

PRIMERGY TX120 S2 Server

Operating manual

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Certified documentation according to DIN EN ISO 9001:2000

To ensure a consistently high quality standard and user-friendliness, this documentation was created to meet the regulations of a quality management system which complies with the requirements of the standard DIN EN ISO 9001:2000.

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1 Preface

The PRIMERGY TX120 S2 server is an Intel-based server for small and medium-sized networks and can be used in the horizontal position or as a desktop model.

The PRIMERGY TX120 S2 server features exceptionally low energy consumption, very quiet running and a compact size. As a result, it is also the ideal solution for home and small offices.

Thanks to its highly developed hardware and software components, the PRIMERGY TX120 S2 server offers a high level of data security and availability. This includes hot-plug HDD modules, the ServerView Operations Manager for server management, Prefailure Detection and Analysing (PDA), and Automatic Server Reconfiguration and Restart (ASR&R).

Security functions in the BIOS-setup protect the data on the server against manipulation. Additional security is provided by the lockable drive cover.

1.1 Concept and target groups for this manual

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

This operating manual is intended for those responsible for installing the hardware and ensuring that the system runs smoothly. It contains all the information you need to put your PRIMERGYTX120 S2 into operation.

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

1.2 Documentation overview

More information on your PRIMERGY TX120 S2 can be found in the following documents:

- “Quick Start Hardware - PRIMERGY TX120 S2” leaflet (only included as a printed copy)
- “Quick Start Software - Quick Installation Guide” DVD booklet (only included with the PRIMERGY ServerView Suite as a printed copy)
- “Safety notes and other important information” manual
- “Warranty” manual
- “PRIMERGY ServerView Suite Local Service Concept - LSC” manual
- “Returning used devices” manual
- “Helpdesk” leaflet
- Technical manual for the system board D2785
- “PRIMERGY TX120 S2 Server Operating Manual”
- “PRIMERGY TX120 S2 Server Options Guide”
- “D2785 BIOS Setup Utility for PRIMERGY TX120 S2” manual



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

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

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

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

Further sources of information:

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

1.3 Features

System board

The features of the system board are described in the technical manual for the system board D2785 for the hardware and in the BIOS Setup manual for the firmware.

TPM (optional)

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

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

**CAUTION!**

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

Hard disk drives

The server has a drive cage in which up to 2 SAS/SATA HDD modules can be inserted. Each HDD module can accommodate an SAS/SATA hard disk drive with a 2.5-inch format. The module is connected to the SAS/SATA backplane wirelessly. This allows HDD modules to be plugged in or pulled out easily.

SATA hard disk drives are controlled by the onboard SATA controller. An additional SAS controller must be installed to control SAS hard disk drives.

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

A hard disk drive extension box can be installed optionally (with a maximum of two HDD modules).

Onboard SATA controller

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

For more information on configuring the controller, see section [“Configuring the onboard SATA controller” on page 55](#).

SAS/SATA RAID controller

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

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

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

For more information on configuring the controller, see section [“Configuring the server” on page 55](#).

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

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

For more information on configuring the controller, see section [“Configuring the server” on page 55](#).



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

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

HDD extension box and accessible drives

Two mounting locations are available:

- a 3.5-inch bay for a HDD extension box or a backup drive.
- a 5.25 inch bay with a slimline DVD drive.

The accessible drives cannot be replaced during operation.

USB ports

The USB ports on the front of the device enable USB devices to be connected directly. The maximum length of the external cable are three meters.

Power supply

The server has a built-in power supply unit, which automatically sets itself to a mains voltage in the range 100 V - 240 V.

High level of availability and data security

When memory data is accessed, 1-bit errors are identified in the main memory and automatically corrected with the error correcting code (ECC) method.

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

The PDA (Prefailure Detection and Analysing) technology from Fujitsu Technology Solutions analyzes and monitors all components that are critical for system reliability.

A RAID controller supports different RAID levels and increase the availability of the system. The hot-plug HDD modules provide additional security.

iRMC S2 with integrated service LAN port



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

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

Major functions supported by the iRMC S2 include the following:

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

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

Server management

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

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

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

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

ServerView Installation Manager

You can configure the PRIMERGY server quickly and precisely with the ServerView Installation Manager software provided. User-guided menus are available for installing the server operating system (for further details see section [“Configuring the server” on page 55](#)).

Service and support

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

The handles and locks (touch point) on the various hot pluggable components are colored green to ensure simple and immediate recognition.

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

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

With the iRMC S2 (integrated Remote Management Controller) on the system board, the PRIMERGY TX120 S2 server can also be maintained and serviced remotely. This enables remote diagnosis for system analysis, remote configuration and remote restart should the operating system or hardware fail.

ServerView Remote Management

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

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

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





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

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

1.4 Notational conventions

The following notational conventions are used in this manual:

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

1.5 Technical data

Electrical data

Rated voltage range	100 V - 240 V
Frequency	50 Hz - 60 Hz
Rated current with basic configuration	100 V - 240 V / 0.53 A - 0.23 A
Max. rated current	100 V - 240 V / 2.7 A - 1.1 A
Effective power	44 W - 120 W
Apparent power	56 VA - 127 VA
Heat dissipation	158 kJ/h - 432 kJ/h (149 btu/h - 409 btu/h)
Main power fuse	16 A
Protection class	I

Compliance with regulations and standards

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

Mechanical values

	Upright operating position	Horizontal operating position
Width	195 mm (including feet)	340 mm
Depth	399 mm	399 mm
Height	360 mm (including feet)	99 mm

Weight

Approx. 10 kg (depending on configuration).

