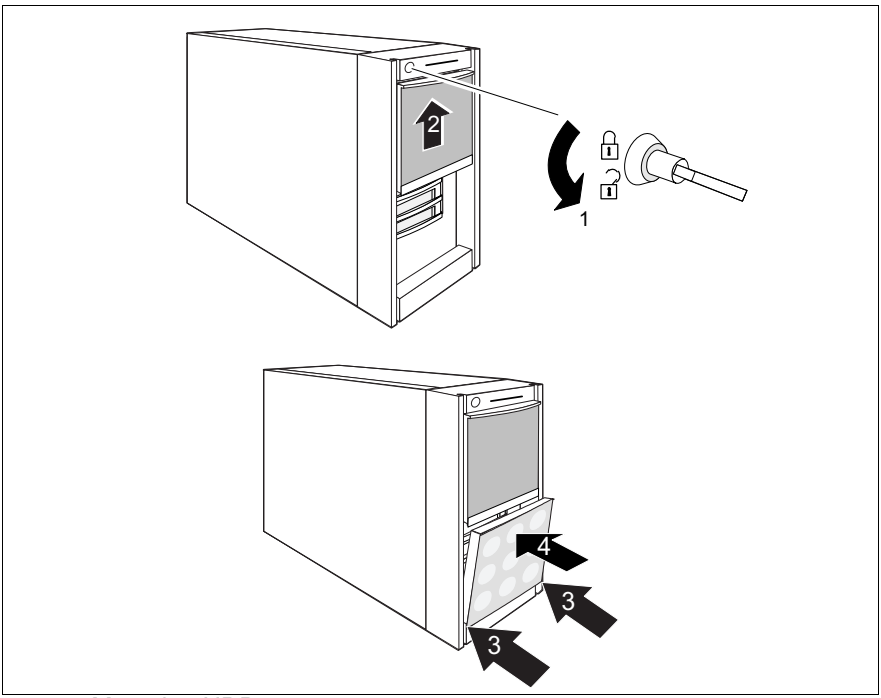

Figure 2: Mounting HDD cover

- Unlock the server (1) and remove the key (figure 2).
- Slide up the accessible drives cover (2) as far as possible (2).
- Hook the tabs of the HDD cover of into the recesses (3) and push the top end of the HDD cover (4) in direction of the arrow until it engages.

- Set up the server. When you set up the floorstand model with hot-plug power supply units the supplied anti-tilt bracket must be fitted to prevent tilting (see section “Mounting the Anti-tilt Bracket” on page 27).

CAUTION!

- The device must be protected against direct sunlight.
- The required minimum distances for operation and maintenance areas must be adhered to.
- In order to connect other devices (e. g.: storage subsystem) the rear of the server must be accessible.
- The mains plug must be accessible easily and safely.
- There must be a clearance of at least 200 mm in front of and behind the server to ensure adequate ventilation.

- The HDD modules are provided with a transport lock (1). Remove these before you setup the server (figure 3).

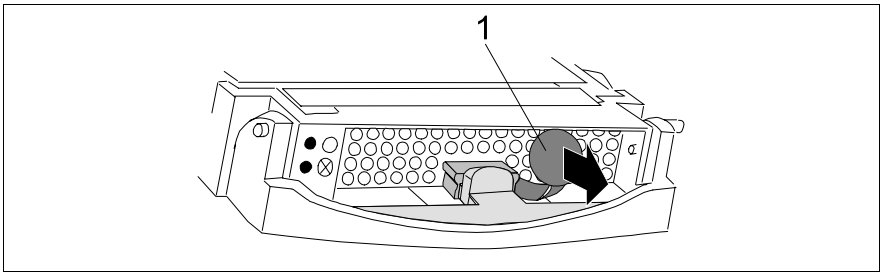

Figure 3: HDD module: remove the transport lock

- Cabling the server. Please also refer to the section “Connecting Devices to the Server” on page 47 and section “Instructions on Connecting/ Disconnecting Cables” on page 51.
- Connect the server to the power supply (see section “Connecting the Server to the Line Voltage” on page 49).

4.3.1 Mounting the Anti-tilt Bracket

For floorstand models with hot-plug power supply units the supplied anti-tilt bracket must be fitted at the rear of the server.

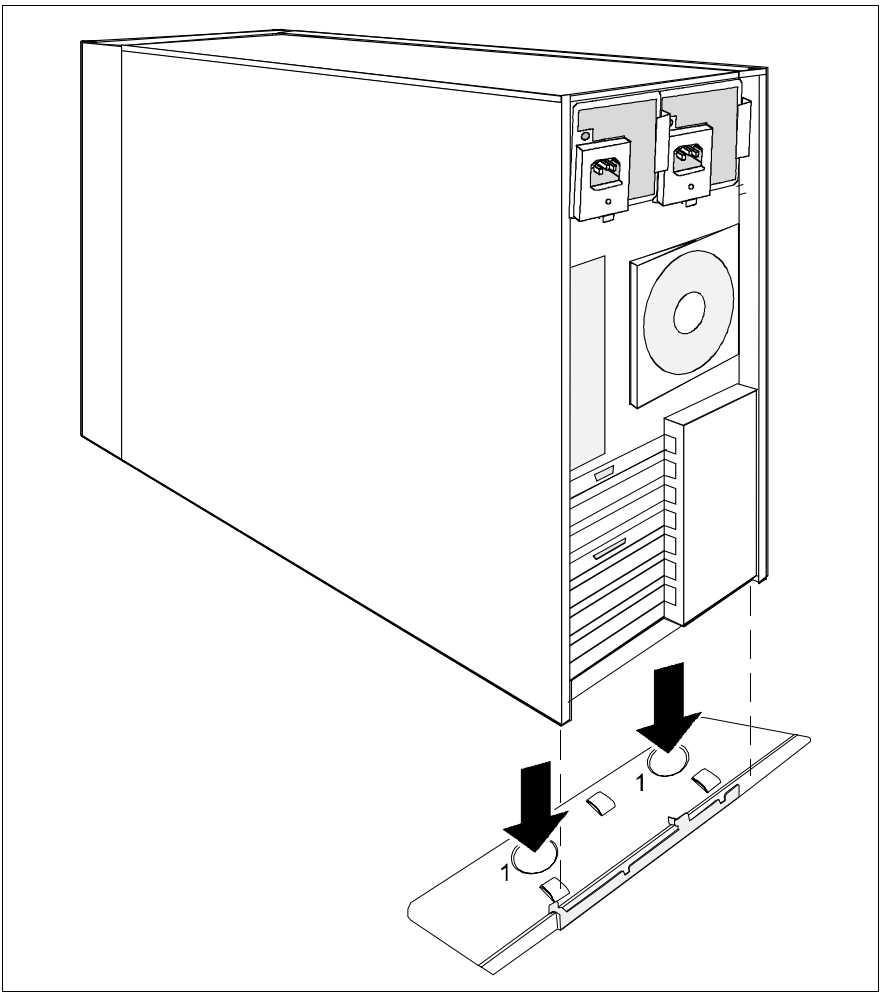

Figure 4: Mounting the anti-tilt bracket

► Position the server on the anti-tilt bracket so the rubber feet of the server fit into the openings of the bracket (1).

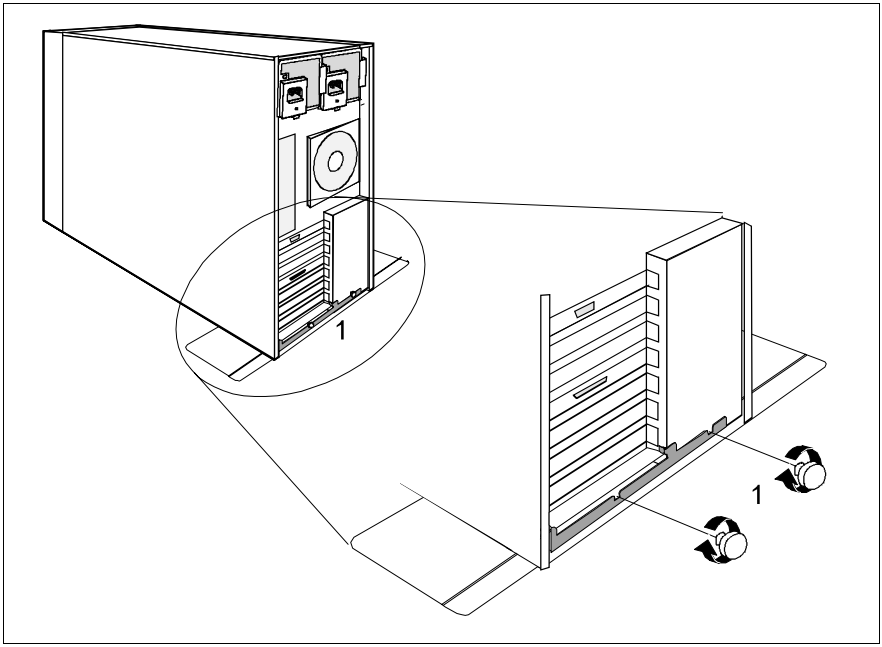

Figure 5: Fastening the anti-tilt bracket

► Fasten the anti-tilt bracket using the two knurled screws (1).

4.4 Installing/Removing the Rack Model

CAUTION!

- Please observe the safety precautions and references to rack installation in chapter “Important Notes” on page 11.
- At least two people are needed to position the server in the rack.
- The rack may tip over if more than one unit is removed at the same time from the rack.
- The server may not occupy the top height unit of the rack (42 HU Classic Rack, 38 HU/42HU PRIMECENTER Rack and/or DataCenter Rack), as otherwise no board can be replaced even with the slide-in module pulled out completely.

Requirements of the Rack

The rack systems of the Fujitsu Siemens Computers GmbH (PRIMECENTER Rack; DataCenter Rack and 19-Inch (Classic) Rack) support fully the installation of the PRIMERGY server systems. The installation into the at present usual rack systems of different foreign manufacturers (**3rd-Party Rack**) is supported to large part.

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

The power is supplied via the socket strips available in the rack.

The main features of the rack systems of the Fujitsu Siemens Computers GmbH are:

PRIMECENTER Rack

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

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

– Extended cable management within the lateral rack area.

DataCenter Rack

– Directly laterally bolted telescopic rails or sliding rails (except within the rear left area where a support bracket is used).

– Extended cable management within the lateral rack area.

19-Inch (Classic) Rack

– Directly laterally bolted telescopic rails or sliding rails.

– Cable management by using an articulated cable carrier.

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

The mounting of the cable management is described in detail in the Technical Manual to the respective rack.

To rack systems of different foreign manufacturers the following applies:

3rd-Party Rack

Certain boundary conditions are to be fulfilled:

– Installation dimensions (see the dimensions shown in figure 6 on page 31).

1	rack front side
2	rack rear side
A	rack depth (comparison PRIMECENTER Rack 940/1000 mm)
B	rack width (comparison PRIMECENTER Rack 700 mm)
C	clearance of the 19-inch installation level
C1	front 19-inch installation level
C2	rear 19-inch installation level
D	area for cable routing (cable area depth) and ventilation
E	area for front panel and ventilation
F	right and left area for support systems
P	PRIMERGY installation depth
a1	front left support upright
a2	front right support upright
b1	rear left support upright
b2	rear right support upright

– Please ensure the functionality of the security mechanism (e. g. stopper or retention system) on the server.
– The form of the rack support uprights must ensure the frontal screwing on of the telescopic or sliding rails.
– In connection with so-called assembly brackets frontally bolted telescopic rails or sliding rails.
  Two of these assembly brackets and/or the sliding rails are provided with a linear alignment possibility to ensure also an adjustment to different rack depths.
– No support of the cable management (delivered with the mounting kit).
– Climatic conditions.
  For the ventilation of the installed server a large extent unhindered air intake in the rack front and air discharge in the rear cover of the rack are necessary. In principle the ventilation concept plans that the necessary cooling is reached by the horizontal self-ventilation of the installed devices (air flow from the front to the rear).