Ventilation clearance

At least 200 mm on the front and rear.

Ambient conditions

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

Condensation during operation must be avoided!

Noise level

Sound power level L_{WAd} (ISO 9296)	< 4.3 B (standby) < 4.7 B (operation)
Sound pressure level at adjacent workstation L_{pAm} (ISO 9296)	< 27 dB (A) (standby) < 32 dB (A) (operation)

2 Installation steps, overview

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

- ▶ First of all, it is essential that you familiarize yourself with the safety information in chapter [“Important information” on page 23](#).
- ▶ Transport the server to the place where you want to set it up.
- ▶ Unpack all parts, check the contents of the package for visible transport damage and check whether the items delivered match the details on the delivery note (see section [“Unpacking the server” on page 36](#)).
- ▶ Make sure that all necessary manuals (see [“Documentation overview” on page 8](#)) are available; print out the PDF files if required.
- ▶ Set up the server (see section [“Setting up the server” on page 37](#)).
- ▶ Wire the server. Follow the instructions in sections [“Connecting devices to the server” on page 42](#) and [“Notes on connecting/disconnecting cables” on page 45](#).
- ▶ Connect the server to the mains (see section [“Connecting the server to the mains” on page 43](#)).
- ▶ Familiarize yourself with the controls and indicators on the front and rear of the server (see section [“Controls and indicators” on page 48](#)).

- ▶ Configure the server and install the desired operating system and applications. The following options are available:

- Remote installation with the ServerView Installation Manager:

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

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

Configuration information can also be found in section [“Configuring the server and installing the operating system with the ServerView Installation Manager” on page 57](#).

- Local configuration and installation with or without the ServerView Installation Manager (see section [“Configuring the server and installing the operating system with the ServerView Installation Manager” on page 57](#) or section [“Configuring the server and installing the operating system without the ServerView Installation Manager” on page 58](#)).



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

3 Important information

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

3.1 Safety instructions



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

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



CAUTION!

- The actions described in this manual should only be performed by technical specialists.
- Equipment repairs should only be performed by service staff. Please note that unauthorized interference with the system will void the warranty and exempt the manufacturer from all liability.
- Any failure to observe the guidelines in this manual, and any improper repairs could expose the user to risks (electric shock, energy hazards, fire hazards) or damage the equipment.

Before starting up



CAUTION!

- During installation and before operating the device, observe the instructions on environmental conditions for your device (see [section “Technical data” on page 20](#)).
- If the server has been moved from a cold environment, condensation may form both inside and on the outside of the machine.

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

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

Installation and operation



CAUTION!

- This unit should not be operated in ambient temperatures above 35 °C.
- If the unit is integrated into an installation that draws power from an industrial power supply network with an IEC309 connector, the power supply's fuse protection must comply with the requirements for non-industrial power supply networks for type A connectors.
- The unit automatically adjusts itself to a mains voltage in a range of 100 V - 240 V. Ensure that the local mains voltage lies within these limits.
- This device must only be connected to properly grounded shock-proof sockets or insulated sockets of the rack's internal power supply with tested and approved power cables.
- Ensure that the device is connected to a grounded shockproof socket close to the device.

**CAUTION!**

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

**CAUTION!**

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

Batteries**CAUTION!**

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

Cd Cadmium

Hg Mercury

Pb Lead

Working with CDs/DVDs and CD/DVD drives

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



CAUTION!

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

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

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

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



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

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

Laser information

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



CAUTION!

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

Never remove parts of the CD/DVD drive casing!

Modules with Electrostatic-Sensitive Devices

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

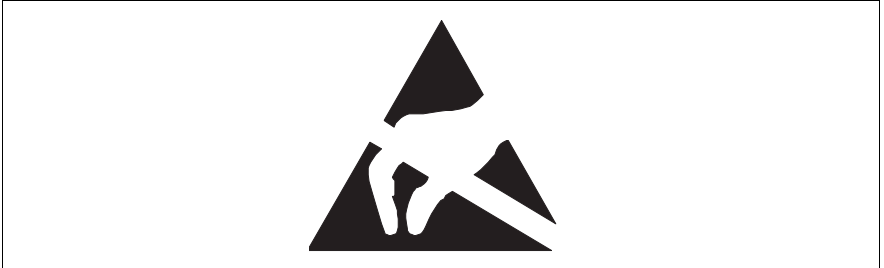


Figure 1: ESD label

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

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




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

Other important information:

- During cleaning, observe the instructions in section [“Cleaning the server” on page 58](#).
- Keep this operating manual and the other documentation (such as the technical manual, CD) close to the device. All documentation must be included if the equipment is passed on to a third party.

3.2 CE conformity

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

3.3 FCC Class B Compliance Statement

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 B” 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 guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

Fujitsu Technology Solutions GmbH is not responsible for any radio or television interference caused by unauthorized modifications of this equipment or the substitution or attachment of connecting cables and equipment other than those specified by Fujitsu Technology Solutions GmbH. 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 ENERGY STAR



In some particular configurations¹ the PRIMERGY TX120 S2 is equipped with a power management system which, in energy-saving mode, reduces the power consumption to <65 W. The server thus satisfies the requirements of the U.S. Environmental Protection Agency (EPA).

The EPA estimates that computer systems use around 5 % of all electricity in the office sector and that this figure is growing rapidly. If all computer systems and peripherals were placed in energy-saving mode when not in use, the overall savings in electricity could amount to some US \$ 2 billion annually. These savings would also prevent the emission of 20 million tons of carbon dioxide into the atmosphere - equivalent to the emissions from 5 million automobiles.

As an ENERGY STAR partner, Fujitsu Technology Solutions GmbH has determined that in some particular configurations this product meets the ENERGY STAR guidelines for energy efficiency.

¹ These servers are always delivered with a particular setting in the BIOS setup. For details please see the manual "D2785 BIOS Setup Utility for PRIMERGY TX120 S2" on the PRIMERGY ServerView Suite DVD 2.

3.5 Transporting the server



CAUTION!

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

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

3.6 Environmental protection

Environmentally-friendly product design and development

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

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

Energy-saving information

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

Packaging information

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

Information on handling consumables

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

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

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

Cd Cadmium

Hg Mercury

Pb Lead

Labels on plastic casing parts

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

Returns, recycling and disposal



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

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

www.ts.fujitsu.com/recycling.

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

Fujitsu Technology Solutions
Recycling Center
D-33106 Paderborn

Tel. +49 5251 8 18010

Fax +49 5251 8 333 18010

4 Hardware installation



CAUTION!

- Follow the safety instructions in the chapter [“Important information” on page 23](#).
- Do not expose the server to extreme environmental conditions (see [“Ambient conditions” on page 20](#)). Protect the server from dust, humidity and heat.
- Make sure that the server is acclimatized for the time indicated in this table before putting it into operation.

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

Table 1: Acclimatization time

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

4.1 Unpacking the server



CAUTION!

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

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

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

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

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

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

4.2 Setting up the server

- ▶ Set up the server.



Note that the server may be operated in the vertical (see section [“Positioning the server vertically” on page 38](#)) or horizontal position (see section [“Positioning the server horizontally” on page 41](#)).



CAUTION!

- The device must be protected from direct sunlight.
 - The required minimum distances for operation and maintenance areas must be adhered to.
 - The server must be accessible at the rear for connection to other devices (e.g. memory subsystem).
 - 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 of the system.
- ▶ Wire the server. Follow the instructions in sections [“Connecting devices to the server” on page 42](#) and [“Notes on connecting/disconnecting cables” on page 45](#).
 - ▶ Connect the server to the mains (see section [“Connecting the server to the mains” on page 43](#)).

4.2.1 Positioning the server vertically



CAUTION!

If the server is positioned vertically, the stabilizers must be attached!

The stabilizers must be attached in the correct direction (see figure 4 on page 40).

Clipping the stabilizers together

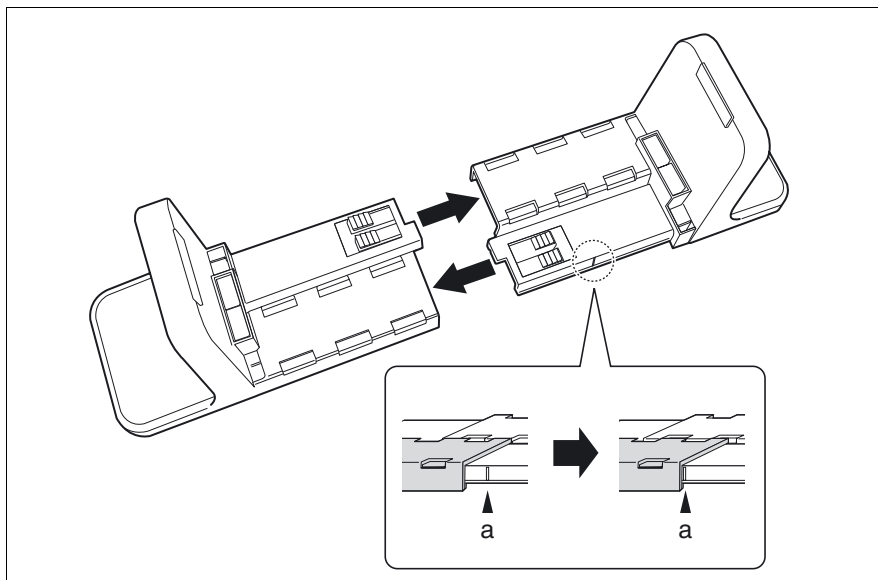


Figure 2: Clipping the stabilizer together

- ▶ Clip the stabilizers together in the direction of the arrow as far as the marking line (a).

Adjusting the width of the stabilizers

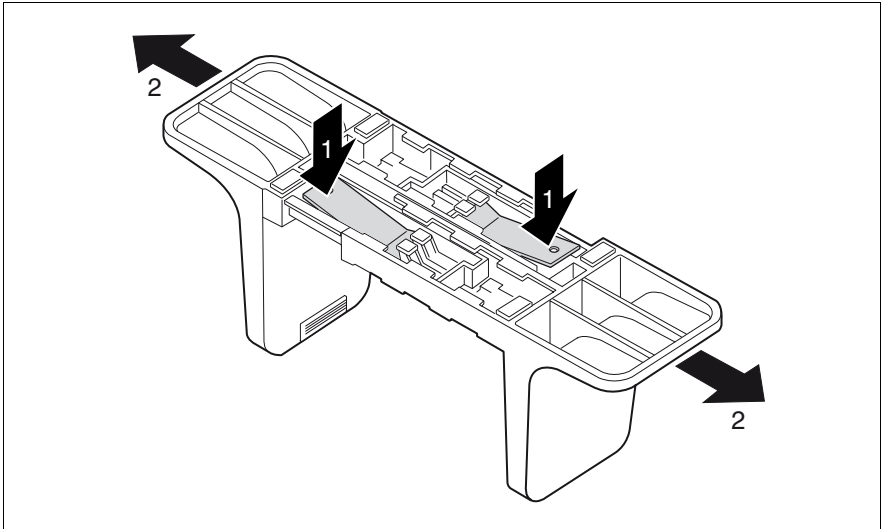


Figure 3: Adjusting the width of a stabilizer

You may have to adjust the width of the stabilizers.