– Power supply.
For the installation in 3rd-Party Racks it is to be made certain that appropriate socket strips are present.

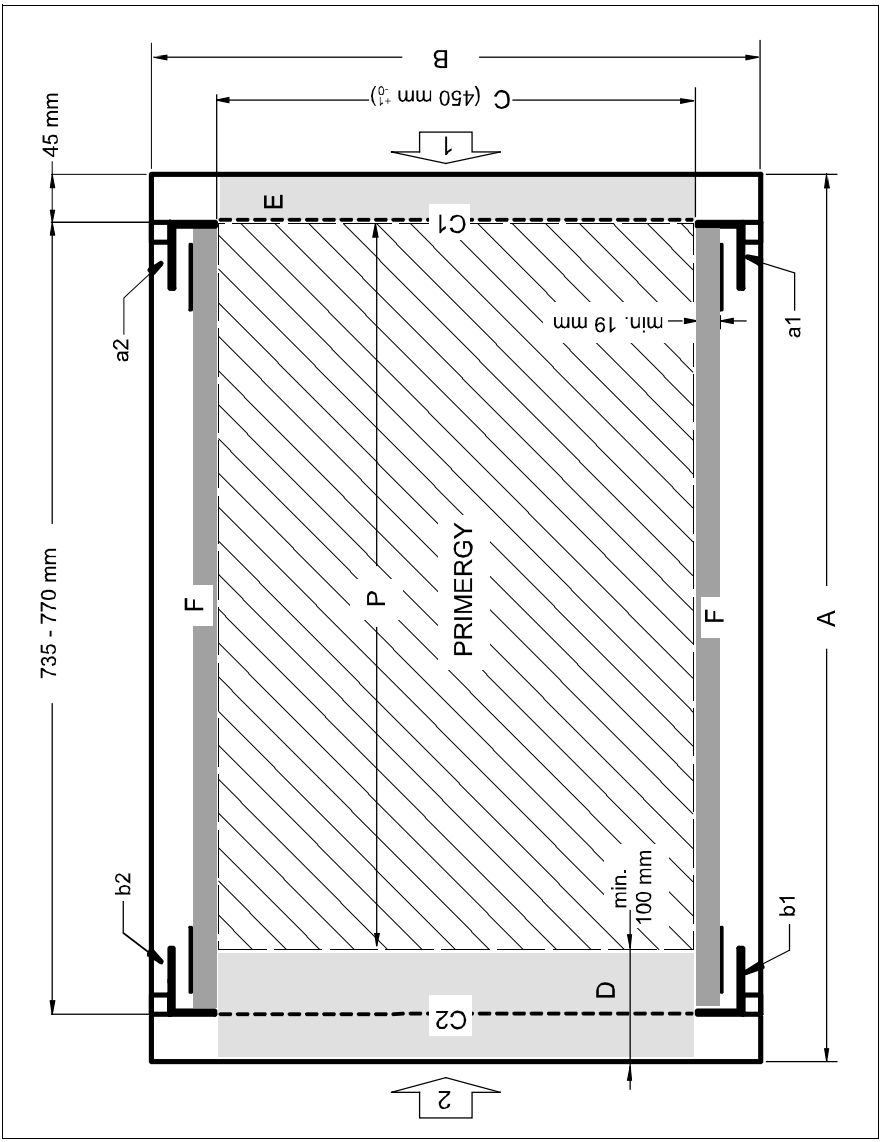

Figure 6: Mechanical conditions

4.4.1 Mounting into the PRIMECENTER Rack

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

– support bracket
– two telescopic rails (assembled)
– four assembly brackets (VL; VR; HL; HR are panched onto the brackets)
– eight plugwashers (figure 8 on page 33)

General information are provided in the Technical Manual for the PRIMECENTER Rack (see also “Related Publications” on page 87).

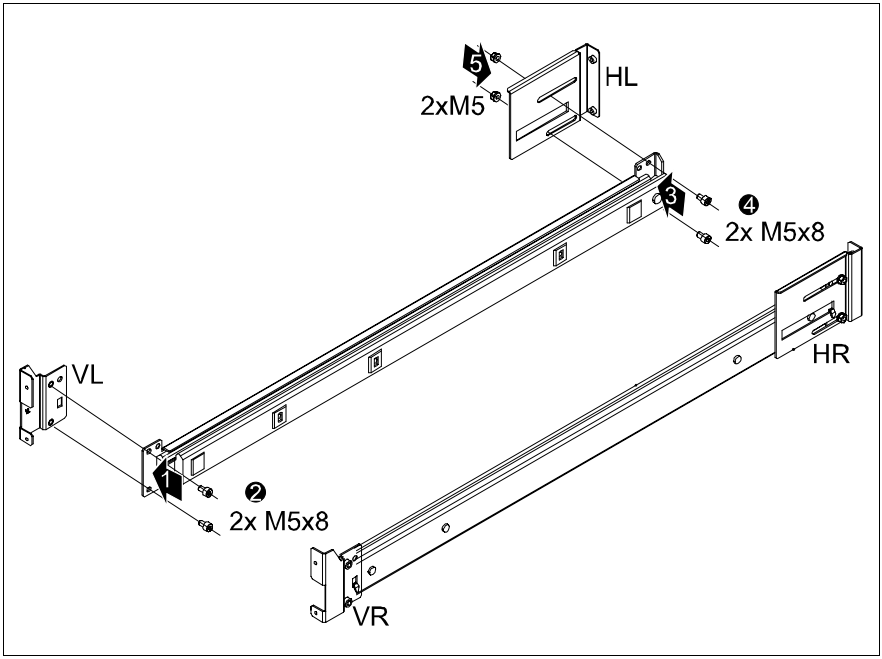

Figure 7: Prepare the telescopic rails

► Fasten the delivered assembly bracket VL on the front end of the left telescopic rail (1) with two screws M5x8 (2) as shown in figure 7.

► Fasten the delivered assembly bracket HL on the rear end of the left telescopic rail (3) with two screws M5x8 (4) and two hexagonal flange nuts M5 as shown in figure 7.

► Repeat the procedure also for the right telescopic rail and the corresponding assembly brackets VR and HR.

For mounting the left telescopic rail in the PRIMECENTER Rack, the delivered support bracket must first be mounted on the rear left support upright. The bracket must be mounted level with the lower edge of the device.

► Mount the support bracket at the appropriate height on the left rear support upright as described in the technical manual of the PRIMECENTER Rack.

To fasten the telescopic rails, no flange nuts are necessary since the assembly brackets are equipped with threaded holes. For adjustment in each case two plugwashers must be pre-mounted at the support uprights and the support bracket (see figure 8):

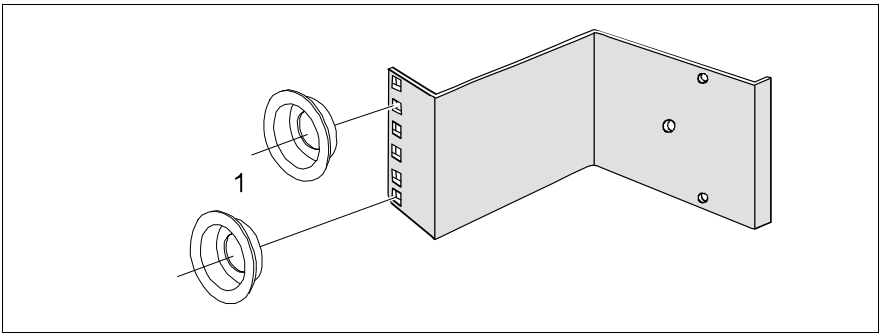

Figure 8: Mounting the plugwashers in the support bracket

► Place the plugwashers (1) in the holes of the support uprights and/or of the support bracket at the marked attachment points.

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

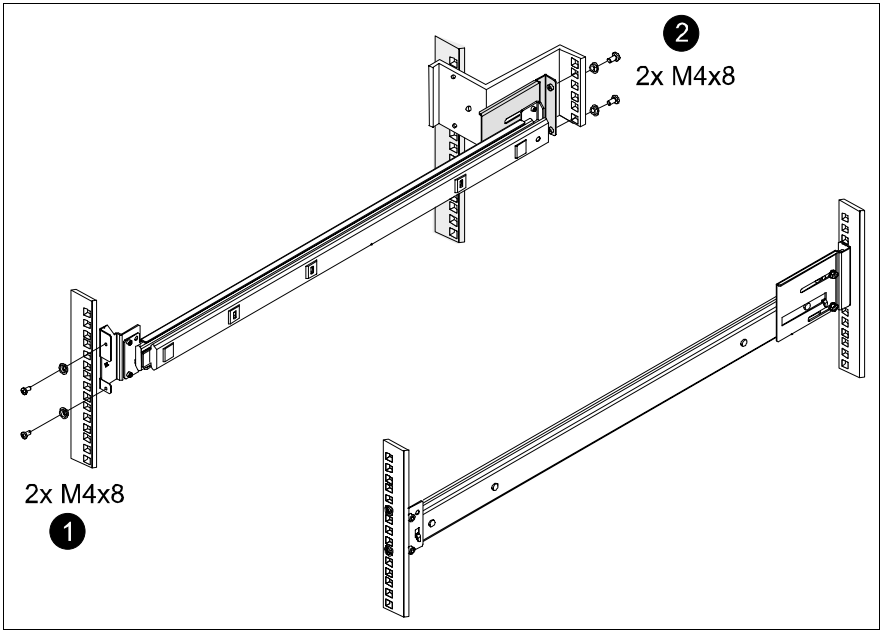

Figure 9: Mounting the telescopic rails into the PRIMECENTER Rack

- ► Using the supplied Allen key (No. 5) secure the end of the telescopic rails with the corresponding assembly brackets with two screws M4 each (1 and 2) in the rack at the support uprights and/or at the support bracket.

  Note with the fact that two plugwashers each are used in the appropriate openings of the support uprights and/or the support bracket (see figure 8 on page 33).

- ► Adjust if necessary the length of the telescopic rails by using the oblong holes of the assembly brackets HL and HR.
- ► Mount the PRIMECENTER Rack cable management (articulated cable guide) as described in the Technical Manual of the PRIMECENTER Rack.
- ► Mount the server (see section “Installing the Server” on page 44).
- ► Route the cables with the inserted server as described in the technical manual of the PRIMECENTER Rack.

4.4.2 Mounting into the DataCenter Rack

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

– support bracket
– two telescopic rails (assembled)
– assembly bracket HL (HL is panched onto the bracket)
– two plugwashers (figure 8 on page 33)

General information are provided in the Technical Manual for the DataCenter Rack (see also “Related Publications” on page 87).

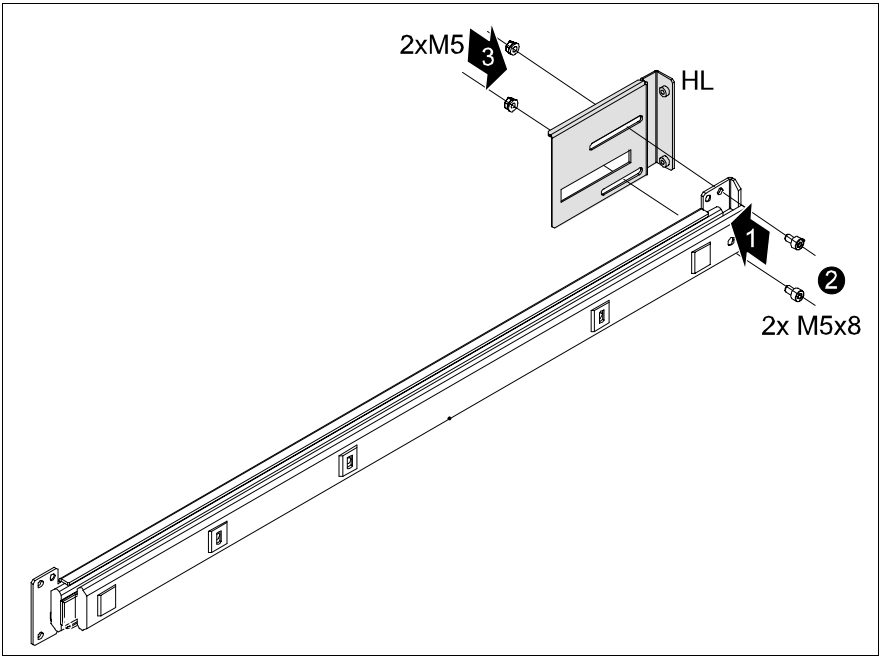

Figure 10: Prepare the left telescopic rail

► Fasten the delivered assembly bracket HL on the rear end of the left telescopic rail (1) with two screws M5x8 (2) and two hexagonal flange nuts M5 (3) as shown in figure 10.