- ▶ Press the two locking levers (1) and keep them pressed.
- ▶ Pull the stabilizer apart (2).

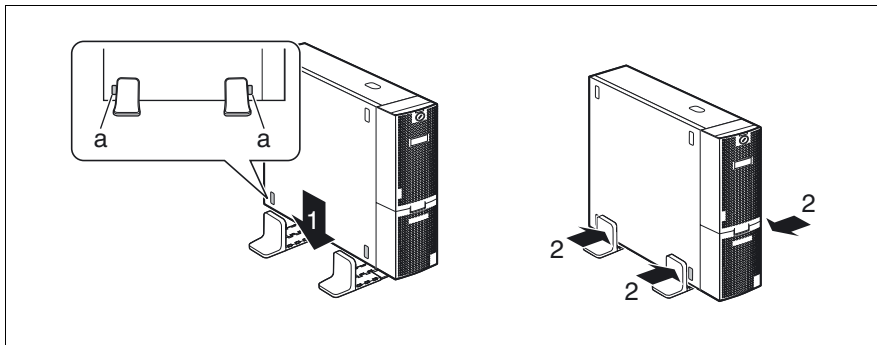
Placing the server on the stabilizers

Figure 4: Placing the server on stabilizers

- ▶ Place the server on the stabilizers (1).
Position the stabilizers between the rubber feet (a).
- ▶ Press the stabilizers together (2).

4.2.2 Positioning the server horizontally



CAUTION!

If the server is positioned horizontally, the rubber feet must be attached!
The stabilizers must be attached in the correct direction (see figure 5).

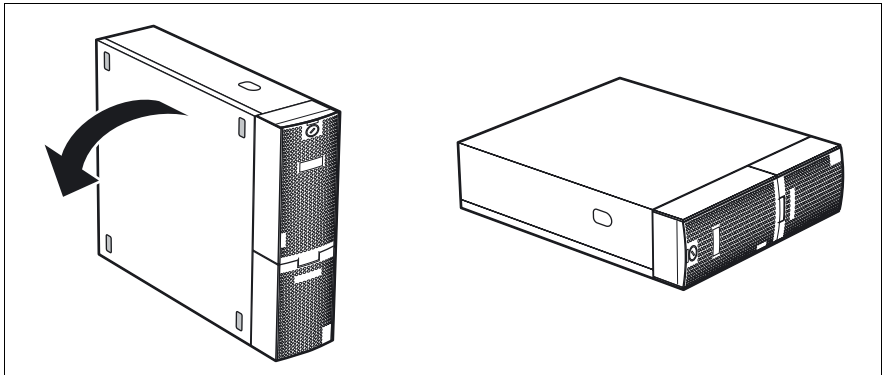


Figure 5: Positioning the server horizontally

- ▶ Place the server on its four rubber feet.

4.3 Connecting devices to the server

The ports for external devices are on the front and rear of the server. The additional ports available on your server depend on the expansion cards installed. For further information refer to the “Options Guide”.

The standard ports are indicated by symbols and color coding:

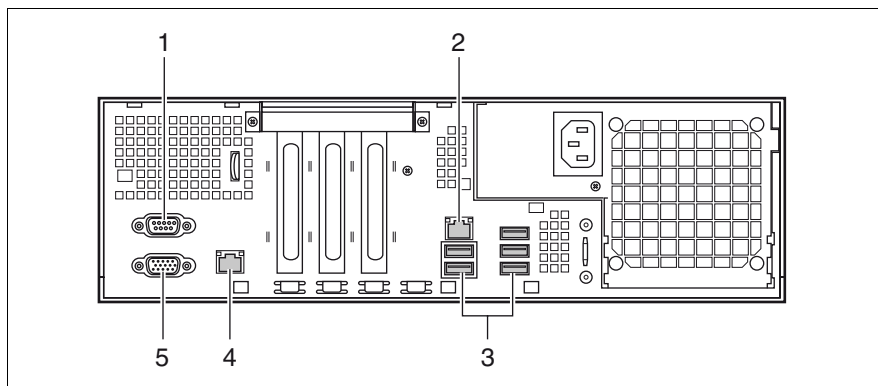


Figure 6: Standard ports

1	Serial port (turquoise)	4	Service LAN port
2	LAN port	5	Monitor port (VGA) (blue)
3	5 x USB ports (black)		



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

- ▶ Connect the data cables to the server and peripherals.

Two additional USB ports are located on the front of the server (see figure 10 on page 48).

4.4 Connecting the server to the mains

The server is fitted with a built-in power supply.



CAUTION!

The server is automatically set to a mains voltage in the range 100 V - 240 V. You may only operate the server if its rated voltage range corresponds to the local mains voltage.

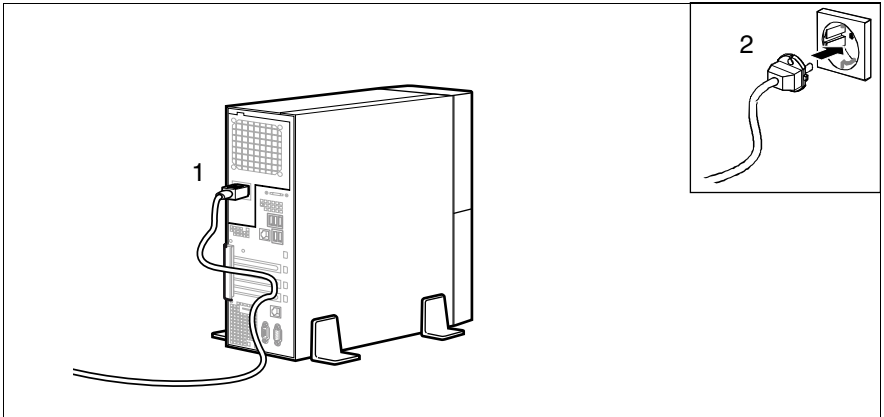


Figure 7: Connecting the server to the mains

- ▶ Connect the insulated connector of the power cable to the power supply unit of the server (1).
- ▶ Insert the mains plug into an earthing contact socket (2) in the internal supply network.

4.4.1 Using cable ties

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

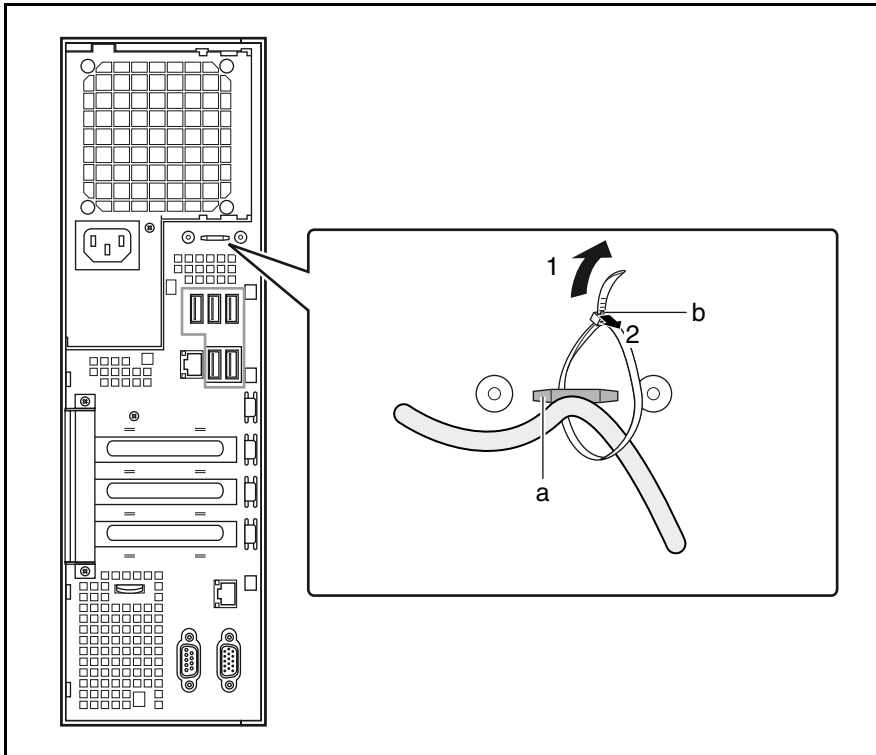


Figure 8: Using cable ties

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

The insulated connector cannot now be disconnected from the power supply unit accidentally.



You can loosen the cable tie by opening the small locking lever (b) in the direction of the arrow (2).

4.5 Notes on connecting/disconnecting cables



CAUTION!

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

Never connect, or disconnect cables during a thunderstorm.

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

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

Connecting cables

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

Disconnecting cables

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

5 Starting up and operation



CAUTION!

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

5.1 Opening the drive cover

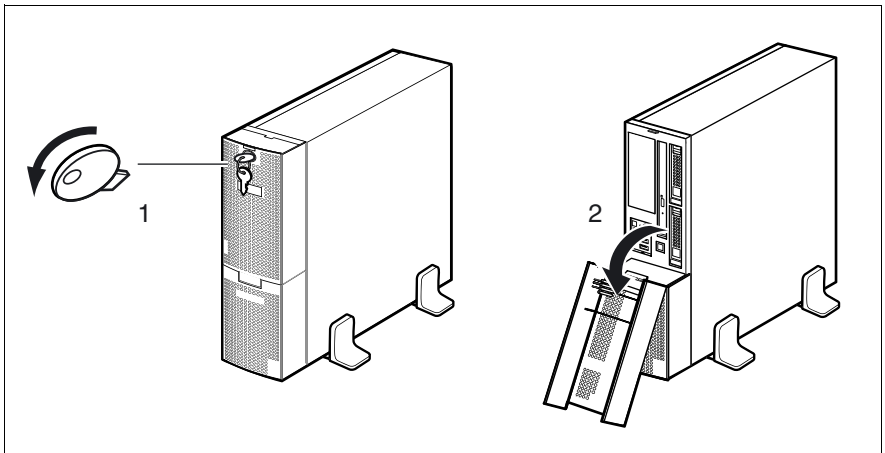


Figure 9: Opening the drive cover

- ▶ Turn the key counterclockwise (1).
- ▶ Open the drive cover in the direction of the arrow (2).