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

- ► Using the mounting aid (stencil) mark the position of the attachment points for the telescopic rails and for the server (front panel) on the support uprights (five height units).

  Refer to the information on the mounting aid.

- ► Mount the support bracket at the appropriate height on the left rear support upright as described in the Technical Manual of the DataCenter Rack.

- ► Place the spring nuts to fasten the telescopic rails in the groove of the support uprights at the marked attachment points.

- ► Adjust the position of the nuts in the groove until they lock into the correct position.

The assembled telescopic rail with assembly bracket (HL) will be secured on the front left support upright and on the support bracket.

To fasten the left telescopic rail to the support bracket, no flange nuts are necessary since the assembly bracket (HL) is equipped with threaded holes. For adjustment two plugwashers must be pre-installed in the support bracket:

- ► Place the plugwashers at the marked attachment points in the corresponding holes of the support bracket (see figure 8 on page 33).

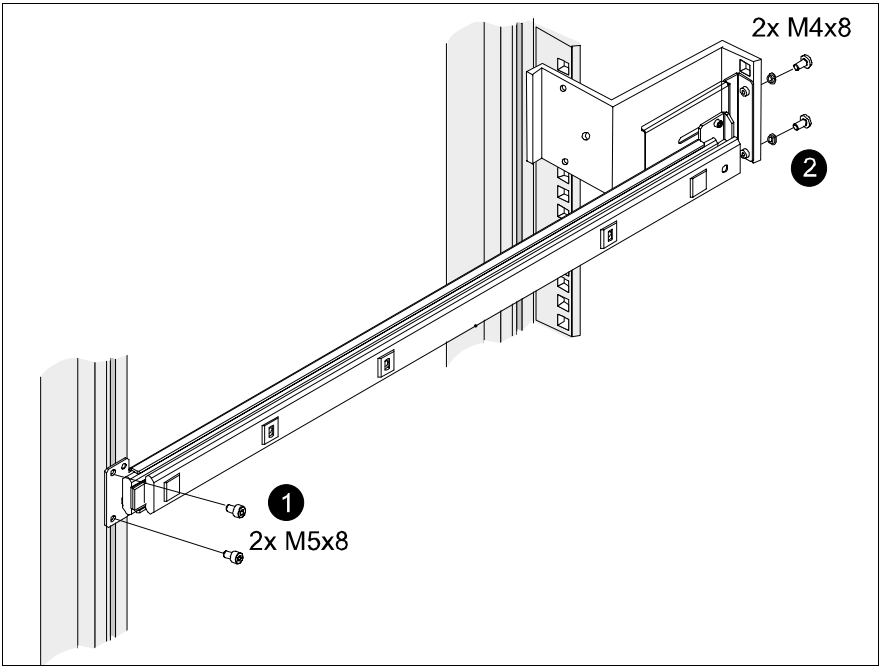

Figure 11: Mounting the telescopic rail into the DataCenter Rack

- ► Using the supplied Allen key (No. 5) secure the end of the telescopic rail without assembly bracket with two screws M5 (1) in the rack at the front left support upright.

  Please note that the guide nubs of the telescopic rail next to the spring nuts must fit into the holes in the support upright.

- ► Secure the end of the telescopic rail assembled with the bracket (HL) with two screws M4 (2) on the support bracket in the rack.

  Note with the fact that the two plugwashers are inserted in the appropriate openings of the support bracket (see figure 8 on page 33).

- ► Adjust if necessary the length of the telescopic rail by using the oblong holes of the assembly bracket (HL).

- ► Secure the second telescopic with two screws M5 each in the rack at the right support uprights.

  Please note that the guide nubs of the telescopic rail next to the spring nuts must fit into the holes in the support uprights.

- ► Mount the DataCenter Rack cable management (articulated cable guide) as described in the Technical Manual of the DataCenter Rack.
- ► Mount the server (see section “Installing the Server” on page 44).
- ► Route the cables with the inserted server as described in the Technical Manual of the DataCenter Rack.

4.4.3 Mounting into the Classic Rack

For mounting the server in the Classic (19-inch) Rack the following parts are necessary:

– two telescopic rails (assembled)
– protective hose for fibre channel optical waveguide cable

i General information are provided in the Technical Manual for the Classic (19-inch) Rack (see also “Related Publications” on page 87).

- ► Refer to the assembly instructions in the Technical Manual for the Classic (19-inch) Rack (see “Related Publications” on page 87).
- ► Using the mounting aid (stencil) mark the position of the attachment points for the telescopic rails and for the server (front panel) on the support uprights (five height units).

  Refer to the information on the mounting aid.
- ► Place the spring nuts to fasten the telescopic rails in the groove of the support uprights at the marked attachment points.
- ► Adjust the position of the nuts in the groove until they lock into the correct position.

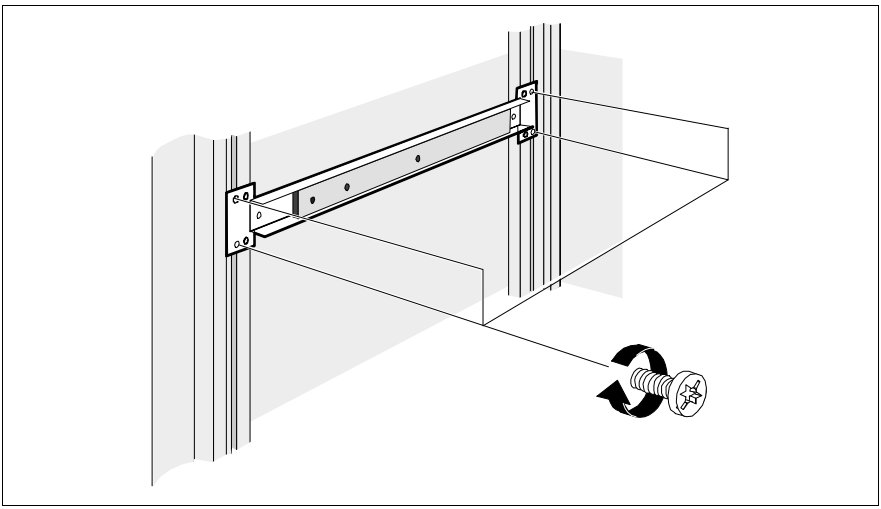

Figure 12: Mounting the telescopic rail into the Classic Rack

► Using the supplied Allen key (No. 5) secure the two telescopic rails with two screws M5 each in the rack at the right and left support uprights.

Please note that the guide nubs of the telescopic rails next to the spring nuts must fit into the holes in the support uprights.

► Mount the server (see section “Installing the Server” on page 44).

Mounting the Articulated Cable Carrier (Cable Management)

CAUTION!

In contrast to the instruction in the Technical Manual for the 19-inch (Classic) Rack the articulated cable carrier is fastened only to the support upright - **not at the server**.

► To secure the articulated cable carrier place two spring nuts in the groove of the rear right support upright. The mounting height must agree with the height of the connecting cables at the server.

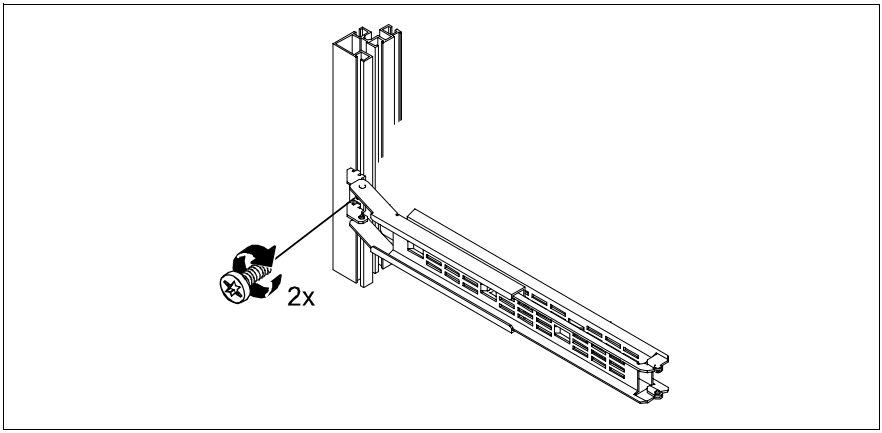

Figure 13: Mounting the articulated cable carrier

► Fix the articulated cable carrier with two mounting screws on the rear right support upright.

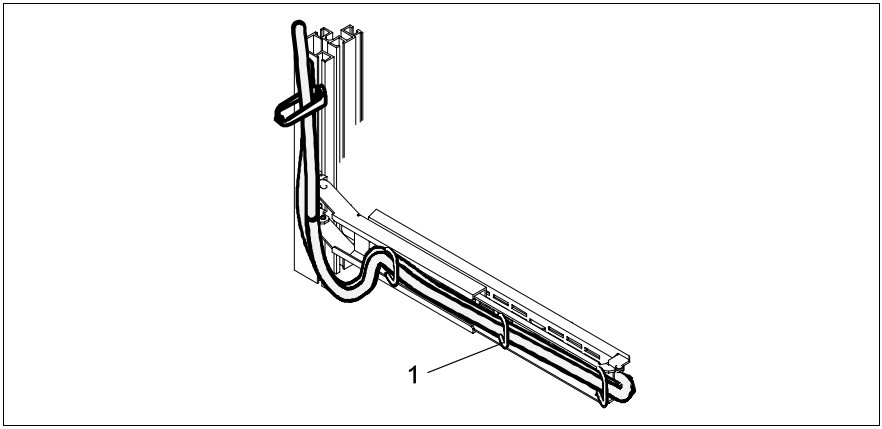

Figure 14: Routing the cables on the articulated cable carrier

► Route the cables as shown in the figure and secure them to the articulated cable carrier with cable ties (1).

CAUTION!

In order to avoid damages at fibre channel optical waveguide cables these must be encased with a protective hose (see Routing the Fibre Channel Optical Waveguide Cable).

Securing the cables to the articulated cable carrier ensures that, if the server is pulled out the articulated cable carrier extends themselves.

The server can be pulled out so later without further preparations (see figure 15).

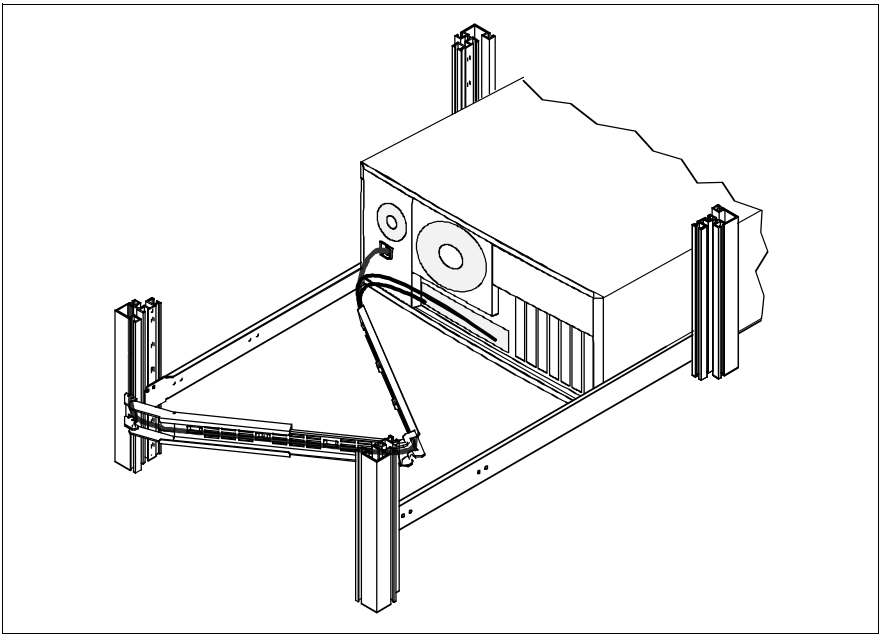

Figure 15: Server with articulated cable carrier: pulled out

Routing the Fibre Channel Optical Waveguide Cable

The protective hose (length approx. 1m) supplied with the mounting kit has a separable design.