5.2 Controls and indicators

5.2.1 Front of server

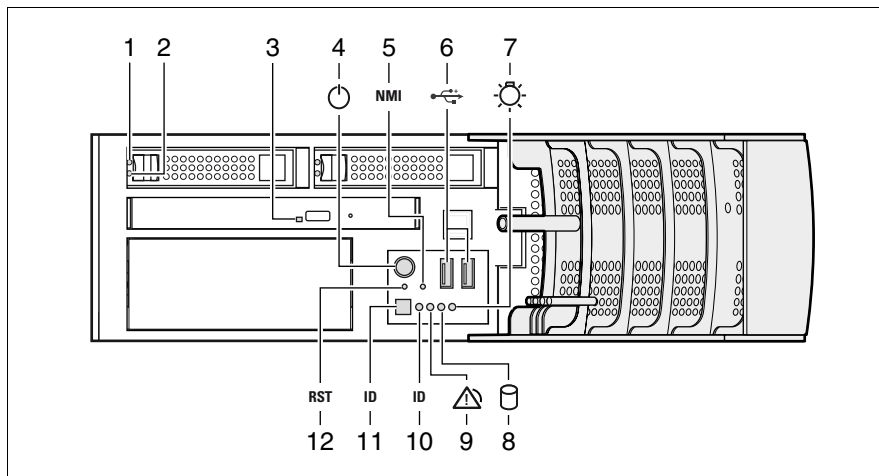


Figure 10: Front side (indicators and controls)

1	HDD FAULT indicator	7	Power-on indicator
2	HDD BUSY indicator	8	Hard disk activity indicator
3	DVD drive activity indicator	9	Global Error indicator
4	On/Off button	10	ID indicator
5	NMI button	11	ID button
6	2 x USB ports	12	Reset button

5.2.1.1 Controls



On/Off button

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

When the system is operating, pressing the On/Off button will switch off the system.



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

NMI NMI button



CAUTION!

Do not press! Risk of loss of data!

The NMI button may only be used by service.

RST Reset button

Pressing the reset button reboots the system.



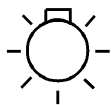
CAUTION!

Risk of loss of data!

ID ID button

When this button is pressed, the ID display (blue) on the front of the server lights up.

5.2.1.2 Indicators on the control panel



Power-on indicator (two colors)

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

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



Hard disk activity indicator (green)

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



Global Error indicator (orange)

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

Lights up orange when a predictable error has been detected. Users can check the System Event Log or via the ServerView Operations Manager for more detailed information.

Flashes orange when a critical event has occurred. Users can check for event details in the BIOS Setup, the System Event Log or via the ServerView Operations Manager.

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

ID ID indicator (blue)

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

The ID indicator can also be activated via the ServerView Operations Manager and the iRMC S2 Web interface and its status reported to the ServerView Operations Manager and the iRMC S2.

5.2.1.3 Indicators on the drives

DVD drive activity indicator

See position 3 in figure [10 on page 48](#).

Lights up green when the storage medium is being accessed.

Indicators on the HDD module

See items 1 and 2 in figure [10 on page 48](#).

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

5.2.2 Rear of server

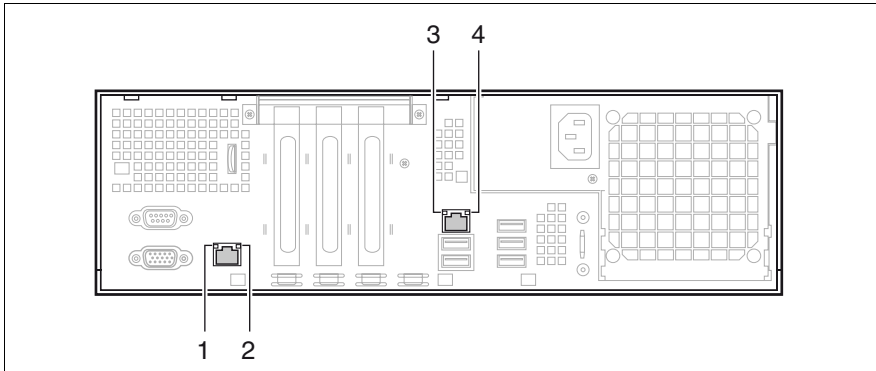


Figure 11: LAN indicators

1	<p>LAN activity indicator (service LAN)</p> <p>Lights up green if a LAN connection exists. Does not light up if no LAN connection exists. Flashes green when a LAN transfer is in progress.</p>
2	<p>LAN transfer rate indicator (service LAN)</p> <p>Lights up green for a LAN transfer rate of 100 Mbit/s. Does not light up for a LAN transfer rate of 10 Mbit/s.</p>
3	<p>LAN activity indicator (standard LAN)</p> <p>Lights up green if a LAN connection exists. Does not light up if no LAN connection exists. Flashes green when a LAN transfer is in progress.</p>
4	<p>LAN transfer rate indicator (standard LAN)</p> <p>Lights yellow for a LAN transfer rate of 1 Gbit/s. Lights up green for a LAN transfer rate of 100 Mbit/s. Does not light up for a LAN transfer rate of 10 Mbit/s.</p>

5.3 Switching the server on and off



CAUTION!

If nothing appears on the screen but flickering stripes after switching on the server, switch the server off immediately (see section [“Flickering stripes on monitor screen” on page 63](#)).

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

Switching the server on

The power-on indicator (item 7 in [figure 10 on page 48](#)) lights orange.

– Starting up for the first time:

- ▶ Press the On/Off button (item 4 in [figure 10 on page 48](#)).
The power-on indicator lights green (item 7 in [figure 10 on page 48](#)).
- ▶ Insert the PRIMERGY ServerView Suite DVD 1 in the DVD drive.
- ▶ Follow the on-screen instructions (see also [section “Configuring the onboard SATA controller” on page 55](#) or [section “Configuring the server and installing the operating system without the ServerView Installation Manager” on page 58](#)).

– System already installed:

- ▶ Press the On/Off button (item 4 in [figure 10 on page 48](#)).
The power-on indicator lights green (item 7 in [figure 10 on page 48](#)).
The server is switched on, performs a system test and boots the operating system.

Switching the server off

Power-on indicator (item 7 in [figure 10 on page 48](#)) lights green.

- ▶ Shut down the operating system properly.

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



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

Other On/Off options

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

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

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

- **Ring indicator**

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

- **Wake On LAN (WOL)**

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

- **After power failure**

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

- **“Power override” function**

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



CAUTION!

There is a risk that data may be lost.

– IPMI

The server is switched on by an IPMI console via serial port COM1 (item 1 in [figure 6 on page 42](#)) or via the service LAN connection (item 4 in [figure 6 on page 42](#)).

5.4 Configuring the server

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

5.4.1 Configuring the onboard SATA controller

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



The controller has its own configuration utility. For further information, refer to the “Embedded MegaRAID Software User’s Guide” (on the PRIMERGY ServerView Suite DVD 2 under *Industry Standard Servers - Expansion Cards - Storage Adapters - LSI RAID / SCSI Controllers*).



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

5.4.2 Configuring the SAS/SATA RAID controller

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



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

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

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



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

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

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

Advantages of the ServerView Installation Manager

- Wizard assisted configuration of your server hardware and disk arrays
- Wizard assisted installation of all leading server operating systems
- Wizard-assisted creation of configuration files for unattended installation of several PRIMERGY servers with identical hardware configurations.
- Installation of drivers and additional software.



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



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

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

If you are using the ServerView Installation Manager, you can skip the following section on how to configure the server and install the operating system. Continue from section [“Cleaning the server” on page 58](#).

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

Configuring the onboard SATA controller

Configure the controller as described in section [“Configuring the onboard SATA controller” on page 55](#).

Configuring the SAS/SATA RAID controller

Configure the controller as described in section [“Configuring the onboard SATA controller” on page 55](#).

Installing the operating system

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

5.5 Cleaning the server



CAUTION!

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

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

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

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

Clean the keyboard and the mouse with a disinfecting cloth.

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

6 Property and data protection

6.1 Mechanical access protection

The lock and drive cover can be used to restrict access to the On/Off button and the drives.

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

6.2 BIOS Setup security functions

The *Security* menu in BIOS Setup offers various options for protecting your data from unauthorized access. For example, it allows you to assign passwords or prevent the BIOS from being overwritten. By combining these options you can achieve optimum protection for your system.



A detailed description of the *Security* menu and how to assign passwords can be found in the BIOS Setup documentation on the PRIMERGY ServerView Suite DVD 2.

7 Troubleshooting and tips



CAUTION!

Follow the safety instructions in the “Safety notes and other important information” manual and in chapter [“Hardware installation” on page 35](#).

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

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

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

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

7.1 Power-on indicator remains unlit

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

Power cable incorrectly connected

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

Power supply overloaded

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

7.2 Server switches itself off

Server Management has detected an error

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

7.3 Screen remains blank

Monitor is switched off

- ▶ Switch on your monitor.

Screen has gone blank

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

Brightness control is set to dark

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

Power cable or monitor cable not connected

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

7.4 Flickering stripes on monitor screen



CAUTION!

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

Monitor does not support the set horizontal frequency

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

7.5 No screen display or display drifts

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

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

7.6 No mouse pointer displayed on screen

Mouse driver not loaded

- ▶ Check whether the mouse driver is properly installed and is activated when the application program is started. Detailed information can be found in the user manuals for the mouse, the operating system and the application program.

7.7 Incorrect date and time

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



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

If the date and time are still wrong after the server has been switched off and back on again, replace the lithium battery (for a description refer to the Technical Manual for the D2785 system board) or contact our customer service team.

7.8 Drives reported as “dead” when starting system

This error message can occur when the onboard SAS controller has RAID functionality or the server is equipped with a PCI RAID controller.

RAID controller configuration incorrect

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

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

7.9 Added drive reported as defective

RAID controller is not configured for this drive

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

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

or

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

If the hard disk drive continues to be shown as defective, then replace it (see [“Installing/removing the HDD module” on page 70](#)).

7.10 Error message on screen

The meaning of the error message is explained in the documentation for the relevant components and programs on the PRIMERGY ServerView Suite DVD 2.

8 Hot-plug hard disk drives



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



CAUTION!

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

Up to four hot-pluggable hard disk drives can be installed in the PRIMERGY TX120 S2 server.

The hard disk drives which can be ordered for the PRIMERGY TX120 S2 are supplied already mounted in an installation frame so that defective hard disk drives can be replaced and new drives can be added during operation. The HDD drive and installation frame together make up the HDD module.

This chapter provides you with details of how to handle the HDD modules (see [page 68](#)) and how to install and remove HDD modules on your server (see [page 70](#)).



CAUTION!

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

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

8.1 Handling hard disk drives and HDD modules

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

Observe the following rules to prevent such problems occurring:

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



CAUTION!