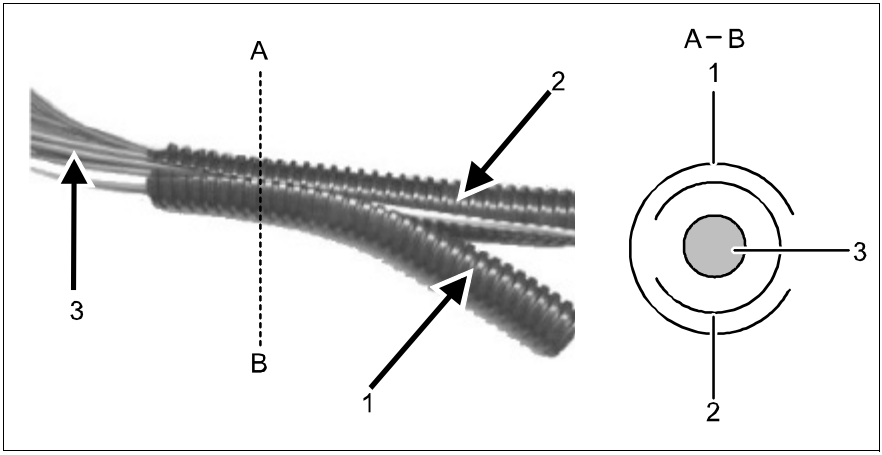

Figure 16: Mounting the protective hose

- ► Separate the outside protective sheath (1) from the inside sheath.
- ► Carefully laid the fibre channel optical waveguide cable (3) into the inside protective sheath (2).
- ► Push the outside protective sheath (1) over the inside protective sheath.

CAUTION!

The sheath openings must be arranged moving in opposite direction as shown in the sectional view A-B.

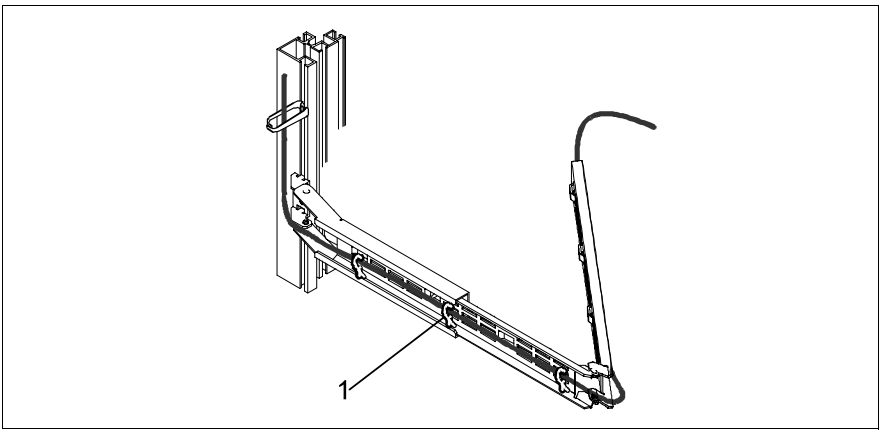

Figure 17: Routing the fibre channel optical waveguide cable with protective hose

► Route the fibre channel optical waveguide cable on the articulated cable carrier as shown in the figure and secure them with cable ties (1).

CAUTION!

Please make sure that the so protected fibre channel optical waveguide cable is routed in such a way on the articulated cable carrier that in the extended as well as in the folded condition of the carrier no damages can occur.

4.4.4 Mounting into 3rd-Party Racks

For mounting the server in a 3rd-Party Rack the following parts from the rack mounting kit are necessary:

– two telescopic rails (assembled)
– four assembly brackets (VL; VR; HL; HR are panched onto the brackets)
– possibly eight plugwashers (figure 8 on page 33)
– possibly protective hose for fibre channel optical waveguide cable

► Take the original manual of the rack manufacturer regarding the mechanical installation and/or the climatic conditions to assistance.

CAUTION!

With the installation in 3rd-Party Rack it is to be made certain that the air flow is ensured from the front to the rear in the rack.

- ► Mount the necessary manufacturer original parts (like support bracket or cable management).

  Sometimes a number of parts of the delivered mounting kit cannot be used because original parts of the 3rd-Party Rack are to be used.

- ► Mount the supplied four assembly brackets on the telescopic rails as described in section “Mounting into the PRIMECENTER Rack” on page 32.
- ► Mount the assembled telescopic rails with the brackets in the 3rd-Party Rack as described in section “Mounting into the PRIMECENTER Rack” on page 32.
- ► Mount the server (see section “Installing the Server” on page 44).
- ► Route the cables as described in the original manual of the Rack.

4.4.5 Installing the Server

CAUTION!

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

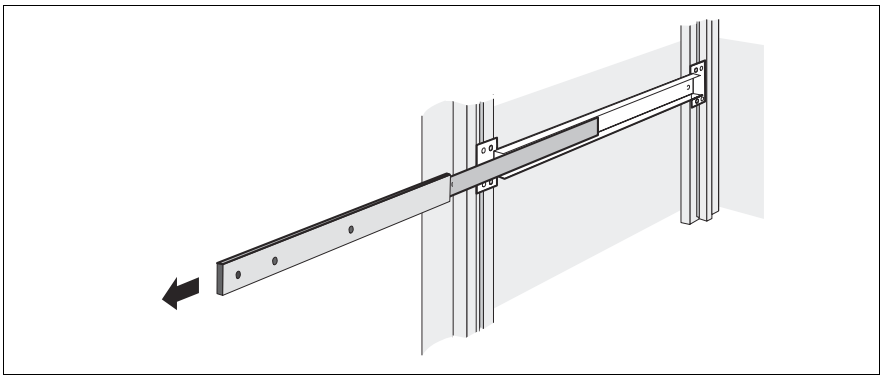

Figure 18: Pulling the telescopic bar out

- ► Pull the mounted telescope bars completely out toward the front. They must click into place so that you can no longer push them back.

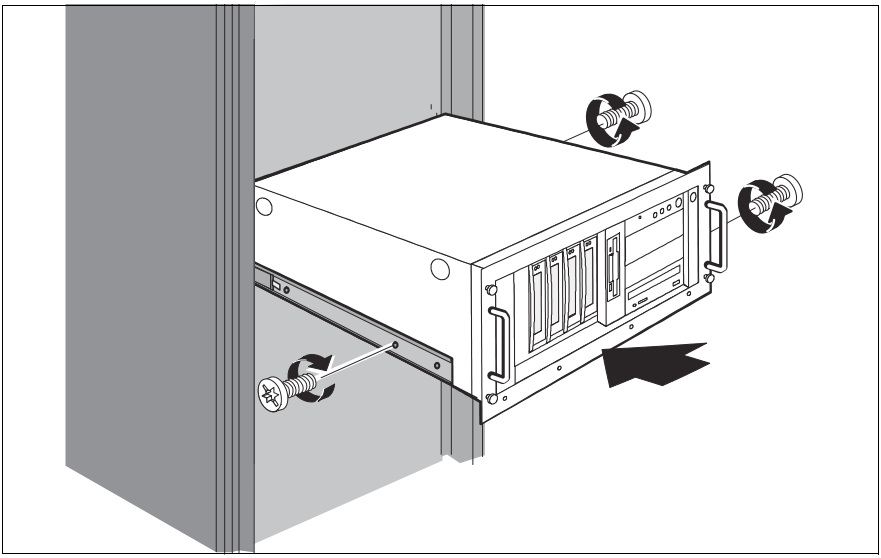

Figure 19: Installing the server

- ► Lift the server onto the two projecting telescope bars.
- ► Position the server so that the holes of the telescopic bars are in line with those of the server. When doing this, ensure that the telescopic bars are kept in a locked position.
- ► Secure the telescope bars to the server using three M4x6 screws: on the left side, one screw on the center hole and on the right side, one screw on the center hole and one screw on the rear hole.

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

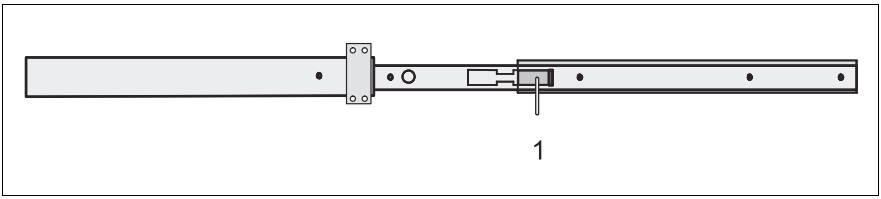

Figure 20: Telescope bar with safety spring

- ► Press in the safety springs (1) on both telescopic bars.

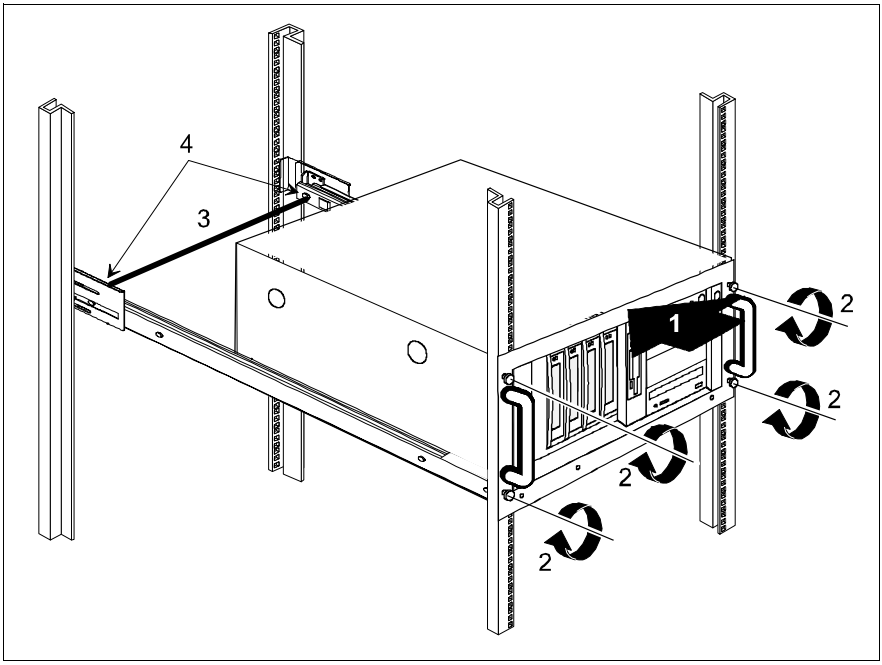

Figure 21: Mounting the spreader bar and fastening the server

- ► Slide the server into the rack (1).

  CAUTION!

  Never lift the server into the rack using the handles on the front panel.

- ► Place the cage nuts for fastening the front panel in the corresponding holes of the front support uprights and fasten the server using four knurled screws (2).
- ► The HDD modules are provided with a transport lock. Remove these before you setup the server (see figure 3 on page 26).
- ► If the server is installed in a PRIMECENTER or a DataCenter Rack, position with inserted server the supplied spreader bar (3) in the corresponding holes (4) of the two telescopic rails.

To remove the server, follow the same procedure in the reverse order.

4.5 Connecting Devices to the Server

The ports for external devices are on the rear of the server. Which additional ports are available on your server depends on the PCI boards installed.

The standard ports (figure 22) are marked with symbols, and some are color-coded.

1 Mouse port (PS/2) (green)
2 Parallel port (burgundy)
3 LAN port
4 Monitor port (VGA) (blue)
5 USB port 1 and 2 (black)
6 Serial port COM2 (turquoise)
7 Serial port COM1 (turquoise)
8 Keyboard port (PS/2) (purple)

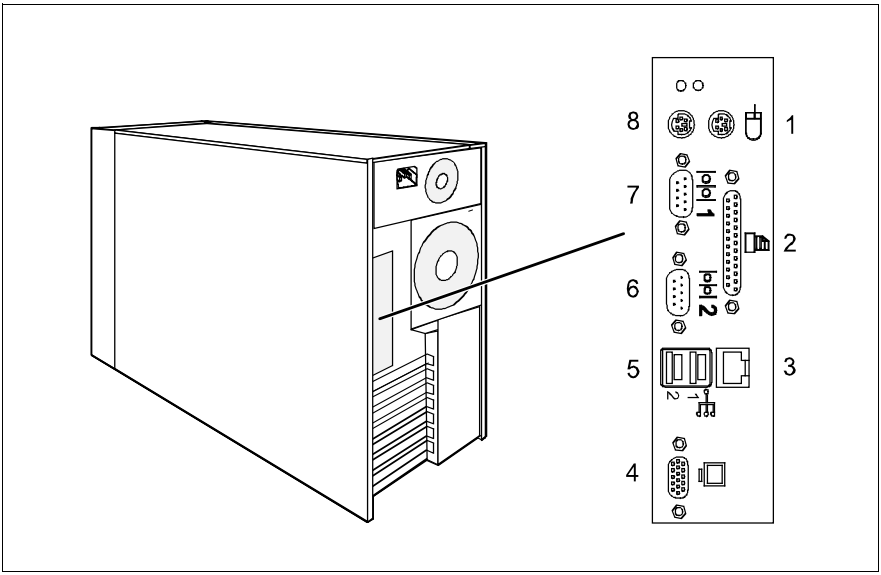

Figure 22: Floorstand model: ports

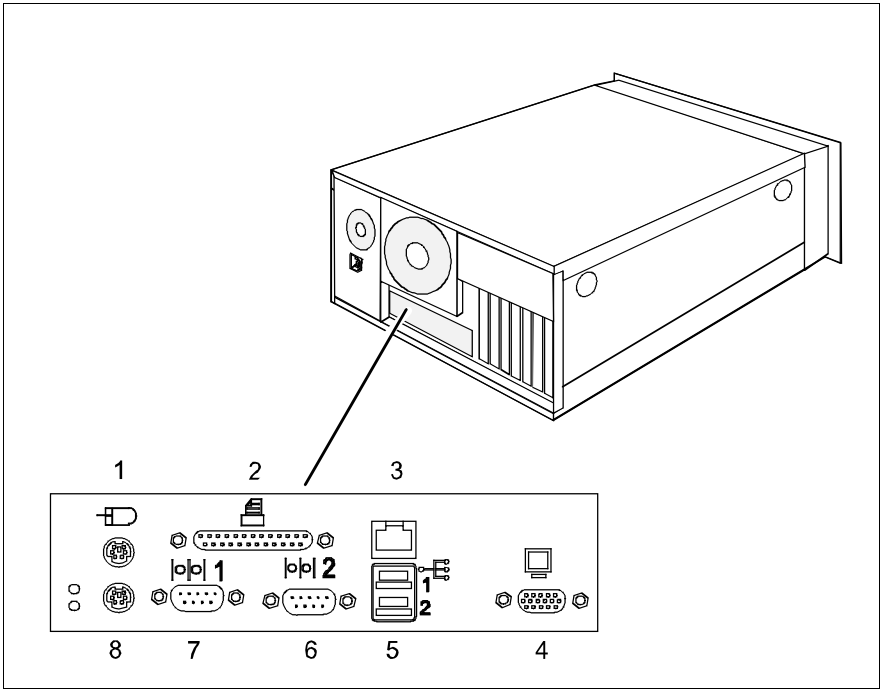

Figure 23: Rack model: ports

Some of the devices that you connect require special driver software (see the documentation for the connected device).

► Connect the data cables to the server and peripherals.

You can find an additional USB port on the front of the server (see figure 27 on page 55).

Connecting the keyboard, mouse and monitor

- Connect the monitor, the keyboard and mouse to the standard ports of the server (see figure 22 on page 47 and figure 23 on page 48).

If a separate graphics card is installed in a slot, the graphic controller on the system board is automatically deactivated. The corresponding monitor port can not be used. Plug the data cable of the monitor into the monitor port of the graphics card.

- Connect the power cable of the monitor to a grounded mains outlet of the in-house mains and/or into the mains socket strip of the rack.

CAUTION!

The rated current for the monitor can be found on the technical data label on the monitor or in the operating manual for the monitor.

4.6 Connecting the Server to the Line Voltage

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

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

CAUTION!

The server automatically adjusts to a mains voltage between 100 - 127 V and/or 200 - 240 V. The server may be place in operation only, if the mains voltage range set on the server corresponds to the local mains voltage.

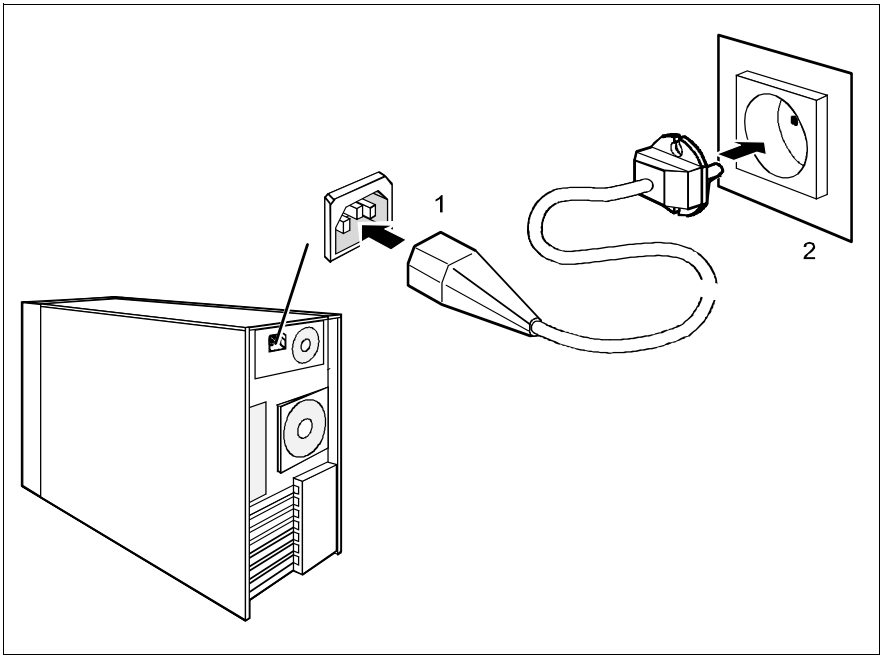

Figure 24: Connecting the server to the line voltage

- Connect the insulated connector of the power cable to power supply unit of the server (1), and the power plug to a grounded mains outlet (2) of the in-house mains and/or into the mains socket strip of the rack (see Technical Manual of the rack).

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

4.7 Instructions on Connecting/ Disconnecting Cables

CAUTION!

Be sure to read the documentation for the peripheral devices before connecting them.

Do not connect or disconnect data cables during a thunderstorm.

When removing a cable, always hold it by the plug.

Connect and disconnect the cables in the order described below.

Connecting leads

- ► Turn off all power and equipment switches.
- ► Unplug all power plugs of grounded power sockets.
- ► Plug all cables into the server and peripherals. Secure the data transmission cable connections (e. g. nut retention).
- ► Plug all data communication cables into the utility sockets.
- ► Plug all power cables into the grounded power sockets.

Disconnecting leads

- ► Turn off all power and equipment switches.
- ► Unplug all power plugs of grounded power sockets.
- ► Unplug all data communication cables from the utility sockets.
- ► Loosen the nut retentions on the connector housings and pull the corresponding cables out from the server and from the peripherals.

5 Preparation for Use and Operation

CAUTION!

Please note the safety instructions in chapter “Important Notes” on page 11.

5.1 Locking and Unlocking the Floorstand Model

Enabling access to the accessible drives

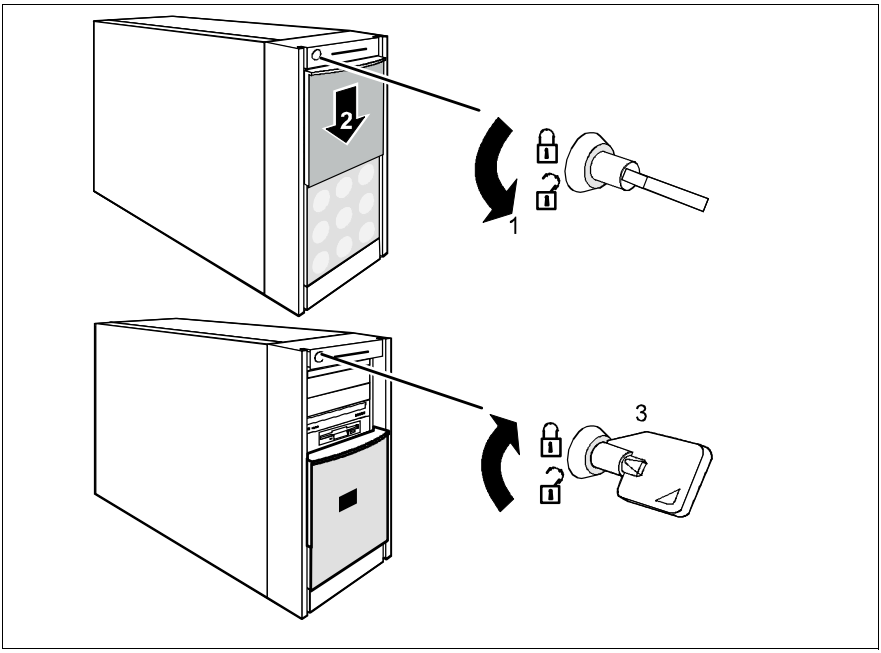

Figure 25: Accessing the accessible drives

- ► Unlock the server (1).
- ► Slide the drive cover downwards (2).

To prevent access to the HDD modules, the server can be locked again (3). In this case, the drive cover cannot be pushed into the top position and the hard disk drive cover cannot be removed.

Enabling access to the HDD modules

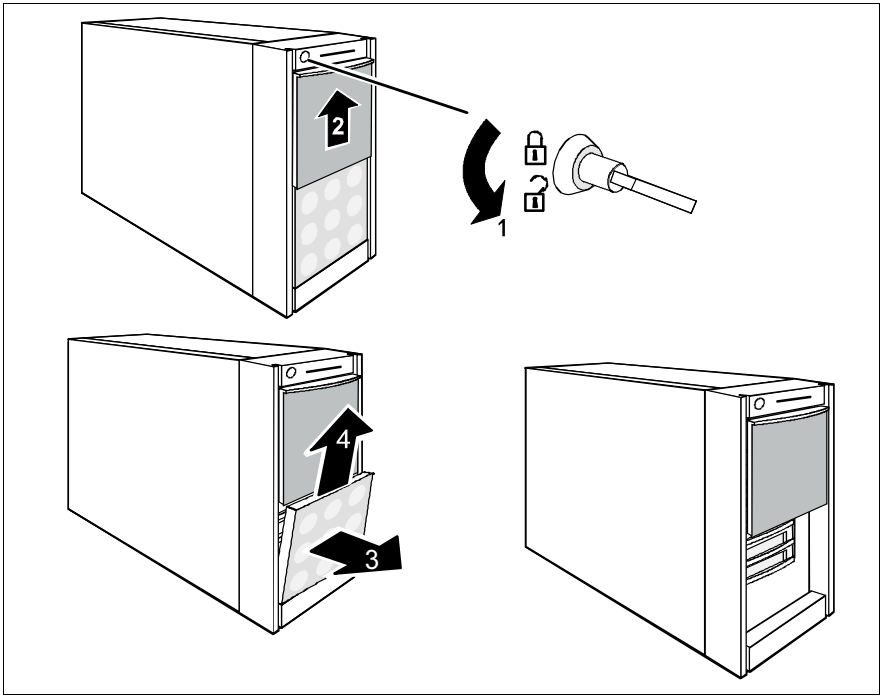

Figure 26: Accessing the HDD modules

- Unlock the server (1) and remove the key.
- Slide up the drive cover as far as possible (2).
- Remove the hard disk drive cover (3 + 4).