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

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

Table 2: Acclimatization times for HDD modules

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

8.2 Removing/Installing the dummy module

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

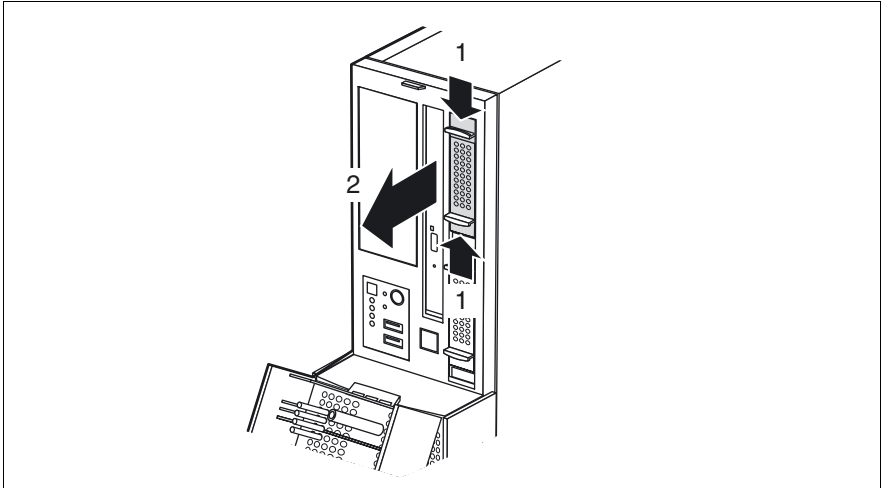


Figure 12: Removing the dummy module

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

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



CAUTION!

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

8.3 Installing/removing the HDD module

Unlocking the HDD module

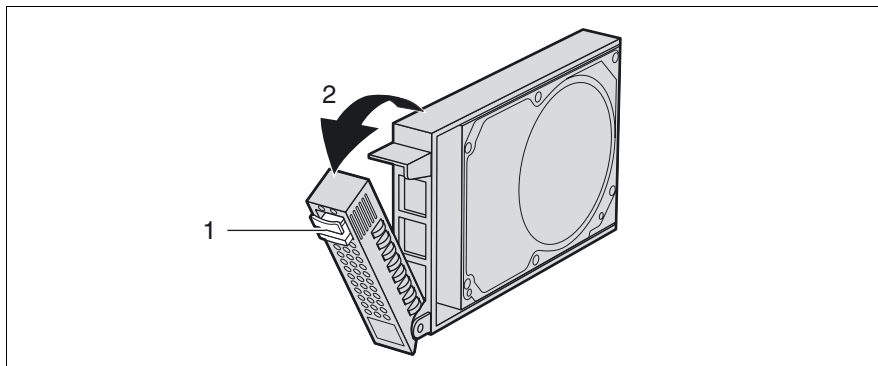


Figure 13: Unlocking the HDD module

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

Installing the HDD module

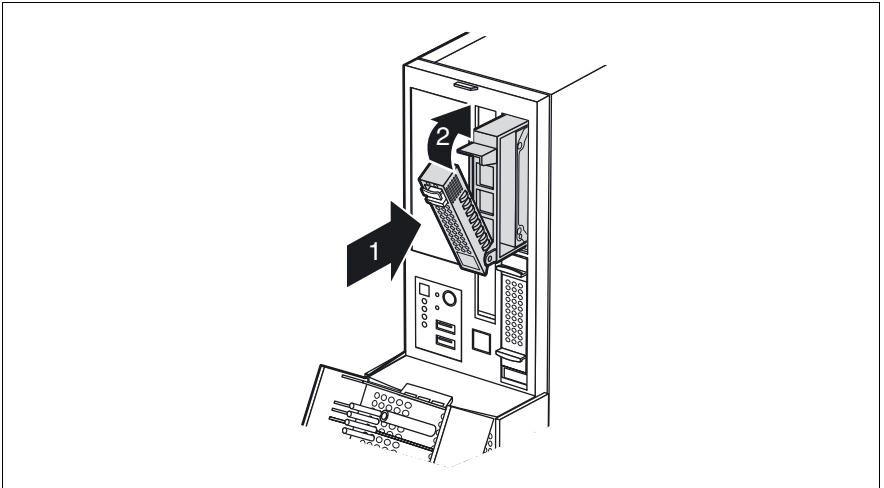


Figure 14: Installing the HDD module

- ▶ Unlock the HDD module as described in section [“Unlocking the HDD module”](#) on page 70.
- ▶ Carefully push the HDD module into the empty mounting location (1) until it stops.
- ▶ Push the handle completely in the direction of the arrow (2) until the locking mechanism engages.

Removing the HDD module



CAUTION!

- Only remove a HDD module during operation if the drive is not currently being accessed. Observe the control LEDs for the corresponding HDD modules (see [“Indicators on the HDD module” on page 51](#)).
- Under no circumstances should you remove an HDD module while the system is in operation if you are not sure whether the hard disk drive is operated by a RAID controller and belongs to a disk array.

An HDD module can only be replaced during operation in conjunction with a corresponding RAID configuration.
- All HDD modules (drives) must be uniquely identified so that they can be reinstalled in their original mounting locations later. If this is not done, existing data can be lost.

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

- ▶ If you want to remove a HDD module that is not defective, the drive must be first set to offline via the software (RAID controller configuration software).
- ▶ Unlock the HDD module as described in section [“Unlocking the HDD module” on page 70](#).
- ▶ Pull the HDD module out a few centimeters.
- ▶ Wait for at least 60 seconds.



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

- ▶ Pull the HDD module out completely.

- ▶ Install the new HDD module, as described in [“Unlocking the HDD module” on page 70](#) and [“Installing the HDD module” on page 71](#).

**CAUTION!**

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

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