Remount the hard disk cover and close the server in the reverse order.

5.2 Operating and Indicator Elements

5.2.1 The Front

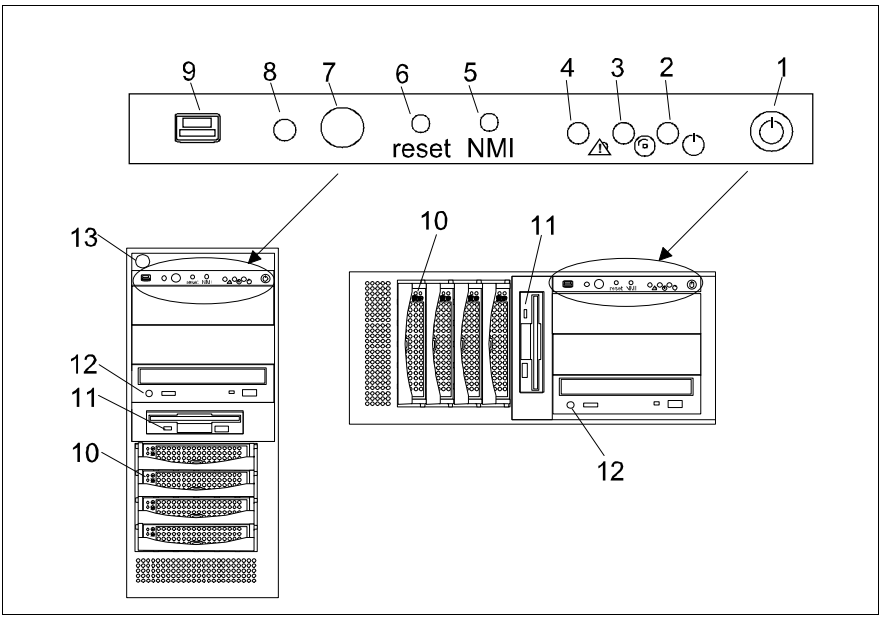

Figure 27: The front

1 ON/OFF button
2 Power-on indicator
3 Hard disk drive active indicator
4 Global Error indicator
5 NMI button
6 Reset button
7 Identification button (= ID button)
8 Identification LED (= ID LED)
9 USB port
10 Hard disk drive control indicators (figure 28)
11 Floppy disk drive access indicator
12 CD-ROM/DVD-ROM/CD burner access indicator
13 Key lock (floorstand model only)

Operating elements

Key lock

To prevent access to the drives, the server can be locked.

ON/OFF button

When the system is switched OFF, it can be switched ON 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 completely disconnect it from the mains voltage, remove the power plug from the socket.

NMI NMI button

Please, do not use it! Using only from service.

reset Reset button

Pressing the reset button reboots the system.

ID ID button

Pressing the ID button lights up the ID LEDs (blue) on the front and on the rear of the server. The two ID LEDs are synchronized.

Indicators on the front panel

Power-on/standby indicator (green/orange)

lights green when the server is switched ON and ready for operation.

lights orange when the server is connected to the mains voltage, but it is switched OFF (standby mode).

Hard disk drive busy indicator (green)

An internal SCSI drive (HDD or magnetic tape) is being accessed.

Global Error indicator (orange)

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

Flashes orange when a critical event has occurred or a prefailure event has been recognized. Users can check BIOS Setup, system- and eventlog or via *ServerView* for event details. The indicator also flashes in standby mode.

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

ID ID LED (blue)

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

The ID LED can be selected also via *ServerView* and his status is also reported to *ServerView*.

Indicators on the drives

CD-ROM/DVD-ROM/CD burner access indicator

lights green when the storage medium is being accessed.

Floppy disk drive access indicator

lights green when the storage medium is being accessed.

Hard disk drive control indicator

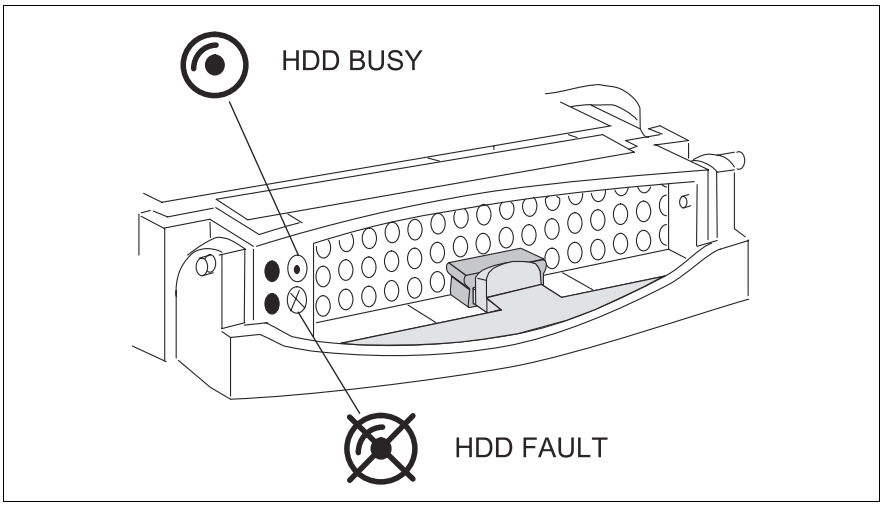

Figure 28: HDD Module: indicators

LED green	HDD BUSY – lights: HDD in active phase – does not light: HDD inactive
LED orange	HDD FAULT (in conjunction with a RAID controller) – does not light: No HDD Error – lights: HDD Faulty or Rebuild Stopped (drive defective/needs replacing, a rebuild process was stopped or the HDD module is not correctly inserted) – slow blink: HDD Rebuild (a rebuild is carried out by the RAID controller after changing a hard disk drive) – fast blink: HDD Identify – four fast blinks/pause: HDD Predicted Fault – two fast blinks/pause: HDD Hot Spare (Hot spare drive active. The corresponding drive has failed).

5.2.2 The Rear Side

Indicators on the Connection Panel

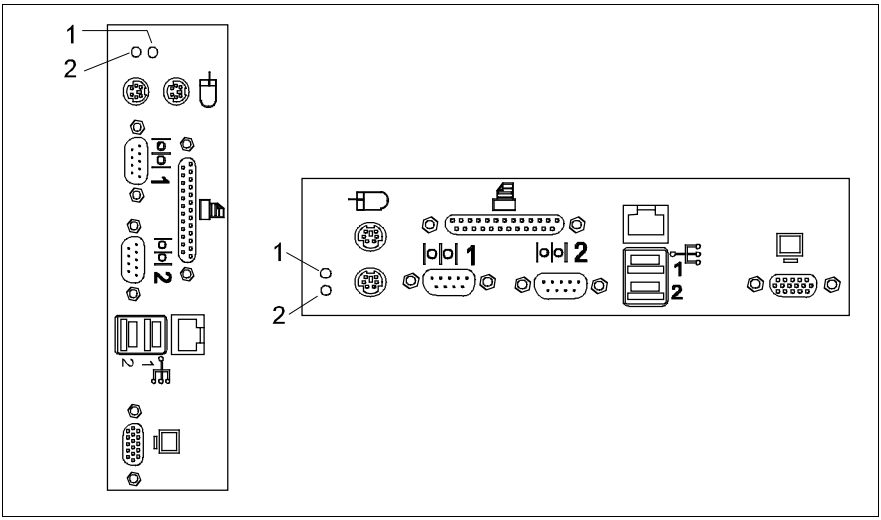

Figure 29: Connection panel: indicators

1 Global Error indicator (orange)

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

Flashes orange when a critical event has occurred or a prefailure event has been recognized. Users can check BIOS Setup, system- and eventlog or via *ServerView* for event details. The indicator also flashes in standby mode.

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

2 ID LED (blue)

Pressing the ID button lights up the ID LEDs (blue) on the front and on the rear of the server. The two ID LEDs are synchronized.

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

The ID LED can be selected also via ServerView and his status is also reported to ServerView.

Indicators on the hot-plug power supply units

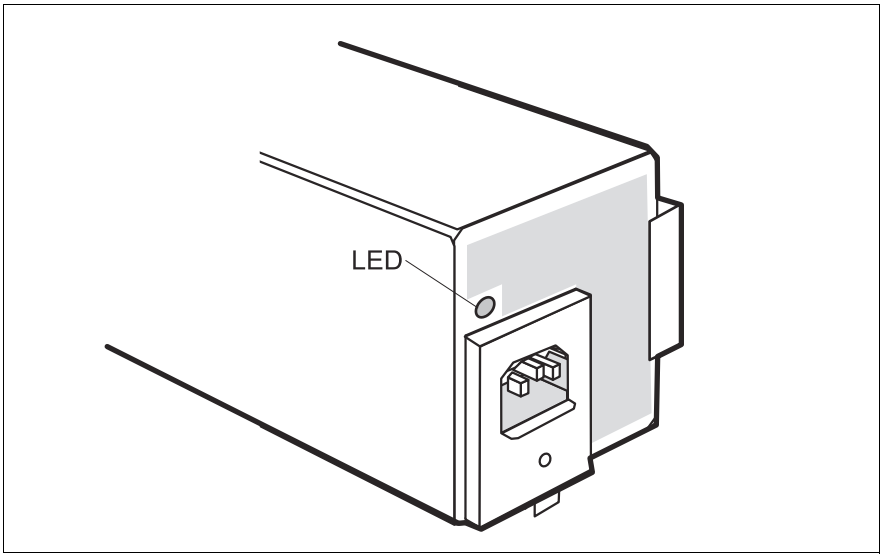

Figure 30: Hot-plug power supply unit

If the power cable is connected, the usability of the power supply unit (operating status) is indicated by the LED.

LED	State	Meaning
green	ON	Power supply unit OK
	OFF	Power supply unit error

5.3 Switching the Server ON/OFF

CAUTION!

If after switching ON the server there is nothing but flickering stripes on the screen, switch the server OFF immediately (see chapter “Problem Solutions and Tips” on page 67).

The ON/OFF button does not disconnect the server from the mains voltage. To completely disconnect it from the mains voltage, remove the power plug from the socket.

Switching the server ON

The power-on indicator (position 2 on figure 27 on page 55) lights orange (standby mode).

– **First system installation:**

► Press the ON/OFF button (position 1 in figure 27 on page 55).

► Insert the *ServerStart*-CD and/or an installation disk in the corresponding drive.

► Follow the instructions on the monitor (see also section “Configuration with ServerStart” on page 62 and/or section “Configuration without ServerStart” on page 63).

– **System already installed**:

► Press the ON/OFF button (position 1 in figure 27 on page 55).

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

Switching the server OFF

Power-on indicator (position 2 on figure 27 on page 55) lights green.

► Shut down the operating in an orderly manner.

► Press the ON/OFF button (position 1 in figure 27 on page 55) and/or send a corresponding controlling signal (see Other ON/OFF possibilities).

The server switches OFF and goes in standby mode.

Other ON/OFF possibilities

In addition to 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 automatically switched ON or OFF at a time specified in the *ServerView* programme.

– **Ring indicator**

  The server is switched ON via an internal or external modem.

– **Wakeup On LAN (WOL)**

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

– **After power failure**

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

5.4 Configuring the Server

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

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

5.4.1 Configuration with ServerStart

Configuring HostRAID

The server is equipped with an onboard SCSI controller with HostRAID functionality. Configure HostRAID **before** you begin with *ServerStart*.

To configure HostRAID the controller has its own RAID-Select Utility. For further information see “Adaptec HostRAID User’s Guide“ on the *ServerBooks* CD (choose *Controllers* from the menu).

With the *ServerStart*-CD provided, you can configure the server and install the operating system in a convenient manner. The menu-guided configuration includes the server configuration with the *SCU* and the RAID controller configuration with the *GAM* (Global Array Manager) and/or Adaptec Storage Manager.

Note on *SCSI-ID*:

Please note that the SCSI-IDs for the hot-swapable hard disk drives are permanently assigned (i.e. in the order 0, 1, 2, 3 from the bottom to top).

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

To find out how to operate *ServerStart* and for further information, refer to the corresponding CD booklet (see “Related Publications” on page 87).

If you use *ServerStart*, you can skip the following sections on how to configure the server and install the operating system. Continue with section “Cleaning the Server” on page 64.

5.4.2 Configuration without ServerStart

Configuring HostRAID

The server is equipped with an onboard SCSI controller with HostRAID functionality.

To configure HostRAID the controller has its own RAID-Select Utility. For further information see “Adaptec HostRAID User’s Guide“ on the *Server-Books* CD (choose *Controllers* from the menu).

Configuring the PCI-RAID controller

If your server is fitted with a RAID controller, you must configure it as described in the related documentation.

Configuring the PCI-SCSI controller

Configure the PCI-SCSI controller as described in the manufacturer's documentation. Further information is available on the driver diskettes provided.

Installing the operating system

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

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

5.5 Cleaning the Server

CAUTION!

Switch the server off, and pull the power plug out of the grounded-contact power socket.

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 free.

Use a cloth for disinfection to clean the keyboard and the mouse.

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

6 Property and Data Protection

The floorstand model is protected against unauthorized opening with the lock. The server is also fitted with an intrusion detection switch which enables the *ServerStart* programme to detect and log any removal of the left cover or housing cover and the cover for the HDD modules.

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

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

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 *System Security* menu in *BIOS Setup* offers you various options for protecting your data from unauthorized access. By combining these options, you can achieve optimum protection for your system.

You will find a detailed description of the *System Security* menu and how to assign passwords in the manual for the *BIOS Setup* and on the ServerBooks CD (see also “Related Publications” on page 87).

Preventing unauthorized BIOS Setup calls

You can activate this protection by selecting the value *Set Setup Password* in the *System Security* menu. After pressing a cursor key (right/left) you are prompted to enter the setup password twice.

Preventing unauthorized system access

You can activate this protection by selecting the value *Set System Password* in the *System Security* menu. After pressing a cursor key (right/left) you are prompted to enter the system password twice.

You can also lock the keyboard during the boot procedure by selecting the value *keyboard* in the *System Password Mode* menu command.
Booting then continues until the first keyboard input by the user is required. You must now enter the system password „blind“ (you are not prompted to do so on the screen) **and** then press the key Enter. The „keyboard locked“ status

is indicated by the three keyboard LEDs which flash on and off alternately. Once you have entered the correct system password and pressed the key Enter, the keyboard LEDs go off and the boot procedure continues.

Preventing unauthorized access to the settings of boards with their own BIOS

You can activate this protection by selecting the value *Extended* for the *Setup Password Lock* field in the *System Security* menu.

Preventing system booting from the diskette drive

You can activate this protection by selecting the value *None* for the *Legacy Floppy Drive A* field in the *Disk Drives* menu.

Preventing unauthorized writing of diskettes

You can activate this protection by selecting the value *Write Protect All Sectors* or the value *Write Protect Boot Sector* for the *Disk Drive Control* field in the *System Security* menu.

Protecting BIOS from overwriting

This function is currently not implemented.

Protecting the sever from being switched on by a modem

You can activate this protection by selecting the value *Disabled* for the *System wake-up event/Modem Ring indicator* field in the *Power Management* menu.

Protecting the sever from being switched on by an onboard LAN controller/PCI LAN card

You can activate this protection by selecting the value *Disabled* for the *System wake-up event/PCI Power Management* field in the *Power Management* menu.

Protecting the sever from being switched on by the internal system clock

You can activate this protection by selecting the value *Disabled* for the *System wake-up event/RTC Alarm* field in the *Power Management* menu.

Protecting server from being switched off by a programme

This function is currently not implemented.

7 Problem Solutions and Tips

CAUTION!

Observe the safety information in the manuals ”Security and Ergonomics“ and „Warranty“ and in chapter “Hardware Installation” on page 23.

If a problem occurs, try to resolve it as described:

– in this chapter,
– in the documentation for the attached devices,
– in the help systems of the software used.

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

► Make a note of the steps and the circumstances that led to the fault. Note also any error message which may have been displayed.

► Switch the server OFF.

► Contact our Service organization.

7.1 Power-on Indicator Remains Dark

The power-on indicator remains dark after switching ON:

Power cable not connected correctly

► Make sure that the power cable is correctly connected to the server and to the grounded power socket.

Power supply overloaded

► Pull the server power plug out of the power socket.

► Wait a few seconds and plug the power plug into the power socket again.

► Switch your server ON.

7.2 The Server Switches Itself OFF

Server management has detected an error

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

7.3 The Monitor Remains Dark

Monitor is switched OFF

- ► Switch ON your monitor.

Power saving has been activated (screen is blank)

- ► Press any key on the keyboard.

  or

- ► Deactivate screen blanking (screen saver). Enter the appropriate password.

Brightness control is set too dark

- ► Adjust the brightness control to increase the brightness. For detailed information, please 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 power socket.
- ► Check whether the monitor cable is properly connected to the server and monitor (if it is connected with a plug). If a separate graphics card is installed in the server, then the monitor cable must be connected to the connection on this graphics card.
- ► Switch ON the monitor and the server.

7.4 Flickering Stripes Across the Monitor

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 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 to the corresponding software for the monitor controller for how to set the correct horizontal frequency for your monitor, and follow the procedure accordingly.

7.5 No Monitor Display or Display Drifts

The wrong horizontal frequency and/or resolution has been selected for the monitor or for the application programme.

- ► Find out which horizontal frequency your monitor 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 to the corresponding software for the monitor controller for how to set the correct horizontal frequency for your monitor, and follow the procedure accordingly.

7.6 No Mouse Pointer Displayed on the Monitor

Mouse driver not loaded

- ► Check whether the mouse driver is properly installed and is present when the application programme is started. Detailed information can be found in the documentation for the mouse, the operating system, or the application programme.

Mouse controller disabled

The mouse controller on the system board must be enabled if you use the supplied mouse.

- Check in the *BIOS Setup* that the mouse controller is *Enabled*.

7.7 Floppy Disk Cannot be Read or Written onto

- Check whether the write protection of the floppy disk is enabled.
- Check the entry for the floppy disk drive in the *BIOS Setup*.
- Check in the *BIOS-Setup* whether the floppy disk drive controller and write permission are enabled (see technical manual for system board at the PRIMERGY ServerBooks-CD).

7.8 Time and/or Date are Incorrect

- Set the time and/or date in the operating system or in the *BIOS-Setup*.

If the time and date are repeatedly wrong when you switch on your server, you must change the lithium battery. Contact our Service group.

7.9 System Fails to Boot

The system fails to boot after installing a new hard disk drive.

SCSI configuration incorrect (Ultra Wide SCSI Controller)

- In the SCSI configuration menu check the settings for the hard disk drives (*SCSI Device Configuration*) and the settings under *Advanced Configuration Options*.

7.10 Drives ”dead“ at System Boot

This error message may occur when the server has a RAID controller:

RAID controller configuration incorrect

► Check and correct the settings for the drives with the RAID controller utility.

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

7.11 Added Drive Defective

This error message may occur when the server has a RAID controller:

RAID controller is not configured for this hard disk drive

The drive was installed with the system switched OFF.

► Reconfigure the RAID controller for the drive with the corresponding utility. Information is contained in the documentation on the RAID controller.

or

► Re-insert the HDD module with the system switched ON into a free module bay.

If the hard disk drive continues to be shown as defective, then replace it (see section “Installing/Removing HDD/Dummy Module” on page 77).

7.12 Error Messages on the Monitor

The meanings of the error messages are explained in the manual for *BIOS Setup* and in the documentation for the relevant components and programmes on the PRIMERGY ServerBooks CD.

8 Hot-plug/Hot-swap Components

This chapter describes how to handle hot-plug or hot-swap components and/or how to modify your server hardware (e.g. installing/removing hot-plug power supply units, hot-swap HDD modules).

Upgrading or replacing fix installed components are described in the Service Manual and may only be performed by maintenance staff.

8.1 Hot-plug Power Supply Units

As an option, the fixed power supply unit can be replaced with one or two hot-plug power supply units (upgrading may only be performed by maintenance staff).

With two hot-plug power supply units installed, if a defect occurs in one power supply unit, the other power supply unit ensures unimpaired further operation. The defective power supply unit can be replaced during operation (hot-plug).

CAUTION!

Please observe the safety information in chapter “Important Notes” on page 11.

8.1.1 Replacing the Hot-plug Power Supply Unit

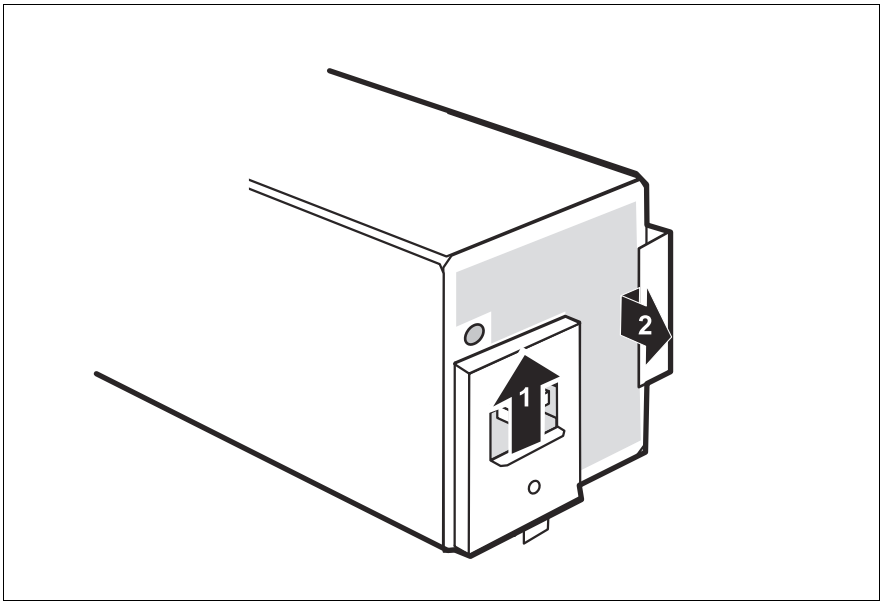

Figure 31: Unlocking and removing the power supply unit

CAUTION!

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

- ► Remove the cable from the installed power supply unit.
- ► Push the locking bar of the installed power supply unit towards the power plug (1).
- ► Hold the bar firmly and pull the power supply unit out of the location in the direction marked (2).
- ► Push the locking bar of the power supply unit that has to be installed towards the power plug and hold it in this position.
- ► Insert the power supply unit into the free location.
- ► Lock the power supply unit with the bar such that it engages firmly in the groove of the mounting frame.

► Connect the power supply unit to the power supply.

Please ensure that the power supply unit engages correctly in the mounting frame and is locked in position.

This is the only way to avoid the power supply unit being shaken out of its mountings and damaged during transport.

8.1.2 Adding a Hot-plug Power Supply Unit

A second hot-plug power supply unit can be added to achieve redundant power supply. If one power supply unit fails, the second power supply unit ensures unimpaired further operation.

The location for an additional power supply unit contains a dummy unit. This dummy unit must be removed before installing a second power supply unit.

► Remove the dummy unit from the second power supply unit location.

Installing/removing the dummy unit occurs in the same way as the power supply unit (see section “Replacing the Hot-plug Power Supply Unit” on page 74).

CAUTION!

Keep the dummy module for future use. If the power supply unit is removed and not replaced with a new unit, then the dummy unit must be reinstalled due to cooling, the applicable EMC regulations (regulations on electromagnetic compatibility) and fire protection.

► Insert the second power supply unit into the free location (see section “Replacing the Hot-plug Power Supply Unit” on page 74) and connect it to the power supply (see section “Connecting the Server to the Line Voltage” on page 49).

8.2 Hot-swap Hard Disk Drive

Up to four Ultra 3-Wide U320-SCSI hard disk drives can be installed into the PRIMERGY TX150 server.

The hard disk drives are built on a carrier which allows defective drives to be replaced (hot-swap) or new drives to be added during operation. The hard disk drive and the carrier constitute the hard disk drive module (HDD module).

The hot-swap function can only be performed together with a corresponding RAID configuration. Further information about the RAID configuration or RAID level can be found in the RAID controller documentation.

A hard disk drive may only be replaced if it is inactive (see description of the LEDs under “Hard disk drive control indicator” on page 58).

The hot-swap procedure increases the availability of the system operation and guarantees a high degree of data integrity and protection against failure.

8.2.1 Handling Hard Disk Drives HDD Modules

Hard disk drives incorporated in the HDD modules are highly sensitive electro-magnetic devices and must be handled with great care. It is extremely likely that an incorrect handling will lead to a partially and/or total failure of the hard disk drives.

These failures will result in data errors and to loss of data or to total destruction of the hard disk drive.

Please observe following rules, which will help to avoid the occurrence of this type of problems:

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

CAUTION!

The HDD module must be acclimatized in its operating environment for an acclimatization time.

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

Table 3: Acclimatization time for the HDD module

- Always put the HDD module down carefully, with its largest surface facing downwards, to avoid the danger of tipping over.

8.2.2 Installing/Removing HDD/Dummy Module

CAUTION!

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 which is operating in RAID level 1 or 5.

CAUTION!

The HDD modules must be marked clearly so that they can be put back into its original place after an upgrade. If this is not taken into account, existing data can be destroyed.

The hard disk drives which can be ordered for the PRIMERGY TX150 are delivered as HDD modules which include the hard disk drive preinstalled in a carrier. Only a service technician may remove a hard disk drive from the carrier.

Free slots are provided with a dummy module (an empty carrier) which must be removed before installing an additional HDD module.

Removing the dummy module

- Press the upper and lower tabs on the dummy module together (see figure 32 on page 78) until the locking mechanism disengages, and remove the dummy module from the slot.

Installation of the dummy module occurs in reverse order.

CAUTION!

Keep the dummy module for future use. If the HDD module is removed again and not replaced with a new module, then the dummy module must be reinstalled due to cooling, the applicable EMC (electromagnetic compatibility) regulations and fire protection.

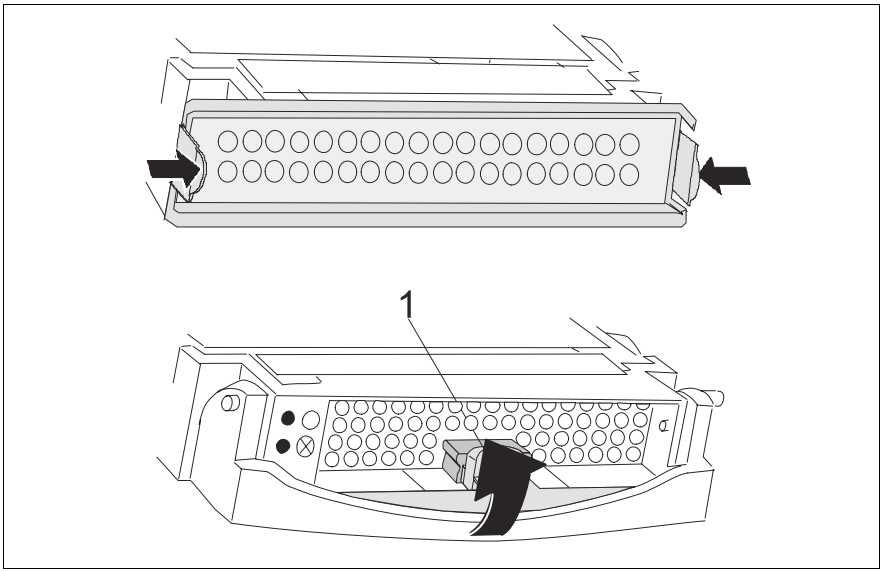

Figure 32: Dummy module and corresponding HDD module

Installing the HDD module

- Solve the locking mechanism by pressing the locking button (1).

  If the HDD modules are provided with a transport lock (1 in figure 3 on page 26) remove these before you open the locking mechanism.

- Push the handle of the HDD module fully in the direction of the arrow.

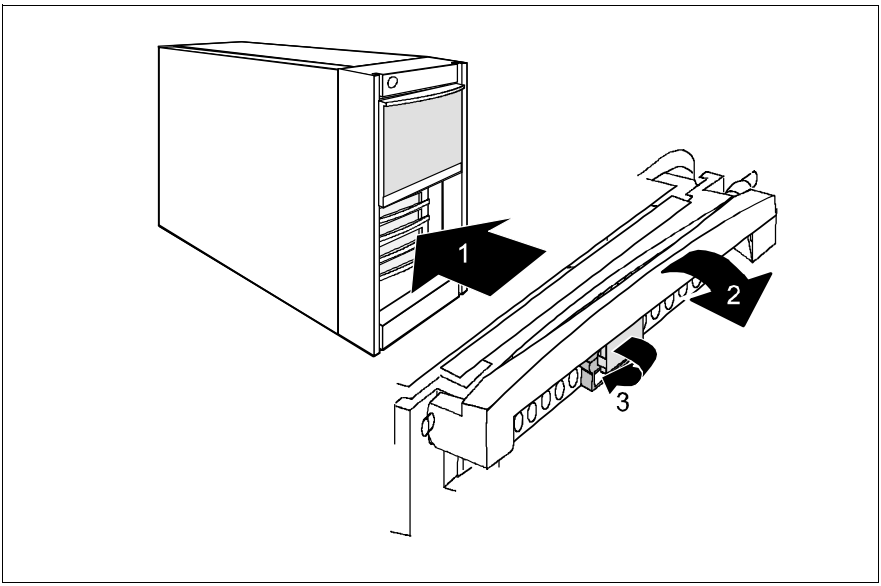

Figure 33: Installing the HDD module

- ► Insert the HDD module with the opened handle carefully into the empty slot (1) until it stops.
- ► Push the module handle completely in the original position (2) until the locking mechanism (3) engages.

Removal is performed in the reverse order.

8.2.3 Hot-swap for HDD Modules

CAUTION!

The hot-swap function can only be performed together with a corresponding RAID configuration.

Only pull out a HDD module if the drive is **not being accessed**. Observe the control LEDs for the corresponding HDD module (see “Hard disk drive control indicator” on page 58).

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

- If you want to pull out a HDD module which is not defective, it must be set to offline via software (RAID controller configuration software).
- Pull out the HDD module (defective/not defective) by 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 pulled out and for the hard disk drive to come to a stop.
- Pull out the HDD module right.
- Insert the new HDD module.

When you have removed the HDD module and are not replaced with a new module, then insert a dummy module into the empty slot. Make sure that the retaining clips of the dummy unit engage correctly in the location.

Abbreviations

AC
Alternating Current

ANSI
American National Standard Institute

ASR&R
Automatic Server Reconfiguration and Restart

BIOS
Basic Input-Output System

BMC
Baseboard Management Controller

CC
Cache Coherency

CD
Compact Disk

CD-ROM
Compact Disk-Read Only Memory

CHS
Cylinder Head Sector

CMOS
Complementary Metal Oxide Semiconductor

COM
Communication

CPU
Central Processing Unit

DC
Direct Current

DIMM
Dual Inline Memory Module

DIP
Dual Inline Package

DMA
Direct Memory Access

DMI
Desktop Management Interface

ECC
Error Checking and Correcting

ECP
Extended Capabilities Port

EEPROM
Electrically Erasable Programmable Read-Only Memory

EMC
ElectroMagnetic Compatibility)

EMP
Emergency Management Port

EPP
Enhanced Parallel Port

ESD
ElectroStatic Discharge

FPC
Front Panel Controller

FRU
Field Replaceable Unit

FSB
Front Side Bus

GAM
Global Array Manager

GUI
Graphical User Interface

HDD
Hard Disk Drive

HSC
Hot-Swap Controller

I²C
Inter-Integrated Circuit

I/O
Input/Output

ICM
Intelligent Chassis Management

ID
Identification

IDE
Integrated Drive Electronics

IRQ
Interrupt Request Line

LAN
Local Area Network

LBA
Logical Block Address

LCD
Liquid Crystal Display

LUN
Logical Unit Number

LVD
Low-Voltage Differential SCSI

MMF
Multi Mode Fibre

MRL
Manually Retention Latch

NMI
Non Maskable Interrupt

NVRAM
Non Volatile Random Access Memory

OS
Operating System

PCI
Peripheral Component Interconnect

PDA
Prefailure Detection and Analysing

POST
Power ON Self Test

RAID
Redundant Arrays of Independent Disks

RAM
Random Access Memory

ROM
Read-Only Memory

RSB
Remote Service Board

RTC
Real Time Clock

RTDS
Remote Test- und Diagnose-System

SAF-TE
SCSI Accessed Fault-Tolerance Enclosures

SBE
Single Bit Error

SCA
Single Connector Attachment

SCSI
Small Computer System Interface

SDR
Sensor Data Record

SDRAM
Synchronous Dynamic Random Access Memory

SEL
System Event Log

SMI
System Management Interrupt

SSU
System Setup Utility

SVGA
Super Video Graphics Adapter

USB
Universal Serial Bus

VGA
Video Graphics Adapter

ZCR
Zero Channel RAID

Related Publications

PRIMERGY manuals are available as PDF file on the ServerBooks CD. The **ServerBooks** CD is part of the **ServerStart Bundle** delivered with each server system.

The actual version of the necessary manuals can be downloaded free of charge from the Internet. The overview page showing the online documentation available in the Internet can be found via the URL: *http://manuals.fujitsu-siemens.com* (choose: intel based servers/PRIMERGY ServerBooks)

[1] **Safety and Ergonomics**

[2] **Warranty**

[3] **PRIMECENTER Rack**
Technical Manual

[4] **DataCenter Rack**
Technical Manual

[5] **19 inch rack**
Technical Manual

[6] **ServerView**
Server Management
User Manual

[7] **RemoteView**
User Manual

[8] **RemoteView Service Board**
Installation Guide

[9] **System Board D1501**
Technical Manual

[10] **D1501 Setup Utility for PRIMERGY TX150**
Reference Manual

[11] **Adaptec HostRAID**
User's Guide

Index

Fujitsu Siemens Computers GmbH
User Documentation
81730 Munich
Germany

Fax: (++49) 700 / 372 00000

email: manuals@fujitsu-siemens.com
http://manuals.fujitsu-siemens.com

Comments
Suggestions
Corrections

Submitted by

Comments on PRIMERGY TX150
Server System

Fujitsu Siemens Computers GmbH
User Documentation
81730 Munich
Germany

Fax: (++49) 700 / 372 00000

email: manuals@fujitsu-siemens.com
http://manuals.fujitsu-siemens.com

Comments
Suggestions
Corrections

Submitted by

Comments on PRIMERGY TX150
Server System

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

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/*..., und unter *http://manuals.ts.fujitsu.com* finden Sie die Benutzerdokumentation.